UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 50-400-LA
CAROLINA POWER & LIGHT COMPANY	)	
	)	ASLBP No. 99-762-02-LA
	)	
(Shearon Harris Nuclear Power Plant)	)	
	)	

AFFIDAVIT OF KENNETH C. HECK
IN SUPPORT OF NRC STAFF'S WRITTEN SUMMARY

I, Kenneth C. Heck, being duly sworn, do hereby state as follows:

1. My name is Kenneth C. Heck. I am employed by the Nuclear Regulatory Commission as a Quality Operations Engineer in the Quality Assurance and Safety Assessment Section, Quality Assurance, Vendor Inspection, Maintenance & Allegations Branch, Division of Inspection Program Management in the Office of Nuclear Reactor Regulation. I am responsible for reviews of submittals involving quality assurance for design, construction and operations. In addition, I have thirty years of experience in the commercial nuclear power field, including design engineering, system engineering, and oversight of nuclear safety programs. This includes active participation in construction activities, including design engineering and startup testing. I have eleven years of direct involvement in startup or restart of commercial nuclear reactors. A statement of my professional qualifications is attached hereto.

2. The purpose of my testimony is to address the Atomic Safety and Licensing Board (Board) concerning Technical Contention 3. as set forth in the Board's Memorandum and Order (Ruling on Standing and Contentions) dated July 12, 1999. Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant), LBP-99-25, 50 NRC 25 (1999). Specifically, this affidavit addresses the first paragraph of the contention, as it relates to 10 C.F.R. Part 50, Appendix B, Criteria XIII and XVII:

> CP&L's proposal to provide cooling of pools C & D by relying upon the use of previously completed portions of the Unit 2 Fuel Pool Cooling and Cleanup System and the Unit 2 Component Cooling Water System fails to satisfy the quality assurance criteria of 10 CFR Part 50, Appendix B, specifically Criterion XIII (failure to show that piping and equipment have been stored and preserved in a manner that prevents damage or deterioration) . . . and Criterion XVII (failure to maintain necessary records to show that all quality assurance requirements are satisfied).

This affidavit also addresses the third paragraph of the contention:

> The Alternative Plan submitted by Applicant is also deficient because 15 welds for which certain quality assurance records are missing are embedded in concrete and inspection of the welds to demonstrate weld quality cannot be adequately accomplished with a remote camera.

3. By letter dated December 23, 1998 (Exhibit 1), the Carolina Power & Light Company (the Licensee) requested an amendment to Facility Operating License NPF-63 for Shearon Harris Nuclear Power Plant to place spent fuel pools C and D in service in order to increase the spent fuel storage capacity of the facility. Further information was provided in letters dated April 30, 1999 (Exhibit 2) and October 29, 1999 (Exhibit 4). An on-site inspection was conducted from November 15-19, 1999, and an inspection report was issued

on December 28, 1999. (Exhibit 4). The purpose of the inspection was to assess the implementation of the construction quality assurance program in the construction of spent fuel pools C and D, evaluate the alternative weld inspection program and evaluate the plans for commissioning the equipment for the C and D spent fuel pools. (Exhibit 4, page 1). The inspection team members were two Region II inspectors with considerable experience in evaluating sites during the construction phase (William Crowley and Joseph Lenahan) and Don Naujock and myself from Headquarters.

4. The spent fuel storage facility at Shearon Harris is located in the fuel handling building. The two pools at the south end of the building are referred to as pools A and B. The two pools at the north end of the building are referred to as pools C and D. Shearon Harris was originally designed as a four unit site. Pools A and B were to serve Units 1 and 4; pools C and D were to serve Units 2 and 3. Construction proceeded on the four unit site until December 1981, when the licensee informed the NRC that Units 3 and 4 had been canceled. (Exhibit 5). NUREG-1038, "Safety Evaluation Report related to the operation of Shearon Harris Nuclear Power Plant, Units 1 and 2," dated November 1983, concluded that Units 1 and 2 could be operated by the applicant without endangering the health and safety of the public (Exhibit 6, page iii). However, Unit 2 was canceled soon afterward, leaving Unit 1 as the only unit to be completed and licensed, with commercial operation beginning in May 1987 (Exhibit 2, Enclosure 8, page 1 -2 of 13). The cancellation of Unit 2 is also discussed in a December 21, 1983, letter from the Counsel for the applicants to the ASLB (Exhibit 7). The construction permit for Units 2, 3, and 4 expired on June 1, 1986, June 1,

1990, and June 1, 1987 respectively. Federal Register Notice of Issuance of Construction Permits, 43 Fed Reg 4465 (1978). (Exhibit 8.)

6. Pools C and D are described in the Final Safety Analysis Report for Unit 1, page 9.1.3-1 (Exhibit 9). The proposed license amendment would authorize the licensee to expand the storage facility by placing pools C and D in service. (To facilitate the clarity of subsequent testimony, I may refer to pools C and D as the Unit 2 pools and to pools A and B as the Unit 1 pools.)

7. Units 1 and 2 were constructed during the same period in accordance with a single quality assurance program. The licensee has submitted a copy of the QA program for control of ASME code-related activities, which was in effect during the construction phase (Exhibit 2, Enclosure 5). This quality assurance program applies to the equipment and piping being discussed as part of this amendment.

8. My testimony addresses the substantiating evidence that provides reasonable assurance that the welds were completed in accordance with applicable regulatory requirements and, consequently, provide an acceptable level of quality and safety. Acceptability of the Unit 2 Fuel Pool Cooling System for Unit 1 Service.

9. A significant portion of the equipment for fuel pools C and D was installed during original construction in the late 1970s and early 1980s. This equipment was procured and installed to applicable quality assurance requirements. System piping and large equipment, such as the fuel pool cooling heat exchanger, have been stored in-place in the fuel handling building since cancellation of Unit 2 in 1983. Smaller components, such as pump

motors, have been maintained under controlled storage. The systems were being installed under the Unit 2 construction permit, which expired on June 1, 1986 (Exhibit 8) and has never been incorporated into the operating license for Unit 1.

10. According to the licensee's application, the Fuel Pool Cooling and Cleanup System (FPCCS) and associated Component Cooling Water System (CCWS) piping will be completed in accordance with the CP&L quality assurance program (Exhibit 2, Enclosure 1, page 5 of 6). A copy of the licensee's QA program applicable to completion of these systems has been submitted by the licensee (Exhibit 2, Enclosure 14). In instances where the licensee's QA Program does not address specific American Society of Mechanical Engineers (ASME) Section III quality assurance requirements, the licensee has developed a set of supplemental quality assurance requirements to specifically address these items (Exhibit 1, Enclosure 8, page 13 of 13).

11. As part of the modification plan to incorporate pools C and D under the Unit 1 license, the licensee plans to implement a commissioning plan, or dedication process, which will ensure that the equipment will meet applicable design and quality assurance requirements and that the completed equipment is capable of performing its design functions (Exhibit 2, Enclosure 16, pages 8-10).

12. Missing Weld Documentation. This issue concerns missing records for 52 field welds. This section addresses substantiating evidence that the welds were completed to the required level of quality and safety. The evidence includes records documenting activities that were completed subsequent to completion of the subject welds, such as

hydrostatic testing of piping lengths that contained these welds and concrete emplacement records. These activities are stringently controlled such that multiple verifications and sign-offs attest to the fact that all weld requirements were met prior to initiating these activities. In addition, complementary quality assurance records, documenting satisfactory resolution of deficiencies identified during installation provide convincing evidence that welding was performed under an effective quality assurance program which identified and corrected deficiencies at variance with the licensee's welding program. Indeed, copies of some of the missing records are attached to these corrective action documents. In addition to quality assurance and construction records that substantiate satisfactory completion of the subject welds, the licensee's quality assurance program provides evidence of a well-controlled construction process that resulted in successful completion and startup of a commercial nuclear reactor and the uncertainty associated with the quality of 52 welds, for which the records are missing, is small.

13. Regulatory Requirements General Design Criterion 1, "Quality Standards and Records," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 requires that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Section 50.55a, "Codes and Standards," of 10 CFR Part 50 requires that components of the reactor coolant pressure boundary be designed, fabricated, erected, and tested in accordance with the requirements for Class 1 components of Section III of the ASME Boiler and Pressure Vessel Code or equivalent standards. Regulatory Guide

1.26 is the principal document used in staff reviews for identifying, on a functional basis, the components important to safety as Quality Groups A, B, C, or D. (Exhibit 10). The relevant items in this case are Group C components. Group C standards are applied to components of the cooling water systems. The American Society of Mechanical Engineers Boiler and Pressure Vessel Code standards for Class 1, 2, and 3 components are acceptable for satisfying GDC 1, for Groups A, B, and C components, respectively. CP&L has used the terminology Class 1, 2, and 3, and nonnuclear safety in classifying components, as defined in ANSI N18.2a-1975 (Exhibit 11), for the design of systems at Shearon Harris. These classifications correspond to NRC Quality Groups A, B, C and D, respectively. The classification of structures, components and systems important to safety is given in the Shearon Harris FSAR. Table 3.2.1-1 (Exhibit 9). The FPCCS cooling piping is classified as Safety Class 3, designed to ASME III, Class 3 requirements.

14. ASME Requirements. Applicable requirements concerning the missing documentation are provided by the ASME Code Section III, Subsection NA, 1974 Edition, Winter 1976 Addenda (Exhibit 12). Subsection NA of the code provides general requirements for the construction of nuclear power plant items such as vessels, storage tanks, piping, pumps, valves, and core support structures, and components of the nuclear power system of any power plant. Subsection ND of the code provides rules for the construction of Class 3 components (Exhibit 13). The code (NA-8420) requires that "field installation of welds shall be verified on Data Report Form N-5" (Exhibit 12, page 59). The N-5 forms, as well as data report forms for other Code items, are provided in Appendix V to Subsection

NA (Exhibit 12, page 211). The form is annotated to allow the use of supplemental sheets in the form of lists, sketches, or drawings in accordance with a prescribed format.

15. The licensee's Construction Quality Assurance procedure CQA-16, "Preparation and Submittal of ASME Code Data Reports," (Exhibit 14) establishes requirements for the preparation of ASME code data reports N-3 and N-5. I examined this procedure and consider the requirements and guidelines to be clear and sufficiently detailed for demonstrating compliance with Code reporting requirements.

16. Quality Assurance Program. The "CP&L Corporate Quality Assurance Program" (Exhibit 2, Enclosure 14) was the basis for the overall quality assurance program used for the engineering and construction of the Shearon Harris Nuclear Power Plant. The guidance provided by the corporate program is supplemented by Sections 1.8 and 17.3 of the FSARs for individual CP&L nuclear plants (Exhibit 9).

17. With regard to Contention 3, the cited Appendix B criteria are: XIII. Handling, Storage, and Shipping; XVI, Corrective Actions, and XVII, Quality Assurance Records. The licensee's QA program description describes respectively how these criteria are met in Section 5.0, Material and Equipment Control, Section 12, Conditions Adverse to Quality and Corrective Action, and Section 14.0, Quality Assurance Records and Document Control. (Exhibit 2, Enclosure 14).

18. The principal regulatory guide (RG) applicable to quality issues during the construction phase is RG 1.28, "QA Program Requirements for Design and Construction" (Exhibit 15). The complementary standard is N45.2, "QA Program Requirements for

Nuclear Facilities" (Exhibit 16). NRC reviews of quality assurance program descriptions for the design and construction phases are conducted in accordance with NUREG-0800, Standard Review Plan 17.1, "Quality Assurance During the Design and Construction Phase" (Exhibit 17).

19. Quality Assurance During Construction. The licensee filed an application in 1971 to construct and operate four units at the Shearon Harris site. Construction permits were issued in 1978. Prior to issuance of the construction permits, the staff reviewed and approved the quality assurance program controlling construction activities. (Exhibit 20, pp. 141-142). Construction proceeded on all four units under a single quality assurance program. Units 3 and 4 were canceled in 1978 (Exhibit 5). NUREG-1038, "Safety Evaluation Report related to the operation of Shearon Harris Nuclear Power Plant," issued in November 1983, summarizes the staff's review and evaluation of Unit 1 and Unit 2 and concludes that, pending completion of the units in conformity with the construction permits, the operation of these units can be conducted without endangering the health and safety of the public and that such activities will be conducted in compliance with applicable regulatory requirements (Exhibit 6, page 23-1). NUREG-1038 Chapter 3.9.3 addresses the staff review of ASME Code Class 1, 2, and 3 components (Exhibit 6, pages 3-41 to 3-44). The Fuel Handling Facility, common to Units 1 and 2 is addressed in Chapter 9.1, and the Fuel Pool Cooling System is addressed in Chapter 9.1.3 (Exhibit 6, pages 9-4 to 9-7). Based on its review, the NRC staff concluded that the system is in conformance with applicable General Design Criteria as they relate to protection against natural phenomena, missiles and environmental

effects, sharing of systems, cooling capability, inservice inspection, functional testing, fuel cooling and radiation protection, and monitoring provisions, and with the guidelines of Regulatory Guides 1.13, 1.26, and 1.29 as they relate to the system's design and quality and seismic group classification (Exhibits 18, 10, 19). The fact that Units 1 and 2 shared a common design basis, which was concurrently reviewed and approved by the staff, and that both units were constructed under a common quality assurance program, using a single source of oversight and construction personnel, provides reasonable assurance that the quality of construction for Unit 2 was similar to the quality of construction for Unit 1.

20. Missing Quality Records for Welds. CP&L states in the amendment request that quality records for 52 field welds were inadvertently lost during a site cleanup effort. In lieu of these required records, the licensee's alternative plan is based on (1) an effective quality assurance program during construction, with documentation substantiating that these welds were completed to an acceptable level of quality and (2) inspection of the original welds for compliance with quality requirements (Exhibit 1, Enclosure 8). A discussion of the inspection of the original welds and resolution of deficiencies, if any, will be provided by staff of the Materials and Chemical Engineering Branch and is not addressed herein. The licensee's alternative plan is described in Enclosure 8 of the license amendment request, dated December 23, 1998. As part of the alternative plan, construction era documents were compiled to substantiate the quality of the Unit 2 fuel pool cooling piping (Exhibit 1, Enclosure 8). These documents define the requirements that were associated with the procurement, storage, handling, and installation of the piping. These documents include

work procedures for welding, weld material control, piping installation, concrete placement, and hydrostatic testing. Development of the sequence of installation through controlling procedures establishes the activities related to quality (tests, inspections, reviews, etc.), which by procedure would have to be satisfactorily completed in order to meet specific documented construction milestones, such as concrete placement and hydrostatic tests. Construction records related to construction of the spent fuel pools and associated equipments have also been compiled. These records include hydrostatic test records and concrete placement tickets.

21. Substantiating Construction Records. CP&L has submitted (Exhibit 2, Enclosure 3) a matrix of construction records pertaining to the spent fuel pool C and D cooling system. The matrix identifies the 52 welds for which records are missing and the proposed resolution. Thirty-seven of these welds are accessible and, consequently, subject to examination. The accessible welds are not the subject of Contention 3. Fifteen of the welds are located in piping which has been embedded in concrete and, consequently, not accessible for direct examination. Substantiation of these embedded welds relies, in part, on available construction records. Sequential installation steps must be completed prior to beginning a subsequent step. For example, prior to hydrostatic testing of a section of piping, the licensee's quality control/quality assurance staff verify that welds within the scope of a hydrostatic test have been satisfactorily completed in accordance with applicable requirements. The licensee has provided records for hydrostatic tests performed on 13 of the 15 embedded welds (Exhibit 2, Enclosure 8). These records substantiate that the

completed welds were in compliance with ASME and other quality requirements and evidenced by signoffs by responsible quality assurance/quality control personnel and witnessed by the Authorized Nuclear Inspector, who served as an independent third party. Because hydrostatic tests cannot be commenced until all required procedures have been satisfactorily completed, the records provide reasonable assurance that the welds had been completed in compliance with applicable quality requirements prior to hydrostatic testing.

22. Site Inspection. A site inspection was conducted from November 15-19, 1999, (Exhibit 4) for the purpose of reviewing issues related to the licensee's alternate plan to compensate for the missing weld records. A primary objective of this inspection was the review of construction era procedures, records, and other documentation that provide substantiating evidence that the subject welds were completed to an acceptable level of quality and safety. I personally reviewed the following items: records required by Section III of the ASME Code, quality assurance program procedures, quality assurance audits of the effectiveness of ASME program implementation and vendors of equipment associated with the fuel pool; and corrective action records. Records associated with weld activities, hydrostatic testing, and concrete placements were reviewed by other members of the inspection team. I discussed the course of these reviews by other inspectors on a daily basis. The following sections discuss the results of these reviews.

23. ASME Documentation. ASME Data Reports for Unit 1. The design basis for the fuel pool cooling system for Unit 1 (Pools A and B), currently in operation is identical

to the design basis for the fuel pool cooling system (Pools C and D); they are described in Section 9.1.3 of the Shearon Harris FSAR (Exhibit 9). Because these pools were installed in the same building, procurement of major components and installation of most system piping and equipment was performed during the same time period, in the late 1970s and early 1980s. They were procured and installed to the same ASME requirements and in accordance with a single ASME Quality Assurance Program (Exhibit 2, Enclosure 5). Therefore, it is reasonable to expect the same level of quality to be applied to both fuel pool cooling systems. The ASME N-5 data package for Unit 2 cannot be completed because 49 weld records are missing. To assess the adequacy of the site quality assurance program in controlling activities and processes related to the data package, I reviewed N-stamp documentation for the Unit 1 fuel pool cooling system. Upon completion of all Code-related systems supporting the operation of Unit 1, an N-3 Code Data Report was submitted to the National Board of Boiler and Pressure Vessel Inspectors on August 15, 1986. The data report contains the documentation required by Section III of the ASME Code for registration of the N-stamp systems for Unit 1. Included in this data report are the Code-required data packages for nuclear piping (ASME Form N-5). I examined the N-5 data packages for the Unit 1 fuel pool cooling system and associated component cooling water system. These packages had been accepted by the National Board for N-Stamp registration. The N-5 data package was complete and satisfactory, with summary data for the welds, hydrostatic tests, and certified material test reports.

Examination of the ASME records, as specified above, demonstrates that welding of the fuel pool cooling and associated component cooling water piping for the Unit 1 and Unit 2 pools, was performed during the same time period, by a common pool of welders qualified to the same requirements, and in accordance with a common system of procedural requirements. Therefore, acceptance for N-stamp registration of the quality of the welds for the Unit 1 pool provides credible substantiating evidence that the welding of similar piping for the Unit 2 pool was of comparable quality.

ASME Data Reports for Unit 2. N-5 data packages for the piping systems supporting operation of Pools C and D cannot be submitted for N-stamp registration because records for 52 field welds are missing. However, records for other equipment, such as heat exchangers, pumps, strainers, and welds made to prefabricated pipespools are complete. To test the completeness of these records, I randomly selected two data packages for review: an NPV-1 data package for Pump 2B-SB and an N-2 NPT data package for strainer 3-SF-53-5A-2. The data package for the pump included a Certificate of Compliance, a manufacturer's code data report, material certification, hydrostatic test reports, performance test reports, welding ticket records, dimensional inspection records, a cross-section drawing, and an as-built drawing. I found the NPV-1 summary package to be complete and satisfactory. The data package for the strainer included an ASME data report, a Certificate of Conformance, liquid penetrant inspection reports, a product quality control check list, material test reports, an inspection and test report, dimensional inspection records, and sequence traveler. I found the N-2 NPT summary package to be complete and satisfactory. The completeness and adequacy of the

N-5 data package for the Unit 1 field welds provides substantiating evidence that a similar level of quality and safety was provided for the Unit 2 field welds and that the issue is a matter of missing documentation, not weld quality. The completeness and adequacy of the two Unit 2 data packages randomly selected provides substantiating evidence of compliance with ASME requirements, except for the missing weld documentation.

24. Quality Assurance Audit Program. The effectiveness of the ASME Quality Assurance Program was verified by corporate audits. I retrieved a listing of these audits from the licensee's document data base and found that eight of these audits had been conducted during the period from March 19, 1979 through February 19, 1992. From the list of audits, I randomly selected audit QAA/170-6 for review. The audit report, conducted from September 21-29, 1981, concluded that the Shearon Harris construction, engineering, and QA programs adequately met ASME code requirements, except for eleven findings and sixteen concerns. I reviewed the findings, the corresponding proposed corrective actions, and QA closure documentation. The findings and concerns were typically associated with procedural and training requirements and indicative of careful auditing, rather than programmatic weaknesses. I found the corrective actions to be reasonable, implemented within a reasonable time period, and properly closed by the quality assurance organization. The completeness and ad equacy of the audit program, based on the audit randomly selected, provides substantiating evidence of an effective ASME program and adequate corporate oversight.

25. Quality Assurance Audits of Vendors. I reviewed a licensee audit of a vendor, conducted from May 22-23, 1974 at the fabrication facility of Southwest Fabricating & Welding Company. The audit was conducted to verify the effectiveness of the vendor's Appendix B quality assurance program, which was invoked through the purchase order for prefabricated piping used for the Unit 1 and 2 spent fuel cooling systems. I found the audit to be thorough, the corrective actions to be appropriate and timely, and properly closed by the licensee's quality assurance organization. The completeness and adequacy of the audit program, based on a randomly selected audit, provides substantiating evidence of adequate oversight of vendors supplying safety-related equipment for the spent fuel cooling systems.

26. Effectiveness of the Construction Quality Assurance Program. A copy of the ASME Quality Assurance Manual for the Construction of the Shearon Harris Nuclear Plant was provided by the licensee in support of the subject license amendment, by letter dated April 30, 1999 (Exhibit 3, Enclosure 5). This manual provides quality measures that assure compliance with the quality requirements of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components, and applicable Federal, State and local regulations and codes. The Manual was applicable to all construction on site, including the spent fuel pools for Unit 1 and Unit 2.

27. Quality Assurance/Quality Control Implementing Procedures. Procedures and processes during construction require that field welds be subject to multiple inspections and documentation reviews. I reviewed the system of procedures, which implement the requirements of the site quality assurance program. These procedures control all of the

construction activities and processes that could affect the quality of construction. The procedures reviewed were in effect during the construction period from 1979-1983 when the bulk of the weld activities on the spent fuel cooling systems was performed.

CQA-1	Personnel, Training and Qualification
CQA-2	QA Document Control
CQA-4	QA Records
CQA-8	Material Issue Surveillance
CQA-12	Mechanical Equipment Installation Monitoring
CQA-14	Application and Control of "N" Type Symbol Stamps
CQA-15	Assignment and Control of National Board Serial Numbers
CQA-16	Preparation and Submittal of ASME Code Data Reports
CQA-18	Control of Site Fabrication/Modification of Piping Subassemblies
CQA-20	Surveillance of Contractor Welding and Related Activities
CQA-22	Welding Activity Monitoring
CQA-24	Procurement Control
CQA-28	QA Surveillance
CQA App. A	Quality Assurance Forms
CQC-2	Nonconformance Control
CQC-4	Procurement Control
CQC-6	Receiving Inspection
CQC-8	Storage Control
CQC-10	Cleanness Control
CQC-12	Mechanical Equipment Installation Control
CQC-13	Concrete Control
CQC-19	Weld Control
CQC-20	Post-Weld Heat Treatment Control
CQC-22	Hydrostatic Test Inspection
CQC-23	Systems Turnover

The procedures consistently implemented the requirements of the QA program for code-related activities, established by the ASME QA Manual (Exhibit 2, Enclosure 5), and defined process requirements in sufficient detail to provide effective process control. Because of the issue concerning the quality of the field welds for which certain records are

missing, particular attention was given to review of CQC-19, " Weld Control." In addition, procedures for processes subsequent to completion of field welds contain prerequisites that the welds have been satisfactorily performed, that all deficiencies associated with the subject welds have been resolved, and that closure documentation for welds has been reviewed by quality assurance, with concurrence by the ANI. Because of the importance of these prerequisites in assuring the satisfactory completion of welds, I also reviewed CQC-22, and CQC-13. A summary of my review and conclusions is provided in the following sections.

28. Weld Control (CQC-19). CQC-19 assigns the Welding QA/QC Specialist the responsibility for: (1) reviewing and verifying data and designated hold points for the weld data reports (WDRs), which document the code-required data; (2) ensuring that completed WDRs are forwarded to the Authorized Nuclear Inspector; and (3) supervising the QC inspectors in the performance of weld inspections and monitoring activities related to welding. With respect to the quality of the subject field welds, the required data is documented on the WDR, reviewed, and approved by the Welding QA/QC Specialist. QA inspection personnel are trained in accordance with CQA-1 for proficiency in determining that weld quality meets applicable code requirements. After the documentation for a field weld has been determined to be acceptable, associated documents are assembled and the package transmitted to QA Records in accordance with CQA-4. Based on my review of CQC-19, I concluded that the procedure provided adequate control of the weld process to provide a basis for stating that there is reasonable assurance that completed field welds met applicable code requirements.

29. Hydrostatic Test Inspection (CQC-22). CQC-22 establishes the requirements for performing hydrostatic test inspections to ensure that the tests are performed in accordance with applicable procedures and specifications. The procedure is directly applicable to hydrostatic testing of piping containing the subject field welds. The Mechanical QA Specialist is responsible for verifying that the completed documentation for the piping is on file. This includes verification that all activities associated with field welds within the scope of a hydrostatic test have been satisfactorily completed and that the welds meet applicable quality requirements. The responsibilities of the Mechanical QA Specialist and QA inspection personnel are sufficiently defined to provide reasonable assurance that the quality of hydrostatic testing is in compliance with applicable procedures and specifications. After a hydrostatic test has been documented and accepted by the Authorized Nuclear Inspector, the associated documents are assembled and reviewed by the Mechanical QA Specialist, who verifies that manufacturing/fabrication records for components within the boundaries of the test have been received and accepted and that there are no nonconformances on any of the components.

Based on review of CQC-22, I concluded that the procedure provided adequate control of the hydrostatic testing to ensure that weld records had been satisfactorily completed and accepted before commencement of hydrostatic testing.

30. Concrete Placement (CQC-13). CQC-13 requires that, prior to concrete placement, a Concrete Placement Report be completed. This report attests that all activities in the affected area have been satisfactorily completed and that access to the area to be

covered by concrete is no longer required. As each craft completes its work, the Craft Superintendent signs off the report, signifying that a particular activity, such as mechanical, electrical, welding, nondestructive examination, or cleanup, is complete and ready for concrete pour. The sign-off must be completed by all Craft Superintendents whether or not they have material in the particular placement, as a safeguard against omissions. After sign-off by the Craft Superintendents, Field Engineering signs the report, verifying that required design attributes, such as the correct location and anchoring of embedded conduit, grounding, inserts, sleeves, piping, and plumbing, are complete and correct. After all crafts have completed their work, the Construction Inspector signs the report, signifying, among other things, that all Code welds have been inspected and approved by Quality Assurance. Subsequently, Quality Control and Quality Assurance sign the report, signifying that all of their oversight activities have been completed and the items to be embedded are in compliance with applicable requirements. Finally, after all required disciplines, QC and QA, the Construction Inspector, and engineering signoffs are complete, the Area Superintendent authorizes concrete placement activities to proceed. The completed Concrete Placement Report is transmitted to QA Records in accordance with CQA-4.

Based on review of CQC-13 and of Construction Procedure WP-05, Rev 7, "Concrete Placement," I concluded that the procedure provides reasonable assurance the subject welds were completed, documented, and determined by the construction quality assurance staff to be compliant with applicable code and quality requirements prior to being embedded.

31. Oversight of Welding Activities. To assess the effectiveness of the site QA/QC program in identifying and resolving problems associated with welding activities, I examined a sample of QA/QC reports documenting deficiencies identified during the period from 1979 through 1983. These records included deficiency and disposition reports (DDRs), nonconformance reports (NCRs), and reports of QA/QC monitoring and surveillance of field activities. All corrective action reports reviewed were properly dispositioned, resolved, and properly closed and archived. The deficiencies identified on these reports were judged to be non-programmatic or pervasive and typical of those to be expected for a large construction project.

32. A number of QC monitoring and surveillance activities were reviewed. These activities document inspector field observations. The reports are generated from day-to-day observation of ongoing construction activities and generally covered such areas as material control, welding equipment, welder training and qualification, weld procedure compliance, and review of weld data reports for accuracy and completeness. Based on my review of DDRs, NCRs, and reports of QC field observations, I concluded that inspection personnel actively monitored the welding activities and processes for compliance with ASME code and QA program requirements. Deficiencies were accurately reported, corrective actions promptly taken, and appropriately resolved. All corrective action documents reviewed were in compliance with QA document requirements. The documentation provides substantiating evidence that the quality assurance program during the period of welding had been effectively implemented.

33. Welding Control Procedures. The inspectors reviewed the welding control procedures to verify that weld activities and processes were controlled in accordance with applicable code requirements. These procedures provide detailed control for all aspects of the welding process, including qualification of procedures and welders, control of welding materials, control of welding variables, and quality documentation for each weld. The following procedures were reviewed:

MP-01	Qualifying of Welding Procedures
MP-02	Procedure for Qualifying Welders and Welding Operators
MP-03	Welding Material Control
MP-06	General Welding Procedure for Carbon Steel Weldments
MP-07	General Welding Procedure for Stainless Steel Nickel Base and Nonferrous Weldments
MP-09	Welding Equipment Control
MP-10	Repair of Base Materials and Weldments
MP-11	Training and Qualification of Metallurgical/Welding Engineering and Support Personnel
MP-12	Control of Special Welding Materials for BOP and Welding Material for Non-Permanent Plant
MP-13	Welder Qualification for Areas of Limited Accessibility

Based on examination of these procedures, the staff inspectors concluded that at the time of original construction of the existing fuel pool cooling system, a comprehensive weld program was in place to control and document pipe welding in accordance with Section III of the ASME Boiler and Pressure Vessel Code.

34. Review of Weld-Related Records. The inspectors reviewed records that provide substantiating evidence that the embedded welds were completed to an acceptable level of quality. A discussion of those reviews is contained in the following paragraphs.

35. Weld Records. The licensee has reinspected all accessible field welds for the Unit 2 fuel pool cooling system and associated component cooling water system pipe and pipe attachments. Reinspection has included visual and liquid penetrant examination, recording of welder identification, and verification of welder qualification. The information has been used to create new weld data reports for the accessible welds for which documentation is missing.

In addition to reviewing the reinspection records, weld records for Unit 1 welds were reviewed. These welds were made using the same welding QC program during the same construction period as the Unit 2 welds. Record review included inspection of weld data reports, welder qualification records, weld QC inspector records, NDE examiner qualification records, welding procedures, and welding qualification records. The original construction records were retrievable, legible, and complete. The records provided evidence that an effective quality program had been implemented during original construction.

36. Hydrostatic Test Records. The inspectors reviewed the records documenting completion of hydrostatic tests applicable to the piping welds embedded in concrete. Hydrostatic test records for 13 of the 15 embedded welds were reviewed. The records document the hydrostatic test boundaries (i.e., identification of welds within the scope of the hydrostatic test), the piping design pressure, hydrostatic test pressure, the test medium and temperature, test data, and test results.

Before a hydrostatic test is performed, Quality Assurance verifies that manufacturing/fabrication records for components within the boundaries of the test have

been accepted and that there are no open non-conformances for any of these components. This ensures that field welds within the hydrostatic test boundaries had been completed and accepted as compliant with all Code and quality assurance requirements.

Test prerequisites required QA verification that all documentation for piping within the scope of the test was complete. The inspectors verified that the test specified that all weld records had been completed and that the weld quality had been accepted as satisfactory prior to beginning the test. The test records substantiate that all embedded welds were tested at a minimum of 25 percent above design pressure. Although hydrostatic test records are not available for embedded welds 2-SF-8-FW-65 and -66, evidence of completion is documented as part of the resolution of Deficiency and Disposition Report 794, which addresses an issue related to hydrostatic testing of the welds attaching the liner plate to the piping spool pieces. The DDR package documents hydrostatic test dates of July 19, 1979 and July 24, 1979 for these embedded welds.

Based on the above, the inspectors concluded that the hydrostatic test records provide reasonable assurance that the welds were completed in accordance with the applicable requirements.

37. Concrete Placement Records. Six fuel pool cooling lines embedded in concrete have field welds for which ASME Code-required records are not available. The inspectors reviewed the concrete placement records for fuel pool C and D, which document that all work in the affected area had been completed prior to placement of concrete. The inspectors determined the applicable concrete placement reports for the embedded welds and

reviewed the subject reports for completeness, as specified by construction procedure WP-05. In addition, WP-102, Installation of Piping, requires verification that all piping is installed per design drawings. Additional requirements, referenced by WP-102, ensure that hydrostatic testing of piping to be embedded in concrete had been satisfactorily completed. The inspectors concluded that these procedural requirements provide evidence that documentation of the adequacy of the embedded welds was complete and that hydrostatic testing had been completed prior to the placement of concrete.

38. NRC Inspections During the Construction Phase. The NRC actively monitored construction activities during the peak period from 1978 through 1983. I reviewed inspection reports for this period for items related to piping installation and welds. Several deficiencies dealing with the general subject of welding were identified in these reports. Most of these deficiencies were relatively minor (Severity Level V and VI) and would not be cited under the current inspection program and would be resolved through the licensee's corrective action program. All deficiencies were typical of what one would expect for oversight of a large construction project and are not indicative of any programmatic weakness in the licensee's weld program.

39. Summary Conclusion Regarding Missing Weld Records. To summarize the above testimony regarding substantiating evidence that the subject field welds were completed to an acceptable level of quality and safety, there is substantial documentation that supports the conclusion that the subject welds were completed with an acceptable level of quality and safety. The Unit 1 fuel pool has supported Unit 1 operation since the beginning

of commercial operation in 1987 and has operated without significant problems for more than twelve years. The Unit 1 fuel pool and Unit 2 fuel pool share a common design basis, which had been reviewed and approved by the NRC.

Pools C and D were constructed during the same period as work was proceeding on Unit 1 and work on both units was controlled by the same quality assurance program and implementing quality procedures. Based on review of the quality assurance program, I conclude that an effective quality assurance program had been implemented and oversight of the program by the quality assurance organization was effective in controlling process activities in accordance with applicable Code and quality assurance requirements. Deficiencies identified by the licensee and by NRC inspectors were relatively minor in nature and not symptomatic of any programmatic weakness in the licensee's welding program. Third party review of all Code welds was provided by an independent, authorized nuclear inspection agency.

Procedural requirements, notably those for hydrostatic testing and concrete placement, provide reasonable assurance that the subject welds had been satisfactorily completed, that outstanding nonconformances had been appropriately resolved and that required documentation was complete and accurate prior to performing these sequential installation steps. Existing documentation (such as corrective action documents, which reference and include substantiating evidence) provide additional assurance that the welds were completed to an acceptable level of quality. Therefore, I conclude that a sufficient basis

exists to state with reasonable assurance that the subject welds were completed with an acceptable level of quality and safety.

40. The attached documents are true and correct copies of the documents relied upon in this affidavit.

41. The foregoing statements made by me are true and correct to the best of my knowledge, information and belief.

_____
Kenneth C. Heck

Sworn and Subscribed before me
this 4th day of January, 2000.

_____
Notary Public

My Commission Expires: _____

KENNETH C. HECK
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Sewanee, Tennessee 37383

Tel: (301) 415-2682
email: kch1@nrc.gov

SUMMARY OF SKILLS

Technical, supervisory, and management experience in the electric power industry and with assignments in engineering, project management, project engineering, plant start-up, plant and program evaluation, quality assurance, and licensing. Proficiencies include design engineering, control systems, electronics, accounting, and computer applications.

EXPERIENCE

Nuclear Regulatory Commission (May 1997 - Present)

Quality Operations Engineer (Headquarters), Inspection Program Management

- Review, evaluate, audit quality assurance programs and other administrative control aspects for nuclear power plants.
- Perform program development functions related to all aspects of the agency's quality assurance programs.
- Conduct inspections of vendors who provide products and services to the nuclear industry.

Tennessee Valley Authority

Lead Auditor, Quality Services (June 1995-October 1996)

- Provided staff augmentation services in the areas of quality assurance and licensing.
- Developed audit/consultation services for implementing international (ISO-9000) quality standards.

Principal Evaluator, Nuclear Assurance & Licensing (October 1988-June 1995)

- Conducted independent audits/evaluations of nuclear power programs, processes, and plant events.
- Served as Technical Secretary for the Nuclear Safety Review Board (senior safety oversight body) from shutdown of TVA's nuclear program through recovery of the Sequoyah and Browns Ferry nuclear plants.
- Conducted independent verifications of the effectiveness of completed corrected actions through successful startup of the Watts Bar nuclear plant.

Senior Evaluator, Nuclear Managers Review Group (March 1987 to October 1988)

- Developed and implemented a review program to assess activities associated with the design, construction and operation of TVA nuclear plants. Findings were reported directly to the Manager, Nuclear Power with recommendations for improvements.

Independent Contractor (December 1985-March 1987)

Design Engineer/System Engineer, Engineering Department

- Modified the integrated control system and non-nuclear instrumentation following shutdown of the Davis Besse nuclear plant.
- Developed engineering designs, implemented modifications, and tested control systems at power through successful program recovery.

Babcock & Wilcox (March 1970-November 1985)

Project Engineer, Plant Services (September 1984-November 1985)

- Developed and deployed hardware and inspection services for repair and maintenance of steam generators and pressure vessels.
- Managed field installation of fuel handling bridge in Kumatori, Japan.

Project Manager, International Business (June 1982-September 1984)

- Developed markets for B&W technology services in Europe and the Pacific Basin in partnership with international companies such as Brown Boveri (Germany), Framatome (France), Sumitomo (Japan) and McDermott International (Hong Kong).

Principal Engineer, Plant Performance (January 1980-June 1982)

- Supervised 9 member team developing operator guidelines for anticipated reactor transients.
- Specialized in original control system analysis and design, principal accomplishments including:
    - Developed course on plant control systems,
    - Consulted onsite on steam generator performance problems,
    - Completed operational/accident transient analyses for several nuclear contracts,
    - Performed failure modes and effects analysis for the integrated reactor control system,
    - Extended methods for reactor power determination,
    - Developed original analyses and conceptual control schemes for steam generator overfill, water hammer transients, anticipated transients without reactor scram, two-phase natural circulation cooling, and reactor vessel embrittlement.

Technical Advisor, Plant Design (January 1976-December 1980)

- On loan to Brown Boveri, Germany, through licensing of the reactor safety systems for the Muehlheim-Kaerlich nuclear plant, to consult on technical licensing issues and oversee the development of complex, nonproprietary computer codes for reactor safety analyses.

Senior Engineer, Technical Staff (March 1970-January 1976)

- Applied internal and industry research to nuclear plant design, provided technical assistance to the engineering department, and developed computer codes licensed for performing transient thermal-hydraulic analyses.

- On loan to Duke Power as test engineer during hot functional testing at Oconee nuclear power station.

EDUCATION

Master of Science/Bachelor of Science, Mechanical Engineering; Lehigh University
Master of Engineering Administration; George Washington University
Bachelor of Applied Accounting; Tennessee Wesley College
Associate of Computer Science; Chattanooga State
Associate of Electronics; U.S. Naval Electronics School

CERTIFICATIONS

Registered Professional Engineer (#20668, VA); Certified Quality Systems Auditor, ISO-9000 (#Q05630); Certified Manager (#02929); Toastmasters International (Able Toastmaster)

PROFESSIONAL ASSOCIATIONS

American Society of Mechanical Engineers, American Nuclear Society, American Society for Quality Control, Institute of Electrical and Electronic Engineers

Heck Exhibit 1

CP&L

Carolina Power & Light Company
PO Box 165
New Hill NC 27562

James Scarola
Vice President
Harris Nuclear Plant

DEC 23 1998

SERIAL: HNP-98-188
10CFR50.90
10CFR50.59(c)
10CFR50.55(a)

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
SPENT FUEL STORAGE

Dear Sir or Madam:

In accordance with the Code of Federal Regulations, Title 10, Part 50.90, Carolina Power & Light Company (CP&L) requests a license amendment to place spent fuel pools 'C' and 'D' in service. Specifically, Harris Nuclear Plant (HNP) proposes to revise TS 5.6 "Fuel Storage" to increase the spent fuel storage capacity by adding rack modules to pools 'C' and 'D'. The enclosures to this letter support the proposed license amendment.

Enclosure 1 provides background information, a description of the proposed changes, and the basis for the changes.

Enclosure 2 details, in accordance with 10 CFR 50.91(a), the basis for the CP&L's determination that the proposed changes do not involve a significant hazards consideration.

Enclosure 3 provides an environmental evaluation which demonstrates that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental assessment is required for approval of this amendment request.

Enclosure 4 provides page change instructions for incorporating the proposed revisions.

Enclosure 5 provides the proposed Technical Specification pages.

Enclosure 6 provides a report entitled "Licensing Report for Expanding Storage Capacity in Harris Spent Fuel Pools 'C' and 'D'" which contains supporting technical documentation. Please note that Enclosure 6 contains information which is considered proprietary pursuant to 10 CFR 2.790. In this regard, CP&L requests Enclosure 6 be withheld from public viewing.

Enclosure 7 is identical to Enclosure 6, except that the proprietary information has been removed and replaced by highlighting and/or a note of explanation at each location where the information has been omitted. CP&L provides this additional version for the purposes of public review.

9812290056

5413 Shearon Harris Road New Hill, NC Tel 919 362-2502 Fax 919 362-2095

Enclosure 8 provides a detailed description of the proposed alternatives to demonstrate compliance with ASME B&PV Code requirements for the cooling and cleanup system piping in accordance with 10 CFR 50.55a(a)(3)(i).

Enclosure 9 provides results of the thermal hydraulic analysis of the cooling water systems that support placing pools 'C' and 'D' in service. The analysis resulted in changes to previously reviewed and approved cooling water flow requirements. These changes have been identified as an unreviewed safety question and are being submitted for NRC review and approval pursuant to the requirements of 10 CFR 50.59(c) and 10 CFR 50.90.

CP&L requests the issuance date for this amendment be no later than December 31, 1999. This issuance date is necessary to support loading of spent fuel in pool 'C' starting in early 2000. CP&L also requests the proposed amendment be issued such that implementation will occur within 60 days of issuance to allow time for procedure revision and orderly incorporation into copies of the Technical Specifications.

Please refer any questions regarding this submittal to Mr. Steven Edwards at (919) 362-2498.

Sincerely,

James Scarola

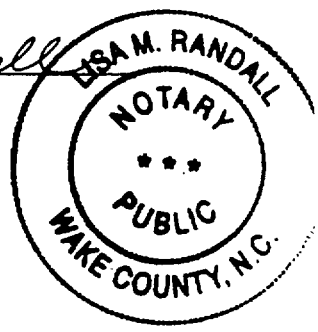
RSE/KWS/kws

Enclosures:
1. Basis for Change Request
2. 10 CFR 50.92 Evaluation
3. Environmental Considerations
4. Page Change Instructions
5. Technical Specification Pages
6. Licensing Report for Expanding Storage Capacity in Harris Spent Fuel Pools 'C' and 'D' (proprietary version)
7. Licensing Report for Expanding Storage Capacity in Harris Spent Fuel Pools 'C' and 'D' (non-proprietary version)
8. 10 CFR 50.55a(a)(3) Alternative Plan
9. Unreviewed Safety Question Analysis

James Scarola, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief, and the sources of his information are employees, contractors, and agents of Carolina Power & Light Company.

Lisa M. Randall
Notary (Seal)

My commission expires: 6-7-2003



c: Mr. J. B. Brady, NRC Sr. Resident Inspector
Mr. S. C. Flanders, NRC Project Manager
Mr. Mel Fry, Director, N.C. DRP
Mr. L. A. Reyes, NRC Regional Administrator

bc: Ms. D. B. Alexander
Mr. K. B. Altman
Mr. G. E. Attarian
Mr. H. K. Chernoff (RNP)
Mr. B. H. Clark
Mr. W. F. Conway
Mr. G. W. Davis
Mr. R. S. Edwards
Mr. R. J. Field
Mr. K. N. Harris
Ms. L. N. Hartz
Mr. W. J. Hindman
Mr. C. S. Hinnant
Mr. G. J. Kline
Ms. W. C. Langston (PE&RAS File)
Mr. R. D. Martin
Mr. J. W. McKay
Mr. P. M. Odom (RNP)
Mr. W. S. Orser
Mr. P. M. Sawyer (BNP)
Mr. J. M. Taylor
Nuclear Records
Licensing File
File: H-X-0512
File: H-X-0642

Enclosure 1 to Serial: HNP-98-188

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
SPENT FUEL STORAGE

BASIS FOR CHANGE REQUEST

BASIS FOR CHANGE REQUEST

Background:

The Harris Plant was originally planned as a four nuclear unit site (Harris 1, 2, 3 and 4). In order to accommodate four units at Harris, the Fuel Handling Building (FHB) was designed and constructed with four separate pools capable of storing spent fuel. The two pools at the south end of the FHB, now known as Spent Fuel Pools (SFPs) 'A' and 'B', were to support Harris Units 1 and 4. The two pools at the north end of the FHB, now known as Spent Fuel Pools 'C' and 'D', were to support Harris Units 2 and 3. The multi-unit design included a spent fuel pool cooling and cleanup system to service SFPs 'A' and 'B' and a separate cooling and cleanup system to support SFPs 'C' and 'D'.

Harris Units 3 and 4 were canceled in late 1981. Harris Unit 2 was canceled in late 1983. The FHB, all four pools (including liners), and the cooling and cleanup system to support SFPs 'A' and 'B' were completed and turned over. However, construction on the spent fuel pool cooling and cleanup system for SFPs 'C' and 'D' was discontinued after Unit 2 was canceled and the system was not completed. Harris Unit 1 began operation in 1987 with SFPs 'A' and 'B' in service. The need to eventually activate SFPs 'C' and 'D' (depending on the availability of a permanent DOE spent fuel storage facility) was anticipated at the time the operating license for Harris Unit 1 was issued. The spent fuel storage capacity currently identified in Section 5.6.3 of the Harris Plant Technical Specifications (1832 PWR assemblies and 48 interchangeable (7 x 7 cell) PWR or (11 x 11 cell) BWR racks) assumes installation of racks in all four of the spent fuel pools.

Since the time that construction of the spent fuel pool cooling and cleanup system for SFPs 'C' and 'D' was halted, CP&L has implemented a spent fuel shipping program because DOE spent fuel storage facilities are not available and are not expected to be available for the foreseeable future. Spent fuel from Brunswick (2 BWR units) and Robinson (1 PWR unit) is shipped to Harris for storage in the Harris SFPs. Shipment of spent fuel to Harris is necessary in order to maintain full core offload capability at Brunswick and Robinson. As a result of the operation of the Harris Plant, shipping program requirements, and the unavailability of DOE storage, it will be necessary to activate SFPs 'C' and 'D' and the associated cooling and cleanup system by early in the year 2000. Activation of these two pools will provide storage capacity for all four CP&L nuclear units (Harris, Brunswick 1 and 2, and Robinson) through the end of their current licenses.

SFP 'A' now contains six Region 1 flux trap style (6 x 10 cell) PWR racks and three (11 x 11 cell) BWR racks for a total storage capacity of 723 assemblies. SFP 'A' has been, and will continue to be, used to store fresh (unburned) and recently discharged Harris fuel.

SFP 'B' now contains six (7 x 10 cell), five (6 x 10 cell), and one (6 x 8 cell) PWR Region 1 style racks. SFP 'B' also currently contains seventeen (11 x 11 cell) BWR racks. SFP 'B' is licensed to store one more (11 x 11 cell) BWR rack, which would increase the total pool storage capacity to 2946 assemblies. Harris is postponing installation of the last BWR rack and prefers to reserve the pool open area for fuel examination and repair. Therefore, the total installed capacity in SFP 'B' will temporarily remain as 768 PWR cells and 2,057 BWR cells for a total of 2,825 storage cell locations.

Proposed Changes:

The proposed changes will allow CP&L to increase the spent fuel storage capacity at the Harris plant by placing SFPs 'C' and 'D' in service. In order to activate the pools, CP&L requests that the NRC review and approve the following changes:

1. Revised Technical Specification 5.6 to identify PWR burnup restrictions, BWR enrichment limits, pool capacities, heat load limitations and nominal center-to-center distances between fuel assemblies in the racks to be installed in SFPs 'C' and 'D'.

   The use of the high density region 2 racks has been shown to be acceptable based on the analysis performed by Holtec International.

2. 10CFR50.55a Alternative Plan to demonstrate acceptable level of quality and safety in the completion of the component cooling water (CCW) and SFP 'C' and 'D' cooling and cleanup system piping.

   The cooling system for SFPs 'C' and 'D' cannot be N stamped in accordance with ASME Section III since some installation records are not available, a partial turnover was not performed when construction was halted following the cancellation of Unit 2 and CP&L's N certificate program was discontinued following completion of Unit 1. The Alternative Plan demonstrates that the originally installed equipment is acceptable for use and that the design and construction on the remaining portion of the cooling system piping (estimated at about 20%) maintains the same level of quality and safety through the use of the CP&L Appendix B QA program supplemented by additional QA requirements integrated into the plant modification package which completes the system

3. Unreviewed safety question for additional heat load on the component cooling water (CCW) system.

   The acceptability of the 1.0 MBtu/hr heat load from SFPs 'C' and 'D' was demonstrated by the use of thermal-hydraulic analyses of the CCW system under

various operating scenarios. The dynamic modeling used in the thermal-hydraulic analyses identified a decrease in the minimum required CCW system flow rate to the RHR heat exchangers. This change has not been previously reviewed by the NRC and is deemed to constitute an unreviewed safety question.

Basis for Change

Installation of spent fuel storage racks in SFPs 'C' and 'D':

The FHB and SFPs 'C' and 'D' (including pool liners) were fully constructed and turned over as part of the construction and licensing of Harris Unit 1. However, the decision was made to not place SFPs 'C' and 'D' in service until needed (depending on the availability of DOE spent fuel storage). SFPs 'C' and 'D' are flooded but have not been previously used for spent fuel storage. CP&L proposes to expand the storage capacity at Harris by installing Region 2 (non-flux trap style) rack modules in Pools 'C' and 'D' in incremental phases (campaigns), on an as needed basis. SFP 'C' will provide the initial storage expansion for both PWR and BWR fuel. In its fully implemented storage configuration, SFP 'C' can accommodate 927 PWR and 2763 BWR assemblies. Expansion of storage capacity by installing racks in SFP 'D' will occur once SFP 'C' is substantially filled. SFP 'D' will contain only PWR fuel and can accommodate 1025 maximum density storage cells.

Following this proposed change, Spent Fuel Pool capacities will be as follows:

Pool	PWR spaces	BWR spaces	Total
'A'	360	363	723
'B'	768	2178	2946
'C'	927	2763	3690
'D'	1025	0	1025
Total	3080	5304	8384

Racks in SFP 'C' and 'D' will be installed in the following phases:

SFP 'C' - 1st Campaign - install by early 2000
4 PWR racks → 360 PWR spaces
10 BWR racks → 1320 BWR spaces

SFP 'C' - 2nd Campaign - install approximately 2005
4 PWR racks → 324 PWR spaces
6 BWR racks → 936 BWR spaces

SFP 'C' - 3rd Campaign - install approximately 2014
3 PWR racks → 243 PWR spaces
3 BWR racks → 507 BWR spaces

SFP 'D' - 1st Campaign - install approximately 2016
6 PWR racks → 500 PWR spaces

SFP 'D' - 2nd Campaign - installation date to be determined
6 PWR racks → 525 PWR spaces

(Note: The projected rack installation dates listed above are based on the current spent fuel shipping schedule. These dates may change as the shipping schedule is revised).

This configuration represents the mixture of PWR and BWR storage which will accommodate future storage requirements based on currently identified needs. Within SFP 'C', eighteen (18) of the racks are sized to allow interchangeability between BWR and PWR storage if required in the future. The dimensions of the (9 x 9 cell) PWR rack and the (13 x 13 cell) BWR rack are virtually identical. Therefore, rack configurations other than those identified above are possible.

Enclosure 6 of this license amendment request provides a report developed in conjunction with Holtec International which describes the evaluations performed to show the acceptability of the proposed change to install the racks in pools 'C' and 'D'. (Enclosure 7 is a non-proprietary version of enclosure 6). The report includes listings of the applicable regulations, codes and standards, descriptions of the evaluation methodology, acceptance criteria, and evaluation results. The licensing report also includes discussions on the need for the proposed change and considerations of other alternatives. Technical Specification Section 5.6, Fuel Storage, will be revised to identify PWR burnup restrictions, BWR enrichment limits, pool capacities, heat load limitations and nominal center-to-center distances between fuel assemblies in the racks to be installed in SFPs 'C' and 'D' (See Enclosure 5).

Completion of Cooling and Cleanup System for SFPs 'C' and 'D':

In order to activate Spent Fuel Pools 'C' and 'D', it is necessary to complete construction of the cooling and cleanup system for these pools and to install tie-ins to the existing Harris Unit 1 component cooling water system to provide heat removal capabilities. Approximately 80% of the SFP cooling and cleanup system piping and the majority of the CCW piping was installed during the original plant construction. In addition, other major system components such as the SFP cooling heat exchangers and pumps were also installed before original construction was discontinued. The cooling and cleanup system for pools 'C' and 'D' will be completed such that system design and operation is

consistent with the design and operation of the cooling and cleanup system for pools 'A' and 'B'. The spent fuel pool cooling system for pools 'C' and 'D' is nuclear safety related with two fully redundant 100% capacity trains.

At the time that construction on the SFP cooling system was discontinued following cancellation of Harris Unit 2, a formal turnover of the partial system was not performed and CP&L has since discontinued its N certificate program. Also, some of the field installation records for the completed piping are no longer available. As a result, the system when completed will not satisfy ASME Section III code requirements (i.e. will not be N stamped). Therefore, an Alternative Plan in accordance with 10CFR50.55a(a)(3) is provided as Enclosure 8 to demonstrate that the completed system will provide an acceptable level of quality and safety. The majority of the ASME Section III piping was already installed when original construction was discontinued. As identified in the Alternative Plan, that piping to the extent that it was completed, was designed, constructed and inspected to Section III requirements. The remainder of the system will also be designed, constructed, inspected and tested to Section III requirements to the extent practical considering CP&L no longer has an N certificate program. Work will be performed in accordance with CP&L's 10CFR50 Appendix B QA program with any differences between Section III requirements and Appendix B requirements conservatively dispositioned. Supplemental QA requirements will be integrated into the modification package(s) as appropriate.

Calculations have been performed to verify that the existing CCW system is adequate to provide heat removal for near-term pool operation. The Spent Fuel Pool 'C' and 'D' heat loads will be limited to 1.0 MBtu/hr for near-term operation. Technical Specification section 5.6.3 will be revised to identify this heat load limit (Enclosure 5). This heat load limit is being established since additional CCW heat loads resulting from the power uprate project (potential to increase post-accident containment temperature resulting in an increased containment sump temperatures and increased load on RHR during long term recirculation phase) are not quantified at this time. Therefore, it has been determined that the most prudent action is to establish limiting heat loads based on current system loads. Additional heat load analysis will be performed concurrent with the power uprate project to establish the maximum heat loads on the CCW system that will exist at the end of plant licensed life when all spent fuel pools are expected to be full. Any CCW modifications necessary to increase system heat removal capability will be identified and implemented at that time. As part of the licensing required to support the power uprate project (currently planned for implementation concurrent with the steam generator replacement in late 2001), the technical specification heat load limit will either be revised or removed completely.

The plant design change package and supporting analyses for the CCW tie-in demonstrated that adequate capacity exists on the CCW system to add the 1.0 MBtu/hr for the near-term operation of SFPs 'C' and 'D'. The thermal-hydraulic analysis performed in support of this plant design change package modeled the dynamic RHR heat

exchanger performance based on fluid property changes. Previous analyses evaluated RHR heat exchanger performance at a fixed data sheet value. This results in a reduction in the required CCW flow to the RHR heat exchanger. While technically valid, the lower required flow rate has not been previously reviewed by the NRC and, therefore, is deemed to constitute an unreviewed safety question. Included in Enclosure 9 are the results of the 10CFR50.59 evaluation for the unreviewed safety question identified by the tie-in to Unit 1 CCW.

Conclusion:

CP&L has concluded that placing SFPs 'C' and 'D' in service at this time to provide spent fuel storage is the safe and prudent alternative for increasing spent fuel storage capacity in the nuclear generating system. This option has been shown to be safe and in conformance with the appropriate regulations, codes and standards. Expansion of storage capacity by using Pools 'C' and 'D' will support continued operation of the Harris, Brunswick and Robinson facilities until the end of their current operating licenses.

Enclosure 8 to Serial: HNP-98-188

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
SPENT FUEL STORAGE

10CFR50.55a ALTERNATIVE PLAN

10CFR50.55a ALTERNATIVE PLAN

I. Introduction

Regulatory Background

10CFR50.55a (Codes and Standards) requires that nuclear power facilities be subject to the licensing condition that (1) structures, systems and components are designed, fabricated, erected, constructed and inspected to quality standards commensurate with the importance of the safety function to be performed, and (2) that certain systems and components of nuclear power reactors must meet the requirements of the ASME Boiler and Pressure Vessel Code. 10CFR50.55a(a)(3) allows alternatives to these requirements with the permission of the Office of Nuclear Reactor Regulation if it can be demonstrated that the proposed alternative would provide an acceptable level of quality and safety, or if compliance with the requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The following is an outline of a "10CFR50.55a Alternative Plan" for licensing plant systems originally intended for use in cooling and storage of Harris Units 2 and 3 spent fuel. This portion of the plant was only partially completed under the Harris Plant construction program at the time that Unit 1 was completed and was never turned over as a part of the licensed and operating facility. The completion of this spent fuel storage capacity is now needed for long term storage of spent fuel from the Harris, Brunswick and Robinson Nuclear Plants in support of continued operation of these CP&L facilities. However, continuing its construction on the basis of the original site construction program is not viable since (1) CP&L has discontinued its N certificate holder program, and (2) certain code required construction records associated with the field installation of this piping are no longer available. This 10CFR50.55a Alternative Plan is intended to provide the basis for construction requirements for the completion of this portion of the Harris Plant and to justify the acceptability of previously constructed equipment in light of missing documentation.

Construction History / Chronology

Carolina Power & Light filed an application with the Atomic Energy Commission in 1971 for licenses to construct and operate its proposed Shearon Harris Nuclear Power Plant Units 1, 2, 3 and 4, in Wake County, NC. After completion of preconstruction reviews and hearings, the AEC issued Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160 and CPPR-161 on January, 1978. Construction proceeded on the four unit site until December 1981, when CP&L informed the NRC that Units 3 and 4 had been canceled, and requested that Units 1 and 2 be considered concurrently for operating licenses. NUREG-1038 was issued in November 1983 for Unit 1, and reflected ongoing construction and eventual completion of Unit 2. However, Unit 2 was canceled soon

afterward in December 1983, leaving Unit 1 as the only Unit to be completed and licensed. The Unit 1 Full Power Operating License was issued in January 1987, with commercial operation beginning in May 1987.

The original design of the four unit Harris Nuclear Plant located Units 1 and 4 at the south end of the plant, and Units 2 and 3 on the north end. These four units were to share a common fuel handling building to serve the purposes of loading and offloading fuel, as well as storage of spent fuel. Two sets of fuel storage pools were located in the fuel handling building, each set containing a spent fuel pool and a new fuel pool. The spent fuel pools were intended to function primarily as spent fuel storage capacity, while the new fuel pools were provided for staging new fuel and offloading spent fuel from the reactor. In the initial design, Units 1 and 4 shared the south ('A' and 'B') fuel pools, while the north ('C' and 'D') fuel pools were intended to service Unit 2 and 3.

The Fuel Handling Building was a common feature to all units, and completion of the building itself was requisite for operation of the first unit placed into service. Logical progression of the Fuel Handling Building construction dictated that major pieces of equipment be installed early in the schedule. As a result, the full complement of Spent Fuel Pool Cooling pools, heat exchangers and pumps initially associated with four unit construction was installed. Many of the smaller pumps, filters, strainers and lesser pieces of equipment were installed as well. Fuel Handling Building construction also dictated that all of the piping to be embedded in concrete be installed at the logical interval as the building was erected. Since the pools were encased in concrete, the adjoining portions of piping providing cooling connections and auxiliaries were necessarily constructed, inspected and tested prior to the encasement concrete being poured.

Subsequent to the cancellation of Units 3 and 4, work on the 'C' and 'D' Spent Fuel Pools continued in support of the planned completion of Unit 2. By the time that Unit 2 was canceled, the majority of the mechanical piping and equipment associated with operation of the 'C' and 'D' end pools was already installed, including all of the embedded and most of the exposed portions of ASME Section III piping associated with these fuel pools' cooling system. Work on the remaining equipment associated with the 'C' and 'D' pools in the Fuel Handling Building was suspended when Unit 2 was canceled. Plant documents from that time describe plans to eventually complete the 'C' and 'D' spent fuel pools and place them into service.

Construction Records Issue

The completed portion of the Unit 2 Fuel Pool Cooling and Cleanup System (FPCCS) and supporting facilities were constructed to the same codes and standards and using the same procedures and personnel as was Unit 1, which was fully completed and licensed. Appropriate records documenting field activities were generated at the time of construction as required by the construction codes and plant procedures, and maintained in storage under the control of the construction Quality Assurance (QA) program pending system completion and turnover. When construction on Unit 2 was halted, these records

were transferred to temporary storage facilities maintained by the Harris Nuclear Plant Document Control. They were not microfilmed since they were associated with systems which were not fully completed and accepted under the site's N Certificate Program, and later were inadvertently discarded during a document control records cleanup effort.

Notably, these discarded records include the piping isometric packages for field installation of the completed portion of Unit 2 Fuel Pool Cooling and Cleanup System and Component Cooling Water System (CCWS) piping within Code boundaries. As a result, Code required records are no longer available for approximately 40 of the nearly 200 large bore welds in the completed ASME Section III portions of the Unit 2 FPCCS and CCWS.

II. Alternative Plan for Missing Construction Records (Piping Pedigree Plan)

The plan for addressing the missing construction documentation associated with the portion of the piping initially installed during plant construction and intended for the 'C' and 'D' Spent Fuel Pools' cooling systems consists of four elements. These are: (1) scoping, (2) records retrieval and review, (3) examination and testing, and (4) reconciliation. The intent of this plan is to develop the body of evidence which supports the quality of the previously completed constructed piping. Consistent with 10CFR50.55a, any deficiencies identified will be evaluated to determine whether a acceptable level of quality and safety can be provided through alternate methods, or if not, whether attaining full compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

(1) The scoping portion of the Piping Pedigree Plan defines the boundaries of piping within the plan, and basically consists of a review of the extent of existing construction vs. that required for completion of the system. The extent of previously completed construction is determined by conducting and documenting detailed field walkdowns. Identification markings such as spoolpiece numbers, welder identification numbers, heat numbers, etc. are recorded at this time for use later in the records review and retrieval phase. Accessibility (both external and internal) are assessed for planning the examination / testing phase.

(2) The records review and retrieval phase of the project is an investigation of construction era documents to compile the archived body of evidence which substantiates the quality of the Unit 2 Spent Fuel Cooling piping. Specific sources of this information are discussed as follows:

A) Procurement documents for piping spool pieces. Requirements to which these spool pieces were fabricated were delineated on Purchase Order NY 435035, which invoked piping spec CAR-SH-M-30. Vendor Data Packages were supplied to the requirements of the pipe spool vendor's NPT program, and

include records of material certification, welding activities and Nondestructive Examination (NDE) and hydrotesting. These records were retained by the Harris Nuclear Plant Document Control Program and are available on microfilm.

B) Construction era documents which defined requirements associated with the procurement, storage, handling and installation of the piping. Work procedures fall into this category, and include those for welding, weld material control, piping installation, concrete placement, hydrotesting, etc. Development of the sequence of installation through controlling procedures establishes the activities related to quality (tests, inspections, reviews, etc.) which by procedure would have to be satisfactorily completed in order to meet specific documented construction milestones, such as concrete placement and hydrotest.

C) Review of records which are available through the Harris Nuclear Plant Document Control System relating to construction of the Spent Fuel Pools and related equipment. Record types which fall into this category include, hydrotest records, concrete placement tickets, records relating to pipe spool modifications, etc. In many cases records may be found which do not directly establish quality, but rather serve to demonstrate that the construction of this piping was subject to the same level of scrutiny as was comparable Unit 1 piping, for which the appropriate quality records do exist.

D) Review of construction era records which are not quality assurance records, but which do serve to substantiate the quality of construction. This category would include documents such as engineering files, or quality control inspector log books which note specific inspections or records review.

(3) An examination and test phase will recreate, to the extent possible, any inspections or records which would have originally been required by plant procedures and the construction code and for which documentation is no longer available. The primary focus of this phase will consist of inspection and NDE of field welds for which weld data records are not available. Accessible ASME Section III welds will be subject to 100% surface examination, and ANSI B31.1 welds will receive a visual examination. Where feasible, internal weld inspections will be performed to verify fitup and adequacy of shielding gas purge. Notably, this will include an internal remote camera inspection of a substantial portion of the embedded FPCCS piping. Alternate methods of attaining comparable assurance will be developed whenever code required inspections cannot be performed, or deficiency in code required records cannot be otherwise addressed. For example, since filler material traceability cannot be established by weld data records, examination and testing of weld filler material will be performed to verify the composition of filler material is consistent with weld requirements. Finally, system hydrotesting will be performed upon completion of the piping systems using ASME Section III hydrotest criteria.

(4) The reconciliation phase of the Piping Pedigree Plan is a review of the data collected in previous phases and assessment of the level to which original construction documentation requirements were met. This is accomplished by compiling the body of records retrieved from document control and those generated by the examination / testing effort, then reviewing this record set against code documentation requirements to determine the extent to which code requirements are met. For instances wherein deficiencies are identified, the body of evidence (alternate tests or inspections, construction procedures, etc) which substantiates the quality of the component would be evaluated to determine if comparable assurance of quality and safety exists.

Piping Pedigree Plan - Implementation

ASME Section III Piping:

The elements of the Piping Pedigree Plan as described above are essentially complete for the ASME Section III piping associated with the 'C' and 'D' pools' FPCCS. The following is a summary of the results of this effort to date:

Scope Definition - The ASME Section III piping associated with the 'C' and 'D' SPF Cooling System has been walked down by CP&L engineering and Harris Nuclear Plant Quality Control personnel to compare the plant configuration with construction isometric drawings and ensure that all welds, both vendor and field constructed, have been identified. Pipe spool identification numbers and welder symbols were inspected and recorded for review and comparison against vendor data packages. The scope of the ASME Section III piping within the plan has been defined based on field walkdowns, a review of modification design and results of the records retrieval effort. Basically, the plan will cover the large bore ASME Section III piping in the FPCCS and CCWS, leaving the small bore pipe welds (vents, drains, etc.) to be cut out and redone as part of the modification effort. A total of 40 large bore piping field welds and 12 pipe hanger attachment welds are being addressed within this portion of the Alternative Plan scope. Of this total, 37 are FPCCS piping welds (15 of which are embedded in concrete) and 3 are CCWS piping welds. All 12 hanger attachment welds are in the FPCCS piping.

Vendor Data Package review - All of the 44 vendor data packages associated with the ASME Section III portions of the 'C' and 'D' FPCCS have been retrieved and reviewed to ensure that the requisite paperwork is in hand. These packages account for approximately 80% of the large bore piping welds in the previously constructed portions of this system . Of the nearly 200 existing large bore (12" and 16") ASME Section III FPCCS piping welds, approximately 160 are vendor welds for which all required records exist. As noted above, these vendor data packages also account for all but 12 of the hanger attachments welds existing in the FPCCS piping. Only 2 vendor data packages are associated with the portion of the previously installed Unit 2

CCW System which will be used in the design to tie in Unit 1 CCW to the 'C' and 'D' Spent Fuel Pool Cooling Heat Exchangers. These packages account for all but 3 of the existing large bore piping welds in this piping.

Review of other documentation - A review of other Construction Quality Control (QC) documentation in the document control system has identified that some construction information does exist for the piping in question. Notably, hydrotest records were located which show that all of the embedded piping was in fact subject to hydrotest. Completion of weldments within the hydrotest boundary and review of Weld Data Reports (WDRs) was a procedural prerequisite for conducting these hydrotests. Of these 15 embedded field welds, hydrotest records contain specific signoffs attesting to satisfactory review of completed WDRs for 9. An additional 4 embedded welds are specifically identified as being within the hydrotest boundary with a general signoff attesting to satisfactory review of weld records, while the remaining 2 can be shown to be within a hydrotest boundary with a signoff for review of welding documentation, although not specifically identified by name.

Additional information pertaining to the quality of the 15 embedded field welds can be found in QC reports (ie., nonconformance reports or deficiency disposition reports*) associated with construction of this piping. Notably, several of these records contain WDR and repair WDRs for embedded welds, providing information pertaining to welder id, filler material and / or NDE for those welds. Pipe Spool Modification packages were located on microfilm; these have been reviewed to determine if any field changes had been made to the pipe spools as supplied from the vendor. Construction era procedures and specifications have been reviewed to identify programmatic requirements pertinent to construction quality.

(* Note - These QC records address routine construction issues which were satisfactorily resolved, and do not have any adverse implications on overall construction quality. On the contrary, the existence of such records serves to strengthen the position that construction was subject to the appropriate level of QC scrutiny.)

Field inspections - Reinspection and NDE of the 37 piping field welds and 12 hanger attachment field welds within the ASME Section III SFP Cooling System portion of the plan scope has been completed. WDRs were generated to document the inspection results; these will be reviewed by both Harris Nuclear Plant Quality Control personnel and the site Authorized Nuclear Inspector (ANI). These inspections also located and recorded weld symbols from each field weld to verify which welds were performed by the pipe spool vendor and to identify the specific welder responsible for field welds. This information was reviewed against pipe spool modification records and vendor data packages to determine that the original vendor welds were intact (had not been replaced or altered by field work), and to ensure that all welds had been identified and their origin accounted for. A total of 4 externally

accessible field welds were also subject to internal examination by engineering and welding craft supervisory personnel, with no anomalies being identified which might indicate substandard weld quality.

The internal examination of externally inaccessible field welds is an integral component of the Piping Pedigree Plan These inspections will be completed prior to post-modification acceptance testing. CP&L has contracted with a specialty vendor to provide remote camera inspections of a substantial portion of the embedded piping and field welds. An inspection procedure will be developed specifically for this activity and will include detailed inspection and acceptance criteria. Based on a feasibility walkdown with the vendor, it is anticipated that greater than one third of the embedded field welds will be subject to an internal inspection in this manner. These inspections will take place at the appropriate interval in the modification process, when pool levels are lowered and the welded piping blanks are removed. Any discrepancies will be appropriately dispositioned at that time, including any necessary supplemental submittals to this 10CFR50.55a Alternative Plan.

Filler Material Analysis - All of the accessible large bore FPCCS piping field welds were subject to examination and/or testing to ascertain the composition of filler material. Generally, this was done using a nondestructive x-ray diffraction "alloy analyzer". In addition, chip samples were taken from three welds at random to support the validity of the alloy analyzer results. The results of this effort support that filler material alloy used in these field welds is consistent with that required by site specifications and welding procedures. The carbon steel CCWS piping welds do not lend themselves to conclusive identification using an x-ray diffraction analyzer, so the three field welds in this piping will either be subject to chemical analysis of chip samples, or as an alternative, cut out and replaced.

B31.1 Piping:

The non-safety related piping and equipment providing skimmer, purification and other support functions for the 'C' and 'D' spent fuel pools was very nearly completed at the time of original construction. All of this piping which will be retained in the final design is considered in the scope of the piping pedigree plan. As with the ASME Section III piping, vendor records can be located for this piping, but not the construction records associated with field installation. Under B31.1 and plant welding procedures, this piping would have been subject to external visual inspection at the time of construction. Reinspections have been performed on a large number of these field welds, with none being rejected. A complete reinspection of this piping will be accomplished as part of the modification effort, and a full system hydrotest to original construction requirements will be completed as part of post-modification acceptance testing.

Piping Pedigree Plan Conclusion - an acceptable level of quality and safety

10CFR50.55a(a)(3) allows for the development of an alternative plan with the permission of the Office of Nuclear Reactor Regulation if it can be demonstrated that the proposed alternative would provide an acceptable level of quality and safety, or if compliance with the requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. In the case of unavailable Unit 2 construction records, a great deal of evidence can be compiled to demonstrate that this piping was indeed constructed to the quality requirements consistent with the construction codes. These are summarized as follows:

Design - CP&L held the N certificate over the ASME Section III portion of Harris Nuclear Plant Construction. A single N Certificate program was developed and implemented uniformly to ensure code compliance for the entire site. All materials were specified to a common program using the same procurement specifications. The same welder qualification program and weld procedures, weld engineering, NDE program, and QC program were common to the site.

Work and Document Control - The Harris Nuclear Plant was designed and constructed (to the extent that it was completed) under a single construction program. Common work control procedures, document control, warehousing and storage facilities were used throughout the site. Generally, the same pool of craft and supervisory personnel, QC personnel and engineering staff was available for construction of all four units.

Welder Qualification - Welder identification symbols have been identified at each of the externally accessible field welds, and can be traced to welders qualified to perform that weld. The chronology of precisely when a welder was qualified vs. when the weld was made is difficult to establish since the precise time the weld was performed cannot be determined, but the work control procedures ensure that the appropriate qualifications were established prior to performing weld, particularly with regard to welds within ASME Section III boundaries.

Obviously, welder identification symbols cannot be inspected and recorded for the 15 embedded welds, but again, the same program and procedures would have applied. Work procedures specifically directed the creation of WDR packages for all welds within code boundaries and required that the supervisor ensure that welders were appropriately qualified. Besides the craft supervisor, welder qualification would have been subject to scrutiny by QC and the ANI upon review of the weld records. Of the 15 embedded field welds, QC construction reports provide the identification of welders associated with at least 3 of these welds. No direct records of welder identification have yet been located for the remaining 12 embedded field welds, but hydrostatic test records have been located which attest to the existence of completed WDR packages for these welds at the time of construction. These records contain

signatures individually attesting to satisfactory review of completed WDRs for 9 of the 15 embedded field welds, with an additional 4 welds being specifically identified as being within the test boundary with a general signoff attesting to satisfactory review of weld records. The remaining 2 embedded field welds were also shown to be within a hydrotest boundary, although not specifically identified by name.

Generally, the same pool of welders was available for work on Unit 2 as was for the completed Unit 1 at any point during construction. A programmatic lack of appropriate welder qualification would have represented a quality assurance breakdown in the welder qualification program for the site, not just for a given unit. Thus, the satisfactory completion and subsequent operation of Unit 1 using a common craft pool qualified under a single welder qualification program provides strong assurance that the Unit 2 welders were also appropriately qualified.

Filler Material Identification - The WDR package generated for each field weld contained the heat number of weld filler metal which provided the traceability for this material. Since the WDRs are typically the only historical source of this information, material certification cannot be directly established for field welds without these records. However, assurance that the filler material was procured to ASME Section III requirements and supplied with traceability records is provided in Site Specification SS-021 (Purchasing Welding Materials for Permanent Plant Construction). Per this procedure, austenetic stainless steel weld filler material procured for permanent plant welding (such as would have been used in the embedded FPCCS piping) was purchased to ASME Section III requirements, including those requirements associated with traceability and certification.

Issuance and control of weld filler material was strictly controlled through the site materials control program. This program and its implementing procedures were common to all Harris units under construction. The site materials control program was regularly subject to QC audit to ensure compliance with the site ASME Section III Program Manual.

An examination and testing program has been completed for the accessible large bore piping welds in the ASME Section III portion of the 'C' and 'D' pools' FPCCS, as well as 12 hanger welds on this piping. Each of these welds was tested either by use of a non-destructive alloy analyzer or by removing chip samples for chemical assay. In each case, the results supported that the filler material alloy was consistent with that required by site specifications and welding procedures. Such inspections cannot be performed for the inaccessible welds, but the quality of filler metal in these welds is supported by the existence of hydrotest records as discussed above, the existence of QC records for several of these welds which do provide certification and traceability information, the procurement requirements of Site Specification SS-021, as well as satisfactory test results from the 22 accessible welds. The 3 carbon steel CCW field

welds in the Piping Pedigree Plan will also be subject to chemical analysis of chip samples to verify composition.

NDE - The WDR package generated for each field weld contained the record of code required inspections and non-destructive examination. The specification of required NDE was a line item on the WDR, and completion of these examinations was affirmed by signature on the WDRs and supported by NDE records included in the respective piping isometric package. Site work control procedures required that these examinations be performed and appropriately documented, and it is clear from interviewing plant personnel that these piping isometric packages were generated and did exist until recently discarded. Since the WDRs are again the only source of this information, the completion of original construction NDE cannot be directly established for the field welds in question.

To address the issue of NDE records, each of the accessible field welds identified as being in the Piping Pedigree Plan scope has been subjected to reinspection and NDE consistent with that which would have been originally performed and found to be acceptable. Obviously, this level of NDE cannot be reperformed on the field welds embedded in concrete, but the existence of hydrotest records attesting to review of completed WDR, QC records for several of these welds which do contain the appropriate NDE records, and the satisfactory NDE of accessible field welds with no rejections provides assurance that the NDE was satisfactorily completed for the embedded welds as well.

The internal camera inspection of a large percentage of embedded field welds will also be performed against inspection criteria developed to provide both subjective examination of weld quality and, to the extent feasible, objective compliance with code and procedural requirements. While an inspection of this nature is not a Code requirement, it is significant in that it will provide direct physical evidence of quality for the embedded field welds. These inspections will take place at the appropriate interval in the modification process, when pool levels are lowered and the welded piping caps are removed. Any discrepancies will be appropriately dispositioned at that time, including any necessary supplemental submittals to this 10CFR50.55a Alternative Plan.

In summary, the portion of the 'C' and 'D' FPCCS which were installed at the time of original plant construction were constructed under CP&L's N Certificate program, using sitewide programs and controls for quality assurance and a common pool of craft, quality control and engineering resources. There is no evidence to support that the level of quality in this portion of Harris plant construction is any less than that of Unit 1, and indeed, it would be difficult to conceive of an unacceptable deficiency which might exist in the partially completed Spent Fuel Cooling facilities without implicating the possibility of its existence in Unit 1 as well. That Unit 1 was completed, licensed and has been in commercial operation for approximately 12 years without cause to suspect construction

quality provides strong assurance of that the quality assurance programs for the site were suitably comprehensive and fully implemented. It follows that a comparable level of quality exists in the partially completed Unit 2 facilities, including those for spent fuel storage.

Beyond programmatic assurances, a large body of evidence has been compiled which directly attest to quality of construction. Vendor data packages, hydrostatic test records, QC records and other construction era documentation has been retrieved which constitute substantial proof of compliance with site programs and procedures. An examination effort has been completed in which code required external NDE of accessible welds has been reperformed with no rejectable indications, and material examinations provide proof that the filler metal used in field welds was appropriate for the weldment. These results provide direct evidence of the quality of accessible field welds, and by extension, the smaller group of welds which are embedded. Internal examination of a significant percentage of these embedded field welds provides an additional measure of quality assurance beyond that required by the Code.

There is no evidence that supports that the missing records were never generated, and to the contrary, document control records indexes indicate that these piping isometric packages were transferred to QA storage and maintained there until they were inadvertently discarded in a document control "cleanup effort". Adverse Condition Report 93-354 was generated at that time which specifically identifies that installation documentation for the 'C' and 'D' FPCCS, including installation verification data and field weld records, was inadvertently discarded during Sept. 1993.

It is concluded that the Piping Pedigree Plan outlined above provides ample evidence exists to support that the portion of the Harris plant associated with the 'C' and 'D' Spent Fuel Pools which was completed during the original site construction effort was indeed constructed to the appropriate level of quality and safety and in compliance with construction code requirements. It follows that the issue of missing code documentation is simply that, a documentation issue, and does not infer a physical lack of quality in the field.

III. Alternative Plan for Continuance of Design and Construction

The original construction of the Harris Nuclear Plant was subject to the full requirements of ASME Section III of the ASME Boiler and Pressure Vessel Code under the authorization of a single N Certificate program maintained by CP&L. This site ASME Section III QA program was discontinued shortly after completion and turnover of Unit 1, and a corporate QA program meeting 10CFR50 Appendix B requirements was implemented as required to address plant operation, including Section XI requirements regarding inspection, repair and replacement activities. Thus, the original construction program no longer exists and it is not possible to complete construction of the 'C' and

'D' FPCCS as a continuance of this program. Further, since a Code data report was not prepared by CP&L for this partially completed piping and equipment under its N certificate holder program at the time it was constructed, responsibility for its construction cannot be now assumed by another N certificate holder under a current program. It follows that it is not possible to N stamp the previously completed portion plant associated with the 'C' and 'D' Spent Fuel Pools. Given this, and considering that the majority of construction has been completed, it is the opinion of CP&L and code authorities within the Hartford Steam Boiler Inspection and Insurance Co. and Bechtel Power Corporation that there is no benefit with invoking an N certificate program to govern the completion of the relatively small outstanding portion of construction vs. using another suitable quality assurance program of comparable rigor.

Since this portion of the plant was never turned over at the time of construction, it is not considered part of the operating facility from the perspective of the ASME code and its completion could not be interpreted as a replacement activity as defined in Section XI. However, the site Section XI Repair and Replacement Program as implemented under the Corporate 10CFR50, Appendix B QA Program does contain many elements of quality control (ie., welder qualification, weld procedures, inspections, documentation, etc.) consistent with the original construction program. Therefore, CP&L proposes to complete the design of this portion of the plant to appropriate ASME Section III requirements, but utilize the Corporate 10CFR50, Appendix B QA Program and site procedures for those elements of quality assurance for which it is appropriate to provide. Generally, any conflicts between the ASME Section III requirements and that of the Corporate 10CFR50, Appendix B QA Program (and the corporate and site procedures which invoke it) would be conservatively dispositioned, such as the use of ASME Section III hydrotest requirements vs. those requirements found in Section XI.

A set of supplemental quality assurance requirements has also been developed to augment the Corporate 10CFR50, Appendix B QA Program in completion of the Code portions of the plant associated with the 'C' and 'D' Spent Fuel Pools. These requirements were obtained by a close review of the requirements in the approved ASME Section III Construction QA Program Manual as it existed at the time of completion of construction vs. those of the currently existing Corporate 10CFR50, Appendix B QA Program, and are specifically intended to identify and conservatively reconcile deficiencies in the corporate program with ASME Section III requirements. For instance, the supplemental requirements specify a level of ANI involvement commensurate with ASME Section III requirements, including review of work packages prior to field issuance, integration of ANI involvement into the work control process, and final review and approval of documentation subsequent to work completion. Other highlights of the supplemental quality assurance requirements include integration of comparable requirements for design specifications and a process for system documentation review and turnover similar to that of N Stamping. These supplemental quality assurance requirements will be implemented by integration into the modification package, or when necessary, by procedure revision.

Since the current Corporate 10CFR50, Appendix B QA Program is sufficient to govern ongoing operation of the Harris Plant (including Section XI repair and replacement activities), it follows that it is of sufficient rigor for the construction effort to complete and activate the portion of the plant associated with the 'C' and 'D' spent fuel pools. There are instances wherein the Corporate 10CFR50, Appendix B QA Program does not address specific ASME Section III quality assurance requirements, and a set of supplemental quality assurance requirements has been developed specifically for the purpose of addressing these items. This approach for continuance of construction is both technically acceptable and commercially viable, and will ensure the requisite level of quality and safety in the completed systems as discussed in 10CFR50.55a(a)(3)(i).

Heck Exhibit 2

CP&L

Carolina Power & Light Company
Harris Nuclear Plant
P.O. Box 165
New Hill NC 27562

SERIAL: HNP-99-069

APR 30 1999

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOL
COOLING AND CLEANUP SYSTEM PIPING

Dear Sir or Madam:

By letter dated March 24, 1999, the NRC requested additional information regarding the Harris Nuclear Plant (HNP) license amendment request to place spent fuel pools 'C' and 'D' in service. Enclosure 8 of the HNP license amendment request (ref. SERIAL: HNP-98-188, dated December 23, 1998) provided a detailed description of the proposed alternatives to demonstrate compliance with ASME B&PV Code requirements for spent fuel pool cooling and cleanup system piping in accordance with 10 CFR 50.55a(a)(3)(i). The NRC has determined that additional information is required to complete the review of the proposed alternative piping plan. Enclosed is the HNP response to the NRC request for additional information. The enclosed information is provided as a supplement to our December 23, 1998 submittal and does not change our initial determination that the proposed license amendment represents a no significant hazards consideration.

Please refer any questions regarding the enclosed information to Mr. Steven Edwards at (919) 362-2498.

Sincerely,

Donna B. Alexander

Donna B. Alexander
Manager, Regulatory Affairs
Harris Nuclear Plant

A001

KWS/kws

Enclosures

c:

Mr. J. B. Brady, NRC Senior Resident Inspector (w/ Enclosure 1)
Mr. Mel Fry, N.C. DEHNR (w/ Enclosure 1)
Mr. R. J. Laufer, NRC Project Manager (w/ all Enclosures)
Mr. L. A. Reyes, NRC Regional Administrator (w/ Enclosure 1)

bc: (w/o enclosures)

Mr. K. B. Altman
Mr. G. E. Attarian
Mr. R. H. Bazemore
Mr. S. R. Carr
Mr. J. R. Caves
Mr. H. K. Chernoff (RNP)
Mr. B. H. Clark
Mr. W. F. Conway
Mr. G. W. Davis
Mr. W. J. Dorman (BNP)
Mr. R. S. Edwards
Mr. R. J. Field
Mr. K. N. Harris
Ms. L. N. Hartz
Mr. W J. Hindman
Mr. C. S. Hinnant
Mr. W. D. Johnson
Mr. G. J. Kline
Ms. W. C. Langston (PE&RAS File)
Mr. R. D. Martin
Mr. T. C. Morton
Mr. J. H. O'Neill, Jr.
Mr. J. M. Taylor
Nuclear Records
Harris Licensing File
Files: H-X-0511
H-X-0642

Enclosure 2 to Serial: HNP-99-069

Markups of Isometric drawings showing:

(1) Piping Within Scope of Alternative Plan (28 sheets)

(2) Continuance of Design and Construction (41 sheets)

Matrix of Construction Records Pertaining to Units 2 & 3 Spent Fuel Pool Cooling System

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-1-FW-1	Embedded	No, but assured by piping installation, hydro and concrete pour procedure requirements	No, but review of "Weld Documentation " contained in Hydro test record	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records; program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements.	Yes (ref. DDR 1347)	Hydro -QC & ANI (ref. DDR 1347)
2-SF-1-FW-2	Embedded	No, but assured by piping installation, hydro and concrete pour procedure requirements	No, but review of "Weld Documentation " contained in Hydro test record	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records; program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements.	Yes (ref. DDR 1347)	Hydro -QC & ANI (ref. DDR 1347)
2-SF-1-FW-3	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B61, G97	Yes, by re-inspection.	No	
2-SF-1-FW-4	Embedded	Yes, on one side (ref. DDR-1347). Also assured by piping installation, hydro and concrete pour procedure requirements	No, but review of "Weld Documentation " contained in Hydro test record	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records; program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements.	Yes (ref. DDR 1347)	Hydro -QC & ANI (ref. DDR 1347)

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-1-FW-5	Embedded	Yes, WDR on hand (ref. DDR-1347) Also assured by piping installation, hydro and concrete pour procedure requirements	Yes, WDR on hand (ref. DDR-1347)	■ SFA 5.9/5.4 ■ Yes, WDR on hand in DDR-1347 ■ Not required	Yes, in weld documentation (ref. DDR-1347)	Yes, attested to in weld documentation.	Yes (ref. DDR 1347)	Hydro -QC & ANI (ref. DDR 1347) weld documentation - QC & ANI (ref. DDR 1347) DDR-1347 - QC & ANI
2-SF-1-FW-6	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D41	Yes, by re-inspection.	No	
2-SF-8-FW-65	Embedded	Yes, on one side by DDR-1387. Also assured by piping installation, concrete pour procedure requirements	No	■ SFA 5.9/5.4 ■ No ■ Assured by site specification SS-021, procedural requirements	No, but assured by weld program and procedural requirements	No, but assured by program and procedural requirements. Will be subject to internal camera inspection	No	liner leak test - QC
2-SF-8-FW-66	Embedded	Yes, on one side by DDR-1387 Also assured by piping installation, concrete pour procedure requirements	No	■ SFA 5.9/5.4 ■ No ■ Assured by site specification SS-021, procedural requirements	No, but assured by weld program and procedural requirements	No, but assured by program and procedural requirements. Will be subject to internal camera inspection	No	liner leak test - QC

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-70-FW-325	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B7, D41	Yes by re-inspection	No, will be hydro-tested by Mod	
2-SF-72-FW-326	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21	Yes by re-inspection	No, will be hydro-tested by Mod	
2-SF-72-FW-327	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21, C97	Yes by re-inspection	No, will be hydro-tested by Mod	
2-SF-69-FW-328	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B61	Yes by re-inspection	No, will be hydro-tested by Mod	
2-SF-69-FW-329	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B61	Yes by re-inspection	No, will be hydro-tested by Mod	

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-71-FW-329	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer, chemical analysis	Yes B7	Yes by re-inspection	No, will be hydro tested by Mod	
2-SF-30-FW-381	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21, C97	Yes by re-inspection	No	
2-SF-148-FW-382	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21	Yes, by re-inspection.	No	
2-SF-149-FW-408	Embedded	Yes (ref. DDR-829). Also assured by piping installation, hydro and concrete pour procedure requirements	No, but have repair WDR on hand, also weld documentation review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ Partial, WDR on hand for repair weld. ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements.	B61 (NCR W-207) Also repair WDR on hand (DDR 829)	Yes, (full LP in DDR 829). Will be subject to internal camera inspection	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI Repair weld documentation - QC & ANI NDE rpt. - QC & ANI (ref. DDR-829) DDR-829 - QC & ANI

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-150-FW-412	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21	Yes, by re-inspection.	No	
2-SF-14-FW-424	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B61	Yes by re-inspection	No, will be hydro tested by Mod	
2-SF-31-FW-426	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21, C97	Yes by re-inspection	No	
2-SF-35-FW-440	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21	Yes by re-inspection	No	NDE rpt. - QC & ANI (ref. NCR WP-016)
2-SF-37-FW-441	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E59, F60, E25, B47	Yes, by re-inspection. Will also be subject to direct internal examination when adjacent strainer is disassembled.	No, will be hydro tested by Mod	
2-SF-16-FW-447	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes B61	Yes by re-inspection	No, will be hydro tested by Mod	DDR-895 - QC & ANI

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-36-FW-448 * See Note	Yes *	*	*	*	*	*	*	*
2-SF-36-FW-449	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D41, B47	Yes, by re-inspection. Will also be subject to direct internal examination when adjacent strainer is disassembled.	No, will be hydro tested by Mod	
2-SF-36-FW-450	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer & chemical analysis	Yes B47	Yes, by re-inspection. Will also be subject to direct internal examination when adjacent strainer is disassembled.	No, will be hydro tested by Mod	
2-SF-38-FW-451	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer & chemical analysis	Yes G1, B7	Yes, by re-inspection. Will also be subject to direct internal examination when adjacent strainer is disassembled.	No, will be hydro tested by Mod	
2-SF-67-FW-452	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E21	Yes, by re-inspection.	No	
2-SF-68-FW-454	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes C97, D87	Yes, by re-inspection.	No	

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-143-FW-512	Embedded	Assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements.	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI
2-SF-143-FW-513	Embedded	Assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements.	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI
2-SF-143-FW-514	Embedded	Yes, ref. DDR-888 Also assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements Will be subject to internal camera inspection	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI DDR-888

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-144-FW-515	Embedded	Assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements. Will be subject to internal camera inspection	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI
2-SF-144-FW-516	Embedded	Yes, on one side, ref. DDR-869. Also assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record,	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements. Will be subject to internal camera inspection	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI DDR-921 - QC & ANI
2-SF-144-FW-517	Embedded	Yes - ref DDR-869. Also assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record.	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	Yes, partial UT & LP performed under DDR-869. Also, assured by weld documentation review in hydro records, program and procedural requirements. Will be subject to internal camera inspection	Yes, see North New Fuel Pool Hydro Test Record. Also ref. DDR-869.	Hydro -QC & ANI Repair weld documentation - QC & ANI (ref. DDR-869) DDR-869 - QC & ANI

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-159-FW-518	Embedded	Also assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	No, but assured by weld doc review in hydro records, program and procedural requirements	No, but assured by weld documentation review in hydro records, program and procedural requirements	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI
2-SF-159-FW-519	Embedded	Yes, on one side (ref. NCR-85-1318, Also assured by piping installation, hydro and concrete pour procedure requirements	No, but WDR review signoff in North New Fuel Pool Hydro Record	■ SFA 5.9/5.4 ■ No ■ Assured by weld doc review in hydro records, site specification SS-021, procedural requirements	Yes, C-20 (see NCR W-103)	No, but assured by weld documentation review in hydro records, program and procedural requirements	Yes, see North New Fuel Pool Hydro Test Record.	Hydro -QC & ANI NCR W-103 - QC
2-SF-71-FW-331 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-332 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-71-FW-333 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-334 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-335 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-336 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-337 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-SF-71-FW-338 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-339 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-340 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-341 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, E50, D69	Yes by re-inspection	N/A (Hanger attachment weld)	
2-SF-71-FW-342 (Hanger Attach. Weld)	Yes	Yes, by inspection	No	■ SFA 5.9/5.4 ■ No ■ by alloy analyzer	Yes D75, D69	Yes by re-inspection	N/A (Hanger attachment weld)	

Field Weld No.	Access?	Id of welded items ?	Weld documents available?	Specified Filler Material ID/ Documentation on hand/ Alt.Verification Method	Qual Record & Welder ID	NDE Records	Hydrotest Records	Inspections completed (ANI / QC)
2-CC-3-FW-207	Yes	No, but is accessible and will be visually verified.	No	■ SFA 5.18/5.1 ■ No ■ TBD by chemical analysis	Yes, K40	Yes by re-inspection	No, to be hydro tested by Mod	
2-CC-3-FW-208	Yes	No, but is accessible and will be visually verified	No	■ SFA 5.18/5.1 ■ No ■ TBD by chemical analysis	Yes, C11	Yes by re-inspection	No, to be hydro tested by Mod	
2-CC-3-FW-209	Yes	No, but is accessible and will be visually verified	No	■ SFA 5.18/5.1 ■ No ■ TBD by chemical analysis	Yes, B1	Yes by re-inspection	No, to be hydro tested by Mod	

Note * Field Weld 2-SF-FW-36-448 is a completed and stamped field weld, but will be cut out and replaced as it joins a section of piping which was affected by a pipe spool modification.

Enclosure 4 to Serial: HNP-99-069

Metallurgy Unit Report for Spent Fuel Pool Weld Metal Composition Analysis

CAROLINA POWER & LIGHT COMPANY
MATERIALS SERVICES SECTION
METALLURGY SERVICES

TECHNICAL REPORT

To: Mr. Jeff Lane

Project Number: 98-125
Date: June 30, 1998

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SUBJECT: Harris Nuclear Plant - Material Identification of Spent Fuel Piping Welds

Project Summary

The Unit 3/4 spent fuel piping field welds analyzed at the Harris Nuclear Plant with a Metorex X-Met 880 Alloy Analyzer were identified as being most similar in composition to either Type 304 stainless steel, Type 309 stainless steel, NIST 1154a SRM, or a combination of these reference materials. These results were confirmed by chemical analysis of chip samples from three different welds by an outside laboratory.

INTRODUCTION:

The objective of this investigation was to perform material identifications of field welds made on Unit 3/4 spent fuel piping at the Harris Nuclear Plant. It was reported that plant personnel wished to upgrade this system for possible future use. It was requested that the welds be analyzed nondestructively. Chips would be removed from two or three welds by Harris Nuclear Plant personnel for a more detailed chemical analysis.

FIELD EXAMINATION AND RESULTS:

The selected welds were identified by Mr. Andy Bartrom of the Harris Nuclear Plant Quality Control Unit. The welds had been prepared for a nondestructive evaluation by plant personnel. Field analysis of the welds was performed using a Metorex X-Met 880 Alloy Analyzer (Serial Number 69871) with a cadmium 109 isotope source (Serial Number 1256LY). The alloy analyzer was used in an identification mode and several standard reference materials had been entered into the alloy analyzer as references for comparison with the field welds. The reference materials are shown in Table 1. It should be noted that using this instrument in an identification mode, the

unknown (or analyzed) material is compared to the reference materials loaded into the instrument during setup and calibration. If the unknown's composition exhibits very little difference to a known reference material, the unknown is identified as the reference material and as a "Good Match." If the unknown's composition is between those of the utilized reference materials, the unknown may be identified as either the nearest reference and "Possible Match" or a combination of the nearest references and "Possible Match." If the unknown's composition exhibits sufficient differences from the reference materials used, the instrument will respond as "No Good Match." Since the analyzed welds were reported to be a product of using a Type 308 stainless steel filler material to join Type 304 stainless steel piping, the resultant welds may exhibit a composition that is between these two materials due to dilution/mixing and, hence, a precise identification as either Type 304 stainless steel or Type 308 stainless steel may not be possible. Therefore, an identification as a reference (or the two nearest references) and as a "Possible Match" demonstrates the unknown's composition is similar to the references, but exhibits some variation due to dilution/mixing. In summary, all of the field welds were identified as being similar in composition to either the Type 304 stainless steel standard, the Type 309 stainless steel standard, the National Institute of Standards & Technology (NIST) standard reference material (SRM) 1154a, or a combination of two of the previous standards. The obtained results are summarized in Table 2.

Chip samples were obtained from three field welds by Harris Plant personnel. These samples were provided to NSL Analytical Services by Materials Dedication and Laboratory Services Unit personnel for chemical analysis using an expanded package for stainless steels. The obtained results are presented in Table 3 and as Attachment 1. These results were in agreement with those obtained by the alloy analyzer in that the majority of the welds were identified as being most similar in composition to either Type 309 stainless steel or the NIST 1154a SRM. The chemical analysis results showed the field welds to have carbon contents that were higher than the maximum limit specified for Type 304 stainless steel, but less than that specified for Type 309 stainless steel. The chromium content of all three welds was at the high end of the specified range for chromium in Type 304 stainless steel, but well under the lower limit of the specified range for chromium in Type 309 stainless steel. The nickel content of all three welds was in the middle of the range specified for Type 304 stainless steel and well under the lower limit for Type 309 stainless steel.

CONCLUSIONS:

The Unit 3/4 spent fuel piping field welds analyzed at the Harris Nuclear Plant with a Metorex X-Met 880 Alloy Analyzer were identified as being most similar in composition to either Type 304 stainless steel, Type 309 stainless steel, NIST 1154a SRM, or a combination of these reference materials. These results were confirmed by chemical analysis of chip samples from three different welds by an outside laboratory.

TABLE 1								
	Specified Elemental Composition, Weight Percent							
Identification	C	Cr	Ni	Mn	Si	P	S	Other
Standard Austenitic Stainless Steel Specifications								
Type 304 SS	0.08	18-20	8-10.5	2.00	1.00	0.045	0.03	...
Type 308 SS	0.08	19-21	10-12	2.00	1.00	0.045	0.03	...
Type 309 SS	0.20	22-24	12-15	2.00	1.00	0.045	0.03	...
Type 310 SS	0.25	24-26	19-22	2.00	1.00	0.045	0.03	...
Type 316 SS	0.08	16-18	10-14	2.00	1.00	0.045	0.03	2-3 Mo
Reference Material Compositions								
Type 304 SS	0.047	18.28	8.13	1.48	0.49	0.019	0.010	0.17 Mo
Type 309 SS	0.063	22.60	13.81	1.63	0.23	0.026	0.014	...
Type 310 SS	0.06	24.87	19.72	1.94	0.68	0.024	0.001	0.16 Mo
Type 316 SS	0.052	16.74	10.07	1.44	0.42	0.022	0.008	2.06 Mo
NIST 1154a	0.100	19.31	13.08	1.44	0.53	0.06	0.051	0.068 Mo
NIST 1155	0.046	18.45	12.18	1.63	0.502	0.018	0.020	2.38 Mo
NIST C1287	0.36	23.98	21.16	1.66	1.66	0.029	0.024	0.46 Mo

TABLE 2
Metorex X-Met 880 Alloy Analyzer Test Results

Date	Specimen Identification	Alloy Identification	Match	Comments
5/12/98	Type 309 SRM	309 SS	Good	Instrument Check
5/12/98	Type 316 SRM	316 SS	Good	Instrument Check
5/12/98	NIST 1154a	NIST 1154a	Good	Instrument Check
5/12/98	2-SF-36-FW-450	304 SS	Possible	
5/12/98	2-SW-36-FW-449	NIST 1154a/309SS	Possible	
5/12/98	2-SF-38-FW-451	NIST 1154a	Possible	
5/12/98	2-SF-37-FW-441	NIST 1154a/309SS	Possible/Good	
5/12/98	2-SF-69-FW-328	NIST 1154a/309SS	Possible	
5/12/98	2-SF-70-FW-325	NIST 1154a/309SS	Good/Possible	
5/12/98	2-SF-69-FW-329	NIST 1154a	Possible	
5/12/98	NIST 1154a	NIST 1154a/309SS	Possible	Instrument Check
5/12/98	2-SF-14-FW-424	NIST 1154a/309SS	Possible/Good	
5/12/98	2-SF-71-FW-329	NIST 1154a	Possible	
5/12/98	2-SF-72-FW-327	NIST 1154a/309SS	Possible	
5/12/98	2-SF-16-FW-447	NIST 1154a	Possible	
5/12/98	2-SF-1-FW-6	NIST 1154a/309SS	Possible	
5/12/98	2-SF-1-FW-3	NIST 1154a/309SS	Possible	
5/12/98	2-SF-35-FW-440	NIST 1154a	Possible	
5/12/98	2-SF-68-FW-454	304SS	Good/Possible	
5/12/98	2-SF-31-FW-426	NIST 1154a/309SS	Possible	
5/12/98	NIST 1154a	NIST 1154a	Good	Instrument Check
5/12/98	2-SF-67-FW-452	NIST 1154a	Possible	
5/12/98	2-SF-72-FW-326	NIST 1154a	Possible	
5/12/98	2-SF-150-FW-412	NIST 1154a/304SS	Possible	
5/12/98	2-SF-148-FW-382	NIST 1154a/304SS	Possible	
5/12/98	2-SF-30-FW-381	NIST 1154a	Possible	
5/12/98	NIST 1154a	NIST 1154a	Good	Instrument Check
5/12/98	Type 309 SRM	309SS	Good	Instrument Check
5/12/98	Type 304 SRM	304SS	Possible	Instrument Check
5/13/98	Type 309 SRM	309SS	Good	Instrument Check
5/13/98	Type 310 SRM	310SS	Good	Instrument Check
5/13/98	NIST 1154a	NIST 1154a	Good	Instrument Check
5/13/98	2-SF-71-FW-341	304SS	Good	
5/13/98	2-SF-71-FW-335	NIST 1154a	Possible/Good	
5/13/98	2-SF-71-FW-336	304SS/NIST 1154a	Good/Possible	
5/13/98	2-SF-71-FW-342	304SS/NIST 1154a	Possible	
5/13/98	2-SF-71-FW-337	304SS/NIST 1154a	Possible	

TABLE 2 - Continued
Metorex X-Met 880 Alloy Analyzer Test Results

Date	Specimen Identification	Alloy Identification	Match	Comments
5/13/98	2-SF-71-FW-334	304SS/NIST 1154a	Possible/Good	
5/13/98	2-SF-71-FW-338	304SS	Good	
5/13/98	2-SF-71-FW-340	304SS	Good	
5/13/98	2-SF-71-FW-332	NIST 1154a/304SS	Possible/Good	
5/13/98	2-SF-71-FW-333	304SS/NIST 1154a	Possible/Good	
5/13/98	2-SF-71-FW-339	304SS/NIST 1154a	Possible/Good	
5/13/98	2-SF-71-FW-331	304SS/NIST 1154a	Good/Possible	
5/13/98	NIST 1154a	NIST 1154a	Good	Instrument Check
5/13/98	NIST 1155	316SS	Possible	Instrument Check
5/13/98	NIST C1287	310SS	Possible	Instrument Check
5/13/98	Type 309SS SRM	309SS/NIST 1154a	Good/Possible	Instrument Check

NOTE: The Metorex X-Met 880 was set up for analysis of the field welds using (1) a Type 304 stainless steel standard, (2) a Type 309 stainless steel standard, (3) a Type 310 stainless steel standard, (4) a Type 316 stainless steel standard, and (5) NIST 1154a standard reference material. NIST 1155 (Type 316 stainless steel) and NIST C1287 (Type 310 stainless steel) standard reference materials were used to check the instrument's response.

TABLE 3
NSL Analytical Services, Inc. Chemical Analysis Results

	Elemental Composition, Weight Percent				
	2-SF-36-FW-450	2-SF-38-FW-451	2-SF-71-FW-329	Type 304	Type 309
Carbon	0.13	0.10	0.064	0.08	0.20
Columbium	<0.05	<0.05	<0.05	...	...
Chromium	20.08	20.11	19.06	18-20	22-24
Copper	0.054	0.10	0.093	...	...
Manganese	1.46	1.39	0.79	2.00	2.00
Molybdenum	0.12	0.10	0.085	...	...
Nickel	9.30	9.24	9.63	8-10.5	12-15
Phosphorus	0.021	0.021	0.026	0.045	0.045
Sulfur	0.007	0.005	0.013	0.03	0.03
Silicon	0.37	0.39	0.25	1.00	1.00
Titanium	<0.01	0.011	<0.01	...	...

NOTE: The specified compositions for Type 304 and Type 309 stainless steels are provided for comparison and the single values represent maximum values.

ATTACHMENT 1

PROJECT NUMBER 98-125

NSL ANALYTICAL SERVICES, INC.
FORMERLY NATIONAL SPECTROGRAPHIC LABORATORIES
QUALITY MATERIALS & ENVIRONMENTAL TESTING SINCE 1945

7650 HUB PARKWAY, CLEVELAND, OHIO 4412
PHONE: (216) 447-1550 FAX: (216) 447-07
(800) 497-6752
HTTP://www.nslanalytical.com

Carolina Power & Light Co
Harris Nuclear Plant
5413 Shearon Harris Rd.
New Hill, NC 27562
Attn: Gary Gray

Date: 5/22/98
Report No: *18630*
P.O. No: 1L5577

Client Description: **Steel Chips**

NSL Lab No	*Sample ID*	*Test*	*Results/Units*
980011091	**#2-SF-36-FW-450**		
		C	0.13 %
		Cb	<0.05 %
		Cr	20.08 %
		Cu	0.054 %
		Mn	1.46 %
		Mo	0.12 %
		Ni	9.30 %
		P	0.021 %
		S	0.007 %
		Si	0.37 %
		Ti	<0.01 %
980011092	**#2-SF-38-FW-451**		
		C	0.10 %
		Cb	<0.05 %
		Cr	20.11 %
		Cu	0.10 %
		Mn	1.39 %
		Mo	0.10 %
		Ni	9.24 %
		P	0.021 %
		S	0.005 %
		Si	0.39 %
		Ti	0.011 %
980011093	**#2-SF-71-FW-329**		
		C	0.064 %
		Cb	<0.05 %
		Cr	19.06 %
		Cu	0.093 %
		Mn	0.79 %
		Mo	0.085 %
		Ni	9.63 %
		P	0.026 %
		S	0.013 %
		Si	0.25 %
		Ti	<0.01 %

Reporting Officers

Henry E. Collins, President
Steven M. Podolan, Vice President Technology

R01

NADCAP Accredited
MATERIAL TESTING LABORATORY

NSL ANALYTICAL SERVICES, INC.
FORMERLY NATIONAL SPECTROGRAPHIC LABORATORIES
QUALITY MATERIALS & ENVIRONMENTAL TESTING SINCE 1945

7650 HUB PARKWAY, CLEVELAND, OHIO 4412
PHONE: (216) 447-1550 FAX: (216) 447-071
(800) 497-6752
HTTP://www.nslanalytical.com

Carolina Power & Light Co
Harris Nuclear Plant
5413 Shearon Harris Rd
New Hill, NC 27562

Attn: Gary Gray

Date: 30 March, 1999
Report #: 18630
Lab #: 11091-11093
P.O.#: 1L5577
Page 1 of 1

SUPPLEMENTAL REPORT- Traceability, Precision and Accuracy **ADDED**

Client Description: Steel Chips

NSL Lab No	Sample ID	Test	Results
980011091	#2-SF-36-FW-450	C	0.13%
		Cb	<0.05%
		Cr	20.08%
		Cu	0.054%
		Mn	1.46%
		Mo	0.12%
		Ni	9.30%
		P	0.021%
		S	0.007%
		Si	0.37%
		Ti	<0.01%
980011092	#2-SF-38-FW-451	C	0.10%
		Cb	<0.05%
		Cr	20.11%
		Cu	0.10%
		Mn	1.39%
		Mo	0.10%
		Ni	9.24%
		P	0.021%
		S	0.005%
		Si	0.39%
		Ti	0.011%
980011093	#2-SF-71-FW-329	C	0.064%
		Cb	<0.05%
		Cr	19.06%
		Cu	0.093%
		Mn	0.79%
		Mo	0.085%
		Ni	9.63%
		P	0.026%
		S	0.013%
		Si	0.25%
		Ti	<0.01%

Precision and Accuracy:
Cr +/-.20 Ni +/- .10 Cu +/- .03 P+/- .005 S+/- .002
Mn +/- .05 Si +/- .05 Mo +/- .03 C+/- .01

Traceability:
STD ARMI 2B

David M. Kluk, Laboratory Manager

DK/mm

NADCAP
MATERIAL TESTING LABORATORY

Enclosure 5 to Serial: HNP-99-069

ASME Quality Assurance Manual for the Construction of the Shearon Harris Nuclear Power Plant

Second Edition
Rev. 4

Policy Statement

It is the policy of the Carolina Power & Light Company to engineer, construct, and operate nuclear power plants without jeopardy to public health and safety. Measures shall be set forth and documented for quality assurance which encompass those responsibilities within CP&L and those responsibilities delegated to companies supporting the engineering, construction and start-up of nuclear power plant projects. These documented measures comprise the CP&L ASME Quality Assurance Manual and shall be strictly adhered to. This Manual provides quality measures for assuring nuclear safety for long-term power production; engineering design requirements and objectives are achieved in construction of new facilities; and plant functional capability is maintained in operating plants. These measures assure compliance with the quality requirements of ASME Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components and applicable Federal, State and local regulations and codes.

I take full and complete responsibility for the program described in this CP&L ASME Quality Assurance Manual. I have assigned the responsibility for its implementation as documented and approved herein for the Engineering, Construction and Start-Up portions of this program to the Senior Vice President - Nuclear Generation, and to the Manager - Corporate Quality Assurance Department.

The Senior Vice President in charge of Nuclear Generation has assigned the responsibility for implementation of his portion of this program to the Vice President - Harris Nuclear Project, and to the Vice President - Nuclear Plant Construction and the Vice President - Nuclear Engineering and Licensing who shall have stop-work authority within their department's responsibility for work determined to be out of compliance with this program.

The Manager - Corporate Quality Assurance Department, in the implementation of his portion of this program, has delegated to the Manager - Quality Assurance/Quality Control Harris Plant and the Manager - Quality Assurance Services, the authority to stop any work determined to be out of compliance with applicable sections of the ASME Code and this program.

The Manager - Corporate Quality Assurance Department has the responsibility for implementing the Corporate quality assurance audit program for the engineering, construction and start-up of nuclear power plants.

E. E. Utley
Senior Executive Vice President
Power Supply and Engineering & Construction

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

ADDENDUM STATEMENT

This Quality Assurance Manual is applicable to the engineering, construction and start-up of the Shearon Harris Nuclear Power Plant located at New Hill in Wake and Chatham Counties, North Carolina, consisting of one pressurized water reactor unit. The Nuclear Steam Supply System was purchased from Westinghouse Pressurized Water Reactor Division, Pittsburgh, Pennsylvania.

The Architect-Engineer for the Shearon Harris Nuclear Power Plant is Ebasco Services, Inc., New York, New York.

The Prime Constructor is Daniel International Corporation of Greenville, South Carolina, who will work under direct supervision and technical control of Carolina Power & Light Company management personnel at the site. The responsibility for construction activities at this nuclear power plant is that of Carolina Power & Light Company, who has the authority to control assignment and removal of personnel at Carolina Power & Light Company's discretion.

Carolina Power & Light Company will secure the services, as appropriate, of organizations to furnish manpower for accomplishing work. Contractual arrangements will clearly reserve to Carolina Power & Light Company those prerogatives necessary to totally control the quality of the work.

△1 The Shearon Harris Nuclear Power Plant Unit 1 was docketed by the Nuclear Regulatory Commission (Atomic Energy Commission) September 29, 1971. Docket

△1 number issued is 50-400.

△1 The Nuclear Steam Supply System piping for Unit 1 was purchased from Westinghouse Pressurized Water Reactor Division to the 1971 Edition of the ASME Code Section III, Division 1, including the 1973 Summer Addenda.

Balance of plant piping requiring Code stamping were purchased by Ebasco Services, Inc., to the 1971 Edition of the ASME Code, Section III, Division 1, including the 1973 Summer Addenda.

The applicable Code Edition and Addenda for field fabrication and installation of Code items shall be the 1974 Edition of the ASME Code, Section III, Division 1, including the 1976 Winter Addenda.

For the Shearon Harris Nuclear Power Plant project, the design, fabrication and installation of component supports do not come within the scope of the ASME Quality Assurance Manual.

FORM 1638

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

ASME
QUALITY ASSURANCE MANUAL
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DATE	10/17/84	3/21/85	4/24/85	6/24/85	11/25/85					
APPROVED	NJC	NJC	NJC	NJC	NJC					

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

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Raleigh, N. C. 27602

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APPROVED	MJC	MJC	MJC	MJC	MJC					

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DEFINITIONS AND ABBREVIATIONS

Approval - An act of endorsing or adding positive authorization, or both, indicated by signature and date on the document or on a record traceable to the document.

Appurtenances - Code-stamp parts which are attached to components that have been completed and previously stamped.

Architect-Engineer (A-E) - Consulting engineering organization which may be assigned as the owner's designee responsibility for portions of a nuclear power plant project.

"As-Built" Sketch - A sketch or tabulation of materials identifying each piece of material with the Certified Material Test Report and the coded marking.

"As-Constructed" Drawing - The Approved for Construction (AFC) design drawing either revised to incorporate, or appended with, authorized design change documents.

Audit - A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of a quality assurance program have been developed, documented, and effectively implemented in accordance with specified requirements. An audit does not include surveillance, surveys, or inspection for the purpose of process control or product acceptance.

Auditor - A person in the Corporate Quality Assurance Department responsible for conducting audits.

Authorized Inspection Agency (AIA) - Agency designated as such by the appropriate legal authority of a state or municipality of the United States or a province of Canada. The agency employs the Authorized Nuclear Inspectors who perform inspections required by ASME Code. The agency may be a state or municipality of the United States, a province of Canada, or an insurance company authorized to write boiler and pressure vessel insurance.

Authorized Nuclear Inspector (ANI) - Authorized Nuclear Inspector performing inspections required by the ASME Code who has been qualified under rules of any state of the United States or province of Canada which has adopted the ASME Code. An employee of the Authorized Inspection Agency and not an employee of CP&L and qualified in accordance with ANSI N626.

Authorized Nuclear Inspector Supervisor (ANIS) - The Authorized Nuclear Inspector Supervisor who has been deemed qualified may be designated by his employer as the Authorized Nuclear Inspector Supervisor and shall meet the requirements of ANSI Standard N626 document.

Certificate of Authorization - A document issued by the American Society of Mechanical Engineers as evidence that CP&L as the Owner, Manufacturer, Fabricator, or Installer has met specific requirements set forth in the ASME Code Section III.

△2 Certificate of Compliance - A written statement signed by a qualified party certifying that items or services comply with specific requirements.

△4 Certification of Qualification - A signed statement supported by documentary evidence in the case of welding procedures or performance, or the credentials of the signer in the case of nondestructive examination certifying that specified criteria have been met by an individual or procedure.

Code - American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, Division 1.

Components - Equipment qualified to be N-stamped, such as vessels, piping systems, pumps, valves, and storage tanks, designed to act as pressure-retaining members of the nuclear power system.

Containment System - Those items which form structures that may enclose nuclear power systems or that may be connected to other containment items and which are designed to provide a pressure-containing barrier for the primary purpose of containing within leakage limits, or channeling for containment, or for controlled disposal of radioactive or hazardous effluents released from the system.

Contractor - Any organization under contract for furnishing items and/or services.

Contractor Audit - An external audit of a CP&L contractor which includes A-E, NSSS Supplier, and other Suppliers.

Corporate Audit - An internal audit of a CP&L activity.

CP&L - Carolina Power & Light Company, the Owner, the Company.

△3 Data Reports - Data reports, e.g., Forms N-1, N-3, N-5, NPP-1, and N-1A, as found in the ASME Code, Section III, shall be completed and certified by the Owner or Manufacturer for each component, system, and installation.

Design Bases - That information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals.

Design Change Request - A documented request for changes, corrections, or additions to design documents previously released for use.

Design Documents - Certified Design Specifications and drawings derived from design bases that delineate plant item design, quality assurance, and process requirements for use in procurement, fabrication, installation,

examination, and testing; and analyses and reports that substantiate design characteristics, or evaluate plant item performance.

Design Document Reference File - A file of the latest revisions of design documents approved for release and use in the design and construction of a nuclear power plant project, including as-built and as-installed documents.

Design Organization - An organization that has been assigned the responsibility for development or revision and documentation of the design of a plant structure, system, equipment, or parts thereof.

Design Specifications - The engineering and performance requirements which provide a complete basis for designing a plant item and/or technical information necessary for purchasing a plant item. Design Specifications are documented and certified by, or for, CP&L for each component and appurtenance of the nuclear plant. Design Specifications will be provided by the Design Organization, the A-E, or NSSS Supplier, as appropriate. Specifications generated by the Harris Plant Construction Section will be identified as site-generated specifications. △2

△2 Discipline Engineer - The Discipline Engineer is an individual who has been delegated authority by the Discipline Manager. The Discipline Engineer may hold the title of Resident Engineer, Principal Engineer, Project Engineer, etc.

Documentation - Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

Field Change Request - A written request originating at the construction site for a design change.

Holdpoints - Mandatory holdpoints at which witnessing of activities is required by CP&L representative or the ANI. Work shall not proceed beyond mandatory holdpoints without the written consent of the CP&L representative or ANI, as applicable.

Inspection Specialist (IS) - The Inspection Specialist performs duties required by the ASME Code who has demonstrated his qualifications by passing an examination acceptable to the ASME in one or more methods of nondestructive examination and, in addition, the test for Inspector Supervisor given by the National Board of Boiler and Pressure Vessel Inspectors for knowledge of, and familiarity with, the ASME Code Section III, Division 1.

Installer - An organization which installs and joins components, piping subassemblies, assemblies, and appurtenances at the construction site in accordance with design documents approved for the nuclear power plant project, and which holds a Certificate of Authorization from the ASME and thereby qualifies to Code-stamp its work.

Item - Any structure, system, equipment, material, components, parts, pieces, or part thereof installed or intended to be installed in the nuclear power plant, including spare or replacement parts of the item, as permitted by Section III of the ASME Code. △3

Manufacturer - One who produces any class of component, material, part, or appurtenance to meet prescribed design requirements. An organization which fabricates components, parts, or appurtenances to meet the Design Specifications and the rules of Section III of the ASME Code.

Nonconformance - A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate. A nonconformance is a deviation from specified requirements. Examples of nonconformance include physical defects; test failures; incorrect or inadequate documentation; or deviation from prescribed processing, inspection or test procedures.

N-Stamp - Official N-type symbol provided by the ASME and applied to plant items upon certification of compliance with applicable rules of the ASME Code, Section III. N-stamps of interest in this document include the NPT stamp for piping subassemblies, the N-stamp for piping systems and storage tanks, and the NA-stamp for installation.

Nuclear Steam Supply System (NSSS) - In general, the nuclear reactor and associated systems and equipment that generate and control the delivery of steam to the Turbine-Generator, specifically those plant items included in the contracted scope of supply for the NSSS Supplier.

NSSS Supplier - The design organization and Supplier for the NSSS.

Owner - The organization which obtains a Construction Permit from the Regulatory Agency for the construction of a nuclear power plant. As used in this Manual, Owner will mean Carolina Power & Light Company (CP&L).

Overpressure Protection Analysis - A comprehensive, documented analysis required for systems which contain ASME Code Class 1 components and Code Class 2 steam and feedwater systems.

Overpressure Protection Report - A certified report of the analysis of overpressure protection for systems which contain ASME Code Class 1 components.

Parts - Items which have work performed on them requiring the presence of or verification by the Authorized Nuclear Inspector and which are furnished to a component manufacturer under a different Certificate of Authorization than that applying to the component. By definition, a part is attached to or becomes a part of a component before completion and stamping of the component.

Piping Subassemblies - Sections of a piping system consisting of fittings and pipes or tubes which are fabricated as subassemblies in a shop or in the field before they are installed in the nuclear power system.

HPCS Procedures - Harris Plant Construction Section procedures which are developed by that organization for site use.

NELD Procedures - Nuclear Engineering and Licensing Department procedures which are developed by that organization for department or Harris Plant Engineering Section use.

Plant Start-Up - The test period beginning with completion of construction (on a system or equipment basis) through completion of the Start-Up Power Test Program. The Start-Up Power Test Program encompasses initial criticality, zero power operation, and ascension to full power.

NPCD Procedures - Nuclear Plant Construction Department procedures which are developed by that organization for either department or site use.

Plant Start-Up Power Test Program - A systematic test program to verify that plant systems and equipment have been constructed and safely function in accordance with design documents. The test program includes flushing, pressure testing, system functional checks and initial operation.

Pressure-Boundary Item - A component or appurtenance which in application is pressure-retaining or pressure-containing, including welding materials applied at the construction site to fabricate or install the pressure-boundary item.

Quality Assurance - All those planned and systematic actions necessary to provide adequate confidence that a structure, system, or equipment will perform satisfactorily in service.

Quality Control - Those quality assurance actions which provide a means to control and measure the characteristics of an item, process, or facility to established requirements.

Quality Release - A document utilized by the A-E, NSSS Supplier, or CP&L quality assurance representatives to release item(s) for shipment from a Supplier's facility. CP&L quality release document is titled Release for Shipment.

Repair - The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely complies with the Code even though that item still may not conform to the original requirement.

Review - A systematic evaluation documented by a signoff, stamp, or written review and dated.

Rework - The process by which a nonconforming item is made to conform to a prior specified requirement by completion, remachining, or reassembling.

SHNPP Start-Up Manual - A controlled document which contains the administrative controls and procedures required to implement the Plant Start-Up Program and the applicable requirements of this Manual. The Start-Up Manual defines the interface agreement between the Harris Plant Operations Section (HPOS) and the Harris Plant Construction Section (HPCS) regarding (i) Code pressure tests to be performed by HPOS and Code pressure tests to be performed by HPCS; and (ii) the use of HPCS tools, gauges and equipment, and the HPCS calibration control system for pressure tests performed by HPOS personnel. The Start-Up Manual also addresses the controls for item disassembly/reassembly to support Code pressure tests performed by HPOS. △4

SNT-TC-1A (1975) - The American Society for Nondestructive Testing publication which present Code requirement practices for qualifying and certifying personnel performing specific methods for nondestructive examination and evaluation of the examination results.

Source Surveillance - A review, observation, or inspection for the purpose of verifying that an action has been accomplished as specified at the location of material procurement or manufacture.

Stress Report - A certified report of stress analysis provided as per Code requirements. It will consist of a complete set of stress analysis calculations establishing that the referenced drawings for construction comply with the requirements of the Design Specifications.

Supplier - An approved vendor, manufacturer, or contractor for materials, items, equipment, or services for the nuclear power plant project.

Use-as-is - A disposition, documented on a Field Change Request/Permanent Waiver form, which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements, including performance, maintainability, fit, and safety. ASME items dispositioned "use as is" shall meet all applicable Code requirements.

1.0 GENERAL

1.1 Scope

1.1.1 This Manual provides measures to assure compliance with the requirements and rules of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components. This Manual shall be applied to activities associated with plant items and services for which compliance with the rules of the ASME Code, Section III, is mandatory.

1.1.2 Carolina Power & Light Company (CP&L) will qualify as the Owner for the nuclear power plant engineering and construction project as prescribed in the ASME Code, Section III. CP&L qualifies as the N certificate holder assuming overall responsibility for piping systems and storage tanks; Installer; and, as the construction site fabricator, will apply the appropriate N-type symbol stamp.

1.1.3 Supporting companies; i.e., the Architect-Engineer (A-E), Nuclear Steam Supply System (NSSS) Supplier, and other Suppliers and

Contractors, shall operate in accordance with quality assurance (QA) programs which are in compliance with the requirements and rules of the Code and this Manual.

1.1.4 The Constructor shall operate in accordance to this Manual and CP&L's procedures and does not operate under a separate quality assurance program.

1.2 Responsibility for the Quality Assurance Program

1.2.1 The Manager - Corporate Quality Assurance is responsible to the Senior Executive Vice President - Power Supply and Engineering & Construction for implementation and corporate auditing of this QA Program. The authority and independence as discussed in paragraph 1.3.5 has been delegated to the Manager - Corporate Quality Assurance and personnel reporting to him.

1.2.2 △6 The Manager - Nuclear Safety and Environmental Services is responsible for execution of the management review of Corporate Quality Assurance audit activities.

1.2.3 The Senior Vice President - Nuclear Generation has assigned the responsibility for engineering, construction, and the Plant Start-Up Program to the Vice President - Harris Nuclear Project.

1.2.4 The Manager - Corporate Quality Assurance has delegated to the Manager - Quality Assurance/Quality Control (QA/QC) Harris Plant and the Manager - Quality Assurance (QA) Services, the authority to order stoppage of any work related to the Code which is determined to be out of compliance with this QA program. In addition, the Manager - QA/QC Harris Plant has been delegated the responsibilities for preparing this manual, controlling and distributing revisions to this Manual, and maintaining master files.

1.3 Organization and Responsibilities

CP&L organizational responsibilites for quality-related activities in engineering, construction and start-up of nuclear power plants are shown on the CP&L Organization Chart for Nuclear Power Plant Projects (Exhibit 1-1).

1.3.1 Harris Nuclear Project Department (HNPD)

The Vice President - Harris Nuclear Project has overall responsibility for engineering, construction and start-up of the Harris Plant. He assigns responsibility for engineering to the Engineering General Manager, for construction, including welding to the General Manager - Milestone Completion, for start-up testing and operation to the General Manager - Harris Plant, and for Material Control/Storage and Document Control to the Manager - Harris Project Administration. The General Manager - Milestone Completion is supported by a matrix organization consisting of the Project General Manager - Construction, the Engineering General Manager, for items pertaining to project completion, and by the General Manager - Harris Plant, through the Manager - Start-Up, for start-up testing activities.

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1.3.1.1 Harris Plant Engineering Section (HPES)

1.3.1.1.1 The Engineering General Manager, who reports to the Vice President - Harris Nuclear Project, has overall responsibility for the planning, scheduling, estimating, cost control, and coordination of engineering-related activities necessary for nuclear power plant construction projects required by the Company. He manages the contract of the assigned A-E, engineering consultant(s), and other assigned purchase contracts associated with his assigned nuclear power plant construction project. As necessary, he may request the NELD to perform projects which, due to timeliness or technical expertise, may not be performed by HPES. This work includes coordinating with the A-E the review and approval of A-E design and procurement documents, the procurement of engineered items and services, and the review and comments of NSSS specifications. The Engineering General Manager has delegated responsibility for design and technical matters to the Manager - Harris Plant Engineering, and for contract administration and scheduling to the Manager - Engineering Management.

The Section responsibilities include:

a. Development of the A-E contract and the NSSS inquiry and contract.

b. Development of the project requirements which define the major plant parameters for operation and construction and identify the major structures, systems, and equipment to be incorporated.

c. Directing the development of the list of plant items to which the Code applies.

d. Initiation of design activities with the A-E following award of the contract.

1.3.1.1.2 The Engineering General Manager is responsible for ensuring that the design and engineering provided by the contracted A-E meet the applicable regulations and codes and will produce safe, economical, constructible, and operable nuclear power plants that have as little impact on the natural environment as possible and for direction of the engineering performed by the A-E.

The Harris Plant Engineering Section, under the direction of its Manager, has overall responsibility for ensuring that the design and

engineering provided by engineering consultants for the nuclear power plant construction projects required by the Company are acceptable and are in compliance with the best interests of the Company. The primary responsibility of the Harris Plant Engineering Section is to provide well engineered nuclear power plants which comply with the necessary codes, regulations, and with good operating practices. The Engineering General Manager is responsible for making those technical decisions, such as approval of specifications and proposals which are required of CP&L by various project agreements.

1.3.1.2 Harris Plant Construction Section (HPCS)

1.3.1.2.1 The Project General Manager - Construction has direct management responsibility for plant construction. The Project General Manager - Construction is responsible for construction of the nuclear power plant that conforms to Code, procedures, permits, specifications, drawings, and Corporate policies and commitments. He is directly accountable to the General Manager - Milestone Completion for constructing the assigned nuclear power plant in

compliance with this Manual. He is responsible for directing activities in accordance with this Manual, including stopping work that is nonconforming and promptly initiating corrective action, and providing construction procedures for the project, as necessary. He has the authority to approve or disapprove requisitions for field purchasing of items and services. He is assisted by the Construction Manager who is responsible for directing the activities of the Discipline Managers. The Construction Manager (or the Project General Manager's designee) assumes the responsibilities of the Project General Manager - Construction during periods of absence.

△6 1.3.1.2.2 The Welding Manager, an employee of CP&L, is assigned direct contractural and technical control and authority over welding activities in accordance with this Manual.

1.3.1.3 Harris Plant Operations Section (HPOS)

1.3.1.3.1 The Manager - Start-Up is responsible for performing Code pressure tests not performed by HPCS in compliance with the Code and this Manual. He is responsible for directing start-up activities in accordance with this Manual including stopping work that is nonconforming and promptly initiating corrective action. He is responsible for providing the Start-Up Manual and testing procedures.

1.3.1.3.2 The Assistant General Manager who reports to the General Manager - Harris Plant is responsible for maintenance activities on Code items. He has assigned implementation of these responsibilities to the Manager - Maintenance which includes stopping work that is nonconforming and promptly initiating corrective action.

1.3.1.4 Harris Plant Administration Section (HPAS)

1.3.1.4.1 The Manager - Harris Project Administration is responsible for receipt, control, and storage of code materials prior to issuance to the field and for control and issuance of specifications, drawings

and procedures and other documents required by those individuals engaged in Code Work at the site. He shall be responsible for the final control and storage of QA Records. △8 △8

1.3.1.5 Supporting Departments

1.3.1.5.1 The Vice President - Nuclear Engineering and Licensing has the responsibility for providing procedures, technical support (including the management of outside consultants) and engineering services as requested to the Harris Plant Engineering Section as required.

1.3.1.5.2 The Vice President - Nuclear Plant Construction has overall responsibility for field procurement. He assigns responsibility for procurement of items requisitioned in the field and the procurement of labor services and/or a combination of labor services and related items requisitioned in the field to the Manager - Construction Procurement and Contracting. The Manager - Construction Procurement and Contracting assigns the function of procurement of labor services to the Director - Construction Contracts and assigns the

function for procurement of items requisitioned in the field to the Principal Buyer - Harris Project who is located on site.

1.3.2 Quality Assurance/Quality Control

1.3.2.1 The Manager - QA/QC Harris Plant has direct management responsibility for QA/QC activities related to site engineering, construction and start-up. He is directly accountable to the Manager - Corporate Quality Assurance for implementation of this Manual. Administrative control (salary review, hire/fire, position assignment) of individuals within the QA/QC Harris Plant Section, subject to the approval of the Manager - Corporate Quality Assurance, is the responsibility of the Manager - QA/QC Harris Plant. △8

1.3.2.2 Control of the Code stamps and Certificates of Authorization shall be the responsibility of the Manager - QA/QC Harris Plant. Certificates and stamps shall be promptly returned to the American Society of Mechanical Engineers upon demand.

1.3.2.3 The Director - Quality Assurance/Quality Control (QA/QC) - Harris Plant Unit, under the direction of the Manager - QA/QC Harris Plant, is responsible for the following:

a. Providing Construction and Start-Up QA/QC procedures (CQA and CQC).

b. Providing construction and start-up QA/QC inspection.

c. Maintaining liaison with the ANI, the field representatives of the A-E and NSSS Supplier, the Project General Managers and the General Manager - Harris Plant to assure prompt interchange of quality-related information and timely resolution of quality-related problems. This function includes establishing lines of communication.

d. Reviewing field purchase documents to ensure inclusion of applicable Code and QA requirements.

e. Reviewing applicable start-up procedures for compliance with specific QA and Code requirements when the procedures are designated for use with Code items at the construction site.

f. Ensuring timely resolution of identified concerns and nonconformances.

1.3.2.4 The Director - QA/QC - Harris Plant, reporting to the Manager - QA/QC, is responsible for those functions listed in Paragraph 1.3.2.3, and for conducting the site QA/QC activities in accordance with this Manual and QA/QC procedures. He supervises the CP&L site QA/QC personnel in the various disciplines who are assigned to his unit. The Director - QA/QC - Harris Plant has the responsibility for initiating and completing ASME Code, Section III, Data Reports. Unless otherwise noted, the Director - QA/QC - Harris Plant referred to herein, hereafter will be addressed as the Director - QA/QC.

1.3.2.5 The Principal QA/QC Specialist - NDE, under the direction of the Manager - QA/QC Harris Plant, is responsible for implementing the NDE program, and the following:

a. Training, qualification and certification of NDE personnel.

b. Providing nondestructive examination procedures (NDE).

c. Providing, as necessary, Level III expertise which includes interpretation of test data.

d. Review applicable contractor NDE procedures involving Code class work.

e. Maintain Radiation Isotope License issued by the State of North Carolina.

1.3.2.6 The Principal QA Engineer - QAE, under the direction of the Manager - QA/QC Harris Plant is responsible for:

a. Reviewing applicable construction, technical and administrative procedures, and their revisions, for compliance with specific QA and Code requirements.

b. Reviewing site generated/controlled specifications and their revisions for QA and Code requirements.

c. Providing QA engineering support to QA/QC Harris Plant personnel.

d. Providing QAE Harris Plant Procedures.

△8 1.3.2.7 The Manager - Operations QA/QC is responsible for providing QA/QC support to the Manager - QA/QC Harris Plant in areas such as start-up and maintenance activities. He has delegated this responsibility to the acting Director - Harris Operations QA/QC. For the purposes of this Manual, reference to the Director - QA/QC, herein shall mean either the Director - QA/QC - Harris Plant or the acting Director -

Harris Operations QA/QC as applicable, for their respective areas of responsibility

1.3.3 Quality Assurance Services

1.3.3.1 The Manager - QA Services has direct management responsibility for engineering, vendor surveillance, and training QA activities. He is also responsible for conducting an independent corporate audit program. He is directly accountable to the Manager - Corporate Quality Assurance for implementation of his responsibilities as described in this Manual (Exhibit 1-1). Administrative control (salary review, hire/fire, position assignment) of individuals within the Quality Assurance Services Section, is the responsibility of the Manager - QA Services. △8

1.3.3.2 The Principal QA Engineer - Quality Assurance Engineering Unit, under the direction of the Manager - QA Services, is responsible for the following:

a. Reviewing A-E and NSSS purchase orders and contracts for inclusion of applicable QA/QC requirements.

b. Maintaining liaison with the A-E and NSSS Supplier in accordance with this Manual to keep up-to-date on project QA/QC activities and status and to assure timely resolution of quality-related problems.

c. Conducting and/or participating in audits of quality-related activities of the A-E and the NSSS Supplier for compliance with this Manual and their quality programs, as required.

d. Providing QA Engineering procedures.

e. Reviewing A/E and NSSS Design Specifications, and CP&L Contracts and their revisions for QA requirements.

f. Ensuring timely resolution of identified concerns and nonconformances.

1.3.3.3 The Principal Vendor Surveillance Specialist - Vendor Surveillance Unit, under direction of the Manager - QA Services, is responsible for the following:

a. Qualification of Supplier's QA programs and performing facility surveys as required. For procurement by the A-E, the actual function of conducting such surveys is performed by the A-E. When surveys are performed by the A-E, the Vendor

Surveillance Unit will monitor and may participate in the survey.

b. Conducting inspections and item acceptance activities (shop inspections) at Supplier facilities for procurement and ensuring timely resolution of identified concerns and nonconformances.

c. Evaluating Supplier's corrective action to prevent recurrence of nonconformances identified during shop inspections.

d. For procurement by the A-E, the actual functions of conducting these inspections and evaluating corrective action are performed by the A-E. The Vendor Surveillance Unit will monitor and may participate in the inspections.

e. As required, conduct and/or participate in audits of quality-related activities of Suppliers for compliance with this Manual and their quality programs.

f. Providing Vendor Surveillance Quality Assurance Procedures.

1.3.3.4 The Principal QA Specialist - Performance Evaluation Unit is responsible to the Manager - QA Services for establishing and implementing the Corporate QA audit program to determine the

effectiveness of the program described in this Manual and its compliance with the requirements of the Code. He reports audit results to the Senior Executive Vice President - Power Supply and Engineering and Construction; Senior Vice President - Nuclear Generation; Manager - Nuclear Safety and Environmental Services; Manager - Corporate Quality Assurance; and to the departmental manager of the function audited. △8

1.3.3.5 The Performance Evaluation Unit is responsible for the following:

a. Assuring that during the engineering, construction and start-up phase of a nuclear power plant, a comprehensive system of planned Contractor audits to determine the effectiveness of the engineering, construction and start-up QA program is conducted as detailed in Corporate Quality Assurance procedures on instruction for preparing, auditing, distributing, and maintaining the QA audit documents. This system shall be in accordance with the Code and as delineated in Corporate Quality Assurance procedures for QA audits. Personnel in this unit are trained to prepare for audits, conduct and report audits, and follow up, as necessary, to assure timely correction of

conditions, practices, and items that could degrade plant quality.

b. Organizations which are subject to audits shall include those manufacturers of Code items and subcontractors of services contracted by the NSSS Supplier and the A-E. For procurement by the NSSS Supplier and the A-E, the actual function of conducting such audits may be delegated to the NSSS Supplier and the A-E. When audits are performed by the NSSS Supplier and the A-E, the Performance Evaluation Unit personnel will monitor and may participate in the audits.

c. For CP&L procurement, auditing the QA programs of suppliers of Code items and/or services. Audits are periodically scheduled at least every three years or once within the life of the contract, whichever comes first, to assure compliance with the approved QA program. The preaward source evaluation audit may suffice for the initial periodic audit. An annual evaluation shall be made by the QA Services Section to determine the necessity of increasing the audit frequency. Material Suppliers and Material Manufacturers not possessing the Quality System Certificate (Materials) shall be audited annually. △7

d. Ensuring timely resolution of identified concerns and nonconformances.

e. Providing Corporate Quality Assurance audit procedures.

1.3.3.6 The Principal QA Specialist - Training and Adminstration is responsible for providing Code training for QA Services Section personnel and for control and storage of quality assurance records for the Corporate Quality Assurance Department General Office. △7 △7

1.3.4 Supporting Companies

1.3.4.1 CP&L utilizes items and services of other companies in the engineering and construction of nuclear power plant projects. To qualify for this work, these supporting companies must meet the following general requirements in addition to those specific requirements outlined herein:

a. Demonstrate, by previous work of a similar nature (not necessarily for CP&L), a technical capability, experience, and facilities commensurate with Purchase Order or contract requirements.

b. Document and submit to CP&L or its agent for review and acceptance a QA program that meets the ASME Code, Section III, as applicable for the assigned scope of work related to Code plant items, and which is consistent with the requirements of this Manual.

c. Implement on a timely basis the applicable portions of their Quality Assurance Program by written procedures covering activities such as administrative controls, QA activities, construction processes, testing, and material control.

1.3.4.2 The A-E, the principal engineering organization for CP&L, is responsible for overall engineering design and design coordination of the nuclear power plant, and for technical guidance of personnel participating in the engineering design and application of the engineering design during construction (Exhibit 1-2). The A-E is responsible to the Engineering General Manager for project contract activities. The responsibilities of the A-E include:

a. Development of design criteria, design bases, and nuclear safety evaluations; and preparation of documents, such as flow diagrams, general arrangement drawings, and other descriptive

information in support of the proposed design. The A-E coordinates these activities with the NSSS Supplier and with the Manager - Harris Plant Engineering to respond to guidelines supplied by CP&L.

b. Developing plant designs, including Code requirements, and coordinating design activities with the NSSS Supplier, with Suppliers responsible to the A-E and with the Harris Plant Engineering Section. This includes interface and document reviews necessary to assure consistency with project requirements.

c. Submitting specific design and procurement documents to the Harris Plant Engineering Section for review and/or approval.

d. Procuring items, for CP&L, subject to approval by the Vice President - Harris Nuclear Project, or his designee.

e. Performing vendor surveillance activities (Supplier facility surveys and shop inspections) when so directed by HPES or QA Services.

f. Control of design documents and their distribution.

g. Maintaining a central reference file of as-constructed design drawings for the nuclear power plant project during the

construction phase and transferring this file to CP&L as directed by the Engineering General Manager.

h. Controlling design document distribution to the construction site from A/E, NSSS and CP&L through the use of the project distribution schedule approved by the Vice President - Harris Nuclear Project.

i. Providing technical guidance to the construction site, as applicable, to assure correct application of design documents as required by the Code.

(Note: HPES may also, at their option, perform the duties outlined in a. thru d. and f. thru i. above.)

1.3.4.3 The NSSS Supplier is responsible for the engineering, design, and provision of the NSSS in accordance with the NSSS contract. The NSSS Supplier provides technical guidance to the construction site for installation, construction, and testing of the NSSS. The responsibilities of the NSSS Supplier for NSSS items include:

a. Submitting to CP&L and the A-E descriptions of the NSSS appropriate design criteria, design bases, nuclear safety evaluations, and supporting drawings.

b. Direction of NSSS design, including document reviews, audits of their Supplier activities, technical reviews of their Supplier design concepts, and interfaces with other design activities.

c. Developing Design Specifications and other design documents which include Code requirements, and submitting them to the A-E for review for items of the NSSS that interface with the balance of plant or which otherwise could influence balance-of-plant design (Exhibit 1-2).

d. Control of NSSS design documents and their distribution.

e. Performing procurement of NSSS items and reviewing NSSS support activities to assure compliance with specifications. This work will include surveillance in the form of shop inspections and audits, when appropriate.

f. Provide controls that will include stopping work that is nonconforming, controlling disposition and correction of nonconformities, and evaluating and accepting corrected items or practices.

g. Maintaining control of NSSS items and activities to assure that deliveries to the construction site meet requirements.

1.3.4.4 The term "Constructor" refers to one or more Contractors who are responsible to the Project General Managers for erection of the plant, installation of systems and equipment, and for construction tests to prove the acceptability of installed items. The Constructor will conduct work related to Code items in accordance with this Manual, CP&L procedures and supervision.

1.3.4.5 Suppliers are responsible to the organization that issues the Purchase Order. Suppliers are responsible for the activities, items, and services of their subvendors or subcontractors and will audit such activities as appropriate to the complexity of the work and importance to the nuclear safety of the plant. Suppliers will perform work related to Code items in accordance with the requirements of their accepted QA programs and applicable ASME Code.

1.3.5 Documentation of Authority and Independence

The following requirements relating to engineering, construction and start-up of nuclear power plants shall be met by CP&L management and by the management of supporting companies:

a. The authority and duties of individuals and organizations performing QA functions shall be clearly established and delineated in writing. These individuals and organizations shall have sufficient authority and organization freedom to:

1) Identify quality problems.

2) Direct work to be stopped when necessary to maintain quality.

3) Initiate, recommend, or provide solutions for conditions adverse to quality.

4) Verify implementation of solutions to quality problems.

b. An individual or organization assigned responsibility for checking, auditing, inspecting, or otherwise verifying that an activity has been correctly performed shall be independent of the individual or group directly responsible for performing or supervising the specific activity.

1.4 Training and Qualification

1.4.1 Each CP&L Department manager for the Construction Site and General Office is responsible for developing procedures which define the training and indoctrination requirements for their personnel. As a minimum, personnel will be trained in the applicable requirements of the Manual, supporting procedures and subsequent changes. This training will be conducted by personnel defined in such procedures and will be completed prior to the person participating in the specific Code activity. Records attesting to such training will be maintained by each Department. On-site training procedures will be reviewed for adequacy by the Manager - QA/QC Harris Plant. Off-site training procedures will be reviewed for adequacy by the Manager - QA Services. Records of formal classroom training shall include name of instructor, subject matter, date, time spent, and list of attendees. Records of other training shall be documented as specified in procedures and would identify the individual and subject matter as a minimum.

1.4.2 Managers at the section level and above who are directly involved in the preparation, review, or approval of Manual revisions receive their indoctrination and training in the Manual through this process to meet the requirments of 1.4.1 of the Manual.

1.5 Delegation of Responsibility

For any activities delineated in this Manual, the party identified in this Manual as responsible for the activity, may delegate the function to other qualified individuals in his organization. The Manager - Maintenance may assume the responsibilities of the Manager - Start-Up, except for pressure testing, when a system is declared operational.

2.0 DESIGN AND DOCUMENT CONTROL

2.1 Design Control by Engineering Organization

2.1.1 Design participation by CP&L is directed and coordinated by the Engineering General Manager in accordance with Paragraph 1.3. Support is provided by the Manager - QA Services and Manager - QA/QC Harris Plant. CP&L participation includes: △7

a. Maintaining control over engineering activities which include, when necessary, participation in design review meetings to evaluate the adequacy of engineering concepts and status of development or to resolve design interface problems between design organizations.

b. Reviewing, approving and/or commenting on the A-E and selected NSSS Design Specifications.

c. Directing the distribution of design documents to ensure availability at the project site.

d. Generation/updating of design documents in selected areas in accordance with authorizing procedures (NELD/HPES Procedures).

△5 HPCS interface with the engineering organization such as HPES/A-E in matters concerning design, shall be as described in HPCS procedures

△5 in interface with design engineering. The responsibility for interface is assigned to the Manager - Harris Project Administration who shall maintain records of the exchange of information regarding design documents. Interface between the Start-Up organization and HPES/HPCS in matters concerning design documents shall be in accordance with the procedures described in HPCS Administrative Procedures.

2.1.2 Intercompany design communications, including distribution of design documents, shall be as depicted on the Nuclear Engineering Organizational Chart (Exhibit 1-2) and distribution schedule.

Each company participating in design of the plant shall designate a coordinator responsible to receive and transmit intercompany design engineering communications in accordance with the project distribution schedule. Distribution controls shall include

provisions for maintaining a record of design document distribution for intercompany review and comment.

2.1.3 Design documents shall be prepared, approved, and released in accordance with those steps outlined in the NELD procedures and the A-E's and NSSS Supplier's documented QA program.

2.2 Design Specifications, Calculations, Stress and/or Design Reports

2.2.1 The Design Specification shall include, as applicable, the following information:

a. The identification of the type and functions of the item, including any dimensions upon which the functional capability depends.

b. The design requirements, including the design bases, and the mechanical and operational loadings, including vibration and shock.

c. The environmental conditions, including radiation.

d. Code classification of the components and appurtenances.

e. Definition of the boundaries of the item for Code application.

f. Material requirements, including impact tests, when applicable.

g. The requirements for Stress and/or Design Reports.

h. The requirements for the Overpressure Protection Report or Overpressure Protection Analysis.

i. The requirements for the various Data Reports particularly with respect to transmittal requirements to enforcement authorities.

j. QA program requirements.

k. When operability of an item is a requirement, the Design Specification shall make reference to other appropriate documents which specify the operating requirements.

l. In addition to the above, will contain all the information contained in paragraph 2.4.2.1.

2.2.2 The NSSS Supplier, A-E, or other approved design organization as applicable, is responsible for certification of the Design Specifications as the Owner's designee. The Design Specification shall be certified to be correct, complete and in compliance with the Code. Certification will be by one or more Registered Professional Engineers competent in the applicable field of design

of components and related nuclear power plant requirements.

2.2.3 CP&L has the responsibility for assuring that copies of the certified Design Specifications are maintained and made available to the ANI and the enforcement authority for the State of North Carolina having jurisdiction for the construction site before the Code items are placed in service.

2.2.4 The NSSS Supplier, the A-E, or other approved design organization responsible for Code items shall provide Design Specifications that are in accordance with the Code. The Design Specification shall assure consistency and compatibility of design within the plant.

2.2.5 CP&L, as the N Certificate Holder, is responsible for the design of piping systems, storage tanks, and the adequacy and completeness of the design documents. CP&L shall be responsible for assuring that the Stress and/or Design Reports are prepared, based on "as-constructed" drawings, as set forth in the Code. Generation, certification and maintenance of the "as-constructed" drawings is

the responsibility of the Manager - Harris Plant Engineering.

Actual installed geometry and location will be generated by HPCS and transmitted to HPES. Acquisition of this data shall be done by persons who are independent from the group responsible for installing the pipe. Verification of this data will be performed by QA/QC on a monitoring basis.

Preparation of the "as-built" sketch is the responsibility of the Project General Manager - Construction. The "as-built" sketch in conjunction with the applicable process control sheets provide the "as built" tabulation of materials and configuration. Verification of this "as-built" data will be performed by QA/QC during in-process inspections.

Internal design reviews and verification of Stress and/or Design Reports shall be performed by competent individuals other than those who performed the original design and shall be documented in or attached to the Stress and/or Design Report. The Stress Report

△8 shall be certified by a Registered Professional Engineer, that it

satisfies the requirements of the Code, the Design Specification and the "as-constructed" drawing. △5

△5 2.2.6 CP&L, or it's designee, shall assure that the certified Stress Report is reviewed to verify that the report satisfies the design and operating conditions stated in the Design Specification. Certification of this review will be attached to the stress report and on file and readily available to the ANI and enforcement authority having jurisdiction for the construction site prior to Code stamping. △5 △5 △5

2.2.7 Modifications of any design document, as authorized in paragraph 2.3.4, from the revision used in preparing a Stress Report to comply with requirements of the Code shall be reconciled by the responsible design organization with those calculations and the as-constructed drawings so certified. Copies of the certified drawings shall (which accompany the Stress Report) be filed as specified for the Stress Report in Paragraph 2.2.6. The Supplier, through the A-E or NSSS Supplier, is responsible for certification, filing, and distribution of the modified drawing.

2.2.8 For systems that include Code Class 1 components and Code Class 2 steam and feedwater systems, an analysis of the overpressure protection system shall be performed and documented. The analysis will develop the specific data required by the Code and is the responsibility of the A-E, NSSS Supplier, or other approved design organization acting for CP&L.

For Code Class 1 components, an Overpressure Protection Report shall be prepared by the design organization responsible for the Design Specification or their subcontractors. This report will define the overpressure protection afforded for the components of the nuclear power system, extent and boundaries of the system, and the details and results of the overpressure protection analysis.

For Code Class 2 steam and feedwater systems, the Overpressure Protection Analysis shall be prepared by the design organization responsible for the Design Specification or their subcontractor and be on file and made available to the ANI and the enforcement agency authorities at the construction site upon request.

2.2.8.1 The Overpressure Protection Report for Code Class 1 components shall be certified by a Registered Professional Engineer competent in the field of design of nuclear power systems and their operating and nuclear safety controls. This certification shall be recorded only after compliance with the requirements of the Code is established. This is the responsibility of the A-E or NSSS Supplier, as applicable, acting for CP&L.

2.2.8.2 Copies of the verified and certified Overpressure Protection Report shall be filed with the enforcement authorities having jurisdiction at the construction site and is the responsibility of the Manager - Harris Plant Engineering.

2.3 Design Changes

2.3.1 Design changes shall be controlled in accordance with design control measures applied to the original design and will require review and approval by the organization that performed the original design. Approval or authorization to proceed (i.e work may proceed prior to Final Analysis) as noted on the design change constitutes approval to initiate the work related to the subject change. Approval of the design change is required prior to final acceptance of the installation by QA/QC and the ANI. In the event it is not practical

for the original organization to perform these functions, CP&L will designate other responsible design organizations which have access to pertinent background information and have adequate understanding of the original requirements. The design organizations and CP&L, as applicable, are responsible for design changes.

2.3.2 Procedure for generating design changes to previously approved design documents is detailed in HPCS/NELD Procedures and the Start-Up Manual.

2.3.3 The methods to be followed for design changes requested by the constructing organization or start-up are described in HPCS procedures and the Start-Up Manual. Such requests are appropriate when the authorized design documents either cannot be implemented or the same end result can be achieved in a more timely or feasible manner. The Field Change Request/Permanent Waiver form (FCR/PW) (Exhibit 2-1) shall be used by the construction, HPES, start-up or other plant organization to request design changes or permanent waivers. The Document Control Supervisor has the responsibility for assigning the FCR/PW number and maintaining a FCR Log within the

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△9 construction controls computer system indicating the status.

2.3.4 Authorization or rejections of requests for design changes require the concurrence of the Manager - Harris Plant Engineering as detailed in the HPCS/NELD procedures. Approved and rejected design changes are issued by HPES to HPAS Document Control.

HPAS Document Control will ensure design changes are distributed to holders of controlled copies of documents assigned to those individuals engaged in Code work in accordance with HPCS procedures. Additionally, HPAS Document Control will distribute copies of approved and rejected design changes to the initiator. HPES will ensure design changes are recorded in the Drawing Control Log against the affected design document. HPES shall also be responsible for stress report reconciliation and/or changes.

2.4 Site-Generated Specifications, Drawings, and Procedures

2.4.1 This Subsection identifies the requirements for the preparation, review, approval, release, distribution, and revision of

specifications, drawings, and procedures associated with the assembly, fabrication and installation of Code items at the construction site.

2.4.1.1 Measures shall assure that documents, including changes thereto, are reviewed for adequacy by authorized personnel as described in Paragraph 2.1.3 and are available for use at the location where the activity is performed.

2.4.1.2 Documents shall be reviewed in accordance with Paragraphs 2.4.2.2 and 2.4.2.3 to assure that applicable Code requirements are specified and correctly translated. The reviewers will be competent in the technical field addressed by these documents.

2.4.1.3 Copies of documents applicable to Code items shall be made available to the ANI and enforcement authority through the Director - QA/QC.

2.4.2 The Discipline Managers have the overall responsibility for control and development of site-generated specifications which are used for field procurement or fabrication activities of Code items.

Preparation and approval of these specifications are detailed in HPCS procedures. Flow Chart, Appendix A (Exhibit 2-3), depicts the responsibilities for preparation, review, and approval. The required approvals of the site specification are by the Discipline Manager and the Manager, Harris Plant Engineering as shown on the Site Specification Cover Sheet (Exhibit 2-4).

2.4.2.1 Construction site-generated specifications shall include the provisions of Paragraph 2.2.1 and the following requirements when they are within the scope of the applicable design documents and are appropriate to the procurement:

a. Identification of the Code and standards to be applied and a delineation of the Code classifications and boundaries of application.

b. Requirements for the QA program of the Suppliers and the requirement that a copy of the documented QA program and any proposed modifications thereof of the Suppliers be provided prior to and after purchase order award.

c. Access requirements for preselection surveys and postselection

shop inspections, surveillance, and auditing.

d. Requirements for inspection and test plans and procedures to be developed and performed by the Supplier.

e. Quantitative and qualitative acceptance criteria.

f. Requirements for documentary evidence of quality to be furnished by the Supplier (e.g., test and analysis results; certification that specific requirements have been met; and heat, lot, batch number, or other records of traceability of items to the source).

g. Requirements for engineering, scheduling, and performance by the Supplier, including the plan and schedule for submittal of Supplier drawings, calculations, and special processes, such as NDE and welding, for review prior to application.

h. Requirements for identification labels or markings on items.

i. Special shipping, storage, and handling requirements for protection and preservation of the items or the need for such instructions to be provided by the Supplier.

j. Requirements for calibration procedures and recommendations for calibration cycles to be furnished along with tools, gauges, instruments, or other equipment supplied and/or used by the

Supplier for which calibration control is necessary.

k. Requirements for manuals, drawings, and other documentation to be furnished by the Supplier for use as construction control documents or as information to be applied in preparing construction control documents.

l. A document list showing attachments to the construction site-generated specification.

m. Code class, Code effectivity, vendor QA program requirements.

n. The Material Manufacturer's Quality System Certificate (materials) number and expiration date shall be shown on the CMTR or Certification of Compliance (COC) as applicable covering materials manufactured under the provisions of the Certificate. Material Manufacturers and Suppliers not holding an ASME Quality Systems Certificate shall include on the CMTR or COC as applicable, the revision level and date of their Quality System Program approved by CP&L.

2.4.2.2 The site-generated specification shall be reviewed by personnel assigned by the responsible Discipline Manager to assure that the engineering data and Code requirements are adequate for the

procurement. The review shall be conducted by individuals other than those who prepared the document and who are cognizant in the intent of the procurement and competent in the technical area of the specification. Site-generated specifications shall be reviewed by HPES and QA/QC personnel.

2.4.2.3 Site-generated specifications for site procurement shall be reviewed and approved as stated herein and as detailed in HPCS procedures to assure adequate coverage of technical and QA requirements. When site-generated specifications specify engineering and/or design activities, approval by the Manager, Harris Plant Engineering is required after HPES and the QA/QC Harris Plant Section's comments have been resolved. Site-generated Design Specifications for Code items shall be certified by one or more registered Professional Engineers competent in the applicable field of design and related nuclear power plant requirements. Specifications not involving engineering and design activities shall be approved by either the Project General Manager, or the responsible Discipline Manager. Resolution of QA/QC Harris Plant Section comments is required prior to approval of site-generated specifications.

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2.4.3 The Manager - QA Services has the overall responsibility for the development and control of Corporate Quality Assurance Department (CQAD) procedures.

The Manager - QA/QC Harris Plant has the overall responsibility for the control of the QA/QC procedures developed for site use which will be identified as site QA procedures (CQA), site Quality Control procedures (CQC), site Quality Assurance Engineering procedures (QAE), and site Nondestructive Examination procedures (NDEP). Maintenance, distribution, and recall of these procedures are as designated in CQAD, NDEP, QAE, and CQA procedures. Upon issuance of a QA/QC procedure, distribution shall be recorded on a document control log. The log shall identify the procedure number, revision, and the person to whom it was issued. The Corporate Quality Assurance Department and the QA/QC Harris Plant Section procedures, as applicable, shall not conflict with this Manual.

△8 2.4.4 The Project General Manager has the overall responsibility for the development and approval of those Construction administrative

procedures applicable to Code items.

2.4.4.1 Development and approval of construction technical and work procedures is the responsibility of the Discipline Manager. Final approval shall be in accordance with HPCS procedures on preparation, approval, control, and release of procedures by authorized personnel. Preparation, approval, and release of welding procedures are detailed in Section 6.0.

2.4.5 Preparation of the Start-Up Manual and preparation and approval of the Start-Up procedures is the responsibility of the Manager Start-Up. Approval of the Start-Up Manual is the responsibility of the Vice President - Harris Nuclear Project. Distribution of the Start-Up Manual and Start-Up procedures is the responsibility of the Manager - Harris Project Administration. Approval and distribution of Start-Up procedures shall be in accordance with SHNPP Start-Up Manual section on preparation, approval, control and distribution of procedures by authorized personnel.

2.4.6 To facilitate installation of Code Instrumentation, the Discipline

Manager is responsible for preparation, review, approval, and revision of instrument isometric drawings in accordance with HPCS Procedures. The instrument isometrics and Instrumentation Sketches (Exhibit 2-9) are prepared based on criteria outlined in approved design documents as described in this Section. Distribution and control of the isometrics and Instrument Isometric Change Request (IICR) (Exhibit 2-8) shall be as described in Paragraph 2.5 and will be issued to the Discipline Engineer for inclusion in a work package as described in Paragraph 5.2.8. The Instrumentation Sketch is controlled through the applicable HPCS procedure. The Discipline Engineer may make changes to instrument isometrics with the IICR or as described below, provide the changes do not affect established or create new QC or ANI Holdpoints or affect NDE or welding processes. These changes will be accomplished by marking in red ink on the controlled copy of the instrument isometric included in the work package; the changes will be initialed and dated by the Discipline Engineer initiating the change. Interim rerouting of tubing that does not require support relocation or modification may be made by craft supervision without "red-lining" the isometric if the change is within the design criteria. Changes to welds or

threaded connections shall not be made prior to issuance of an approved isometric revision or IICR and the appropriate process control documents. Upon return of each completed work package from the field, the Discipline Engineer shall review each package and revise the instrument isometric to incorporate all interim changes and IICR's prior to release of the work package for final review/acceptance.

Erection and inspection of instrument installations will only be performed to the work package copy of the instrument isometric. Inspection to the instrument isometric by QA/QC shall be limited to verification that the drawing depicts the "As-built condition". Revision of instrument isometrics and IICR's will be subject to the same review as the original document as described in HPCS Procedures.

2.5 Site Document Control

2.5.1 The methods used on site to distribute and control Design Specifications and drawings; site-generated specifications and

drawings; and administrative, technical, work, and welding procedures shall be as described in HPCS procedures on document distribution and control. The Manager - Harris Project Administration is responsible to assure documents received are △8 recorded on the HPAS Document Record form (Exhibit 2-5), or recorded △8 on a computor system that will indicate status, revision date, △8 revision number and controlled distribution. Distribution of these documents shall be accomplished by utilizing the HPCS Document Transmittal form (Exhibit 2-6). Only documents issued through the HPAS Document Control Unit, or the Pipe Spool Fabrication/Modification Sheet (PSFMS) (Exhibit 5-4), the Instrument △8 Isometric Change Request (IICR) (Exhibit 2-8) or the Instrumentation △3 Sketch (Exhibit 2-9) when issued by the Discipline Manager may be used for construction. Controlled documents, issued by HPAS Document Control, will be updated as new revisions are received and FCRs will be distributed to holders of controlled copies of affected drawings at the time the FCR is approved. Documents processed and distributed through the HPAS Document Control Unit will be identified by a Document Control "RECEIVED" stamp. The PSFMS or IICR issued by the Discipline Manager will be stamped "Issued for a period not to exceed 7 days". Document Control will issue within seven days, a controlled copy of the PSFMS/IICR to be inserted in

△8 the work package. The Instrumentation Sketch shall be controlled

△8 through the applicable HPCS procedure. Documents issued for information purposes that may not be used for construction will be stamped "UNCONTROLLED", "SUPERSEDED", or "VOID". The HPAS Document Control Unit may retain void/superseded documents as necessary for information purposes. The Director - QA/QC will ensure that documents required for record purposes are maintained in accordance with Corporate Quality Assurance Department Procedures.

2.5.2 Revisions to specifications, drawings, and procedures shall be controlled in accordance with those measures applied to the original document. Revisions shall be reviewed and approved by the same organization that performed the original review, or other properly authorized personnel competent in the applicable field of design and have adequate understanding of the requirements of the original document. Provisions shall assure that the current revisions of specifications, drawings, and procedures are available for use where the applicable function is being performed. Approved specifications, drawings and revisions to these documents will be

transmitted by numbered transmittal letters from the design organization to the Project General Manager and processed through the HPAS Document Control Unit. The HPAS Document Control Unit will transmit documents to holders of controlled documents as listed on the approved distribution list by a Document Transmittal Form (Exhibit 2-6) which must be acknowledged by the controlled document holder by a signature and date indicating that superseded documents have been destroyed. Transmittal Forms (Exhibit 2-6), when completed and signed, will be retained by the HPAS Document Control Unit for the current calendar year and the previous calendar year. The Manager - Harris Project Administration will make a monthly survey of site document holders, in accordance with HPCS procedures, engaged in Code work to ensure that the most current documents are available at the point where the Code work is being done. The Director - QA/QC is responsible for checking the effectiveness of document control activities by surveillance of construction activities to verify that the latest approved documents are in use. Maintenance, distribution, and disposition of obsolete or superseded procedures shall be as specified in appropriate site procedures.

2.5.3 Responsibility for document control in support of the Harris Plant Operations Section is that of the Manager - Harris Project Administration. The methods used by Harris Plant Operations for the distribution and control of design specifications, drawings, procedures and the Start-Up Manual shall be described in HPOS procedures. Revisions to specifications, drawings, procedures and manuals shall be controlled in the same manner as the original document. Provisions described in procedures shall assure that the current revisions of specifications, drawings, procedures and manuals are available to holders of controlled copies of these documents and available within the libraries and satellite document control areas throughout the plant. During the construction phase of the project, approved specifications, drawings and revisions to such documents will be processed by the HPAS Document Control Unit. The HPAS Document Control Unit will transmit documents to holders of controlled documents as listed on the approved distribution list by use of a controlled document distribution form which shall be acknowledged by the controlled document holder by signature and date indicating receipt of the documents transmitted and compliance with disposition instruction for adding and/or deleting documents. An accountability record of distribution and acknowledgement will be maintained by the HPAS

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△4 △4 Document Control Unit for a minimum period of two years. The Manager - Harris Project Administration shall survey monthly, in accordance with HPOS procedures, the document holders engaged in Code work where the applicable function is being performed to ensure the latest documents are in use. The Director - QA/QC is responsible for checking document control effectiveness by surveillance of HPOS activities to ensure that the latest approved documents are in use.

2.6 Identification of ASME Code Documents

2.6.1 Purchase requisitions, purchase orders, and procedures generated and/or used at the construction site for fabrication and installation of Code items shall be identified as "ASME Section III".

2.6.2 For documents generated and/or used at the construction site for other than Code work, no special marking is required to distinguish it from documents marked in accordance with Paragraph 2.6.1.

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3.0 PROCUREMENT

3.1 Service Contracts

The Department manager responsible for obtaining services is responsible for the applicable service contract. When contracted services affect the quality of the engineering or construction of the plant, the contract shall be controlled as described in this Subsection. Examples of services of the type covered by the Subsection are as follows:

a. Engineering Consultant and A-E services contracted by the Harris Plant Engineering Section or the Nuclear Engineering and Licensing Department in support of nuclear power plant engineering and design projects.

b. Constructor and/or Construction Manager contracted by the Nuclear Plant Construction Department in support of nuclear power plant construction projects.

Prior to award, contracts for plant quality-related services shall be reviewed by the QA Services Section. Any revisions other than for commercial consideration to such a contract shall also be reviewed by the QA Services Section. These reviews will provide assurance that the quality-related requirements of the contract are adequate for the services specified. Additionally, the QA review will determine that the QA program of the Supplier and implementation meets the applicable requirements of the Code. Qualification of contractors will be in the same manner as described in paragraphs 3.3.5.1 through 3.3.8.

3.2 Procurement by the Architect-Engineer

The A-E is responsible for the procurement of Code-stamped items, including the NSSS, on behalf of CP&L as described in this Subsection.

3.2.1 Procurement by the A-E shall be initiated by preparing an inquiry. The inquiry shall consist of two parts:

a. The commercial portion which sets forth items, quantities, delivery schedule, terms, and conditions.

b. The Design Specification which includes the engineering and quality requirements. (The Design Specification, as defined by this Manual, is prepared or revised, approved for release, and approved for use in the nuclear power plant project as set forth in Section 2.0.)

3.2.2 A recommended bidders list shall be prepared by the A-E for each inquiry. The bidders list identifies potential Suppliers.

3.2.3 The recommended bidders list shall be evaluated by the Harris Plant Engineering Section. As a result of these evaluations and records of Supplier performance or surveys, bidders may be added to or deleted from the list. The recommended bidders list, as reviewed or amended, shall be approved by the Engineering General Manager to authorize its use for issue of inquiries to potential Suppliers.

3.2.4 The inquiry shall be issued by the A-E to bidders on the list approved by CP&L. A copy of the inquiry will be forwarded to the Manager - QA Services and to the Manager - Harris Plant Engineering.

3.2.5 Proposals submitted by selected bidders to the A-E shall be evaluated (including the QA program submitted by the bidder). This evaluation and recommendations for selection of the Supplier shall be documented by the A-E.

Proposals, including the A-E's evaluations and recommendations, shall be submitted to CP&L for approval.

3.2.6 The documents submitted by the A-E shall be reviewed by the Harris Plant Engineering Section for engineering acceptance and/or comments. Reviews and comments will be obtained from the Quality Assurance Services Section when quality exceptions are noted in a recommended proposal. As a result of these reviews, one of the following courses of action shall be documented and transmitted to the A-E:

a. Approval is granted to proceed with the procurement as recommended.

b. Approval is granted to proceed with the procurement as recommended following resolution of CP&L comments (engineering and/or QA).

c. CP&L comments are to be resolved and a new recommendation submitted, if required.

3.2.7 Qualification of the Supplier selected for the procurement shall be accomplished by the A-E as required by the A-E's nuclear QA program and in accordance with the rules of the applicable Code. Qualification shall be established prior to award of the Purchase Order. Records shall be maintained by the A-E that identify the selected Supplier, his facility, specified items or equipment which he is qualified to supply, and the date of survey or verification.

Qualification will be reviewed and approved by CP&L by one or more of the following means:

a. Receipt of Supplier verification that he holds an active Certificate of Authorization from the ASME to manufacture and Code-stamp the item(s) described in the inquiry.

b. Evidence that Material Manufacturers or Material Suppliers hold a Quality System Certificate (Materials).

c. Verification that the vendor is currently on the A-E's Approved Supplier's List.

d. CP&L or A-E survey of the Supplier's facility to assess his capability to document and execute a QA program that meets the requirements of the inquiry, including verification that his technical capability, organization, facilities, and inspection measures are commensurate with requirements of the inquiry.

3.2.7.1 When an A-E survey is required, as determined above, the Manager - QA Services shall be advised by the A-E of the survey schedule with sufficient advance notice to participate, at his option.

3.2.7.2 The survey shall be conducted by the A-E and documented on a Manufacturer Evaluation Quality Assurance form (Exhibit 3-1) or equivalent. The evaluation form shall be submitted to CP&L for

review which will summarize the results of the survey and state whether or not, in the opinion of the survey team, the Supplier is qualified and meets Code requirements.

3.2.8 If the Supplier is found not to be qualified, corrective action shall be implemented to qualify the Supplier; or a new Supplier shall be selected by re-examination of the bids or by resolicitation as set forth in Paragraphs 3.2.1 through 3.2.7.1 for the initial selection.

3.2.9 A Purchase Order shall be awarded to a qualified Supplier. The Design Specification and other applicable requirements of the inquiry shall be made a part of the Purchase Order. If the scope of supply or complexity of requirements so warrants, a preaward meeting shall be held by the A-E with the selected Supplier to assure that the requirements are understood. When a preaward meeting is held, a qualified spokesman for QA in the A-E's organization shall clarify QA requirements to assure that there are no misunderstandings. QA questions or concerns and their resolution will be documented. Award shall be withheld until QA requirements for the procurement

are accepted by the Supplier. If as a result of the preaward meeting a revision is proposed to the Design Specification, the revision shall be prepared, reviewed, and approved for release as set forth in Section 2.0.

3.2.10 A Quality Compliance Plan for Vendors, Manufacturers, or Contractors (Exhibit 3-2) shall be documented and executed by the A-E for an awarded Purchase Order. The plan shall be submitted by the A-E to CP&L for review and approval by the Manager - QA Services prior to execution.

The compliance plan shall include provisions, as required:

a. For in-process and final inspections (shop inspections) of Supplier items at the Supplier's work site when so specified. The inspections will be documented by the A-E and copies of the reports forwarded to the Manager - QA Services.

b. For surveillance, as necessary, to assure that Supplier planning and execution of work are controlled in accordance with his approved QA program.

During execution of the compliance plan, the Manager - QA Services shall be notified by the A-E of scheduled surveillance events at the Supplier's facilities. This notification will allow reasonable time for preparation and participation by CP&L when so directed by the Manager - QA Services.

3.2.11 Supplier documents required by the Design Specifications, which are made a part of the Purchase Order, will be reviewed and accepted by the A-E.

3.2.12 Purchase Order additions or modifications after award shall be reviewed and controlled the same as set forth for the original Purchase Order.

3.3 Site Procurement

△4 3.3.1 The Project General Manager is responsible for controlling field purchase requisitions for Code items and services at the construction site as described in this Subsection.

3.3.2 Field purchases shall be initiated by preparing a purchase requisition as detailed in the HPCS procedures on the requisitioning of materials and equipment. Items, quantities, delivery schedule, technical, and QA requirements will be included on the Purchase Requisition form (Exhibit 3-3) or in attachments as necessary. One of the following types of specifications shall be attached to or included with the Purchase Requisition.

a. A-E generated Design Specifications distributed to the construction site in accordance with Section 2.0.

b. Construction site-generated specifications consisting of engineering and quality requirements developed for the procurement. The specification shall be in accordance with applicable Code, regulatory requirements, design bases, and other requirements established for the plant items to which the procurement applies to assure adequate quality in the purchased items or services.

3.3.3 The Purchase Requisition package shall be submitted to the Director - QA/QC, or his designee, for review to ensure inclusion of QA requirements prior to bid solicitation.

3.3.4 Proposals which contain technical differences, deviations, or exceptions submitted by bidders on Code items shall be technically reviewed and evaluated for conformance to procurement documents by the Engineering General Manager, Project General Manager, Discipline Managers, or their designees. Exceptions to QA requirements in the Supplier's proposal shall be referred by the evaluator to the Director - QA/QC for review and concurrence. △5

3.3.5 For Code items Construction Procurement and Contracting Section shall request the QA qualifications of the Supplier selected for the procurement which shall be accomplished as required by this Manual and in accordance with Corporate Quality Assurance Department procedure on Supplier evaluation.

The requested QA qualification shall be established by the Manager - QA Services prior to award of the Purchase Order or Contract by one or more of the means detailed below:

a. Receipt of supplier verification that he holds an active Certificate of Authorization from the ASME to manufacture and Code-stamp the item(s).

b. Evidence that Material Manufacturers or Material Suppliers hold a Quality System Certificate (Materials).

c. Verification that the vendor is currently on the approved supplier's list.

d. Survey of the Supplier's facility to assess his capability to document and execute a QA program that meets the requirements of the procurement documents, including verification that his technical capability, organization, facilities, and inspection measures are commensurate with requirements of the procurement documents.

3.3.5.1 When a survey is required, it shall be performed at the Supplier's facility and documented (e.g. on a Manufacturer Evaluation Quality Assurance form Exhibit 3-1) by the Quality Assurance Services Section. A report will summarize the results of the survey and state whether or not, in the opinion of the survey team, the Supplier is adequately qualified and meets Code requirements.

3.3.5.2 QA approval of a Supplier will be documented in a memorandum by the Manager - QA Services Section and forwarded to the Construction Procurement and Contracting Section.

3.3.5.3 The Manager - QA Services shall be responsible for generating, maintaining, and controlling an Approved Suppliers List (ASL) for vendor's supplying ASME Code items. The listing shall include in tabular form:

a. Name of supplier.

b. Address of supplier.

c. Types and description of materials, parts or services qualified to supply.

d. Basis for qualification.

e. Qualification expiration date.

f. Restriction (if any) with regard to qualification.

At least once each month the Manager - QA Services shall revise the Quality Assurance Record Tracking System data base to reflect the addition of new suppliers qualified during the previous month, and the deletion of previously approved suppliers whose qualification has been terminated. This information will be summarized in a published memorandum.

Access to the ASL (via computer terminal) and distribution of the memorandum will be made to the Manager - Construction Procurement and Contracting, the Principal Buyer - Harris Project, and the Director - QA/QC - Harris Plant.

Additions to the list will be limited to vendors whose quality assurance programs have been evaluated and conform to the applicable requirements of this Manual. Termination shall be supported by appropriate records such as:

a. Expiration of qualification date and no purchasing activity to support continued qualification.

b. Failure of the supplier to maintain an adequate quality assurance program.

As occurring, the Manager - QA Services will prepare a memorandum to add or remove a qualified vendor, except for expiration of qualification date and/or no further interest by the procurement and contracts sections.

3.3.5.4 The Quality Assurance Services Section shall maintain qualification records that identify the selected Supplier, the item to be furnished, and the date of QA qualification.

3.3.6 If the Supplier is found not to be qualified and resolution of the problem cannot be resolved before the start of work, a new Supplier shall be selected by re-examination of the proposals, or by resolicitation as set forth in this Subsection for the initial selection.

3.3.7 For procurement of Code items, a Purchase Order (Exhibit 3-4) shall be awarded by the Manager - Construction Procurement and Contracting or his designee to a Supplier on the Approved Supplier's List. For procurement involving labor services or a combination of labor services and Code items, a Contract shall be issued by the Manager - Construction Procurement and Contracting, or his designee, in accordance with NPCD procedures. The Purchase Order or Contract shall be awarded to the qualified and selected Supplier after resolution of any exceptions or deviations to the QA or technical requirements of the Purchase Requisition as detailed in NPCD

procedures. The Design Specification or site-generated specification shall be made a part of the Purchase Order or Contract, as applicable. If the scope of supply or complexity of requirements so warrants, a preaward meeting may be held with the selected Supplier to assure that requirements are understood.

3.3.8 Purchase Order or Contract award shall be withheld until QA requirements for the procurement are resolved with the Supplier. If, as a result of the preaward meeting, a revision is proposed to the Design Specification or site-generated specification, the revision shall be prepared, reviewed and approved as set forth for the original specification.

3.3.9 The Manager - QA Services is responsible for a Vendor Surveillance Check Plan (Exhibit 3-5) to be documented and executed for an awarded Purchase Order as required for items manufactured in accordance with the Code. The surveillance plan shall include provisions, as required:

a. For in-process and final inspections (shop inspections) at the Supplier's work site. When specified, the inspection will be documented on a QC Inspection Report (Exhibit 3-6) and copies of the reports forwarded to the Director - QA/QC.

b. For surveillance, as necessary, to assure that Supplier planning and execution of work at his work site is controlled in accordance with this QA program.

c. As applicable, only a properly executed Release for Shipment form (Exhibit 3-7) by the CP&L Vendor Surveillance Specialist will release Supplier to ship items or equipment.

△4 3.3.10 The Engineering General Manager/Project General Manager/Discipline Managers shall be responsible for the review and control of Purchase Order or Contract additions or modifications involving the specifications concerning Code items and services. Additions or modifications, excluding commercial or quantity, will be reviewed by the Director - QA/QC, or his designee for QA requirements.

3.3.11 Engineering drawings, calculations, and special process procedures and revisions thereto submitted from a Supplier performing

engineering, which are received by the Principal Buyer - Harris Project or Manager - Construction Procurement and Contracting, are forwarded to the Harris Plant Engineering Section for their review and comment as detailed in the HPCS procedures on interface with the Harris Plant Engineering Section.

3.3.12 Engineering drawings, calculations, and special process procedures and revisions thereto, submitted from a Contractor who furnishes labor/related items and who performs engineering, are received by the Discipline Managers for review and approval and, if applicable, forwarded to the Harris Plant Engineering Section for their review and comment as detailed in the HPCS procedures on interface with the Harris Plant Engineering Section.

3.3.13 The Harris Plant Engineering Section will review Supplier submittals of documents pertaining to engineering when specific submittals are requested in the Purchase Orders or Contracts issued by NPCD. Comments by the Harris Plant Engineering Section will be provided to the Discipline Manager or to the Manager - Construction Procurement and Contracting. The Nuclear Engineering and Licensing Department

may perform these activities for the Harris Plant Engineering Section.

3.3.14 CP&L approval and/or comments to be resolved will be forwarded by the Principal Buyer - Harris Project, the Manager - Construction Procurement and Contracting, the Engineering General Manager or Project General Manager, as applicable, to the Supplier. △6

3.3.15 For A-E purchase orders in which procurement responsibilities have been assumed by CP&L, further supplements shall be issued on the Purchase Contract Form (Exhibit 3-8). Preparation and Processing of the form shall be in accordance with Paragraph 3.3.

3.4 Reclassified Material

The Welding Manager shall be responsible to ascertain the Code required examinations, testing and any other operations required to upgrade the materials to the requirements of the Code class for which the material is to be used. The Welding Manager shall be responsible to evaluate and ensure all tests and operations required to upgrade the material are completed and acceptable. The Welding Manager shall be responsible to prepare and certify that the

contents of the Certified Material Test Report are correct and that all tests are in compliance with the requirements of the material specification and the Code and attach to the Material Manufacturer's original Certified Material Test Report. Material identification shall be described in the Certified Material Test Report.

All upgraded material shall be identified and marked, as required, in accordance with the Code. Additional marking and stamping shall be witnessed by QA/QC personnel. Material shall be received and inspected as described for purchased materials in Section 4.0 of this manual. Certified Material Test Report records and laboratory test reports, after completion, shall be sent to QA/QC personnel for review and retention in QA Records. QA/QC personnel shall submit the CMTR's to the ANI for review prior to use of the material.

△4 The Welding Manager who certifies material made from stock produced by a manufacturer whose Quality System Program has not been △4 qualified under NA-3700 may accept the certification of the requirements of the material specification which must be performed △4 during the melting and of the heat analysis from the manufacturer of the stock provided the requirements of (1) through (4) below are △4 met.

△0 (1) (a) The Welding Manager performs or subcontracts all other requirements of the material specification on each piece of stock material. Alternatively, the Welding Manager may perform or subcontract all other requirements of the material specification on each heat and lot of material, provided traceability has been established by this program.

△0 (b) Where Certificates of Compliance are acceptable, testing of each piece is not required.

△0 (2) The Welding Manager performs or subcontracts a product analysis to verify the chemical composition of each piece of stock material furnished by the stock material manufacturer.

△0 (3) The stock material manufacturer does not perform any welding on the material.

△0 (4) These functions shall be performed in accordance with this program.

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4.0 RECEIVING INSPECTION

4.1 This Section sets forth requirements for the receipt of Code items at the construction site. It includes requirements for identification of the source and status of the item and control of its use for construction. The purpose of receipt inspection of items is to assure that only items that comply with the Code will be used or installed in the plant; and to prevent damage, deterioration, or loss to those items.

4.2 It is the responsibility of the Director - QA/QC to ensure items are inspected in accordance with approved procedures and identified to provide the required traceability upon receipt at the construction site.

4.3 The QA/QC Specialist and/or the QA/QC Inspector shall review the Purchase Order, Design Specification, site-generated specification, or other documents as applicable, and inspect the item to ensure special packaging, shipping, and handling instructions are adhered to.

4.4 Where, as evidenced by the receipt of an A-E or NSSS Supplier quality release, or CP&L Release for Shipment (Exhibit 3-7), the item and documentation were inspected and certified to comply with the requirements of the Purchase Order, the item may be accepted by QA/QC personnel and released to construction provided the item has not been damaged or otherwise degraded in shipment. The QA/QC inspector shall ensure that special inspection, protection, and handling instructions from the Supplier are adhered to and shall review the quality release and verify there are no exceptions prior to release to construction. If exceptions are identified, the QA/QC inspector will perform the required inspections.

4.5 Where a quality release or Release for Shipment is not required by the procurement documents, acceptability of an item shall be determined by QA/QC personnel review of the Supplier's certifications, manufacturing/fabrication records, and physical receipt inspection.

4.6 The inspection and examination of an item shall be accomplished in accordance with QA/QC procedures and documented in the QA Receiving

Inspection Report (Exhibit 4-1). Items inspected and accepted by QA/QC personnel shall be tagged/labeled by QA/QC personnel (Exhibit 4-2).

4.7 △3 Nonconformances noted during receipt inspection shall be reported and controlled in accordance with Section 10.0 and the CQA procedure on nonconformance control. The QA/QC inspector shall place the item(s) in a QA/QC Hold or Reject status (Exhibit 4-2), as appropriate.

4.8 A receiving inspection package consisting of receiving inspection reports, Quality Releases and Supplier documentation shall be assembled by the QA/QC receiving inspector. Documents placed in the package shall be identified by marking with the appropriate QA number (purchase order and item number) to establish traceability. The package is then forwarded to the Director - QA/QC or his designee for review.

4.9 The Director - QA/QC or his designee will ensure that Supplier documentation for CP&L site-purchased items is reviewed for

compliance with the Purchase Order requirements. The documentation will be identified to the item by a QA number and transmitted with the Records Review and Acknowledgement form (Exhibit 4-3) to QA Records for filing.

4.10 When an A-E or NSSS Quality Release (QR) or CP&L Release for Shipment is not received for an item, acceptability of the item shall be determined by review of the Supplier's certifications, manufacturing/fabricating records, and a physical receipt inspection performed per Paragraph 4.6 prior to release of the item to construction.

4.11 When conditions warrant, a Conditional Release Request (Exhibit 4-4) may be initiated to permit progression of work involving a nonconforming item awaiting resolution. The Conditional Release Request shall be processed and approved by the Project General Manager/Discipline Manager or General Manager, as applicable, and concurred with by the Director - QA/QC in accordance with CQA procedures and Paragraph 10.3.2(f) of this Manual on nonconformance control.

4.12 The Records QA/QC Specialist or other designated individual shall review and verify the certification and/or manufacturing data packages for A-E purchased items for compliance to procurement documents. The Records QA/QC Specialist or other designated individual is responsible only to ensure completeness of NSSS Supplier packages and that the NSSS QA organization has provided certification of review and compliance to the Purchase Order for their Suppliers' data packages. The Records QA/QC Specialist or other designated individual shall indicate his review and acceptance of the package as required by the CQC procedure on receiving inspection and forward the package to QA Records for retention as QA records.

△3 4.13 When the manufacturing data package is not included with the item shipment, a suspense file for the item, identifying the missing manufacturing data package, will be maintained by the Director - QA/QC. If the data package is not received within the time specified by the purchase order or sixty days the item will be considered nonconforming and processed per Section 10.0.

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5.0 STORAGE AND PROCESS CONTROL

5.1 Storage

The Discipline Managers/Manager Project Administration are responsible for issue of procedures for storage control of Code items to prevent damage, deterioration or loss. When necessary special coverings, special equipment, and special protective environments such as, inert gas atmosphere, specific moisture content levels, and temperature levels shall be specified and provided in storage procedures.

5.1.1 The Director - QA/QC is responsible for surveillance of storage areas containing Code items in accordance with Harris Plant QA/QC Section procedures to assure that items are properly controlled and protected. Nonconformances shall be identified and dispositioned in accordance with Section 10.0.

5.2 Process Control

5.2.1 Process control sheets are utilized to establish measures to assure that processes, including welding and heat treating, are controlled in accordance with the Code and are accomplished by qualified personnel using qualified procedures. Process control sheets contain checklists including the document numbers and revisions to which the process conforms, with space provided for reporting results of completion of specific operations. The checklists include spaces for Director - QA/QC signature and date and for signature, initials or stamp of the ANI for activities which he witnesses. Whenever process control sheets have to be revised, they shall be processed in the same manner as the originals.

△4 5.2.2 The Discipline Managers utilizing specifications and drawings are △4 responsible for initiating HPCS process control sheets. The Manager - Start-Up, utilizing specifications and drawings, initiates the Start-Up process control sheets.

5.2.3 For fabrication and installation of Code items by welding, the Weld Data Report (Exhibit 6-7), the Tank Fabrication Weld Record (Exhibit 6-2) and the Safety-Related Instrumentation Weld Data Report (Exhibit 6-13) are the process control sheets as described in Section 6.0. For pipe spool fabrication/modification, the Pipe Spool Fabrication/Modification Record (Exhibit 5-9) is used to supplement the WDR as a process control sheet. These process control sheets are initiated by HPCS. 5

5.2.3.1 The Pipe Spool Fabrication/Modification Sheet (PSFMS) (Exhibit 5-4) is initiated by the Discipline Engineer to define the specific operations required and processes the PSFMS through Document Control. The Discipline Engineer routes the PSFMS with the Pipe Spool Fabrication/Modification Record (PSFMR) to the Director - QA/QC for review and insertion of hold points. The Director - QA/QC reviews the PSFMS and PSFMR and forwards it to the ANI who establishes his hold points and signs and dates the PSFMR to indicate reviews. 5 5

5.2.3.2 After review and insertion of QA/QC and ANI hold points, the PSFMS and PSFMR are returned by the Director - QA/QC to the Discipline

Engineer for development and issue of the work package per Paragraph 5.2.8. △7

5.2.3.3 After completion of work, the PSFMR shall be submitted by the Discipline Engineer to the Director - QA/QC and ANI for acceptance and sign-off. The QA copy of the PSFMR shall be filed as a permanent QA Record. These records shall not be submitted until final acceptance of any design changes are obtained.

5.2.4 The ASME Section III - Work Traveler - Non-Welding (WTNW) (Exhibit 5-2) and the continuation sheet (Exhibit 5-3) are used for process controls involving repair or rework non-welding activities such as grinding/machining on pressure boundary areas of code items.

5.2.4.1 The WTNW is initiated by the Discipline Engineer or the Discipline Welding Engineer to define the specific operations required and forwards the WTNW and related documents (e.g. FCR, Drawings, etc.) to the Director - QA/QC for review and insertion of hold points. The Director - QA/QC reviews the WTNW and forwards it to the ANI who establishes his hold points and signs and dates the WTNW to indicate review.

5.2.4.2 After review for hold point applicability by QA/QC and ANI, the WTNW is returned by the Director - QA/QC to the Discipline Engineer, who is responsible for transmittal to the craft for initiation of work. △5 △5

5.2.4.3 After completion of work, the WTNW shall be submitted by the responsible Discipline Engineer to the Director - QA/QC and ANI for acceptance review and sign-off.

5.2.5 For HPCS installation of Code items by bolting, the Flanged Connection Inspection Form (FCIF) (Exhibit 5-5) serves as the process control sheet.

5.2.5.1 The FCIF is initiated by the Discipline Engineer to define the specific operations required and forwards the FCIF and related drawings to the Director - QA/QC for review and insertion of hold points. The Director - QA/QC reviews the FCIF and forwards it to the ANI who establishes his hold points and signs and dates the FCIF to indicate review.

5.2.5.2 After review and insertion of QA/QC and ANI hold points, the FCIF is

returned by the Director - QA/QC to the Discipline Engineer for development of the work package per Paragraph 5.2.8. △5

5.2.5.3 After completion of work, the FCIF shall be submitted by the Discipline Engineer to the Director - QA/QC and ANI for acceptance and sign-off.

5.2.6 To support the pressure tests to be performed by Start-Up personnel, Code items installed by bolting may have to be disassembled by Start-Up personnel prior to the pressure tests and then reinstalled by Start-Up personnel after the pressure tests. The Start-Up Flanged Connection Inspection form (SU FCIF) (Exhibit 5-7) serves as the Start-Up process control sheet for this action.

5.2.6.1 The SU FCIF is initiated by the Start-Up Engineer to define the specific operations required and forwards the SU FCIF to the Director - QA/QC for review and insertion of hold points. The Director - QA/QC reviews the SU FCIF and forwards it to the ANI who establishes his hold points and signs and dates the SU FCIF to indicate review. △5

△4 5.2.6.2 After review and insertion of QA/QC and ANI hold points, the SU FCIF is returned by the Director - QA/QC to the Start-Up Engineer for initiation of the work. The Director - QA/QC shall verify correct identification, tagging and storage of disassembled items.

△4 5.2.6.3 After completion of work, the SU FCIF shall be submitted by the Start-Up Engineer to the Director - QA/QC and ANI for acceptance and sign-off. The Director - QA/QC shall verify correct identification of the reinstalled items and document such action on the process control sheet.

△4 5.2.7 The process sheet for pressure tests performed by HPCS is the Pressure Test Record (Exhibit 9-6) and its controls are addressed in Section 9.0. The process sheet for pressure tests performed by Start-Up personnel is the Pressure Test Data and Witness form (Exhibit 9-7), and its controls are addressed in Section 9.0 of this Manual.

△4 5.2.8 For HPCS installed items, the Discipline Engineer has the

responsibility of issuing a work package that is comprised of drawings and process control sheets to craft personnel. The work package defines the scope of the work and provides directions to the craft for accomplishment of the work. From this work package Code items are requisitioned by craft personnel from the warehouse or from the Pipe Fabrication Shop, which is established as a controlled storage area by use of the Construction Material Requisition form (Exhibit 5-1) for installation in the field. QA/QC verifies correct identification of the item and documents such action on the process control sheets. Changes to the process control sheets in the work package will be handled in the same manner as the original.

△6

△6

5.2.9 Instrumentation tubing, prior to bending and installation, shall be qualified according to each material heat lot of tubing, size and type of bending tool. The preparation of the Qualification Record for ASME Code Class Tube Bending (Exhibit 5-10) shall be the responsibility of the Discipline Engineer who shall submit it to the Director - QA/QC and the ANI for establishment of hold points prior to qualification.

△4 5.2.9.1 Installation of instrument tubing shall require that the process control sheet, Heat Number Transfer/Tube Bending Verification Sheet (HNT/TBVS) (Exhibit 5-11), be prepared by the Discipline Engineer. The HNT/TBVS shall be submitted by the Discipline Engineer to the Director - QA/QC and the ANI for verification of operations data, qualification of tubing, and inspection as required. Removal of completed instrument tubing installations for maintenance/testing purposes shall be in accordance with the SHNPP Start-Up Manual.

△4 5.2.9.2 Instrumentation tubing joints with threaded NPT connections shall require a process control sheet, Threaded Connection Inspection Sheet (TCIS) (Exhibit 5-13), to be initiated by the Discipline Engineer. The TCIS shall be submitted to the Director QA/QC and the ANI for review and establishment of hold points prior to issue.

△4 5.2.9.3 Instrumentation tubing joints involving welding shall require a process control sheet, Safety-Related Instrumentation Weld Data Report (SRIWDR) (Exhibit 6-13). The Welding Manager shall be responsible for preparation of the SRIWDR and submittal to the Director - QA/QC and ANI for review and establishment of hold points prior to issue.

△5 5.2.9.4 Instrument Tubing Joints including compression fittings, pipe fittings, instruments, instrument valves, pipe and tubing shall require a Material Verification Sheet (MVS) (Exhibit 5-14) to be initiated by the Discipline Engineer. The MVS shall be submitted to the Director - QA/QC and the ANI for the verification of materials by bill of material/heat-trace number/piece number/serial number.

5.2.10 After completion of operations involving qualification, bending fabrication and required inspection, the completed process control sheets shall be submitted to the Director - QA/QC and ANI for acceptance and sign-off.

5.2.11 Piping joints involving threaded connections shall require a process control record, Threaded Connection Inspection Report (TCIR) (Exhibit 5-12), to be initiated by the Discipline Engineer. The TCIR shall be submitted to the Director - QA/QC and the ANI for review and establishment of hold points prior to initiation of installation. After completion of the operations, the TCIR shall be submitted to the Director - QA/QC and ANI for acceptance and sign-off.

5.2.12 The Director - QA/QC is responsible for notifying the ANI when a mandatory hold point is reached and for providing necessary inspections in accordance with Code requirements. Hold point inspections shall be accepted by signature or initials and date on the process sheet prior to any work proceeding past that point.

5.2.13 △7 Nonconformances will be handled per Section 10.0. The Director - QA/QC will enter the NCR number on the process sheet for inprocess work. The Discipline Manager or the Director - QA/QC may enter the NCR number on process control sheets that are initiated to correct discrepancies identified by a NCR. The Director - QA/QC will verify NCRs are resloved prior to signing the process control sheets for final acceptance.

5.2.14 Identification tags or marks shall be retained on each item. When it is necessary to cut an item, material identification shall be transferred to the affected piece by HPCS prior to cutting. The action shall be verified and documented by QA/QC personnel on a QA/QC Field Report, (Exhibit 5-6) or PSFMR or HNT/TBVS as applicable.

△2 5.2.15 △2 It is the responsibility of the Project General Manager/Discipline Managers/General Manager/Director - QA/QC to assure that Code items are controlled as follows:

a. Permanent labels, markings, or other identification shall be applied and documented to assure proper identification of the item and traceability to its material sources.

b. Required identification and status markings shall be retained with the item until it becomes part of an assembly or installation. The identification of each item shall be included in the record of the assembly or installation.

c. Materials applied in welding of Code items shall be identified and controlled as detailed in Section 6.0. Instructions shall be provided to ensure that specified materials are used. Records shall provide source traceability for welding materials used at the construction site in the fabrication and installation of Code items.

d. Items tagged Hold or Reject shall be withheld from use or installation, except as provided for in Section 10.0.

e. Material protection procedures shall be implemented to prevent damage or deterioration.

5.3 Construction Procedures Development

5.3.1 The Discipline Managers are responsible for assuring that necessary construction procedures are developed; reviewed for adequacy; approved for release; and made available at construction site work areas. The Discipline Managers will provide construction procedures to QA/QC for review. QA/QC comments will be resolved prior to procedure release.

△3 5.3.2 It is the responsibility of the Project General Manager to maintain
△3 a current file of construction procedures.

△1 5.3.3 Construction procedures applied to control work associated with Code items will include the following information, when appropriate:

a. Requirements for indoctrination, training, and skills.

b. Prerequisites for special environments, equipment, tools, and material preparation.

c. Instructions for data collection and reporting.

d. Instructions for documenting work performed, results achieved, and requirements for retention of QA records.

e. Requirements for verification of functional capability and quality by inspection, witnessing, examination, and testing, including designation of mandatory hold points.

f. Quantitative and qualitative criteria for determining that important steps or functions have been satisfactorily accomplished.

5.4 Start-Up Procedure Development

5.4.1 The General Manager is responsible for assuring that Start-Up test procedures are reviewed for adequacy, approved for release, and made

available at the test area. He will provide Start-Up procedures to the Director - QA/QC for review. QA/QC comments will be resolved prior to procedure release. It is the responsiblity of the General Manager to maintain a current file of Start-Up procedures.

5.4.2 Start-Up procedures applied to control work associated with Code items will include the information, as applicable, listed in Paragraph 5.3.3.

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6.0 WELDING CONTROL

6.1 Procurement of Welding Material

6.1.1 Welding material used in the construction or repair of items or materials shall conform to the requirements of the Code as detailed in the Site Specification titled "Purchasing Welding Materials for permanent Plant Construction." Procurement shall be in accordance with this Manual as described in Subsection 3.3, "Site Procurement". The required material tests shall be conducted by the manufacturer for each lot of flux-cored or fabricated electrodes; for each heat of bare electrodes, rod, or wire for use with the site welding processes; and for each heat of consumable insert. Submerged arc welding is not used by CP&L under this program for site fabrication.

6.1.2 Purchase orders for weld materials shall include the welding material classification and shall require that testing and certification be performed to the test requirements per ASME Code NB2400 for each heat and/or lot of material in

accordance with the latest mandatory addenda of the ASME Boiler and Pressure Vessel Code, Section II, Part C; and the 1974 Edition, 1976 Winter Addenda (or later edition) of ASME Section III. Tests, as applicable, shall include tensile tests; impact tests; heat treatment; and chemical analysis with all results to be recorded on the manufacturer's Certified Material Test Report (CMTR). Test coupons, as required by Code, shall be tested in the as-welded and post weld heat treated conditions as described in the Site Specification.

For austenitic stainless steel, the manufacturer shall certify the delta ferrite on the CMTR as determined by the use of an Aminco-Bremmer Magne-Gage or by a chemical constitution diagram in accordance with the ASME Section III Code. The delta ferrite and the method used to determine the delta ferrite shall be stated on the CMTR, and shall be a minimum of 5 to a maximum of 20.

△2 6.1.3 Welding materials received from a manufacturer/supplier without proper certification or complete documentation records, as required by the Code, shall be tagged and placed on Hold Status in a

controlled segregated area until the documentation has been received or corrected.

6.2 Welding Procedure Qualification

6.2.1 The Welding Manager is responsible for preparation, qualification, and approval of CP&L welding procedures used for nuclear power plant Code work. Welding procedures shall be qualified in accordance with ASME Code, Section IX, and shall meet the requirements of the ASME Code, Section III. The Director - QA/QC shall be notified of the procedure test schedule prior to the set-up and welding of the test assembly to allow QA/QC monitoring and documenting of the activity on a QA Surveillance report or checklist.

6.2.2 Welding Procedure Specification form (Exhibit 6-3) and the Procedure Qualification Record (Exhibit 6-4) shall be used to record actual welding parameters, test results and data as required by Code and shall be certified by the Welding Manager or his authorized representative. The Director - QA/QC shall sign these records after review against the applicable Code requirements. These records are

submitted to the ANI for review through Document Control by the Welding Manager. The ANI may require requalification of weld procedures if he deems it necessary.

6.3 Qualification of Welders and Welding Operators

6.3.1 The Welding Manager is responsible for testing, qualification, and approval of the qualification for welders and welding operators qualified to perform welding on nuclear power plant Code items. Prior to performing any site welding, welders and welding operators will perform a welder qualification test(s) in accordance with ASME Section IX and approved Welding Procedure Specifications (W.P.S.). These tests will be performed in the Weld Test Shop under the responsibility of the Welding Manager. Each welder and welding operator successfully passing test requirements on the qualification test coupons will be certified by the Welding Manager on a Performance Qualification Test Record (Exhibit 6-6). This test record is submitted to Document Control. In addition, the welder qualification status will be listed in a Welder Qualification Status Report which is also transmitted to Document Control for issuance to

the field for use by craft supervisors in the selecting of welders for welding assignments. The Welding Manager is responsible for

△3 compiling, each month, the current Welder Qualification Status Report of each welder and/or welding operator. The Status Report shall contain each welder's qualifications by WPS procedure number and the limitations according to welding process, diameter, thickness and position. Also, the report shall list the date which the three month welder qualification will expire if no welding has occurred within a three month period. The Welder Qualification Status Report shall also specify when the welder is extended an additional three months provided the welder has welded to some other welding process in the previous three month period. Copies shall be furnished by site Document Control to site welding supervision and the Director - QA/QC as required. Copies of the Welder Qualification Status Report and of the welder and/or welding operator Performance Qualification Test Record (Exhibit 6-6) shall be made available to the ANI through the Director - QA/QC.

6.3.2 Welders, including tack welders, and welding operators shall be qualified and certified by the Welding Manager or his designee in accordance with the HPCS procedure on qualifying welders and welding

operators in accordance with the ASME Code, Section III and Section IX.

6.3.3 Each welder and welding operator who has been certified shall be assigned a welder symbol by the Welding Manager or his designee in accordance with HPCS procedure on qualifying welders and welding operators to identify the welds made by the welder. A log shall be maintained for welding symbols by the Discipline Welding Engineer. Upon termination, or loss of the symbol stamp the symbol stamp will not be reassigned to another welder for a period of one year.

6.3.4 Renewal of qualification of a welder or welding operator performanc qualification is required:

a. When a welder or welding operator has not used the specific process, i.e., metal-arc, gas, etc., for a period of 3 months or more; except when employed on some other welding process, the period may be extended to 6 months by the Welding Manager or

b. When there is a specific reason to question his ability to make welds that meet the specification.

Renewal of qualification for a specific welding process under (a) above may be made in only a single test joint (plate or pipe) on any thickness, position, or material to reestablish the welder's or welding operator's qualification for any thickness, position, or material for which he was previously qualified.

△2 Only one extension of the welder's qualification can be granted based on the welding to another welding process before requalification is required.

6.3.5 If there is a specific reason to question the ability of the welder or welding operator to make welds to meet the requirements of the specification and Code, the Welding Manager, Director - QA/QC, or the ANI may require requalification before the welder or welding operator is permitted to continue on Code work.

6.4 Construction Welding

6.4.1 The Welding Manager shall be responsible for the selection of the welding procedure(s) to be used by the welders and welding operators

by preparation of the pipe Weld Data Report (WDR) (Exhibit 6-7) or the Tank Fabrication Weld Record (TFWR) (Exhibit 6-2) or the Safety-Related Instrumentation Weld Data Report (SRIWDR) (Exhibit 6-13). Preparation is based on design drawings, specifications and site procedures. The Director - QA/QC reviews the WDR/TFWR/SRIWDR for essential requirements and mandatory hold points. The Director - QA/QC reviews the WDR/TFWR/SRIWDR and forwards it to the ANI who establishes his hold points and signs and dates the WDR/TFWR/SRIWDR to indicate review. The WDR/TFWR/SRIWDR is then returned by the Director - QA/QC to the Discipline Engineer, who is responsible for transmittal to the craft supervisor, along with the applicable drawing, for initiation of the welding activity. After completion of the work the WDR/TFWR/SRIWDR is submitted to the Director - QA/QC and the ANI for acceptance and sign-off.

△4

6.4.2 Welding shall be performed by CP&L or contracted welders or welding operators. All welding personnel shall be qualified by CP&L to CP&L Welding Procedures Specifications of which preparation is the responsibility of the Welding Manager. All performance qualifications shall be performed under his supervision and all

construction welding shall be accomplished to the qualified procedures. (2) The Welding Manager shall have direct contractual control of the welding operation including authority to assign or remove welders and welding operators at his discretion.

6.4.3 Prior to assigning a welder the craft foreman/supervisor reviews the WDR and ascertains the required WPS, material, thickness, and diameter. Based on this review, a welder or welding operator is selected as listed in the Welder Qualification Status Report.

6.4.4 The craft foreman/supervisor shall prepare the Welding Material Requisition (WMR) (Exhibit 6-1) for welding materials required for Code work in accordance with the HPCS procedure for site welding material control. The requisition shall contain the type of material, welder to whom material is to be issued, welding procedure specification, and location to be used. (2) The Welding Manager is responsible for issuing the controlled welding material. The weld material issue room attendant, at time of issue, shall enter the heat number of the welding material (or other identifying manufacturers number which is traceable to the material

certification), quantity, date, time, and his signature on the WMR and retain a copy for his records. A copy of the WMR shall be maintained by the welder at his work station until he has used all materials issued or returned with the unused portion to the weld material issue room. △3 △3

6.4.5 Welding materials will be issued to a welder or welding operator for a shift. All coated electrodes shall be issued in portable heated ovens. Unused welding material shall be turned in to the welding material issue room at the end of the shift; however, spools of bare wire or fluxcore materials may remain with a welding machine until the weld(s) requiring the same grade and type of material are completed or all the material is used.

6.4.6 After opening sealed containers, coated electrodes shall be stored by the weld material issue room attendant in heated ovens in accordance with welding material Manufacturers' recommendations and the Code as detailed by the HPCS procedure on welding material

control. Surveillance of ovens used for storage of coated electrodes will be conducted and documented on QA Surveillance reports by QA/QC inspectors in accordance with Harris Plant QA/QC Section procedures. Materials returned after issue shall be processed in accordance with material Manufacturers' recommendations and the Code as detailed by the HPCS procedure on welding material control.

6.4.7 The Director - QA/QC is responsible for notifying the ANI when a mandatory holdpoint is reached and for providing necessary inspections in accordance with Code requirements. Holdpoint inspections shall be accepted by the QA/QC welding inspector and ANI by signature or initials and date on the original WDR or Tank Fabrication Weld Record or the Safety-Related Instrumentation Weld Data Report prior to any work proceeding past that point.

6.4.8 The visual inspection of weldpreps, fitup, tack welds, root pass, cleanliness control, and final inspection will be performed by QA/QC inspectors as required by the Code and CQC procedures. If the QA/QC welding inspector observes an unacceptable in process condition requiring rework, he shall advise the responsible craft foreman/supervisor. It shall be the craft foreman/supervisor's responsibility to effect the necessary repair or rework.

6.4.9 The welder identification symbol shall be applied by the welder, next to the weld joint, in accordance with HPCS procedures.

6.5 Repairs to Welds and Base Material

6.5.1 Unacceptable defects identified on the applicable inspection report(s) (Exhibits 6-8 through 6-11) shall be repaired in accordance with the Code as detailed by HPCS procedure on repair of base materials and weldments. The Director - QA/QC is responsible for notifying the ANI of planned repairs to Code work for his concurrence prior to initiation of such repairs. The ANI may establish holdpoints as deemed necessary. △3 △3

6.5.2 The QA/QC welding inspector shall furnish information on the location of the defect requiring removal and repair on or adjacent to the weld and notify the Discipline Welding Engineer of the need to repair.

Prior to the weld repair, the Discipline Welding Engineer is responsible to prepare a Repair Weld Data Report (RWDR) (Exhibit 6-12). The RWDR shall include instructions on the required preparation of the repair area, WPS, welding material, and inspection requirements. The RWDR will be submitted to the Director - QA/QC for review and establishing of hold points. The Director - QA/QC reviews the RWDR and forwards it to the ANI who establishes his hold points and signs and dates the RWDR to indicate review. The RWDR is then returned by the Director - QA/QC to the Discipline Engineer, who is responsible for transmittal to the Craft Supervisor, for initiation of the repair activity. △4

6.5.3 The QA/QC welding inspector will be responsible for documentation of the pipe/storage tank weld repairs on a Repair Weld Data Report (Exhibit 6-12). For Code Classes 1, 2, and 3 base metal repairs, the QA/QC welding inspector will prepare a sketch of the repaired area, as required by the Code for QA records, showing location and size of the prepared cavity. The welding material identifications,

the welding procedure identification, heat treatment records and reports of examination results shall be on the WDR/RWDR or shall be included in the WDR/RWDR package.

6.5.4 After the repair is completed, the repaired area shall be examined by the same method used to detect the original defect and by any additional NDE required by the Code.

6.6 Control of Welding Equipment

6.6.1 △3 The welding equipment shall be given an operational check as required by the Welding Manager at intervals not to exceed three months in accordance with HPCS procedures. This operation check shall be performed with instruments calibrated at regular intervals and used in accordance with Section 8.0 of this Manual. Operation Check stickers are applied to the machines by the electrical craft personnel. Code work welding will be performed with welding equipment as detailed in HPCS procedure on welding equipment control.

6.6.2 When a machine is found to be operating outside of the tolerance ranges as specified by procedure during operation check or QA monitoring, the Welding Manager is notified by receipt of the welding machine maintenance report or a QA nonconformance report. If the settings for amperage or voltage are out of tolerance, it is the responsibility of the Discipline Welding Engineer to determine if the condition was sufficient to affect quality, then investigate the location and use of the machine since its last operational check. Corrective measures shall be initiated by the Discipline Welding Engineer as deemed appropriate and accepted by QA and the ANI when a nonconformance is reported.

△3 6.7 Additional Process Control Forms

△3 The Repair Weld Data Report Continuation Sheet (Exhibit 6-5) may be
△3 used when space is needed for additional hold points or remarks.

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7.0 HEAT TREATING

7.1 Description of System

Heat treating shall be performed in accordance with approved written procedures conforming to the Code and approved as described in HPCS procedures on heat treatment. The Welding Manager is responsible for preparation and approval of site procedures for heat treatment of Code items.

7.2 Construction Heat Treatment

7.2.1 The Welding Manager is responsible for reviewing design specifications, drawings and Code requirements and specifying heat treatment requirements in site procedures, WDR's, TFWR's and RWDR's. Manufacturers' records for items which require site heat treatment during fabrication, installation or repair shall be reviewed by the Discipline Welding Engineer or his designee to determine if prior heat treatment has been performed. The cumulative time at temperature for items will be considered prior to

assigning a heat treatment procedure to ensure that total time at temperature or temperatures during postweld heat treatment of the material does not exceed the total accumulative time allowed by the Code.

△3

7.3 Calibration

Heat treating equipment, such as thermocouples, gauges, and recorders, shall be calibrated at regular intervals in accordance with Code requirements as detailed in HPCS procedures on heat treatment and Section 8.0 of this Manual.

7.4 Verification of Metal Temperature

7.4.1 Thermocouples must be attached to the item undergoing heat treatment at locations specified in HPCS procedures on heat treatment.

7.4.2 The item undergoing heat treatment will have heating rates, holding time, and rate of cool down as required by Code and as described in the site heat treatment procedures.

7.5 Training

△2 7.5.1 The training of personnel performing heat treatment, indoctrination and qualification in heat treatment techniques and applicable HPCS procedures for Code work is the responsibility of the Welding Manager. Training shall be documented in accordance with Section 1.0 of this Manual.

△2 7.5.2 Records of qualifications will be maintained by the Welding Manager or his designee as part of personnel qualification records.

7.6 Construction Site Inspection

The Director - QA/QC shall be responsible for the review of heat treatment charts, verification of compliance with applicable procedures and Code requirements, and monitoring and inspection of

heat treatment activities in accordance with CQC procedures on heat treatment control. He shall maintain records pertaining to heat treatment of Code items.

7.7 Records

7.7.1 Each heat treatment shall be documented by the operator. The record shall indicate time, temperature and date. The heat treatment record shall identify the heat treatment method used, the recorder number, and item or joint identification; and other pertinent data essential for traceability to the item shall be entered by the operator as required by HPCS procedures on heat treatment. △2

7.7.2 The operator shall place his signature or initials and date on heat treatment records which shall contain the following minimum data:

a. Heat treatment procedure and revision

b. Time (a.m. and p.m.) and date

c. Item and material specification

d. Holding temperature

e. Holding time (hours)

f. Rate of heating and cooling as required

g. Operator name

△2 7.7.3 Records shall be forwarded by the Welding Manager to the Director - QA/QC or his designee for review and acceptance prior to transfer to the QA records vault. Records will be available through the Director - QA/QC to the ANI for review and acceptance.

7.8 Bending and Forming

7.8.1 No bending and forming of Class 1 materials will be performed at the construction site.

7.8.2 Bending of Code Class 2 and 3 instrument tubing shall be performed at the construction site by CP&L in accordance with the ASME Code. Section 2.0 describes the controls for procedure preparation and approval and Section 5.0 describes the process control sheets including QC/ANI interface as related to the instrument tubing bending qualification and installation operations.

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8.0 CONTROL OF EQUIPMENT, TOOLS, GAUGES, AND INSTRUMENTS

8.1 Calibration

8.1.1 Equipment, tools, gauges, and instruments specified for calibration control shall be identified, stored, calibrated, and maintained in accordance with HPCS and CQC procedures for tool, gauge, and instrument calibration control. For simplicity of this Section, equipment, tools, gauges, and instruments hereafter will be addressed as instruments. Calibrations and adjustments shall be accomplished at prescribed intervals and against certified standards having known valid relationships to national standards. If no national standard exists, the equipment manufacturer's recommended standard shall be used. Calibration and adjustment records shall be retained. Recalibration shall be performed when the accuracy of the instrument is suspect.

8.1.1.1 Traceability shall be maintained between the instrument and the equipment or item tested. The instrument identification number shall be recorded on the Controlled Tool Log (Exhibit 8-5) and on

the process control documents. In the event that an instrument is found to be out of calibration, the calibration shop shall issue an Out of Calibration Notification form (Exhibit 8-7) to the Discipline Engineer/QA/QC Specialist of the area to which the instrument has been assigned. The Discipline Engineer/QA/QC Specialist through review of records shall identify and document on the Out of Calibration Corrective Action form (Exhibit 8-6) the activities and items for which the tool was used since the last valid calibration of the tool. A program will be implemented by the Discipline Manager to evaluate the suspect inspections, examinations and test results. The results of this evaluation will be documented by the Discipline Manager on the Out of Calibration Corrective Action form and shall be transmitted to the Director - QA/QC. Nonconformances, as necessary, will be processed by the Director - QA/QC per Section 10.

△3 8.1.1.2 An instrument frequently found out of calibration shall be recalibrated on a shorter interval, or the instruments repaired or replaced. Calibration status and the next prescribed calibration date shall be shown on or with the instrument, except for pressure

gauges which are calibrated before use and upon being returned to the calibration shop, the period of which shall not exceed two weeks.

(5) 8.1.2 The Discipline Manager shall ensure proper implementation of construction calibration procedures for instruments under this program used for the construction and start-up of nuclear power plants. These calibration procedures as a minimum will identify the method of calibration, accuracy, frequency of calibration and allowable tolerances.

8.1.3 The Director - QA/QC shall perform surveillance of instrument calibration and control activities in accordance with HPCS and CQC procedures on instrument calibration and control. Surveillances shall be performed in accordance with Harris Plant QA/QC procedures and documented on a QA Surveillance report (Exhibit 5-8) and shall include checks of instruments in use for current calibration status.

8.2 Records and Maintenance

8.2.1 The Master Controlled Tool List (Exhibit 8-1) shall be maintained by the Discipline Manager for instruments within the scope of this Section. Maintenance shall include updating concurrently with addition of new instruments to the inventory. (2)

8.2.2 A certification record form, Controlled Tool Recalibration Record (Exhibit 8-2), shall be maintained by the Discipline Manager to provide "date calibrated" and "due date" information. (2) Records shall be maintained by the Discipline Manager for calibration of controlled instruments on a Calibration Data Form (Exhibit 8-3). (2) These records shall contain, or have attached, pertinent data recorded in the calibration process.

8.2.3 A Calibration Sticker (Exhibit 8-4) shall be attached to each instrument under the calibration program except where size, shape, or condition prohibits. In the case where a sticker cannot be attached to the instrument, the sticker will be kept in the calibration shop and will be traceable to the unique identification marked on the instrument.

8.2.4 Care and storage instructions for such instruments shall be detailed in HPCS procedure on instrumentation calibration and control.

8.2.5 Pressure gauges used for hydrostatic testing shall be calibrated before and after each test or series of tests. A series of tests is that group of tests using the same pressure test gauge or gauges which is conducted within a period not exceeding two weeks.

8.2.6 Charpy impact equipment will be calibrated once each 12 months and temperature devices used for impact testing will be calibrated every 3 months.

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9.0 INSPECTION, TESTS, AND NONDESTRUCTIVE EXAMINATION

9.1 Training, Qualification, and Certification

9.1.1 The Manager - QA/QC Harris Plant has the responsibility for staffing the QA/QC Section with personnel meeting appropriate Code qualification requirements. QA/QC Supervisors shall have the responsibility for personnel indoctrination and site training on related activities in their assigned areas of responsibility.

9.1.2 QA/QC inspection personnel shall be trained and qualified in accordance with Section 1.0 and CQA procedure on personnel training and qualification, except for NDE which is described in Subsection 9.3. The job performance of QA/QC inspection personnel shall be evaluated at intervals not to exceed two years.

9.1.3 QA/QC inspection personnel shall meet the physical requirements as set forth in CQA procedure on personnel training and qualification.

△3 △3 QA/QC inspection personnel records shall be maintained by the Director - QA/QC.

9.2 Inspections and Tests

9.2.1 The Manager - QA/QC Harris Plant, the Project General Managers/Discipline Managers, and the General Manager are responsible in their respective areas for determining and implementing the appropriate training and programs needed to qualify personnel for performing inspection and tests.

9.2.2 QA/QC inspection and test personnel shall be trained to perform appropriate inspections and tests to procedures approved by the Manager - QA/QC Harris Plant which are applicable to their areas of responsibility. They shall be trained in the proper preparation and control of inspection and test records.

9.2.3 Inspection and test personnel shall perform inspection and tests in accordance with approved procedures as specified on appropriate

process sheets. Results of the inspections and tests shall be documented on the report forms specified (in the applicable inspection and test procedure and in the process control sheets).

9.2.4 At the conclusion of the inspection or test, the status of the item will be indicated by Status Tags (Exhibit 4-2) or labels attached to the item or indicated on process control sheets or test records traceable to the item.

9.2.5 The ANI shall be notified by the Director - QA/QC when ANI holdpoints for inspection are reached.

9.2.6 Work will not progress past established QA/QC inspection and ANI inspection holdpoints until the holdpoint is accepted and initialed or signed off and dated by the QA/QC inspector and/or ANI, as applicable.

9.2.7 Work not in conformance with the Code shall be stopped and action initiated as described in Section 10.0.

9.3 Nondestructive Examination (NDE)

9.3.1 Personnel performing NDE shall be indoctrinated, trained, qualified, and certified in accordance with SNT-TC-1A (1975), the Code, and QA/QC procedures. The Principal QA/QC Specialist - NDE shall ensure that only qualified personnel are assigned to perform NDE. Procedures (written practice) for NDE training, qualification, and certification shall be prepared by a Level III and be approved by the Manager - QA/QC Harris Plant and shall address, as a minimum, the following:

a. Scope.

b. Nondestructive test method.

c. Levels of qualification.

d. Interrupted Service.

e. Education, training, and experience.

f. Training program.

g. Examinations.

h. Certifications and Recertification.

i. Terminations.

j. Physical qualification.

9.3.2 Levels I and II personnel shall be qualified and certified by examination which will be administered by Level III personnel. Level III personnel will be qualified by examination administered by a Level III examiner and certified by the Manager - QA/QC Harris Plant. △2

9.3.3 In the event that no NDE Level III personnel exist within the CP&L organization, the services of an outside agency shall be contracted.

9.3.4 Training, qualification, and certification of Levels I, II, and III site personnel shall be in accordance with NDEP procedure on training, qualification, and certification of nondestructive examination personnel. These activities shall be administered to those NDE personnel whose specific jobs require appropriate knowledge of the technical principles for NDE to which they are to perform, monitor, or evaluate. Certification of NDE personnel shall be documented on a Certificate of NDE Personnel Qualification form (Exhibit 9-4). A separate certification form shall be prepared for each NDE method and level for which an individual is qualified.

9.3.5 The maintenance of records for site NDE certified personnel shall be the responsibility of the Principal QA/QC Specialist - NDE.

9.3.6 Certified NDE personnel shall be recertified at least once every three years for each NDE discipline certified.

9.3.7 NDE may be performed by personnel qualified to Level I, but interpretation and evaluation of the results of NDE shall be performed by personnel qualified to Level II or III.

9.3.8 Service organizations for performing NDE shall not be employed.

9.3.9 NDE requests shall be initiated by QA/QC inspectors or responsible construction personnel, as applicable. Nondestructive Examination Request (Exhibit 9-5) shall be used. Reports for magnetic particle, liquid penetrant, ultrasonic, radiographic and leak test examinations (Exhibits 6-8, 6-9, 6-10, 6-11 and 6-14) will be prepared by the examiner and shall show the examination procedure, revision number, type of equipment used, the examiner name, signature, date, level of qualification, and results of the examination.

9.4 Inspection and Test Equipment

Prior to performing inspection and test activities, QA/QC inspection personnel are responsible for ensuring that inspection and test equipment is calibrated and has current calibration labels which are displayed in accordance with Section 8.0.

9.5 Inspection and Test Records

9.5.1 QA/QC inspection personnel shall ascertain that required records are prepared and maintained in accordance with this Section and Section 11.0. For nonconforming materials or items identified, appropriate action as required by Section 10.0 shall be initiated.

9.5.2 The Director - QA/QC and/or Principal QA/QC Specialist - NDE, as applicable, shall have the responsibility for releasing completed inspection, test witness, and QA/QC reports for retention as QA records after correctness and completeness are ascertained.

9.5.3 Records of inspections, tests, and examinations involving mandatory holdpoints by the ANI are not considered complete until the ANI has completed his inspection and signed and dated the process control sheets.

9.5.4 The Principal NDE Specialist is responsible for maintaining records of NDE personnel training, examination, and certification in accordance with the Code and Section 11.0 of this Manual.

9.5.5 Records shall be available for the ANI review through the Principal QA/QC Specialist - NDE.

9.5.6 The NDE Level III shall assure that NDE procedure capability is proven by actual demonstration to the satisfaction of the ANI prior to use of the procedure. The documentation, signed by the ANI, of this demonstration shall be retained in accordance with Section 11.0 of this Manual.

9.5.7 The ANI may require requalification of NDE procedures or personnel as he deems necessary.

9.5.8 The Discipline Managers are responsible for developing a pressure testing procedure, for those pressure tests performed by HPCS, to meet specification requirements for test parameters and controls. QA/QC inspection personnel will notify the ANI of all pressure tests so that he may witness as required by the Code. The QA/QC inspector will inspect all joints and areas of high stress during the test. Pressure tests shall be documented on the Pressure Test Record (Exhibit 9-6).

Prior to pressure testing, the Pressure Test Record shall be initiated by the Discipline Engineer and forwarded to the Director - QA/QC for review and assignment of hold points. The Director - QA/QC reviews the pressure test record and forwards it to the ANI who establishes his hold points and signs and dates the pressure test record to indicate reviews. Upon completion of the pressure test, the Pressure Test Record (Exhibit 9-6) is signed by the QA/QC inspector and the ANI to indicate acceptance of the test.

9.5.9 The Manager - Start-Up is responsible for developing pressure test procedures, for those pressure tests performed by Start-Up, to meet specification requirements for test parameters and controls. QA/QC inspection personnel will notify the ANI of all pressure tests so that he may witness as required by the Code. The QA/QC inspector will inspect all joints and areas of high stress during the test. Pressure tests shall be documented on the Pressure Test Data and Witness form (PTD&W) (Exhibit 9-7).

Prior to pressure testing, the PTD&W form shall be initiated by the Start-Up Engineer and forwarded to the Director - QA/QC for review and assignment of hold points. The Director - QA/QC reviews the PTD&W form and forwards it to the ANI who establishes his hold points and signs and dates the PTD&W form to indicate review. Upon completion of the pressure test, the PTD&W form (Exhibit 9-7) is signed by the QA/QC inspector and the ANI to indicate acceptance of the pressure test.

9.6 Code Data Report and Nameplate Stamping

9.6.1 The Director - QA/QC is responsible for the Data Reports. Data Reports shall be signed by the Director - QA/QC or the Superintendent - QC to certify compliance with the requirements of the Code. Certification will be based on verification of completeness of records addressed in Section 11. △2

9.6.2 Data Reports shall be submitted to the ANI by the Director - QA/QC for review and certify compliance with the requirements of the ASME Code, Section III. If required by the enforcement authorities having jurisdiction at the construction site, a National Board registration number will be filed with the National Board. One original and one legible copy of the Data Report shall be filed with the National Board.

9.6.3 The Director - QA/QC is responsible to assure that before a component or appurtenance is placed in service, the certified Data Report shall be filed with the enforcement authorities having jurisdiction at the construction site.

9.6.4 National Board Serial Numbers shall be controlled, issued sequentially, and stamped on the nameplate by the Director - QA/QC or his designee. He shall maintain a record of issuance using a National Board Number Log giving the following information: National Board Number, Type of Item, Serial number (if different from the National Board Number), date stamped and date registered. The Director - QA/QC is responsible to ensure the N symbol stamps

△2 are controlled by procedure and applied to the items or nameplates attached to the items fabricated at the construction site when the following conditions are met:

a. CP&L holds a valid Certificate of Authorization for the fabrication or installation.

b. The required Data Reports have been completed and certified.

c. The ANI has authorized application of the stamp.

10.0 NONCONFORMANCE AND CORRECTIVE ACTION

10.1 Scope

This Section sets forth requirements for identification, reporting, segregation, investigation, and obtaining resolution to nonconformances related to Code requirements.

Deficiencies in required documentation and violations of construction control and Start-up procedures shall be reported as nonconformances. Nonconformance control shall be maintained to prevent inadvertent use or installation that could degrade the quality of the nuclear plant.

The Manager - QA/QC Harris Plant is responsible for the implementation of the nonconformance control and corrective action program. He has the authority and responsibility to stop work related to a nonconforming item, deficiency, or unsatisfactory condition until corrective action can be accomplished.

10.2 Reporting Nonconformances

10.2.1 When a nonconformance is identified at the construction site, the following action in accordance with the CQA procedure on nonconformance control shall be taken to prevent inadvertent use of the item.

a. The QA/QC Specialist responsible for the Code item will be notified by the originator using a Nonconformance Report (NCR) (Exhibit 10-1). The originator will obtain the NCR number from the Director - QA/QC or his designee (who maintains the NCR Log) and enter the NCR number on the appropriate status tags. The NCR will be referenced on the Receiving Inspection Report, WDR or other appropriate process control documents.

b. The item will be tagged/labeled (Exhibit 4-2) or identified by marking to identify its unaccepted status. For nonconformances identified during the installation process, the QA/QC Inspector shall indicate applicable "Limits of Hold" (e.g. may be installed, etc.) on the NCR Form and QA Hold Tags (when used). Site personnel shall comply with the limits in further processing the nonconforming item. Items under warehouse

control shall require a Conditional Release (Exhibit 4-4) to allow issuance and/or installation of the item. The conditional release shall be entered in the Conditional Release Log.

c. The item will be segregated, when practical. If size or bulk make this impractical, the location where the nonconforming item is stored may be designated a Hold area and adequately identified as such.

d. Corrective action and disposition of the nonconformance will be reported by the Discipline Engineer on the NCR and a Corrective Action Report (CAR) (Exhibit 10-2), and, if necessary, attachments thereto.

10.2.2 △5 The status of nonconforming items shall be clearly shown by tags, labels, markings or indicating status on process control documents. This status identification shall be retained with the item or in records traceable to the item during all phases of disposition and correction.

10.2.3 The nonconforming item and NCR shall be reviewed by the QA/QC Specialist. If the nonconformance is confirmed, disposition and corrective action shall be determined and assigned as outlined herein. If the condition is determined not to be a nonconformance, the QA/QC Specialist will cancel the NCR by noting the basis for the cancellation in the "Review Comments" section of the NCR. The cancelled NCR shall be so marked, and retained on file in QA Records. The QA/QC Specialist will have the QA Status Tags/Labels changed, or removed. The cancelled NCR shall be noted in the NCR Log.

10.2.4 Contractor audit nonconformances and corrective action will be handled in accordance with Section 13.0 of this Manual.

10.2.5 When additional space is needed to write the description of a Nonconforming condition, Exhibit 10-3, QA/QC Report Continuation Sheet, may be used.

10.3 Corrective Action

10.3.1 Disposition and corrective action taken by the Supplier or CP&L, as applicable, shall be determined and recorded by the applicable Discipline Engineer on the NCR and CAR. The Director - QA/QC shall indicate concurrence with the final disposition, cause, and preventive measures by signing and dating the "Final Review By" sections of the NCR and CAR. Corrective action will be documented on the CAR form and will include identification and documentation of the cause and action taken to preclude recurrence of the condition. Verification of disposition and corrective action, as specified on the NCR and CAR form shall be performed by the QA/QC inspector and documented by signing the NCR and CAR prior to closing. △4

10.3.2 Disposition options are:

a. Reject the nonconforming item and obtain an acceptable replacement; i.e.,

1) Return the item to the Supplier for replacement, or

2) Scrap the item at the site and obtain a new item.

b. Rework or repair the item at the site, or return it to the Supplier for rework or repair in accordance with approved procedures/instructions.

c. Accept the item for "use as is" (must meet the requirements of the Code).

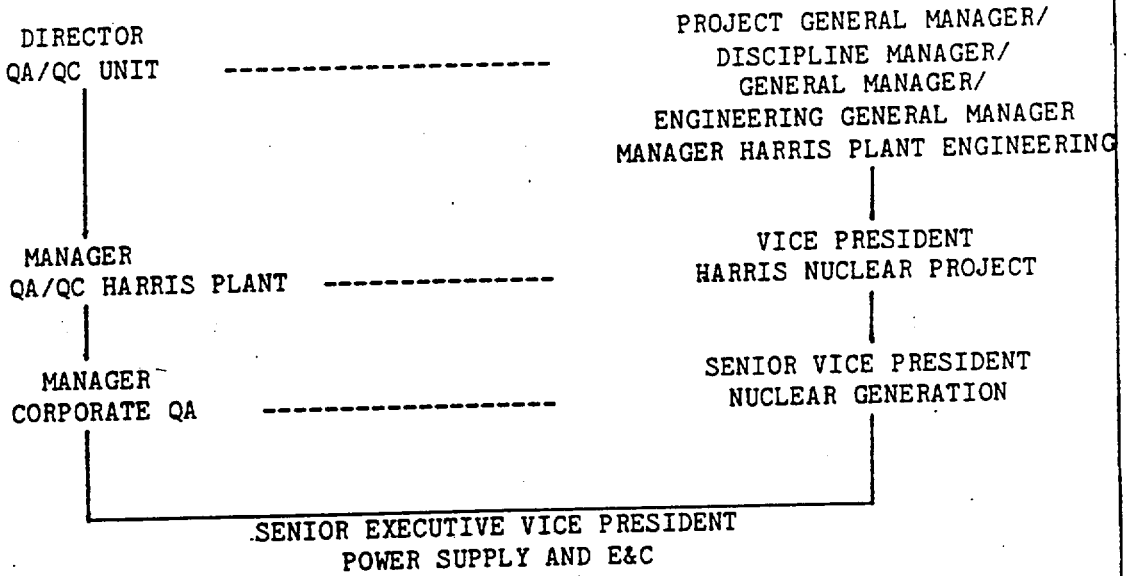
d. Disposition for use in noncode application.

e. Accept the conforming unit(s) in a multiple-unit lot, and arrange for the Supplier or site personnel to initiate disposition for the remainder of the nonconforming lot.

f. Issue a Conditional Release Request (Exhibit 4-4) in accordance with CQA procedure to release the nonconforming item for specified, limited use or installation pending final disposition. This is a temporary disposition and does not resolve the nonconformance. The item is identified with a conditional release tag affixed by the QA/QC Inspector. The Conditional Release and NCR's shall be resolved prior to final testing. As an alternate to processing a Conditional Release, site personnel may comply with the "Limits of Hold" listed on the NCR Form and on the QA Hold Tags (Exhibit 4-2).

△6 10.3.3 In the event the Project General Manager/Discipline Managers/General Manager/Engineering General Manager/Manager Harris Plant Engineering and Director - QA/QC cannot agree on the corrective action or disposition, the chart for escalation below will be used until a resolution is reached.

△6



△6

------- Lines of Communication
_____ Escalation Chain

△6 10.3.4 The Project General Manager/Discipline Managers, for HPCS activities, or the General Manager, for Start-Up activities or the

△6 Engineering General Manager for HPES activities is responsible for final disposition of nonconforming items. Scrapped items or materials shall be identified by a Hold Tag (Exhibit 4-2), promptly removed from work areas and controlled to prevent inadvertent use.

10.3.5 Rework and repair shall be controlled and documented as set forth in Sections 5.0 and 6.0 and CQA procedures.

10.3.6 If a nonconformance is detected at a Supplier's facility by CP&L Vendor Surveillance personnel, the Supplier shall be required to submit a Vendor Material Nonconformance Report (Exhibit 10-4) or equivalent to the Manager - QA Services. This report shall include sufficient detail to define the nature of the nonconformance, stage of manufacture, disposition and corrective action to prevent recurrence, unless it is a normal inherent production defect such as repairable surface inperfections.

10.3.7 Supplier's disposition and corrective action taken to resolve the nonconformance will be reviewed and evaluated by a Vendor Surveillance Specialist. Acceptance will be documented on the

nonconformance report. The nonconformance report shall be included in the Supplier's documentation package.

10.4 Review of Nonconformance Report

10.4.1 Corrected items or documents shall be reinspected by a QA/QC inspector. Acceptance will be recorded in the applicable NCR and CAR as detailed in CQA procedure for nonconformance control and is the responsibility of the Director - QA/QC.

10.4.2 Records regarding the nonconformance, including documentation of the cause, disposition, and corrective action, shall be reviewed for completeness and compliance with the specification and the Code by the Director - QA/QC. If the documentation is accepted, the nonconformance report and CAR shall be closed out and the appropriate documents transferred to the QA records vault. The QA/QC inspector will remove the Hold tag and release the item for further processing.

10.4.3 The Manager - Corporate Quality Assurance is responsible for ensuring that NCR's are reviewed on a quarterly basis and a trend

report generated. Trend reports shall be distributed to appropriate department/section managers for review. Measures shall be taken to determine and correct the cause to preclude repetition.

10.4.4 The ANI shall be apprised by the Director - QA/QC of nonconforming items which pertain to the Code. He shall have access to review and comment on the disposition and corrective action performed. Concurrence for Code items is indicated by ANI signature and date on the CAR (Exhibit 10-2) prior to closing the NCR.

10.5 Receiving Inspection Software Deficiencies

10.5.1 Documentation deficiencies identified by the QA/QC Inspector at Receipt Inspection that can be resolved by routine measures (e.g. missing documents, illegible markings, non-reproducable documents, unsigned documents) will be reported to the QA/QC Specialist on a Receiving Inspection Report (RIR) (Exhibit 10-5). The QA/QC Inspector will obtain the RIR number from the Director - QA/QC, or his designee (who maintains the RIR Log), and enter the RIR number on the appropriate status tags. Disposition of the deficiency will

(0) be reported by the Discipline Engineer on the RIR form and, if necessary, attachments thereto. Disposition will be verified by the QA/QC Inspector and reviewed for acceptability by the QA/QC Specialist for closure. If it is determined that the RIR can not be resolved by routine measures a NCR will be written.

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11.0 RECORD RETENTION

11.1 Responsibility

11.1.1 CP&L, Suppliers, and Contractors shall provide documents generated in their work that are designated by this Section for retention. Upon completion of work by Suppliers and Contractors, these records shall be transferred to CP&L or its agent unless, by contractual agreement, the Supplier or Contractor retains the records for CP&L for the required periods mutually agreed upon and as required by the Code.

△1 11.1.2 The applicable Manager/Director - QA/QC shall be responsible for the preparation of record checklists for systems and/or components; and the accumulation, identification, and review of documents in accordance with the appropriate procedures prior to filing as QA Records.

△1 11.1.2.1 The Director - QA/QC shall be responsible for the accumulation, control and storage of site documentation as defined herein until

△1 turnover to HPAS Document Control.

△1 11.1.2.2 The Engineering General Manager shall be responsible for the control

△1 of design engineering documentation until turnover to HPAS Document Control.

△1 11.1.2.3 The Manager - HPAS shall be responsible for the final accumulation, control and storage of site documentation.

△1 11.1.3 The Manager - HPAS/Director - QA/QC is responsible for filing and maintaining records in accordance with site procedures on records filing. They shall restrict access to the records storage area to those authorized access by an approved list of personnel. They shall assure that no records will be removed from the storage area except when authorized by them or their designated representative. A record sign-out log shall be maintained by the Manager - HPAS/Director - QA/QC, or his designee.

△1 11.1.4 The Principal Quality Assurance Specialist - Training and Administration shall be responsible for control and storage of

△3 quality assurance records, and other required documentation, for Corporate Quality Assurance Department (CQAD) general office personnel in accordance with CQAD procedures for document control and quality assurance records.

△3 11.2 Record Index

Preparation of a record index shall be the responsibility of the applicable Manager - HPAS/Director - QA/QC to permit orderly filing and timely retrieval of records by personnel authorized access to these records. The index shall specify the location of records.

11.3 Accumulation and Maintenance of Records

△3 11.3.1 A checklist of documents shall be prepared for each system and △3 structure by the Manager - HPAS/Director QA/QC to ensure accumulation of required documents.

11.3.2 Supplier's manufacturing records for A-E and NSSS Supplier purchased △3 items shall be reviewed by the Records QA/QC Specialist or other

designated individual and transmitted to QA Records storage room with the Records Review and Acknowledgement Form (Exhibit 4-3) for retention. Suppliers' manufacturing records for site-purchased items will be reviewed by the responsible QA/QC Specialist and transmitted to QA Records with the checklist (Exhibit 4-3) for retention..

11.3.3 Receiving inspection records containing material certifications, manufacturing records, and QA releases shall be assigned a QA number by the QA/QC inspector for traceability to the item received.

11.3.4 Permanent records shall be retained for the lifetime of the plant. Permanent records shall include "as-built" sketches or a tabulation of materials identifying each piece of material with the certified Material Test Report and the coded marking; and other documents providing objective evidence of plant quality which meet one or more of the following criteria:

a. Those which would be of significant value in demonstrating capability for proper functioning of Code items.

b. Those which would be of significant value in maintaining, reworking, repairing, replacing, or modifying the item.

c. Those which would be of significant value in determining the cause of an accident or malfunction of an item.

d. Those which provide required baseline data for in-service inspection.

11.3.4.1 The permanent record file shall contain documents required for quality assurance, fabrication, manufacturing, installation and traceability. The file shall contain such records of materials, manufacturing, examination and test data taken before and during construction, and the procedures, specifications, Stress Reports, and drawings used, fully identified by pertinent material or item identification numbers, revision numbers and issue dates. The file shall also include related data such as qualifications of personnel, procedures, equipment and related repairs.

△5 11.3.4.2 The Manager - HPAS/Director - QA/QC shall be responsible for designating the records to be maintained and shall ensure filing in a manner which will allow access by the ANI.

Records retained by the Manufacturer or Installer shall be filed and maintained in a manner that will allow access by the ANI and CP&L or its agent to specific information contained therein.

(4) 11.3.4.3 The Director - QA/QC shall be responsible for maintaining the following records on file until turnover to HPAS Document Control.

(4) a. An index to the record file.

(4) b. Data Reports for each part, component, appurtenance, piping system and piping subassembly. (Available as received from the supplier.)

(4) c. Copies of appropriate Certified Material Test Reports.

(4) d. "As-built" sketch or tabulation of materials.

(4) e. NDE reports including final radiographs.

(4) f. Heat treatment records.

(4) 11.3.4.4 The Manager - HPAS shall be responsible for maintaining an index to the permanent record file and for maintaining the following records on file as received.

(4) a. Those records defined in paragraph 11.3.4.3 b through f.

(4) b. Certified Design Specifications.

△4 c. The Ceritifed Stress Reports or Stress Calculations with verification regarding the applicability to the "As-constructed" condition. (Must have certification of owner's review and on file prior to application of the Code Stamp.)

△4 d. "As-constructed" drawings certified as to correctness (must be on file prior to application of the Code Stamp).

△4 11.3.4.5 The records at the site shall be filed and maintained in facilities that prevent deterioration or damage to documents and shall be controlled to prevent loss.

△4 11.3.4.6 The records shall be organized and filed by being attached in binders, placed in folders or envelopes or by being microfilmed so that each document is identifiable and retrievable.

△4 Records which cannot be filed in binders, folders, envelopes or microfilmed will be filed in a suitable manner which will preclude deterioration of the records.

△0 11.3.5 Nonpermanent records are documents that provide indirect evidence of quality in the plant and which do not qualify as lifetime records.

△0 After manufacture or installation, nonpermanent records for Class I items required to verify compliance with the ASME Code and the Manufacturer's or Installer's QA Program, except those required in Paragraph 11.3.4, shall be maintained for a minimum period of five (5) years, but not less than two (2) years after commercial operation of the nuclear plant. Location of the records will be designated in departmental and/or section procedures, as appropriate.

12.0 AUTHORIZED NUCLEAR INSPECTOR

12.1 Personnel Interface

This Section summarizes the interface with the Authorized Nuclear Inspector (ANI) and associated requirements for compliance with the Code.

12.1.1 An ANI is an employee of an Authorized Inspection Agency, such as an Insurance Company authorized to write boiler and pressure vessel insurance, who has been qualified by written examination under the rules of any state of the United States which has adopted the ASME Code.

12.1.2 The ANI will be given free access to all work locations which come under his jurisdiction. In performance of his duties, the ANI will be subject to safety and security regulations.

12.1.3 The primary contact for the ANI is the Director - QA/QC. It is the responsiblity of the Director - QA/QC to notify the ANI of the progress of work and furnish necessary information.

12.1.4 The ANI shall be provided adequate facilities from which to perform his duties as required by the Code.

12.1.5 The ANI shall witness or otherwise verify examinations and make inspections required by the agreement for his inspection services and by the Code.

12.1.6 An agreement shall be established by the Vice President - Nuclear Plant Construction with the Authorized Inspection Agency of record at the nuclear power plant construction site to perform inspection services as set forth in the Code.

12.1.7 The Authorized Nuclear Inspector Supervisor shall be given assistance necessary to perform his audits and shall be accompanied by the Director - QA/QC or his designee.

12.2 Document Accessibility

12.2.1 The ANI shall be given free access to all information and records applicable for Code items.

12.2.2 Procedures utilized to implement Code requirements on Code items shall be subject to review by the ANI. Procedures found not in compliance with Code requirements or this Manual shall be revised to comply with the Code and this Manual. Welding procedure qualifications and certified reports for material related to Code items shall be submitted to the ANI for review by the Director - QA/QC upon completion and verification and prior to filing.

12.2.3 The ANI may monitor the QA program to determine that requirements of the Manual are being complied with. The ANI shall be provided assistance as necessary.

12.3 Selection of Holdpoints

12.3.1 The ANI shall be given the opportunity to select holdpoints as described in Sections 5.0 and 6.0. The ANI shall have access to any incoming Code items he may wish to inspect.

12.3.2 The Director - QA/QC is responsible for assuring that the ANI is notified sufficiently in advance of the initiation of Code-related work and testing to avoid delays in such activities.

12.4 NDE, Tests, and the Authorized Nuclear Inspector

12.4.1 If the ANI has reason to question procedure or personnel qualifications related to Code items (welding and NDE), he has the authority to require requalification to his satisfaction.

12.4.2 The ANI may witness or verify records of nondestructive examination to determine the acceptability of the items evaluated.

12.4.3 The ANI shall witness final hydrostatic or pneumatic tests required by the Code.

13.0 AUDITS

13.1 Corporate Audits

The Manager - QA Services has responsibility for Corporate QA audit activities as described in Section 1.0.

13.1.1 Training and Qualification of Personnel

13.1.1.1 The Manager - QA Services is responsible for the training and qualification of Corporate QA audit personnel. This is accomplished by assuring that Auditors and Lead Auditors are trained and qualified in accordance with the established requirements of Corporate Quality Assurance Department procedures on instruction for training and qualification of Corporate QA audit personnel. Auditors shall have no direct responsibilities in the areas they audit.

13.1.1.2 A personnel history file reflecting the records of each Lead Auditor's qualification (Exhibit 13-1), personnel history records,

and Audit Participation Record (Exhibit 13-2) is maintained in the Corporate Quality Assurance Department files.

13.1.2 Corporate Audit System

13.1.2.1 During the engineering, construction and start-up of a nuclear power plant, a comprehensive system of planned Corporate audits to determine the effectiveness of the engineering, construction and start-up QA program is carried out as detailed in Corporate Quality Assurance Department procedures on instruction for preparing, distributing, and maintaining the Corporate QA audit documents. This system shall be in accordance with the Code and delineated in Corporate Quality Assurance Department procedure for Corporate QA audits.

13.1.2.2 Audits shall be regularly scheduled on the basis of the status and importance of the activities to assure compliance with the Code and this Manual. The frequency of these audits shall be based on the areas of activity, amount of activity in progress, and the degree of criticality of the area involved. As a minimum, the entire program shall be audited annually.

△3 13.1.2.3 Written Audit Reports shall document audit results and will identify nonconformances and provide sufficient associated information to enable appropriate corrective action to be taken.

△3 13.1.2.4 When the audit report requires corrective action to be taken, the applicable management is responsible for transmitting to the Manager - Quality Assurance Services, within thirty days after receipt of the audit report, a document describing the cause of the condition, corrective action taken or planned and schedule for completion of corrective action. A status of audits will be maintained by the Lead Auditor.

△3 13.1.2.5 Corrective and follow-up action associated with audits shall be determined and accomplished by the Lead Auditor and reported to the Manager - QA Services. Verification of completion of corrective action will be accomplished during the next scheduled audit of the activity or plant. △3

13.1.3 Management Review for Status and Adequacy

Corporate Quality Assurance internal audit reports shall be distributed for management review by the Manager - QA Services to the Senior Executive Vice President - Power Supply and Engineering & Construction, Senior Vice President - Nuclear Generation, Vice President - Harris Nuclear Project, Manager - Nuclear Safety and Environmental Services, Manager - Corporate Quality Assurance, and other CP&L Management having responsibility for the activity audited. The Senior Executive Vice President - Power Supply and Engineering & Construction shall sign and return the original audit report to the Manager - QA Services indicating his review. When corrective action is required, it shall be monitored to assure timely and effective results. Monitoring will include follow-up audits when appropriate.

△6 △6

13.1.4 Audit Reports

13.1.4.1 A separate file of each audit report shall be maintained in the Corporate Quality Assurance Department files and shall include associated correspondence.

13.1.4.2 Audit reports covering activities associated with this Manual shall be made available to the ANI for review when so requested by him through the Director - QA/QC.

13.2 Supplier Audits

13.2.1 The Manager - QA Services has the responsibility to ensure that audit activities are planned, scheduled, coordinated and accomplished by trained and qualified personnel during the engineering, construction and start-up of nuclear power plants.

13.2.1.1 Training and Qualification of Personnel

13.2.1.1.1 The Manager - QA Services is responsible for the training and qualification of QA audit personnel. This is accomplished by assuring that Auditors and Lead Auditors are trained and qualified in accordance with the established requirements of Corporate Quality Assurance Department procedures on instruction for training and qualification of QA audit personnel. Auditors shall have no direct responsibilities in the areas they audit.

13.2.1.1.2 A personnel history file reflecting the records of each Lead Auditor and Auditor's qualification, personnel history records, and audit participation record is maintained in the Corporate Quality Assurance Department files.

13.2.1.2 Supplier Audit System

13.2.1.2.1 Those organizations which are subject to the audit shall include the A-E, the NSSS Supplier and other Suppliers surveyed and qualified by CP&L. The A-E and NSSS Supplier audit frequency intervals shall be described in Corporate Quality Assurance Department procedures and shall be conducted at least once each twelve months. The total coverage of the applicable portions of the ASME Code NA-4000 shall be accomplished on a triennial basis. For Suppliers of Code items and/or services, audits are periodically scheduled at least every three years or once within the life of the contract, whichever comes first, to assure compliance with the approved QA program. The preaward source evaluation audit may suffice for the initial periodic audit. An annual evaluation shall be made to determine the necessity of increasing the audit frequency. Material Suppliers and

Material Manufacturers not possessing the Quality System Certificate (Materials) shall be audited annually.

13.2.1.2.2 Audits shall be regularly scheduled on the basis of the status and nuclear safety importance of the activities to assure compliance with the developed and implemented program. The need for audits to maintain contractor qualification will be evaluated and determined by the Manager - QA Services and coordinated with the Principal QA Specialist - Performance Evaluation Unit. When corrective action is required, it shall be monitored to assure timely and effective results. Monitoring will include follow-up audits when appropriate.

13.2.1.2.3 Audits may be scheduled at any time at the direction of the Manager - Corporate Quality Assurance Department. Follow-up audits will be planned and conducted when necessary.

13.2.1.2.4 Audits shall be conducted using written procedures or checklists as guidelines. However, an auditor may depart temporarily from the guidelines when necessary to follow through in an area of concern to determine if a quality problem does exist.

13.2.1.2.5 Audit planning shall include a review of previous audit reports for the area or activity to be audited.

13.2.1.2.6 Personnel shall be appropriately trained and indoctrinated to plan, conduct, and report audits. Auditors shall have no direct responsibilities in the areas they audit.

13.2.1.2.7 The audits will include an objective evaluation of the documented organization and Contractor's QA program for administrative control and the effectiveness of the implementation of the program in meeting the requirements of the applicable Purchase Order or Contract and the Code.

13.2.1.2.8 The audit report will be transmitted to the management of the activity audited. When the audit report requires appropriate corrective action to be taken, the applicable organization or Contractor is responsible for transmitting to the Manager - QA Services, within thirty days after receipt of the audit report, a document describing the cause of the condition, corrective action taken or being planned and schedule for completion of corrective

action. Verification of completion of corrective action will be accomplished during the next scheduled audit or shop inspection whichever comes first.

13.2.1.2.9 Contractors have the responsibility for conducting audits of their QA programs and are responsible for auditing their subsuppliers.

13.2.1.3 Management Review for Status and Adequacy

△3 13.2.1.3.1 Audit reports shall be distributed to the Senior Executive Vice President - Power Supply and Engineering & Construction, Senior Vice President - Nuclear Generation, Vice President - Harris Nuclear Project, Manager - Corporate Quality Assurance and to the management of the function or activity audited. The Manager - Corporate Quality Assurance shall sign and return preaward audit reports to the Manager - QA Services indicating his review. The Senior Executive Vice President - Power Supply and Engineering & Construction shall sign and return periodic audit reports to the Manager - Corporate Quality Assurance indicating his review.

13.2.1.4 Audit Reports

13.2.1.4.1 A separate file of each audit report shall be maintained in the Corporate Quality Assurance Department files and shall include associated correspondence.

13.2.1.4.2 Audit reports covering activities associated with Code items shall be made available to the ANI for review when so requested by him through the Director - QA/QC.

13.3 CP&L Management Review of Corporate Quality Assurance Audit Activities

The authority and responsibility for the administration and execution of the management review program is delegated by the Senior Executive Vice President - Power Supply and Engineering & Construction through the Senior Vice President - Operations Support to the Manager - Nuclear Safety and Environmental Services. A management review of Corporate Quality Assurance Unit activities will be conducted at least semi-annually by the Manager - Nuclear

△4 Safety and Environmental Services. The management review report

△4 will be distributed by the Manager - Nuclear Safety and

△4 Environmental Services for review to the CP&L Chairman/President,

Senior Executive Vice President - Power Supply and Engineering &

△4 Construction, Senior Vice President - Operations Support and the Manager - Corporate Quality Assurance. These reviews will be conducted in accordance with the "Procedure for Management Review of Quality Assurance Audit Activities," approved by the Executive Vice President - Power Supply and Engineering & Construction.

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EXHIBIT NO.	FORM NO.	REVISION NO.	TITLE OF EXHIBIT
11 1-1		23	CP&L Nuclear Engineering, Construction, Start-Up and Quality Assurance/Quality Control Organization Chart
1-2		6	CP&L Nuclear Engineering Organization Chart
11 2-1	APF-001	24	Field Change Request/Permanent Waiver
2-3	AP-IX-10	5	Flow Chart
2-4	APF-008	6	Site Specification Cover Sheet
2-5	1651	3	Document Record
2-6	APF-003	5	Document Transmittal
11 2-7		0	Delete
11 2-8		1	Instrument Isometric Change Request
1 2-9		3	Instrumentation Sketch
3-1	1483	H	Manufacturer Evaluation Quality Assurance
3-2	6009-12M	5/75	Quality Compliance Plan for Vendors, Manufacturers, or Contractors
3-3	150	3/82	Purchase Requisition
3-4	152	10/81	Purchase Order

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

ASME QUALITY ASSURANCE MANUAL

15.0 EXHIBITS

EXHIBIT NO.	FORM NO.	REVISION NO.	TITLE OF EXHIBIT
3-5	1538	0	Vendor Surveillance Check Plan
3-6	1539	0	Quality Control Inspection Report
3-7	1540	0	Release for Shipment
3-8		5/80	Purchase Contract Form
4-1	QA-7	5	Receiving Inspection Report
4-2		2	Quality Assurance Status Tags
4-3	QA-6	6	Records Review and Acknowledgement
4-4	QA-5	12	Conditional Release Request
5-1		1	Construction Material Requisition
5-2	QA-36	0	ASME Section III - Work Traveler - Non-Welding
5-3	QA-36A	0	ASME Section III - Work Traveler - Non-Welding Continuation Sheet
5-4		8	Pipe Spool Fabrication/Modification Sheet
5-5		7	Flanged Connection Inspection Form
5-6	QA-3	0	QA/QC Field Report
5-7	SU-18.1	12	Start-Up Flanged Connection Inspection Form
11 5-8			Delete

REVISION	10	11	12	13	14	15	16	17	18	1
BY	NJC	NJC								
DATE	6/24/85	11/25/85								

EXHIBIT NO.	FORM NO.	REVISION NO.	TITLE OF EXHIBIT
5-9		3	Pipe Spool Fabrication/Modification Record
5-10		1	Qualification Record for ASME Code Class Tube Bending
11 5-11		1	Heat Number Transfer/Tube Bending Verification Sheet
5-12	QA-39	1	Threaded Connection Inspection Record
11 5-13		1	Threaded Connection Inspection Sheet
11 5-14		2	Material Verification Sheet
6-1	MP/3-1	5	Welding Materials Requisition
6-2	QA-32	1	Tank Fabrication Weld Record
6-3	MP/1-2	7	Welding Procedure Specification
6-4	MP/1-1	8	Procedure Qualification Record
6-5	QA-28A	0	Repair/Weld Data Report Continuation Sheet
6-6	MP/2-2	3	Performance Qualification Test Record
6-7	QA-28	5	Weld Data Report
6-8	PT-1	2	Liquid Penetrant NDE Report
6-9	MT-1	2	Magnetic Particle NDE Report
6-10	RT-1	2	Radiographic NDE Report

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

ASME QUALITY ASSURANCE MANUAL

15.0 EXHIBITS

DATE 5/11/82

EXHIBIT NO.	FORM NO.	REVISION NO.	TITLE OF EXHIBIT
6-11	UT-2	0	Ultrasonic Weld Examination Report
6-12	QA-30	3	Repair Weld Data Report
6-13	QA-40	0	Safety-Related Instrumentation Weld Data Report
6-14	LT-1	0	Vacuum Box Leak Test Report
8-1	APF-004	4	Master Controlled Tool List
8-2	APF-005	6	Controlled Tool Recalibration Record
8-3	APF-006	5	Calibrated Data Form
8-4	APF-009	1	Calibration Sticker
8-5	APF-007	6	Controlled Tool Log
8-6	APF-012	4	Out of Calibration Corrective Action Form
8-7		0	Out of Calibration Notification
14 9-1	QA-47		Delete
14 9-3	QA-49		Delete
9-4	QA PQ-6	1	Certificate of NDE Personnel Qualification
9-5	QA-37	3	Nondestructive Examination Request

REVISION	10	11	12	13	14	15	16	17	18	19
BY	NJC	NJC	NJC	NJC	NJC					
DATE	10/17/84	3/21/85	4/24/85	6/24/85	11/25/85					
APPROVED										

14.0 REVIEW AND CONTROL OF MANUAL

14.1 Responsibilities

14.1.1 The Manager - QA/QC Harris Plant is responsible for the revision of this Manual, as necessary, to maintain consistency with the applicable Code Edition and Addenda as stipulated in the Manual Addendum. The Manager - Corporate Quality Assurance will review the status and adequacy of this Manual and submit recommended revisions, as necessary, to the Manager - QA/QC Harris Plant. The Manager - QA/QC Harris Plant will submit proposed revisions to appropriate

△4 management for review and to the Senior Executive Vice President - Power Supply and Engineering & Construction for approval. This approval will be documented by his signature on the transmittal memorandum from the Manager - QA/QC Harris Plant. In the absence of

△4 the Senior Executive Vice President - Power Supply and Engineering & Construction, the approval will be by signature of the Senior Vice President - Nuclear Generation on the transmittal memorandum from the Manager - QA/QC Harris Plant.

14.1.2 Upon receipt of approval of the proposed revisions from either the Executive Vice President - Power Supply and Engineering &

2 Construction or the Senior Vice President - Nuclear Generation, the Manager - QA/QC Harris Plant shall obtain the acceptance by the AIA per paragraph 14.3.1 and incorporate the revision(s) into this Manual and shall initial the "Approved" revision block on each revised page.

14.2 Distribution and Control of Manual

14.2.1 The Manager - QA/QC Harris Plant shall control distribution of this Manual, including those distributed to CP&L personnel, the ANI, and the Authorized Nuclear Inspector Supervisor. Copies shall be numbered, and issuance shall be controlled.

14.2.2 Each copy of this Manual shall be assigned to a specific individual and a record maintained on the QA Manual Distribution List (Exhibit 14-1) by the Manager - QA/QC Harris Plant, or his designee.

14.2.3 Each Manual shall be transmitted by letter (Exhibit 14-2), a copy of which is to be signed and returned acknowledging receipt of the Manual.

14.3 Revision

14.3.1 Revisions of this Manual shall be submitted to the Authorized Inspection Agency by a letter (Exhibit 14-3) by the Manager - QA/QC Harris Plant for review and acceptance prior to implementation. The acceptance copy of the letter (Exhibit 14-3) shall be furnished to the ANI by the Manager - QA/QC Harris Plant simultaneously with transmittal of revisions to the Manual.

14.3.2 Exhibits in the Manual may be changed without a revision to the Manual provided no information is deleted. Approval by the Manager - QA/QC Harris Plant, or Principal QA Engineer, is required. Print Shop form number addition/deletion is outside the scope of the manual. Revisions to the exhibits shall not conflict with the editorial sections of this manual.

Any organization change within CP&L that affects this Manual will be incorporated as a revision within sixty (60) days after effective date of the change.

14.3.3 When accepted by the Authorized Inspection Agency, revisions of this Manual shall be dated and forwarded by the Manager - QA/QC Harris Plant to individuals on the Distribution List by a form letter (Exhibit 14-4), a copy of which is to be signed and returned

△2 acknowledging receipt of the revision. The general revision numbers, which are consecutive and appear on the transmittal letter described in 14.3.1, will be identified on the Summary of Revision section. Specific revisions to each page shall be indicated with a △. The specific revision number shall appear within the △ symbol, placed adjacent to the effected paragraph and also listed in the revision block at the bottom of each page. Only the latest specific revision number shall appear within the △. Each time the manual is revised, a complete updated Summary of Revision section shall accompany the specific revised pages. △2

14.3.4 Acknowledgement of receipt of revisions shall be returned to the sender no later than thirty days after date of distribution. Within forty-five (45) days after acceptance by the AIA the effective change will be implemented. Prior to implementation, classroom training or individual reading of the latest revision will be accomplished and documented. Procedures will be changed if applicable. Failure to acknowledge receipt of the revision by Manual holders other than CP&L shall result in a notification by letter (Exhibit 14-5). The Manager - QA/QC Harris Plant, or his

designee, will maintain a copy of the letter until acknowledgement is received. The Manager - QA/QC Harris Plant and Manual Holders within CP&L shall be responsible to ensure that their Manuals are maintained current. Manuals found to be in noncompliance will be retrieved and the holder removed from controlled distribution, or the Manual will be updated.

14.3.5 Holders of this Manual are responsible for acknowledging receipt of revisions thereto on the transmittal form letters (Exhibit 14-2 or Exhibit 14-4), for inserting revised pages into the designated sections, and for returning superseded pages. The returned acknowledgement receipt shall be retained by the Manager - QA/QC Harris Plant, or his designee, for a minimum of one (1) year or until the next revision whichever is longer.

14.3.6 A Summary of Revisions shall document revisions of all pages in this Manual. The Summary of Revisions shall be inserted in the front of this Manual. The Summary of Revisions shall also reflect the Section revised, page number, and revision number of each page of the Manual.

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EXHIBIT NO.	FORM NO.	REVISION NO.	TITLE OF EXHIBIT
9-6	QA-26	6	Pressure Test Record
9-7	SU-10.1	16	Pressure Test Data and Witness Form
10-1	QA-1	5	Nonconformance Report
10-2	QA-4	10	Corrective Action Report
10-3	QA-13	0	QA/QC Report Continuation Sheet
10-4		0	Vendor Material Nonconformance Report
10-5	QA-7A	0	Receiving Inspection Report
13-1	Ex. A	5	Qualification Requirements
△6 13-2	Ex. B	5	Audit Participation Record
14-1		0	Quality Assurance Manual Distribution List
14-2		3	Form Letter (On Manual Distribution)
14-3		5	Form Letter (Distribution to ANIS or IS)
14-4		6	Form Letter (Distribution of Manual Revisions)
14-5		2	Form Letter (Notification of Late Acknowledgement on Distribution)

Enclosure 6 to Serial: HNP-99-069

Weld Process Specification and Procedure Qualification Records Associated with Field Welds Subject to the Alternative Plan

approved nyc ability

CAROLINA POWER & LIGHT COMPANY
WELDING PROCEDURE SPECIFICATION

POSITIONS	PROCESS(ES) TYPE	THICKNESS RANGE	PIPE DIAMETER RANGE	
ALL	Manual GTAW & SMAW	Base Metal: Min.3/16" - 1½" Max. Weld Metal: Max.½" GTAW Max.1 7/16" SMAW Max.1½" GTAW & SMAW	All	WPS 1BA3 REV. NO. 7 DATE 3/29/85 PQR NO.(S) 15 (3/29/78) R7

BASE METAL

R7 P1(Gr.1) to P-1(Gr.1)

FILLER METALS

	GTAW	SMAW
Process:	GTAW	SMAW
SFA No.:	5.18	5.1
AWS Class:	ER70S-6	E7018
A. No.:	1	1
F. No.:	6	4

R7 (AWS Class)

Electrode-Flux (Class): N/A
Consumable Insert: N/A
Flux Trade Name: N/A
Filler Metal Size(s): 1/16", 3/32", 1/8"

ELECTRICAL CHARACTERISTICS

Process:	GTAW	SMAW
Current:	DC	DC
Polarity:	SP	RP

Electrode Wire Feed Speed Range: N/A
Other:

BACKING: YES x NO x

Material (Type): P-1 Carbon Steel
Retainer (Type): Non-fusing metallic retainer
Other: N/A Prohibited

GAS	Percent/Composition Type	Flow Rate (CF/H)
Shielding:	Argon Min. 99.95%	10-30 CFH
Backing:	None	
Trailing:	None	

APPLICABLE PROCEDURE(S):
MP-06, MP-10, MP-18, Latest Revision

RESTRICTION: None

SPECIFIC REQUIREMENTS:

Preheat Temperature
Temperature: See Page 3 of WPS
Maintenance: Resistance or Fuel Gas Torch

INTERPASS TEMPERATURE
500°F Max.

DOCUMENT CONTROL
RECEIVED
APR 4 1985
SHEARON HARRIS N. P. P.

POST WELD HEAT TREATMENT
Temperature Range: None
Hold Time: N/A
Procedure: N/A

TECHNIQUE (Specific):
Tungsten Size: 3/32", 1/8"
Tungsten Type: 2% Thoriated
Orifice or Gas Cup Size: Nos. 4-10
Contact Tube to Work Distance: N/A
Oscillation/Weave: 4X Core Wire Dia. or 5/8" whichever is less.
Weld Progression: Uphill R7
Insert Size and Style: N/A
Stringer or Weave: Both

TECHNIQUE (General):
Multiple or Single Electrode: Single
Multiple or Single Pass: Multiple (Per Side)
Electrode Spacing: N/A
Initial & Interpass Cleaning: Brush/Grind
Method of Back Gouging: Grind/Air Arc Gouge
Peening: Prohibited

REMARKS
Charpies qualified at -20°F for material over 5/8" thick. R7

This procedure specification meets the requirements of Section III, Div. 2, and 1975 Code Edition, W1975 Code Addenda; and Section IX of the ASME Code, 1977 Code Edition, W1977 Code Addenda.

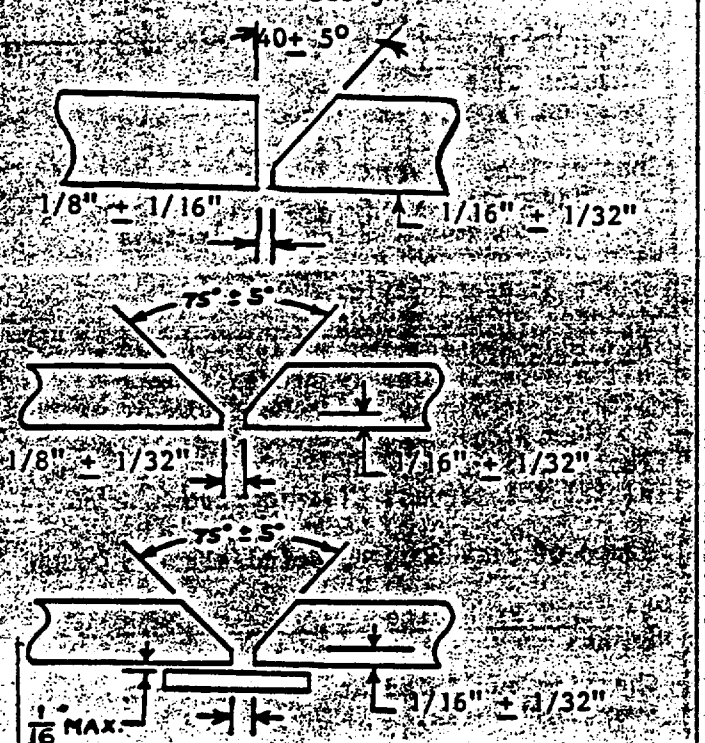
REVIEWED BY:	APPROVED BY:	ORIGINATOR:
G. L. Forehand	R. Hanford	Jan Stahl
DATE: 3/29/85	DATE: 3/28/85	DATE: 3/27/85
DIRECTOR QA/QC - HARRIS PLANT	MET/WELDING ENGINEERING	

WELDING TECHNIQUE

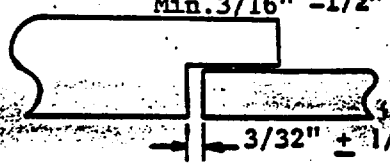
WPS 1BA3
REV. NO. 7
DATE 3/29/85

WELDING TECHNIQUE	LAYER	PROCESS	FILLER METAL SIZE	AMPS (RANGE)	VOLTS (RANGE)	TRAVEL SPEED (in./min.)
See page 1 of WPS	1-2	GTAW	1/16", 3/32", 1/8"	50-130	8-12	Manual
	Remain.	SMAW	3/32"	70-110	21-23	Manual
	Alt. Remain.	SMAW	1/8"	90-125	21-23	Manual

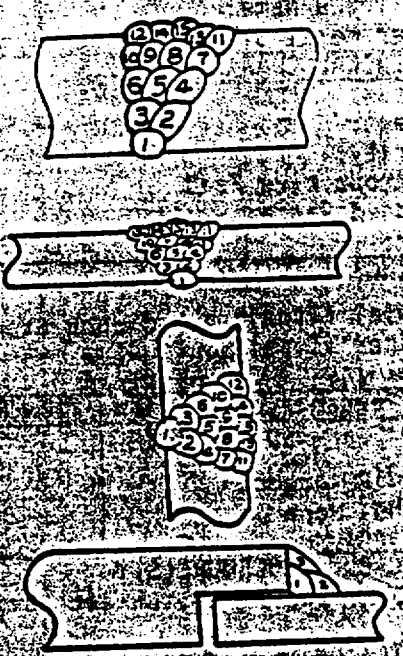
Joint Design*



R7 Min. 3/16" - 1/2" max



Welding Sequence*



Thickness of any SMAW pass shall not exceed 3/16".
Thickness of any GTAW pass shall not exceed 1/16". R7

*DEVIATIONS TO JOINT DESIGN DIMENSIONS OTHER THAN ESSENTIAL AND NON-ESSENTIAL VARIABLES ARE PERMISSABLE WHEN APPROVED IN WRITING BY WELDING ENGINEERING.

JOINT DETAILS OTHER THAN THOSE SHOWN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS.

*Recommended
Additional Requirements

W.P.S. NO. 1BA3 7
WPS NO. REV.

DATE 3/29/85

Preheat

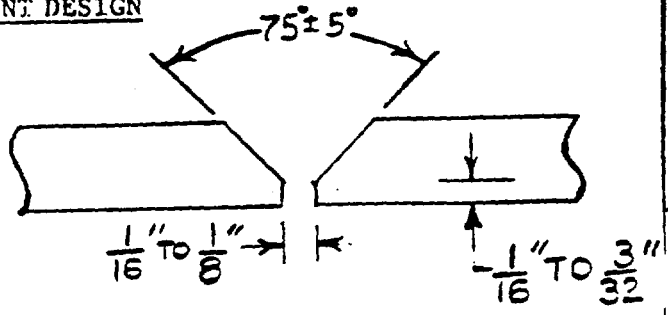
Code	P-Number	Thickness of Adjoining Member See Note 1	Maximum Reported Carbon %	Minimum Preheat	Note
Section III Div. 1 & 2	1	1¼" or less	.30 or less	100°F	1
		over 1¼" to 1½"	.30 or less	200°F	1
		3/4" or less	over .30	100°F	1
		over 3/4" to 1½"	over .30	200°F	1
ANSI B31.1 ASME Section I	1	3/4" or less	.30 or less	100°F	
AWS D1.1	1	up to 3/4"	N/A	100°F	
		over 3/4" thru 1½"	N/A	100°F	
ASME Section VIII	1	over 1" to 1½"	over .30	175°F	
		over 1¼" to 1½"	N/A	200°F	

Note 1: "Thickness of Adjoining Member" is nominal thickness. For ASME Section III Div. 1 & 2, the column shall read: Nominal thickness which is defined as the thickness of the weld, pressure retaining material, or the thinner of the sections being joined, whichever is less.

Welding Process(es) GTAW & SMAW Type(s) Manual
(Manual, Automatic, Semi-Auto.)

WPS NoS. P-1-I-BA-3, 4/28/78, Rev. 0
(WPS No., DATE, REVISION)

JOINT DESIGN



TECHNIQUE

String or Weave Bead Weave
Oscillation 4 x Core Wire Dia., or 5/8" whichever is least
Single or Multiple Electrodes Single
Single or Multiple Pass Multiple
Travel Speed Manual
Thickness GTAW-.125", SMAW-0.719"

BASE METALS

Pipe XX Plate Other N/A
Material Spec SA 106
Type or Grade B
P. No 1 to P. No 1
Thickness 0.844
Diameter 10.75
Other 10" Sch. 120

FILLER METALS

N/A (Bare Wire)
Weld Metal Analysis A-No. A-1 (C.E.)
Size of Electrode 3/32"(B.W.) & 3/32",1/8"(C.E.)
Filler Metal F-No F-6 & F-4
SFA Specification SFA 5.18 & SFA 5.1
AWS Classification E70S-6 & E7018
Trade Name AIRCO E70S-6 & Hobart LH718
Other N/A

POSITION

Position of Joint 6G
Weld Progression Uphill
(uphill or downhill)
Other N/A

POSTWELD HEAT TREATMENT

Temperature None
Time N/A
Other N/A

PREHEAT

Preheat Temperature 200°F, Min.
Interpass Temperature 500°F. Max.
Other N/A

ELECTRICAL CHARACTERISTERICS

Current type Direct Current
Polarity Straight & Reverse
Amperage (120, 125, 130) & (90, 125)
Voltage (10, 12) & (23)
Other N/A

GAS

Comp. of Shielding Gas(es) 99.9% Argon
Flow Rate (CFH) 28 CFH
Comp. of Backing Gas(es) N/A
Flow Rate (CFH) N/A
Other N/A

We certify that the data in this record is correct and that the test welds were prepared and welded in accordance with the requirements of Section III, Div. 2 a of the ASME Code, 1977 Code edition, 1977 Winter Code addenda. This is a true copy, only Editorial changes were made on 8-7-80. 8/7/80

Orig. WITNESSED BY: Joe Young /True Copy/ Sr. Q.A. Specialist 5/3/78
Name Title Date

Ori REVIEWED BY: G. L. Forehand /True Copy/ 5/18/78
E & C - Q. A. Date

Orig. APPROVED BY: Malcolm E. Reese /True Copy/ 5/18/78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

A. M. Lucas /True Copy/ 5/19/78

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE AND LOCATION
T-1	.747	.718	.536	35,500	66,231	Broke/Base Metal
T-2	.732	.671	.491	39,000	79,430	Broke/Base Metal

GUIDED BEND TESTS

TYPE AND FIGURE NO.	RESULT	TYPE AND FIGURE NO.	RESULT
Side Bend-QW-462.2(a)	Satisfactory	Side Bend - QW-462.2 (a)	Satisfactory
Side Bend-QW-462.2(a)	Satisfactory	Side Bend - QW-462.2 (a)	Satisfactory

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES	LATERAL EXP. % SHEAR	LATERAL EXP. MILS	DROP WEIGHT BREAK	DROP WEIGHT NO BREAK
Base Metal	Base Metal	V	-20°F	22 ft-lbs-ave	5%	18 Ave		
HAZ	HAZ	V	-20°F	22 ft-lbs-ave	5%	18 Ave		
Weld Metal	Weld Metal	V	-20°F	98.3 ft-lbs-ave	50%	76 Ave		
			Actual Data	See Attachment				

FILLET WELD TEST

Result - Satisfactory N/A (yes-no) Penetration into Base Metal N/A (yes-no)

Type and character of Failure N/A Macro Results N/A

Clock No. 240-62-7846 Stamp no. _____

Welders name James A. Buffaloe Laboratory Test No. 2800-R

Test Conducted by: Newport News Industrial Corp.

We certify that the data in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section III* and Section IX of the ASME Code, latest applicable revision.**

*Division 2
**1977 Edition, Winter 1977 Add

REVIEWED BY: G. L. Forehand /True Copy/ 5/18/78
E & C - Q. A. Date

APPROVED BY: Malcolm E. Reese /True Copy/ 5/18/78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

APPROVED BY: A. M. Lucas /True Copy/ 5/19/78

Sample No.	Temp. °F	Ft/Lbs.	Lat. Exp. Mils	Lat. Exp. Percent	Percent Shear
Weld Metal-1	-20	115	80	20.3	50
Weld Metal-2	-20	60	44	11.2	30
Weld Metal-3	-20	95	74	18.8	40
Weld Metal-4	-20	89*	66	16.8	50
Weld Metal-5	-20	111*	88	22.3	60
Base Metal-6	-20	22	18	4.6	5
Base Metal-7	-20	22	17	4.3	5
Base Metal-8	-20	22	18	4.6	5
Base Metal-9	-20	21*	18	4.6	5
Base Metal-10	-20	24*	19	4.8	5
HAZ-11	-20	6	4	1.0	1
HAZ-12	-20	20	16	4.1	5
HAZ-13	-20	27	22	5.6	5
HAZ-14	-20	54*	46	11.7	30
HAZ-15	-20	19*	16	4.1	5

* Retest

MP/1-2 Rev. 7 approved mc 6/27/84

6/84

CAROLINA POWER & LIGHT COMPANY - WELDING PROCEDURE SPECIFICATION

PAGE 1 OF 2

POSITIONS	PROCESS(ES) TYPE	THICKNESS RANGE	PIPE DIAMETER RANGE	WPS 8B2
ALL	Manual GTAW	Base Metal: Min..031-8.00" Max. Weld Metal: 8.00" Max.	ALL	REV. NO. 16
			ANI REVIEW ANI Rwhite DATE 10-29-85	DATE 10/01/85
				PQR NO.(S) 6,6A,6B 6C

BASE METAL

P-8 Stainless Steel to P-8 Stainless Steel

FILLER METALS

Process: GTAW
SFA No.: 5.9
AWS Class: ER308,ER308L,ER316,ER316L,ER309, ER309L,ER347
A. No.: 8
F. No.: 6
Electrode-Flux (Class): N/A
Consumable Insert: N/A
Flux Trade Name: N/A
Filler Metal Size(s): 1/16", 3/32", 1/8" 0.045", 0.035",

/16

ELECTRICAL CHARACTERISTICS

Process: GTAW
Current: DC
Polarity: SP
Electrode Wire Feed Speed Range: N/A
Other: N/A

BACKING: YES X NO X

Material (Type): P-8 Stainless Steel
Retainer (Type): None
Other: N/A

GAS Type	Percent/Composition	Flow Rate(CF/H)
Shielding:	Min.99.95%Argon	10-30 CFH
Backing:	Min.99.95%Argon	5-30 CFH
Trailing:	None	N/A

APPLICABLE PROCEDURE(S):

MP-07 Latest Revision

RESTRICTION: None

SPECIFIC REQUIREMENTS:

Preheat Temperature
Temperature: 0° F Min.
Maintenance: None

INTERPASS TEMPERATURE
300°F Max.

DOCUMENT CONTROL RECEIVED OCT 1 1985 SHEARON HARRIS N. P. P.

POST WELD HEAT TREATMENT
Temperature Range: None
Hold Time: N/A
Procedure: N/A

TECHNIQUE (Specific):
Tungsten Size: 1/16,3/32,1/8
Tungsten Type: E-ThW-2
Orifice or Gas Cup Size: 4-8
Contact Tube to Work Distance: N/A
Oscillation/Weave: 3X Core Dia.or ½" whichever is less
Weld Progression: Uphill for Vertical Progress.
Insert Size and Style: N/A
Stringer or Weave: Both

TECHNIQUE (General):
Multiple or Single Electrode: Single
Multiple or Single Pass: Multiple (Per Side)
Electrode Spacing: N/A
Initial & Interpass Cleaning: Brush/Grind
Method of Back Gouging: Grind/Air Arc Gouge
Peening: Prohibited

REMARKS Single pass may be used up to 3/32" thickness,pulsation may or maynot be used. Thickness of any pass shall not exceed 3/16" Backing gas is not required for joints with backing strip, doubled welded joint or fillet weld.

This procedure specification meets the requirements of Section III, Div. 1, and 1974 Code Edition, W1976 Code Addenda; and Section IX of the ASME Code, 1983 Code Edition, S1984 Code Addenda.

REVIEWED BY:	APPROVED BY:	ORIGINATOR:
G. L. Fouchard	JE Upchurch for R. HANFORD	JE Upchurch
DATE: 10/1/85	DATE: 10-1-85	DATE: 10-1-85
DIRECTOR QA/QC - HARRIS PLANT	MET/WELDING ENGINEERING	

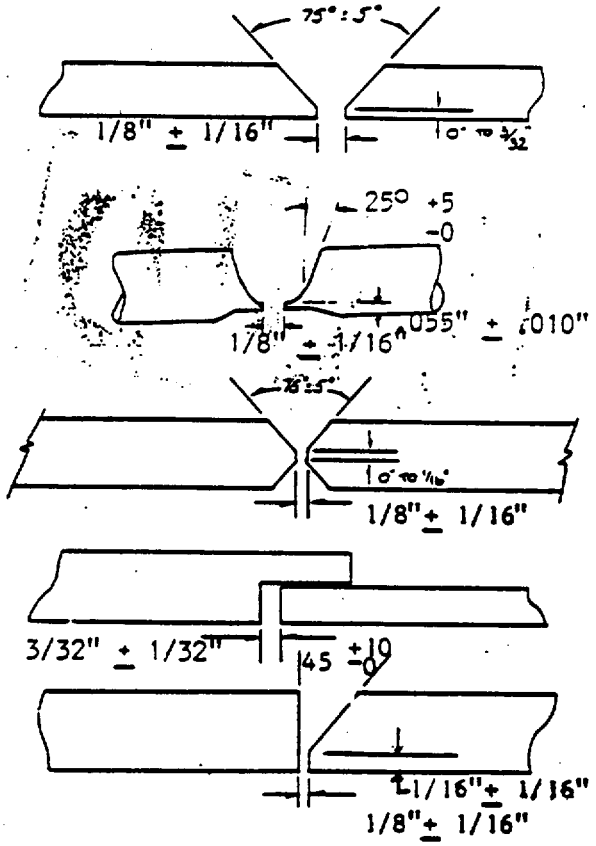
approved xyc 6/27/84

WPS 8B2
REV. NO. 16
DATE 10/01/8

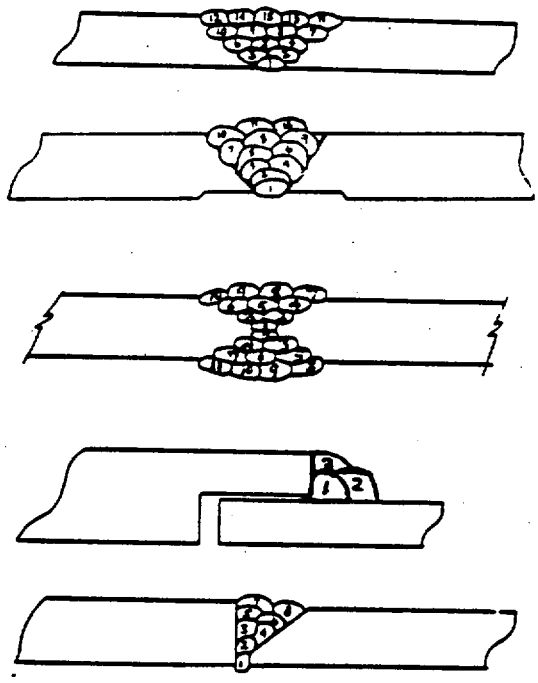
WELDING TECHNIQUE

	WELDING TECHNIQUE	LAYER	PROCESS	FILLER METAL SIZE	AMPS (RANGE)	VOLTS (RANGE)	TRAVEL SPEED (in./min
R/16	See Page 1	1	GTAW	1/16",3/32", 1/8",0.045", 0.035"	10-140	8-12	2-6 IPM
R/16		Remainder	GTAW	1/16",3/32", 1/8", 0.045", 0.035"	10-165	8-12	2-6 IPM

Joint Design*



Welding Sequence*



JOINT DETAILS OTHER THAN THOSE SHOWN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS.
OPEN BUTT, GROOVE WITH BACKING, SOCKET, FILLET, DOUBLE GROOVE

*Recommended
Additional Requirements

MP/1-2 Rev. 7
6/84

CAROLINA POWER & LIGHT COMPANY
WELDING PROCEDURE SPECIFICATION

POSITIONS	PROCESS(ES) TYPE	THICKNESS RANGE	PIPE DIAMETER RANGE	
ALL	Manual GTAW	Base Metal: Min. .0625"-.7300" Max. Weld Metal: .7300" Max.	ALL	WPS 8B4 REV. NO. 9 DATE 11/15/84 PQR NO.(S) 7 7/10/76

VOID

BASE METAL
P-8 (Stainless Steel) to P-8 (Stainless Steel)

FILLER METALS
Process: GTAW (Manual)
SFA No.: 5.9
AWS Class: ER308, ER308L, ER316, ER316L, ER347
A. No.: 8
F. No.: 6
Electrode-Flux (Class): N/A
Consumable Insert: SFA 5.30 ER308L, ER316, ER308, ER316L
Flux Trade Name: N/A
Filler Metal Size(s): 1/16, 3/32, 1/8, 5/32

ELECTRICAL CHARACTERISTICS
Process: GTAW (Manual)
Current: DC
Polarity: SP
Electrode Wire Feed Speed Range: N/A
Other: N/A

BACKING: YES ____ NO X
Material (Type): N/A
Retainer (Type): None
Other: N/A

GAS Percent/Composition Type		Flow Rate (CF/H)
Shielding	Min. 99.95% Argon	10-35
Backing:	Min. 99.95% Argon	5-25
Trailing:	None	N/A

APPLICABLE PROCEDURE(S):
MP-07 Latest Revision

RESTRICTION: Thickness of any pass shall not exceed 3/16"

SPECIFIC REQUIREMENTS:

Preheat Temperature
Temperature: Min. 50°F
Maintenance: None

INTERPASS TEMPERATURE
300° F Max.

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SHEARON HARRIS N. P. P.

POST WELD HEAT TREATMENT
Temperature Range: None
Hold Time: N/A
Procedure: N/A

TECHNIQUE (Specific):
Tungsten Size: 1/16, 3/32, 1/8
Tungsten Type: E-ThW-2
Orifice or Gas Cup Size: 4-8
Contact Tube to Work Distance: N/A
Oscillation/Weave: 3X Core Wire Dia. or 1/2" whichever is less
Weld Progression: Uphill for vert. progression
Insert Size and Style: 1/8, 5/32 any style per SFA 5.30
Stringer or Weave: Both

TECHNIQUE (General):
Multiple or Single Electrode: Single
Multiple or Single Pass: Multiple (Per Side)
Electrode Spacing: N/A
Initial & Interpass Cleaning: Brush/Grind
Method of Back Gouging: Grind/Air Arc Gouge
Peening: Prohibited

REMARKS
Sensitization tested
Pulsation may or may not be used

ANI REVIEW
ANI [signature]
DATE 2-24-87

This procedure specification meets the requirements of Section III, Div. 1&2* and 1974 Code Edition, W1976 Code Addenda; and Section IX of the ASME Code, *1974 Code Edition, S1976 Code Addenda *1975 Edition W1975

REVIEWED BY:	APPROVED BY:	ORIGINATOR:
[signature] for GLP	[signature]	[signature]
DATE: 11-15-84	DATE: 11/15/84	DATE: 11/15/84
DIRECTOR QA/QC - HARRIS PLANT	MET/WELDING ENGINEERING	

approved JC 6/27/84

CAROLINA POWER & LIGHT COMPANY

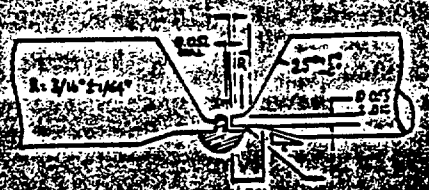
WELDING TECHNIQUE

WPS 8B4
REV. NO. 9
DATE 11/15/84

	WELDING TECHNIQUE	LAYER	PROCESS	FILLER METAL SIZE	AMPS (RANGE)	VOLTS (RANGE)	TRAVEL SPEED (in./min
R9	See Page 1	1	GTAW	1/8 Insert	60-140	8-14	Manual
		Alt. 1	GTAW	5/32" Insert	70-140	8-14	Manual
		Reaminder	GTAW	1/16", 3/32", 1/8"	50-140	8-14	Manual

Joint Design*

Max. Extension beyond radius .015"



3/32" + 1/32"

R9

Welding Sequence*

JOINT DETAILS OTHER THAN THOSE SHOWN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS.

Recommended Additional Requirements

MP/1-2 Rev. 5
2/11/81

Exhibit 2, MP-01
CAROLINA POWER & LIGHT CO.
SHNP
WELDING PROCEDURE SPEC.

PROCESS(ES): GTAW & SMAW TYPE(S) Manual

MATERIAL: P-8 Stainless Steel to P-8 Stainless Steel

WPS NO. 8BA3 5 7/22/83
WPS No., Rev., Date

JOINT DESIGN: Open Butt, Backing Ring, Socket, Fillet & Double Groove Butt Welds

QUALIFIED BY PQR NO(S): 6(7/10/76) 8(8/24/76) (Sensitization Tested) 6A(10/6/81)

PAGE 1 of 2

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POSITIONS: All	THICKNESS RANGE* Min. 3/16 Max. 2 11/32		PIPE DIAMETER RANGE SMAW Any	
	Min. 1/16	Max. 1/4	GTAW	
Layer Number	1-3	Remainder	Remainder	Remainder
Welding Process	GTAW	SMAW	SMAW	SMAW
Tungsten Size	1/16", 3/32"	N/A	N/A	N/A
Filler Metal A - No.	8	8	8	8
Filler Metal F - No.	6	5	5	5
Electrode/Wire Size Bare Wire	1/8" 1/16", 3/32"	3/32"	1/8"	5/32"
Welding Amperage Range	50-160	60-90	90-120	120-160
Welding Voltage Range	8-14	19-28	19-28	22-28
Electrical Characteristics Current	DC	DC	DC	DC
Electrical Characteristics Polarity	SP	RP	RP	RP
Torch Gas Type and Flow Range (CFH)	Argon 10-30 CFH	N/A	N/A	N/A
Backing Gas Type & Flow Range (CFH)	Argon 5-25CFH	Same	(Discontinue after 3/16" deposit thickness or two (2) layers, whichever is greater.)	
Temperature Preheat	50°F	Same	Same	Same
Temperature Interpass	300°F	Same	Same	Same
Weld Progression	Vertical Up	Vertical Up	Vertical Up	Vertical Up
Oscillation/Weave	3 X Core Wire Diameter or ½", whichever is less			
Insert Size	N/A	N/A	N/A	N/A
Insert Style	N/A	N/A	N/A	N/A
Post Weld Heat Treatment	None Required			
Applicable Procedure(s)	MP-07, Latest Revision			

NOTE: WPS 8BA3 was formally P8-8-BA-3. Work that was specified to be done in accordance with previous revisions may be performed or completed with this revision.

* Thickness range for GTAW and SMAW used in combination: 1/16" Min. - 2 19/32" Max.

CAROLINA POWER & LIGHT COMPANY

This procedure meets the requirements of Section III, Div. 1*, and IX of the ASME Code, 1977 Code edition, 1977 Winter Code addenda. *1974 Edition, 1976 Winter Addenda

REVIEWED BY: G. L. Forehand 7/22/83
Date
E & C - QA/QC

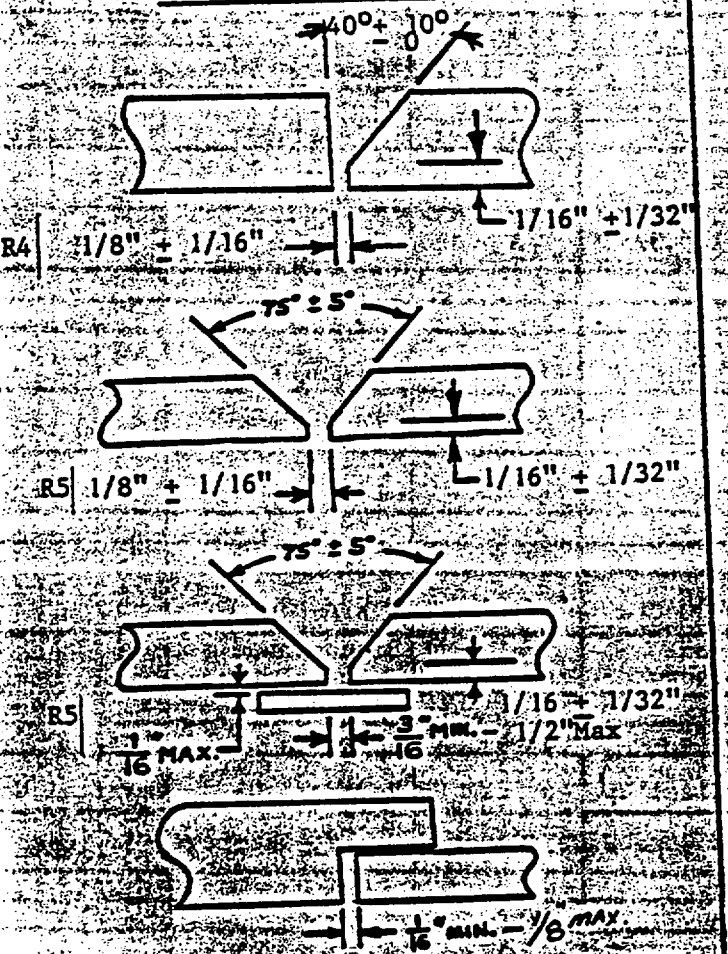
APPROVED BY: [signature] 7/22/83
Date
NPC - SHNP - Discipline Engr. Metallurgy/Welding

APPROVED BY: [signature] for N. F. Thompson Jr 7/22/83

CAROLINA POWER & LIGHT COMPANY
WELDING PROCEDURE SPECIFICATION

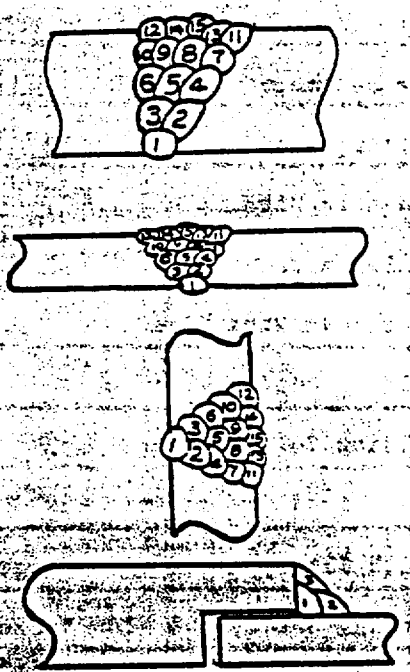
WPS No.	Rev. No.	Date	PAGE
8BA3	5	7/22/83	2 OF 2

PREPARATION DESIGN*



JOINT DETAILS OTHER THAN THOSE SHOWN SHALL BE

WELD PASS SEQUENCE*



NOTE: DEVIATIONS TO DIMENSIONS ARE PERMISSABL
WHEN APPROVED IN WRITING BY WELDING ENGINEERI

IN ACCORDANCE WITH DESIGN SPECIFICATIONS.

*Recommended

R2 **Joints**
Backing: Yes X No X
Backing Material (Type) P-8 Stainless Steel
Nonmetallic retainer or
Nonfusing metallic retainer type Prohibited
Other N/A

Filler Metals
Spec. No. (SFA) SFA 5.9(B.W.);SFA 5.4(C.E.)
R2 AWS No. (Class) ER308,ER308L,ER309,ER309L,ER316
Electrode-Flux (Class) N/A; ER316L (See Other)
Consumable Insert N/A
Other E308,E308L,E309,E309L,E316,E316L

Preheat
Preheat Maintenance Resistance or Fuel Gas Torch
Other N/A

Gas
Percent Composition (Mixtures) Min 99.95% Argo
(Shield)
Trailing Shielding Gas Composition Purge Gas
Min 99.95% Argon

Technique
String or Weave Bead String or Weave
Orifice or Gas Cup Size Nos. 4-10
Initial & Interpass Cleaning Brushing & Grindi
Method of Back Gouging Grind/Gouge
Contact Tube to Work Distance N/A
Multiple or Single Pass (Per Side) Multiple
Multiple or Single Electrodes Single
Travel Speed (Range) Manual
Electrode Spacing N/A
Peening Prohibited

MP/--2 Rev. 5
2/11/81

Exhibit 2, MP-01
CAROLINA POWER & LIGHT CO.
SHNP
WELDING PROCEDURE SPEC.

PROCESS (ES): GTAW & SMAW TYPE(S) Manual

MATERIAL: P-8 Stainless Steel to P-8 Stainless Steel

WPS NO. 8BA6, 6 12-14-82
WPS No., Rev., Date

JOINT DESIGN: Groove with Consumable Insert, Fillet, Socket Weld & Double Welded Joint

QUALIFIED BY PQR NO(S): 8 (8/24/76) Sensitization Tested

PAGE 1 of 2

POSITIONS: All

Base Metal & Weld Metal Thickness Range **
Min. 1/16" Max. 1/4" (GTAW)
3/16" 2 11/32 (SMAW)

PIPE DIAMETER RANGE All

VOID

Layer Number		1	2-3	Remainder		Remainder
Welding Process		GTAW	GTAW	SMAW		SMAW
Tungsten Size	E-ThW-2	3/32",1/8"	3/32",1/8"	N/A		N/A
Filler Metal	A - No.	8	8	8		8
	F - No.	6	6	5		5
Electrode/Wire Size		Insert 1/8", 5/32"	Bare Wire 3/32",1/8"	Coated Electrode 3/32"	1/8"	Coated Elect. 5/32"
Welding Amperage Range	(Pulsation may be used)	60-90, 70-125	50-140	55-95	90-120	120-160
Welding Voltage Range	(Pulsation may be used)	8-12, 8-12	8-14	16-24	19-28	19-28
Electrical Characteristics	Current	DC	DC	DC	DC	DC
	Polarity	SP	SP	RP	RP	RP
Torch Gas Type and Flow Range (CFH)		Argon 10-30	Argon 10-30	N/A	N/A	N/A
Backing Gas Type & Flow Range* (CFH)		Argon 5-25	Argon 5-25	N/A	N/A	N/A
Temperature	Preheat	60°F Min.	60°F Min.	60°F Min.	Same	60°F Min.
	Interpass	300°F Max.	300°F Max.	Same	Same	Same
Weld Progression		Vertical Up	Vertical Up	Vertical Up		Vertical Up
Oscillation		3X Core Wire Diameter or 1/2", whichever is less				
Insert	Size	+1/8", 5/32"	N/A	N/A	N/A	N/A
	Style	+See Below	N/A	N/A	N/A	N/A
Post Weld Heat Treatment		N/A				
Applicable Procedure(s)		MP-07, MP-16, MP-19, Latest Revision				

VOID

RECEIVED DOCUMENT CONTROL DEC 16 1982 SHEARON HARRIS N.P.P.

* Purge gas shall be discontinued after 3/16" deposit thickness.
** Thickness range for GTAW & SMAW used in combination: 3/16" Min. 2 19/32" Max. Base Metal thickness

\+ As required by engineering design spec., otherwise, at the option of the welding engineer any style such as those listed in SFA 5.30

***1974 Edition W76 Addenda

VOID

This procedure meets the requirements of Section III, Div. 1*** and IX of the ASME Code, 1977 Code edition; 1977 Winter Code addenda.

REVIEWED BY: [signature] 12/14/82
E & C - QA/QC Date

VOID

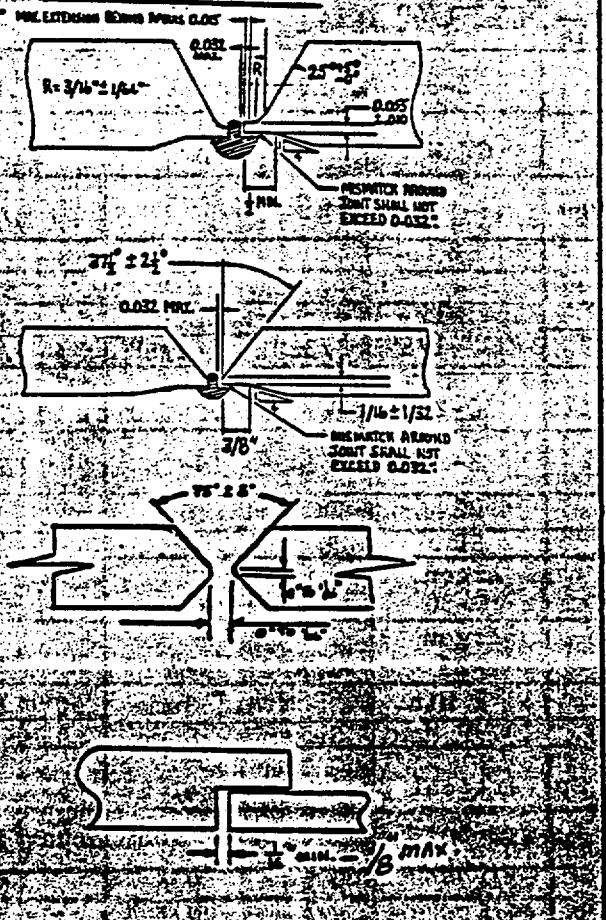
APPROVED BY: R. Harford 12/14/82
NPC - SHNP - Discipline Engr. Metallurgy/Welding Date

APPROVED BY: R. Harford FOR M. F. THOMPSON JR 12/14/82
NPC - SHNP - Senior Resident Engineer Date

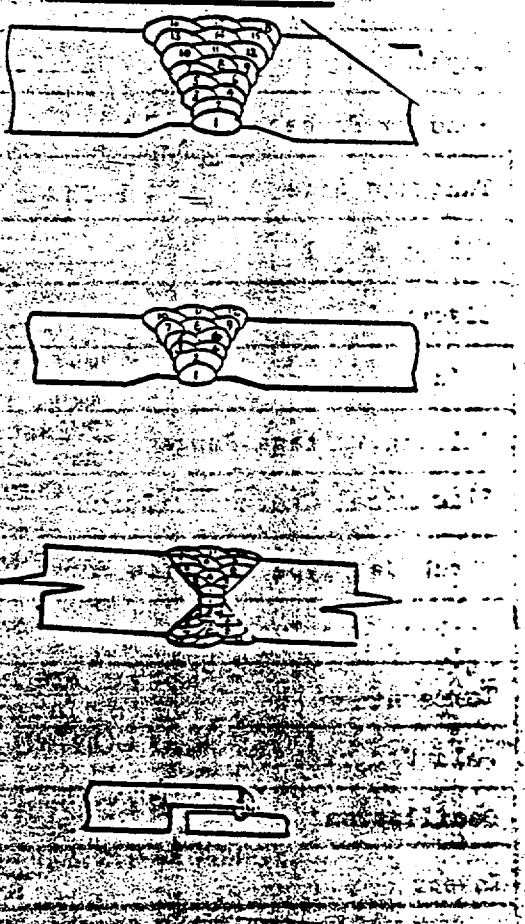
CAROLINA POWER & LIGHT COMPANY
WELDING PROCEDURE SPECIFICATION

WPS No.	Rev. No.	Date			PAGE 2 OF 2
8BA6	6	12-14-82			

PREPARATION DESIGN*



WELD PASS SEQUENCE*



JOINT DETAILS OTHER THAN THOSE SHOWN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS.

*Recommended

Joints

Backing: Yes ____ No X
Backing Material (Type) N/A
Nonmetallic retainer or
Nonfusing metallic retainer type Prohibited
Other Groove with Comsumable Insert

Filler Metals

Spec. No. (SFA) SFA 5.9, SFA 5.4, SFA 5.30 **
AWS No(Class) ER308, ER308L, ER316L, ER309L, ER316, ER309
Electrode-Flux (Class) N/A (See other)
Consumable Insert 308L, 316L, 309L, 308, 316, 309
Other E308L, E316L, E309L, E316, E308, E309
Conforming to SFA 5.30

Preheat

Preheat Maintenance Resistance or Fuel Gas
Other N/A Torch

Gas

Percent Composition (Mixtures) ____
Min. 99.95% Argon R6
Trailing Shielding Gas Composition min. 99.95% Ar
Purge Gas

Technique

String or Weave Bead Stringer or Weave
Orfice or Gas Cup Size Nos. 4-10
Initial & Interpass Cleaning Brushing & Grinding
Method of Back Gouging Grinding C.A.C.
Contact Tube to Work Distance N/A
Multiple or Single Pass (Per Side) Multiple
Multiple or Single Electrodes Single
Travel Speed (Range) Manual
Electrode Spacing N/A
Peening Prohibited

** ER309

ANI REVIEW
ANI 286
DATE 2/4/82

NP/1-1
Rev. 2
3/78

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
PROCEDURE QUALIFICATION RECORD

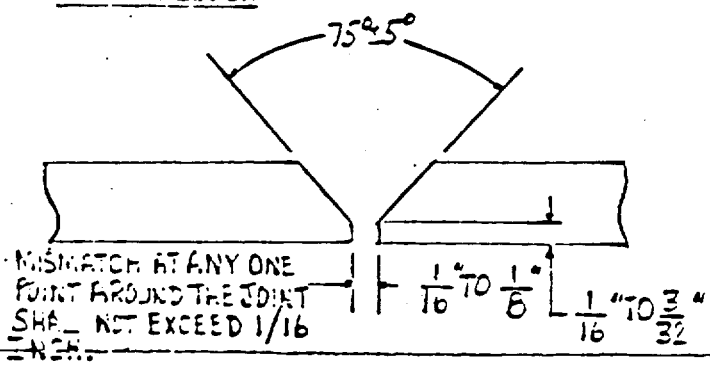
PQR No. 6 Rev. 0

Welding Process (es) GTAW

Types Manual
(Manual, Automatic, Semi-Auto

WPS NoS. WPS P-8-8-B-2, 10-8-76, Rev. 0
(WPS No., DATE, REVISION)

JOINT DESIGN



TECHNIQUE

String or Weave Bead Stringer
Oscillation 3X wire Diameter or 1/2" whichever is less
Single or Multiple Electrodes Single
Single or Multiple Pass Multiple
Travel Speed Manual
Other

BASE METALS

(Pipe) Plate Other
Material Spec SA 312
Type or Grade Type 304
P. No 8 to P. No 8
Thickness 0.365
Diameter 10.750
Other 10" Sch 40

FILLER METALS

Weld Metal Analysis A-No 8
Size of Electrode 3/32"
Filler Metal F-No 6
SFA Specification SFA 5.9
AWS Classification ER-308L
Trade Name Chromenar 308L
Other E-ThW-2

POSITION

Position of Joint 6G
Weld Progression Uphill
(uphill or downhill)
Other

POSTWELD HEAT TREATMENT

Temperature None
Time N/A
Other N/A

PREHEAT

Preheat Temperature 50°F
Interpass Temperature 300°F Max.
Other N/A

ELECTRICAL CHARACTERISTERICS

Current type DC
Polarity Straight
Amperage Range 75-130
Voltage Range 8-14
Other N/A

GAS

Comp. of Shielding Gas(es) Argon 99.9%
Flow Rate (CFH) 10-30 CFH
Comp. of Backing Gas(es) Argon 99.9%
Flow Rate (CFH) 5-50 CFH
Other

We certify that the data in this record is correct and that the test welds were prepared and welded in accordance with the requirements of Section III, Div. 1, and I of the ASME Code, 1974 Code edition, Winter, 1975 Code addenda.
Originally

WITNESSED BY: Douglas N. Allen Q.A. Supervisor 9-23-76
Name Title Date

REVIEWED BY: Joe Gray 9-5-78
C & C Q. A. Date

APPROVED BY: Malcolm C Reese 9-6-78
PPCD - SHNPP - Discipline Engr., Metallurgy/Welding Date

MP/1-1
Rev. 2
3/78

TENSILE TEST

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE AND LOCATION
TEN-1	.748	.244	.1825	16,050	87,945	Break in Weld
TEN-2	.749	.273	.2044	18,100	88,551	Break in Weld

GUIDED BEND TESTS

TYPE AND FIGURE NO.	RESULT	TYPE AND FIGURE NO.	RESULT
FB-1 QW-462.3 (a)	No Visible Cracks	RB-1 QW-462.3 (a)	No Visible Cracks
FB-2 QW-462.3 (a)	No Visible Cracks	RB-2 QW-462.3 (a)	vNo Visible Cracks

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES	LATERAL EXP. % SHEAR	MILS	DROP WEIGHT BREAK	DROP WEIGHT NO BREAK
			N / A					

FILLET WELD TEST

Result - Satisfactory N/A (yes-no) Penetration into Base Metal N/A (yes-no)

Type and character of Failure N/A Macro Results N/A

Welders name Billy R. Stidham Clock No. 241-82-6299 Stamp no. B-2

Laboratory Test No. 5530-P

Test Conducted by: Newport News Industrial Corp.

We certify that the data in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section III, Div. __ and IX of the ASME Code, 1974 Code edition, Winter, 1975 Code addenda.

REVIEWED BY: Joe Young E & C - Q. A. 9-5-78 Date

APPROVED BY: Malcolm E Reese 9-6-78

PPCD - SHNPP , Discipline Engr. Metallurgy/ Date

/80 PROCEDURE QUALIFICATION RECORD

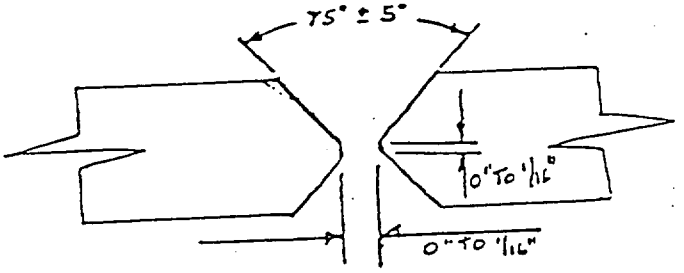
PQR No. 6 (A) (10/6/81)

Welding Process (es) GTAW

Types Manual (Manual, Automatic, Semi-Auto)

WPS NoS. 8B2 4/21/80 5
(WPS No., DATE, REVISION)

JOINT DESIGN



TECHNIQUE

String or Weave Bead Both
Oscillation 3X Wire Diameter
Single or Multiple Electrodes Single
Single or Multiple Pass Multiple
Travel Speed 1-4IPM (Manual)
Other

BASE METALS

Pipe Plate Other
Material Spec SA240
Type or Grade TP 304
P. No 8 to P. No 8
Thickness 1 1/2"
Diameter N/A
Other N/A

FILLER METALS

Weld Metal Analysis A-No 8
Size of Electrode 3/32" & 1/8"
Filler Metal F-No 6
SFA Specification 5.9
AWS Classification ER 308
Trade Name Arcos
Other N/A

POSITION

Position of Joint 3G
Weld Progression Uphill
(uphill or downhill)
Other

POSTWELD HEAT TREATMENT

Temperature N/A
Time N/A
Other N/A

PREHEAT

Preheat Temperature 60°F.
Interpass Temperature 300°F max
Other N/A

ELECTRICAL CHARACTERISTERICS

Current type DC
Polarity SP
Amperage 165, 140, 165, 155, 150, 150,
Voltage 11, 12, 11.5, 11, 12, 11,
Other N/A

GAS

Comp. of Shielding Gas(es) 99.95% Argon
Flow Rate (CFH) 10-25
Comp. of Backing Gas(es) 99.95% Argon
Flow Rate (CFH) 5-15
Other N/A

Electrode Spacing N/A
Peening None
Other N/A

Other Remarks:

Sensitization tested per ASTM A242 Practice A and were found to be acceptable.

TENSILE TEST

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE AND LOCATION
T1/187	1.393	.877	1.222	108,300	88,625	Ductile Base Metal
T2/188	1.397	.868	1.213	106,500	87,799	Ductile Base Metal

GUIDED BEND TESTS

TYPE AND FIGURE NO.	RESULT	TYPE AND FIGURE NO.	RESULT
Side Bend QW 462.2(a)	Passed	Side Bend QW 462.2(a)	Passed
Side Bend QW 462.2(a)	Passed	Side Bend QW 462.2(a)	Passed

TOUGENESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES-	LATERAL EXP. % SHEAR	LATERAL EXP. MILS	DROP WEIGHT BREAK	DROP WEIGHT NO BREAK
			N/A					

FILLET WELD TEST

Result - Satisfactory N/A (yes-no) Penetration into Base Metal N/A (yes-no)

Type and character of Failure N/A Macro Results N/A

Welders name Robert Morgan ~~Clock No~~ I.D. 282 Stamp no. H-5

Test Conducted by: Laboratory Test No. MSL6-2-142

We certify that the data in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section III, Div. 1 and IX of the ASME Code, 1980 Code edition, 1981 Summer Code addenda. *1974 Edition, 1976 Winter Addenda

WITNESSED BY: Monte Noble Const Spec. 10/6/81
Name Title Date

TESTED BY: [signature] 10/6/81
Date

APPROVED BY: [signature] 10/6/81
PTCD - SNNPP - Discipline Engr. Metallurgy Welding Date

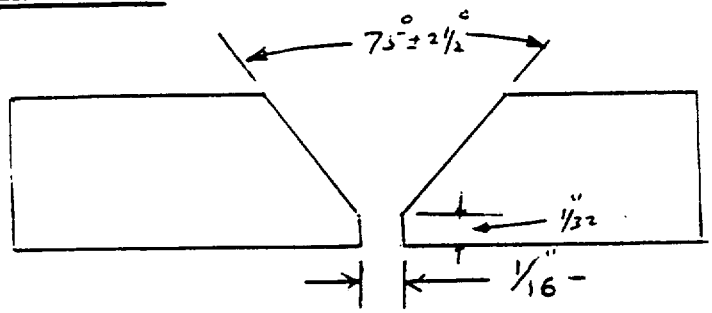
CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR PLANT
PROCEDURE QUALIFICATION RECORD

No. 6(B) Types Manual (Manual, Automatic, Semi-Auto)

Welding Process(es) GTAW

WPS Nos. 8B2 8/6/82 8 (WPS No., Date, Revision)

JOINT DESIGN



TECHNIQUE

String or Weave Bead: String
Oscillation: None
Single or Multiple Electrodes: Single
Single or Multiple Pass: Single
Travel Speed: Manual
Other:

BASE METALS

(Pipe) Plate Other N/A
Material Spec: SA 213
Type or Grade: TP 316
P. No. 8 to P. No. 8
Thickness: .049"
Diameter: ¼" OD
Other: N/A

FILLER METALS

Weld Metal Analysis A-No.: 8
Size of Electrode: 1/16"
Filler Metal F-No.: 6
SFA Specification: SFA 5.9
AWS Classification: ER 308L
Trade Name: Sandvick
Other: N/A

POSITION

Position of Joint: 5G
Weld Progression: Uphill (uphill or downhill)

POSTWELD HEAT TREATMENT

Temperature: N/A
Time: N/A
Other: N/A

PREHEAT

Preheat Temperature: 60°F
Interpass Temperature: 250°F Max.
Other: N/A

ELECTRICAL CHARACTERISTICS

Current type: DC
Polarity: SP
Amperage: 20
Voltage: 8
Other: N/A

GAS

Comp. of Shielding Gas(es): 99.95% Argon
Flow Rate (CFH): 15 CFH
Comp. of Backing Gas(es): 99.95% Argon
Flow Rate (CFH): 10 CFH
Other: N/A

Electrode Spacing: N/A
Peening: None
Other: N/A

Other Remarks:

Sensitization tested per ASTM A262 Practice A and were found to be acceptable.

NOTIFICATION OF WELD PROCEDURE QUALIFICATION TEST

TO: Q A WELDING

DATE 6/24/82

FROM: Robert Morgan

P.Q.R. Number 4B

Welding for Weld Procedure Qualification # 4B will begin

on 6/24/82 (date) 8P.00 (time) in the weld

process development and qualification area

Notification is being provided in accordance with procedure MP-01.

Robert Morgan (Signature)

Received by: Kenneth A Douglas DATE 6-24-82

TIME 8:00 Am

BASE MATERIAL CERTS

GUYON ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES

950 South Fourth Street, Harrison. N.J. 07029

(201) 485-5050

MATERIAL CERTIFICATION

Subject: Carolina Power & Light
Purchase Order H-35811

Description: Seamless ASME SA-213 TP316

Item 1.	1/4" OD x .049 M/W	(Wall Tube & Metal Heat No. 404422)
Item 3.	3/8" OD x .065 M/W	(Wall Tube & Metal Heat No. 404422)
Item 4.	1/2" OD x .065 M/W	(Wall Tube & Metal Heat No. 404422)
Item 2.	3/8" OD X .049 M/W	(Wall Tube & Metal Heat No. 404422)

Certification: This certifies, to the best of our knowledge and belief, that the piping material described herein is in accordance with the specification and Section III, Class 2 of the ASME Boiler and Pressure Vessel Code, 1974 Edition, through the 1976 Winter Addenda, and that all requirements of the purchase order have been fulfilled. Material has been processed in accordance with our Identification and Verification Program.

Attachments: CMTR'S(3)

REVIEWED BY QA

SIGNED/INITIALS 8-23-82 DATE

VA:ldb
cc: Job File
Q.A. File

1-23-82

ASME SECTION III

Veronica Allen
Veronica Allen
Quality Assurance

Date: 12/23/81

Quality Systems Certificat (Materials)# QSC-205

Expiration Date: 1-6-84

FILLER MATERIAL CERTS

SANDVIK

SANDVIK, INC. SCRANTON WORKS
P.O. BOX 1220, SCRANTON, PA. 18501 PH: 717 - 587-5191
PLANT LOCATION: INTERSTATE 81, WAVERLY EXIT 59

CUSTOMER PURCHASE ORDER NO.	SANDVIK ORDER NO.	ITEM	SPECIAL CODE	MARKS	CERTIFICATE NO.	CERTIFICATE DA
H-21111	051081	01	44716/30839		100404	2/7/80

SOLD TO: CAROLINA POWER & LIGHT

SPECIFICATION AND MATERIAL: ASME SECTION II: SFA 5.9; ASME SECTION III: PARA. NB2400 1974 EDITION THRU WINTER 76 ADD. AND SPEC #021, REV. 4
SANDVIK STAINLESS STEEL WELDING WIRE TYPE ER 308L 1/16 x 36 1,000.0#

Filler Metal Analysis, %

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
761463	.015	.38	1.55	.007	.010	20.08	9.98	.08
	Cb+Ta	Ti	V	Cu	Co	N		
	.02	.01	.019	.032	.020	.035		

Delta Ferrite content as determined from above analysis per Fig. NB2433.1-1
WRC Ferrite No. 12 FN
Corresponding ferrite percent 11 %
Ferrite per Schaeffler Diagram - 10 %
Ferrite by Magna Gage - 12 FN per NRC Reg. Guide 1.31 R3
This is to certify that the contents of this certificate are correct and accurate, as contained in Sandvik's records, and that all above test results and operations performed are in compliance with the requirements of the purchase order and the applicable sections of the code and specifications as designated by the purchase order.
ASME Quality System Certificate (materials) No. N-1400. Expiration date: June 11, 1982.

FOR INFORMATION ONLY

ASME SECTION III

For Bengt H. Berg, Quality Assurance Manager

(W-B-SFA-1, REV. 5) ss

ANI REVIEW
ANI JBR
DATE 5/26/81

REVIEWED BY QA

SIGNED/INITIALS DATE BBH 2/25/80

SL 5030

CUSTOMER ORIGINAL

LAB TEST REPORTS

HARRIS ENERGY AND ENVIRONMENTAL CENTER

Carolina Power & Light Company

Weld Test Report for Metallurgy/Welding Engineering, SHNPP

Requested by: RAY HANFORD

-Purpose for Request-

Weld Procedure Qualification: (✓)	Welder Performance Qual.: ( )	Other (Specify): (
P.Q.R. Number: 6(B)	Welder Iden.:	
W.P.S. & Rev.: 8B2 REV. 2	W.P.S. & Rev.:	

Required Code or Specification Compliance: ASME SECTION IX 1980 EDITION WINTER 1981 ADDENDA & ASME SECTION III DIV. 1 1974 EDITION, WINTER 1976 ADDENDA.

Tests Required:	Number	Per (Code Section)
A. Tensile Test	2	ASME SECTION IX QW 46
B. Bend Test	4	ASME SECTION IX QW 462.3
C. Impact Test		
D. Sensitization Test	✓	ASTM A262 PRACTICE
E. Other (Specify)		

Base Material Specification & Size: SA 213 TYPE 316, 1/4" O.D. X .049" W

Filler Material Specification: SFA 5.9 ER 308L, 1/16" DIA.

Heat/~~Lot~~ Number 761463

REVIEWED BY QA

8-23-82

INITIALS DATE

HARRIS ENERGY AND ENVIRONMENTAL CENTER

Carolina Power & Light Company

Weld Test Report for Metallurgy/Welding Engineering, SHNPP

Requested by: RAY HANFORD

-Purpose for Request-

Weld Procedure Qualification: (✓)	Welder Performance Qual.: ( )	Other (Specify): (
P.Q.R. Number: 6(B) W.P.S. & Rev.: 8B2 REV. 6	Welder Iden.: _____ W.P.S. & Rev.: _____	_____ _____

Required Code or Specification Compliance: ASME SECTION IX 1980 EDIT WINTER 1981 ADDENDA & ASME SECTION III DIV. 1 1974 EDITION, WIN 1976 ADDENDA.

Tests Required:	Number	Per (Code Section)
A. Tensile Test	2	ASME SECTION IX QW 46
B. Bend Test	4	ASME SECTION IX QW 462.
C. Impact Test	____	____
D. Sensitization Test	✓	ASTM A262 PRACTICE
E. Other (Specify)	____	____

Base Material Specification & Size: SA 213 TYPE 316, 1/4" O.D. X .049"

Filler Material Specification: SFA 5.9 ER 308L, 1/16" DIA.

Heat/~~Lot~~ Number 761463

REVIEWED BY QA

SIGNED/INITIALS

8-23-82

DATE

HARRIS ENERGY AND ENVIRONMENTAL CENTER

Carolina Power & Light Company

Weld Test Report for Metallurgy/Welding Engineering, SHNPP

Requested by: RAY HANFORD PBS

-Purpose for Request-

Weld Procedure Qualification: (✓)	Welder Performance Qual.: ( )	Other (Specify): (
P.Q.R. Number: 6(B) W.P.S. & Rev.: 8B2 REV. 2	Welder Iden.: _____ W.P.S. & Rev.: _____	_____ _____

Required Code or Specification Compliance: ASME SECTION IX 1980 EDIT WINTER 1981 ADDENDA & ASME SECTION III DIV 1 1974 EDITION, WINT 1976 ADDENDA

Tests Recuired:	Number	Per (Code Section)
A. Tensile Test	2	ASME SECTION IX QW 46
B. Bend Test	4	ASME SECTION IX QW 462.
C. Impact Test	____	____
D. Sensitization Test	✓	ASTM A262 PRACTICE
E. Other (Specify)	____	____

Base Material Specification & Size: SA 213 TYPE 316, 1/4" O.D. X .049"

Filler Material Specification: SFA 5.9 ER 308L, 1/16" DIA.

Heat/~~Lot~~ Number 761463

REVIEWED BY QA

K. H. [illegible] 8-23-82

SIGNED/INITIALS DATE

MP-1-1
Rev. 7 7/5/84

Carolina Power & Light Company
Procedure Qualification Record

Exhibit 3
MP-01
Page 1 of 3

Welding Process(es) ☒ Manual ☐ Semi-Automatic ☐ Automatic	PQR No. 6 (c)
SFA No. 5.9 Filler Metal F No. 6	Date 11/15/84
AWS Classification ER308	WPS No. 882
Weld Metal Analysis (A No.) 8	Rev. No. 15
Filler Metal Size(s) 1/16"	Date 11/15/84

Material Specification (Type or Grade) SA240 TP 304	Preheat Temperature Ambient (50°F)
P No. 8 to P No. 8	Interpass Temperature N/A
Form Sheet	Post Weld Heat Treat Temp None
Diameter N/A Thickness .031"	Time of PWHT N/A
Weld Deposit Thickness: .031"	Electrode Spacing N/A
Position of Groove 1G	Current Type DC
Vertical Weld Progression N/A	Polarity SP
Stringer or weave Stringer	Tungsten Size & Type 3/32" EThW-2
Oscillation or weave None	Composition of Shielding Gas Min.99.95%Argon
Single or Multiple Pass Single	Flow Rate (CFH) 30 CFH
Single or Multiple Electrode Single	Composition of Backing Gas Min.99.95% Argon
Peening None	Flow Rate (CFH) 30 CFH
	Backing Material None
	Electrode Tradename Arcos

TENSILE TESTS QW462.1(a)

Specimen Number	Width	Thickness	Area	Ultimate Total Load	Ultimate Unit Stress (PSI)	Type of Failure and Location
699	1.484	.031"	.046	5420	113,913	Brittle in Weld
700	1.482	.031"	.046	4950	107,609	Brittle Base Metal

GUIDED BEND TEST

Type and Figure No.	Results	Type and Figure No.	Results
QW462.3(a) Root	Passed	QW462.3(a) Face	Passed
QW462.3(a) Root	Passed	QW462.3(a) Face	Passed

FILLET WELD TEST

Result - Satisfactory ☐ Yes ☐ No Penetration into Base Metal ☐ Yes ☐ No

Type & Character of Failure N/A Macro Results

Welders Name Robert Morgan SS No. 238-78-1542 Stamp No. H-5

Test Conducted By CP&L E&E Laboratory Test No. 9-2-149

Remarks/Additional Tests:

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code 1983 Edition, S1984 Code Addenda and Section III Code 1974 Edition W1976 Addenda.

Witnessed By Mart J. Miller Const. Spec. Signature Mart J. Miller Date 11/15/84
Name - Title

Review By D. A. McGAW Signature for GLF Date 11-15-84
Director QA/QC - Harris Plant

Approved By R. Hanford Signature 11/15/84 Date
Discipline Engr./Met/Welding

MP-1-1
Rev. 7
7/30/84

Carolina Power & Light Company
Procedure Qualification Record

Exhibit 3
Page 2 of 3
PQR No. 6

Joint

PASS	ELECTRODE	ELECTRODE DIAMETER	AMPS	VOLTS	TRAVEL SPEED	HEAT INPUT	
1	3/32"	1/16"	10	8	Manual	N/A	

U.S. 79 0195

MP-1-1
Rev. 7
7/30/84

Carolina Power & Light Company
Procedure Qualification Record

Exhibit 3
Page 3 of 3
PQR No. 6 (c)

Charpy Notch
Impact Test

Specimen Number	Notch Type	Notch Location	Specimen Size	Test Temperture (°F)	Impact Values (ft/lbs)	Lateral Expansion %Shear	Lateral Expansion Mils
			N/A				

N/A

Test Conducted By _____ Date _____ Laboratory Test No. _____

Remarks _____

Drop Weight Test

Specimen Number	Test Temperature	Ft-Lbs	Break	No Break
		N/A		

Remarks _____

Test Conducted By _____ Date _____ Laboratory No. _____

7 9 0 1 9 6

0 · 7 5 7 9 0 1 9 7

CP&L

SECTION: ENVIRONMENTAL TECHNOLOGY
Effective Date: 6/16/77

APPLICATION: SPECIAL ANALYSIS
Revision Date: 8/9/82

REMARKS: SHNPP-

Sample Form: 8 4 - 5 4 7 9

Sample No.	Date Received 1984	Date Sampled 1984	Identification	Phosphorus* %	Silicon %	Chromium %	Manganese %	Molybdenum %	Nickel %					
84 5479	11-12	11-9	Type 316 Stainless Steel Chips SP246, MSL 9-2-149											
			Date Analyzed	11-19-84										
			Reference	127/66 GC										

* Phosphorus could not be determined on this sample. Exhaust not working adequately in perchloric acid hood. Fasih Shaikh was notified 11-19-84
GW Cessna

Silicon, Chromium, Manganese, Moly, and Nickel determined by MSL.

Analysis Requested By: Robert Jordan x295
Charge No.:
Analysis Performed By:
Analysis Reviewed By: GWC
Reporting Date: 11/20/84
Supervisor Analytical Laboratory: [illegible signature]

	[redacted]	Mo	Cr	Mn	Fe	Ni	C	S
9-2-149 Bel. Rep A	2.13		18.58	1.05	71.48	6.76		
	2.00		18.79	0.93	71.64	6.64		
AVG	2.07		18.69	0.99	71.56	6.70		
NBS 304			18.1		71.0	10.9		
XML	1.24		19.73	-0-	69.26	9.77		
16 spots (99% Prob)			17.6 - 18.6		69.6 - 72.4	10.7 - 11.1		
NBS 316	0.50	2.38	18.4	1.64	Bal	12.2		
XML	2.19	2.23	19.54	1.62	63.00	11.43		
							0.095	0.0
							RB. 12/4/84	
							9-2-149	

SANDVIK

H-21111 051081 01 44716/30839 100404 2/7/80

SOLD TO CAROLINA POWER & LIGHT

MATERIAL ASME SECTION II: SFA 5.9; ASME SECTION III: PARA. NB2400 1974 EDITION THRU WINTER 76 ADD. AND SPEC #021, REV. 4

SANDVIK STAINLESS STEEL WELDING WIRE TYPE ER 308L 1/16 x 36 1,000.0#

Filler Metal Analysis, %

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
761463	.015	.38	1.55	.007	.010	20.08	9.98	.08
	Cb+Ta	Ti	V	Cu	Co	N		
	.02	.01	.019	.032	.020	.035		

Delta Ferrite content as determined from above analysis per Fig. NB2433.1-1
WRC Ferrite No. 12 FN
Corresponding ferrite percent 11 %
Ferrite per Schaeffler Diagram - 10 %
Ferrite by Magna Gage - 12 FN per NRC Reg. Guide 1.31 R3
This is to certify that the contents of this certificate are correct and accurate, as contained in Sandvik's records, and that all above test results and operations performed are in compliance with the requirements of the purchase order and the applicable sections of the code and specifications as designated by the purchase order.
ASME Quality System Certificate (materials) No. N-1400. Expiration date: June 11, 1982.

COP INFORMATION ONLY

AS
SECTI

For Bengt H. Berg, Quality Assurance Manager

(W-B-SFA-1, REV. 5) ss

JBR 5/26/81

CUSTOMER ORIGINAL

ALLOY RODS, INC.

P.O BOX 517 HANOVER, PA 17331 717/637-8911

CERTIFICATE OF ANALYSIS

CERTIFIED MATERIALS TEST REPORT

CAROLINA POWER & LIGHT
SHARON HARRIS NUC POWER PLT
STATE ROAD 1134
NEW HILL, NC 27562

Customer Order No. 12-7275

Order No. 230740- 1

This Material Conforms to Specification ASME B&PVC SFA 5.1 SEC. II PART C 1983 ED. THRU WNTR. 1983 ADD. ASME B&PVC SEC. III, NB-2400 1974 ED. THRU WNTR. 1976 ADD. CP&L 021 REV. 14 PART A. 10 CFR PART 21 APPLIES, 10 CFR 50 APPENDIX B.

Trade Name or Trademark: Arcaloy 316 ELC Bare

Type: ER316L

Diameter Size: 1/16"

Test No. 2-3593-00

Weight: 250 lbs.

Lot Number:

Heat Number: P0478

Carbon	.01
Manganese	1.47
Chromium	19.48
Nickel	12.80
Silicon	.40
Columbium+ Tantalum	.01 .02
Molybdenum	2.52
Tungsten	
Copper	.12
Titanium	.02
Phosphorus	.021
Sulphur	.010
Vanadium	.06
Cobalt	
Iron	Rem.
Nitrogen	.019
FERRITE	9 FN Magne

ASME
SECTION III

State of Pennsylvania } SS
County of York

Subscribed and sworn to before me this 1st day of May, 1984

SEAL Kay Hidlan
Notary Public

My Commission expires: 11/22/86

Quality Systems Certificate No. QSC-221
Expiration Date: September 8, 1984

The undersigned certifies that the contents of this report are correct and accurate and that all operations performed by the undersigned or sub contractors are in compliance with requirements of the material specification and ASME Boiler and Pressure Vessel Code Section III Division I Subsection NCA-3800

ALLOY RODS, INC.

BY D. A. Smith

D. A. Smith
Supervisor, Q.A. Services

ANI REVIEW
ANI
DATE 9/5/84

BBH 5/10/84

BBH 5/17/84

2149

HARRIS ENERGY AND ENVIRONMENTAL CENTER

Carolina Power & Light Company

Weld Test Report for Metallurgy/Welding Engineering, SHNPP

Requested by: RAY HANFORD

-Purpose for Request-

Weld Procedure Qualification: (✓)	Welder Performance Qual.: ( )	Other (Specify): ( )
P.Q.R. Number: 6(c)	Welder Iden.:	
W.P.S. & Rev.: 8B2 REV. 14	W.P.S. & Rev.:	

Required Code or Specification Compliance: ASME SECTION IV 1983 EDITION SUMMER 1984 ADDENDA & ASME SECTION III DIV 1 1974 EDITION, WINTER 1976 ADDENDA

Tests Required:	Number	Per (Code Section)
A. Tensile Test	2	QW 150 SECTION IX
B. Bend Test	~~2~~ 4	QW 160 SECTION IX
C. Impact Test		
D. Sensitization Test		
E. Other (Specify) CHEMICAL ANALYSIS		

PLEASE ANALYZE C, Mn, P, S, Si, Cr, Ni, Mo ~~Fe~~

Base Material Specification & Size: SA 240 T 316, .031" THICK

Filler Material Specification: SFA 5.9 ER 316

Heat/Lot Number

Materials Laboratory Number: 9-2-149

Results of Tests:

A. Reduced Section Tensile Test:

Specimen No.	Width	Thickness	Area	Ultimate Total Load, lb.	Ultimate Unit Stress	Character Failure & Location
699	1.484	.031	.046	5420	113,913	Brittle WELD
700	1.482	.031	.046	4950	107,609	Brittle Base metal

B. Bend Test:

Type of Bend	Results	Type of Bend	Results
ROOT	PASSED	ROOT	PASSED
FACE	PASSED	FACE	PASSED

C. Impact Test:

Specimen No.	Notch Location	Notch Type	Test Temp.	Ft./lbs.	Lat. Exp. Mils.	Lat. Exp. Percent	Percent Shear
NA							
NA							
NA							
NA							
NA							
NA							
NA							
NA							
NA							

D. Sensitization Test: NA

E. Other Tests: Chemical analysis per attached sheets

Remarks:

I certify that the statements in this report are correct and performed in accordance with the above specification(s).

Robert C. Jordan 12/3/84
(Signature) (Date)

Distribution: 3 copies, Metallurgy/Welding Engineering Subunit (SHNPP)

NOTIFICATION OF WELD PROCEDURE QUALIFICATION TEST

TO: Q A WELDING

DATE 11-7-84

FROM:

P.Q.R. Number 6(C)

Welding for Weld Procedure Qualification # 6(C) will begin

on 11-7-84 (date) 9:00 AM (time) in the weld

process development and qualification area

Notification is being provided in accordance with procedure QP-01

(Signature)

Received by: R.R. McConnell DATE 11/7/84

TIME 7:30 A.M

0 0 3

MP/1-1
Rev. 3
5/79

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
PROCEDURE QUALIFICATION RECORD

Exhibit 3
MP-01
Page 1 of 2

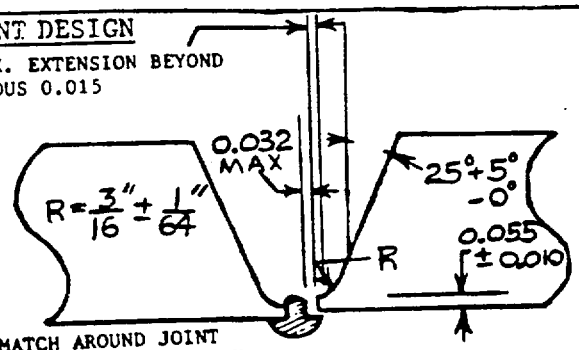
PQR No. 7, 7/10/76

Welding Process (es) GTAW

Types Manual
(Manual, Automatic, Semi-Aut

WPS NoS. P-8-8-B-4 10/8/76 Rev. 0
(WPS No., DATE, REVISION)

JOINT DESIGN



TECHNIQUE

String or Weave Bead String
Oscillation 3 X Dia., or 1/2" Whichever is least
Single or Multiple Electrodes Single
Single or Multiple Pass Multiple
Travel Speed Manual
Other

BASE METALS

Pipe XX ~~Plate~~ Other
Material Spec SA312
Type or Grade Type 304
P. No 8 to P. No 8
Thickness 0.365
Diameter 10.750
Other 10" Sch. 40

FILLER METALS

Weld Metal Analysis A-No 8
Size of Electrode 5/32" (CI), 3/32"*
Filler Metal F-No 6
SFA Specification SFA 5.9
AWS Classification ER308L
Trade Name EB Insert, Type 308L, Chromenar 308L
Other ER308L

POSITION

Position of Joint 6G
Weld Progression Uphill
(uphill or downhill)
Other

POSTWELD HEAT TREATMENT

Temperature None
Time -
Other -

PREHEAT

Preheat Temperature 50°F Min.
Interpass Temperature 300°F Max.
Other -

ELECTRICAL CHARACTERISTERICS

Current type DC
Polarity SP
Amperage *70-80-90-100-110
Voltage * 8 -9-10-11-12
Other

GAS

Comp. of Shielding Gas(es) Argon 99.9%
Flow Rate (CFH) 10-30CFH
Comp. of Backing Gas(es) Argon 99.9%
Flow Rate (CFH) 5-25 CFH
Other

We certify that the data in this record is correct and that the test welds were prepared and welded in accordance with the requirements of Section III, Div. 1, and of the ASME Code, 1974 Code edition, 1975 Winter Code addenda.

WITNESSED BY: Douglas N. Allen, QA Supervisor 7-23-76
Name Title Date

REVIEWED BY: G. P. Lombard 9/28/78
E & C - Q. A. Date

APPROVED BY: M E Reise 9/26/78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

APPROVED BY: C M Lucas 9/28/78
PPCD - SHNPP - Resident Engineer Date

ANI REVIEW ANI

6-LHa

TENSILE TEST

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE AND LOCATION
T-1	.753	1.045	.787	70,250	89,260	Base Metal Br
T-2	.748	1.102	.824	70,000	84,950	Base Metal Br

GUIDED BEND TESTS

TYPE AND FIGURE NO.	RESULT	TYPE AND FIGURE NO.	RESULT
SB-1 QW-462 (a)	Satisfactory	SB-3 QW-462.2 (a)	Satisfactory
SB-2 QW-462.2 (a)	Satisfactory	SB-3 QW-462.2 (a)	Satisfactory

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES	LATERAL EXP. % SHEAR	LATERAL EXP. MILS	DROP WEIGH BREAK	DROP WEIGH NO BR
			N/A					

FILLET WELD TEST

Result - Satisfactory NA (yes-no) Penetration into Base Metal N/A (yes-no)

Type and character of Failure N/A Macro Results N/A

Clock No. 241-82-6299 Stamp no. B-2

Welders name Billy R. Stidham Laboratory Test No. 6482-F

Test Conducted by: Newport News Industrial Corp.

We certify that the data in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section III, Di and IX of the ASME Code, 1974 Code edition, Winter, 1975 Code addenda.

Orig. REVIEWED BY: Joe Young /True Copy/ 9-5-78
E & C - Q. A. Date

Orig. APPROVED BY: Malcolm E. Reese /True Copy/ 9-6-78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

Orig. APPROVED BY: A. M. Lucas /True Copy/ 9-6-78
PPCD - SHNPP - Senior Resident Engineer Date

MP/1-1
Rev. 3
5/79

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
PROCEDURE QUALIFICATION RECORD

Exhibit 3
MP-01
Page 1 of 2

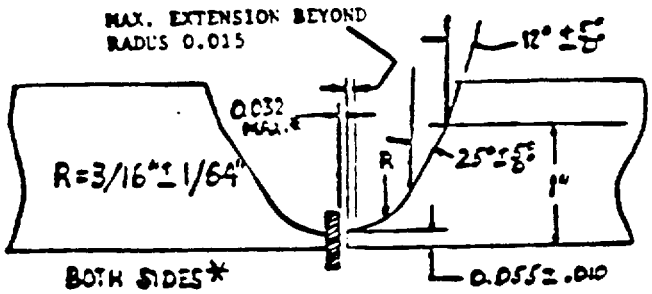
PQR No. 8 8/24/76

Welding Process (es) GTAW & SMAW

Types Manual
(Manual, Automatic, Semi-Au

WPS NoS. WPS P8-8-BA-6, Rev. 1, 10/8/76
(WPS No., DATE, REVISION)

JOINT DESIGN



TECHNIQUE

String or Weave Bead Stringer
Oscillation 3X Wire Diameter or 1/2" whichever is less
Single or Multiple Electrodes Single
Single or Multiple Pass Multiple
Travel Speed Manual
Other

BASE METALS

Pipe XX Plate N/A Other
Material Spec SA 182
Type or Grade Type 304
P. No 8 to P. No 8
Thickness 1.312"
Diameter 12.750"
Other 12" Sch. 160

FILLER METALS

Weld Metal Analysis A-No 8
Size of Electrode 5/32" CI, 3/32" *Bare Wire", **3/32", ***1/8" C.E.
Filler Metal F-No 6*, 5**, ***
SFA Specification SFA 5.9 & SFA 5.4
AWS Classification ER308, ER308L*, E-308ELC-16**, ***
Trade Name 308 Grinnel Insert, Chromenar 308L
Other Arcaloy 308 ELC-16**, ***

POSITION

Position of Joint 6G
Weld Progression Uphill
(uphill or downhill)
Other

POSTWELD HEAT TREATMENT

Temperature None
Time N/A
Other N/A

PREHEAT

Preheat Temperature 50°F
Interpass Temperature 300°F Max.
Other N/A

ELECTRICAL CHARACTERISTERICS

Current type DC*, DC**, ***
Polarity SP*, RP**, ***
Amperage 70-95, 75-95*, 80-110**, (85-90-110-120)***
Voltage 9-11, 9-11*, 20-24**, (20-21-24-26)***
Other CI, Bare Wire*; CE**, ***

GAS

Comp. of Shielding Gas(es) Argon 99.95%
Flow Rate (CFH) 20-30 CFH
Comp. of Backing Gas(es) 99.95%
Flow Rate (CFH) 10-25 CFH
Other

We certify that the data in this record is correct and that the test welds were prepared and welded in accordance with the requirements of Section III, Div. 1, of the ASME Code, 1974 Code edition, Winter, 1975 Code addenda. RH 11/
Only Editorial changes were made 12/14/79.

WITNESSED BY: Douglas N. Allen — Q.A. Supervisor — 9-23-76
Name — Title — Date

Orig. REVIEWED BY: G. L. Forehand /True Copy/ 9/5/78
E & C - Q. A. Date

Orig. APPROVED BY: M. E. Reese /True Copy/ 9/6/78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

Orig. APPROVED BY: A. M. Lucas /True Copy/ 9/6/78
PPCD - SHNPP - Senior Resident Engineer Date

TENSILE TEST

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE AND LOCATION
TEN-1	.750	.280	.2100	18,750	89,285	Break in Weld
TEN-2	.750	.270	.2025	18,000	88,888	Break in Weld

GUIDED BEND TESTS

TYPE AND FIGURE NO.	RESULT	TYPE AND FIGURE NO.	RESULT
FB-1-QW462.3 (a)	Satisfactory	RB-1 QW462.3 (a)	Satisfactory
FB-2-QW462.3 (a)	Satisfactory	RB-2 QW462.3 (a)	Satisfactory

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES	LATERAL EXP.		DROP WEIGHT	
					% SHEAR	MILS	BREAK	NO BREAK
			N/A					

FILLET WELD TEST

Result - Satisfactory N/A (yes-no) Penetration into Base Metal N/A (yes-no)

Type and character of Failure N/A Macro Results N/A

Clock No. 241-82-6299 Stamp no. B-2

Welders name Billy R. Stidham Laboratory Test No. 5529-P

Test Conducted by: Newport News Industrial Corp.

We certify that the data in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section III, Div. __ and IX of the ASME Code, 1974 Code edition, 1975 Winter Code addenda.

REVIEWED BY: [signature] 9/28/78
E & C - Q. A. Date

APPROVED BY: [signature] 9/28/78
PPCD - SHNPP - Discipline Engr. Metallurgy/Welding Date

APPROVED BY: [signature] 9/28/78
PPCD - SHNPP - Resident Engineer Date

ANI REVIEW
ANI [signature]
DATE 6/27/[illegible]

Matrix of Code Requirements vs. Missing Field Weld Records

Code Section	Code Requirement	Deficiency	Reconciliation
Section III, ND-2150 Section III, ND-4122	Requires identification and control of pressure-retaining materials	Identification of weld material for field welds was contained on WDRs which in most cases are no longer available. Likewise, records attesting to pipe spool id cannot be located for all of the embedded pipe spools. It is noted that numerous sections in the Code pertain to base metal and weld metal certification requirements. (ND-2121, 2130 & 2410, 2432, 2433, 4125)). There is no indication that CP&L did not conform to any of these requirements; rather, the deficiency is taken to be one of identification and traceability	For all accessible welds, material verification program will be undertaken to assure that correct material was used. For embedded SFP piping field welds, programmatic assurance is provided in that the procurement specification for welding materials during the time of construction (Site Specification No. 021)assured that all austenetic stainless steel welding material procured for Harris Plant construction was procured to Section III requirements. Construction procedure MP-03, "Welding Material Control" required that all filler material used for Code work at the Shearon Harris Nuclear Power Plant be purchased as specified by this procurement specification. Relative to embedded pipe spool id, in many cases this can be verified with alternate documentation from QA records. In those cases where this cannot be accomplished, program and procedure requirements provide additional assurance.
Section III, ND-4230	Requires that tack welds be removed or adequately prepared for incorporation into the final weld. Requires alignment of sections to be welded to specific criteria.	WDRs used to verify fit-up and alignment are generally not available.	All accessible field welds have been re-inspected using Code criteria with no gross fit-up deficiencies identified. A significant portion of embedded welds will be subject to internal camera inspection which would identify issues with fit-up and alignment.

Code Section	Code Requirement	Deficiency	Reconciliation
Section III, ND-4323	Requires that only those welding processes and welders qualified in accordance with Section IX be used.	Lack of documentation prevents verification of adherence to qualified processes and use of qualified welders.	Processes and programs at the time assure that the welding program was adhered to such that only qualified welders and processes were used. Construction Procedures MP-01(Qualification of WPS) & MP-02 (Qualification of Welders) required that all welders and welding procedures used for Power Plant construction be appropriately qualified. Construction Procedure MP-07, "General Welding Procedure for Stainless Steel Weldments", provided additional specific technical requirements beyond those found in the WPS. In addition, records associated with QA/QC oversight are available and provide assurance that issues were identified and resolved in accordance with QA program requirements. Finally, in most cases QC review of satisfactorily completed field welds is attested to by signature in hydro test records.
Section III, ND-4322.1	Requires identification of joint by application of welder id symbol	For embedded piping where WDRs are not available, lack of accessibility prevents verification of welder id	Program and procedural requirements would have required that the welder id be stamped at the weldment and included on the WDR (ref. Construction Procedure MP-05, "Stamping of Weldments")
Section III, ND-4440	Requires examinations of welds in accordance with ND-5000. For the welds in question, this would have resulted in either MT (for CCW Piping) or LP (SFP Piping), with acceptance standards per ND-5300.	Lack of documentation attesting to the satisfactory completion of required NDE.	All accessible Code field welds in scope of the Alternative Plan have been subject to visual examination, along with Code required external NDE (LP / MT) using original Code acceptance criteria. In addition, a large percentage of embedded field welds will be subject to internal camera inspection using documented inspection procedures and qualified inspectors. This examination program augments programmatic and procedural measures existing at the time of construction to assure that the necessary level of quality exists.
Section III, ND-4452 & 4453	Requires that defects be removed and repaired areas be examined.	Repair WDRs may not be available to document all inspection / repair activities	Records review finds that many Repair WDRs are on file as a result of QC oversight of the construction process. However, Repair WDRs which were identified "in process" may not be on hand. The same assurances which attest to the quality of completed field welds also apply to assure that defects were identified and removed per Code requirements.

Enclosure 8 to Serial: HNP-99-069

Hydrotest Records for Embedded Spent Fuel Pool Cooling Piping and Field Welds

RECS INPUT SHEET

ENCODED _ ⌀
INPUT _
VERIFIED _

DIR NO: _ FILE NO: ⌀7711⌀ DOCUMENT DATE: 79⌀314

UNIT: 1 CART NO: _ FRAME NO: _

Q AND RET CODE QP APPROVAL: Q - _ MISC - _

SERIAL NO: _

NAME/TITLE: Hydro Test Form

PROC. NO: _ REV. NO: _ RESPONSIBILITY: _

VENDOR: _ P.O. NO: _

CHG. NO: _ JOB ORDER NO: _

T-232

REFERENCE: _

CONTENTS: (System) Spent Fuel 711⌀

* DOC TYPES: 1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 22, 23, 25, 27, 31, 32, 41

INDEX

Title Spent Fuel 7110

Report	Page	Description
Exhibit 1 TP-30 1	1 of 2	From but not including 1SF-FW1 to but not including 1-SF-1 FW4 1-SF-1 Rev 1 - Line No. 3SF12-174SA-184
Exhibit 1 TP-30 2	1 of 2	From but not including 1-SF-2-FW-5 to but not including 1-SF-2-FW-8 1-SF-2 Rev 1 - Line No. 3SF12-171SB-184
Exhibit 1 TP-30 3	1 of 2	Boundaries between Ref. field welds but not including ISO 1-SF-4 Rev. 1 1-SF-4 Rev 1 - Line No. 3SF12-176SB-184
Exhibit 1 TP-30 4	1 of 2	Boundaries between Ref. field welds but not ISO 1-SF-4 Rev. 1 1-SF-4 Rev 1 - Line No. 3SF12-179SA-184
QA 26 5	1 of 2	1-SF-2-FW-8 and Shop welds on spool 1-SF-132-2 1-SF-132 Rev. 1 - Line No. 3SF12 171-SB 184
QA 26 6	1 of 2	1-SF-1-FW4 and Shop welds on Spool 1-SF-132-1 1-SF-132 Rev 1 Line No. 3SF12 174SA 184
Exhibit 1 TP-30 7	1 of 2	From but not including 1-SF-10-FW-58 to Ring. 1-SF-10 Rev. 2 Line No. 3SF12 5SA 184
Exhibit 1 TP-30 8	1 of 2	From but not including 1-SF-10-FW-60 to Ring. 1-SF-10 Rev. 2 Line No. 3SF12-6SB-184
Exhibit 1 TP-30 9	1 of 2	Spool pieces FI-261-1-SF-133-3 and FI-261-1-SF-133-4 including Field Weld 1-SF-133-FW-290. 1-SF-133 Rev. 2
QA 26 10	1 of 2	All welds on ISO. Between but excluding liner ring weld to and including field weld 2-SF-143-FW-512. 2-SF-143 Rev. 1
QA 26 11	1 of 2	From, including 2-SF-149 FW-108 to but not including Instrumentation Flange. All welds between to be tested 2-SF-149 Rev. 1 Line No. 3SF12-171SB-233
QA 26 12	1 of 2	On 2-SF-151-2, Test covers all welds between but excluding, weld at 90 Elbow to but excluding Field weld 2-SF-143-FW-512. 2-SF-151 Rev. 0
QA 26 13	1 of 2	Southwest FAB Shop weld on line 3SF12-174SA-233 and ISO 2-SF-159 at elevation 264'-2 3/4" 2-SF-159 Rev. 0
QA 26 14	1 of 2	Test covers all welds between FW-518 and Liner Ring, excluding Liner Ring Welds and 2-SF-159-1A 2-SF-159 Rev. 0
QA 26 15	1 of 2	Test covers all weld between and FW-5FA and Liner Ring, excluding Liner Ring 2-SF-159 Rev. 0

1-7110-A.2

INDEX

Title Spent Fuel 7110

Report	Page	Description
Exhibit 1 TP-30 16	1 of 2	From but not including 1-SF-1 FW-1 to but not including 1-SF-1 FW-4 1-SF-1 Rev. 1 Weld 2&3 Line No. 3SF12-174SA-154
Exhibit 1 TP-30 17	1 of 2	Piece numbers 1-SF-133-1 and 1-SF-133-2 including field weld 1-SF-133-FW-289 (3SF 1-SF-133 Rev. 2 (1394-1719 R 1)
Exhibit 1 TP-30 18	1 of 2	From but not including 1-SF-2-FW-5 to but not including 1-SF-2-FW-8. 1-SF-2 Rev. 1 Weld 6 and 7
QA 26 19	1 of 2	From and including 2-SF-144-FW-515 to and including Spent Fuel Liner Ring weld and all welds Between 2-SF-144 Rev. 0 Line No. 3SF12-176SB-2:3 SEE FCR-A-254
QA 26 20	1 of 2	2-SF-143-3 Stainless Steel Liner Plate Ring weld

0375391

(10)

QA-26
2/4/82
Rev. 2

Page 1 of 2

Corrected Doc'n. [illegible]
CC 9-8-83
[illegible] 9/8/83
Initial Date.

CARLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) R/2
WP 115 R/3 CC 9-8-83

Unit No. 2 System SPENT FUEL Turnover No. 1-7110.003

Drawing No. N/A Rev. N/A Code Class 3

Isometric(s) 2-SF-143 REV 1

Test Boundaries ALL WELDS ON ISO. BETWEEN BUT EXCLUDING LINER RING WELD TO AND INCLUDING FIELD WELD 2-SF-143-FW-512

Design Press. 25 psi Maximum Press. (of lowest component) 138 psi

Test Press. 32 psi Minimum Time at Test Press. 10 min.

Hold Press. 25 psi TEST MEDIUM WATER
TEST TEMPERATURE NO MINIMUM

Prepared By: SEE FCR-P-254 Verified By:

[signature] 5/27/82 — Mech. Discipline Engineer, Date

[signature] for G. McDaniel 6/3/82 — Mech. QA/[illegible], Date

COMPONENTS

Ident. No.	Q.G./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & Date)
2-SF-143-1	yes	DDR 897	[initials] 6-3-82
2-SF-143-2	yes	Partially	[initials] 6-3-82
2-SF-143-3	yes	Closed	[initials] 6-3-82

INCORPORATED ON
N-5
INITIALS SLS DATE 6/7/82

PRE-TEST CHECK-OFF

1. [illegible] Sat. SLB 6/3/82 Unsat. ____
2. [illegible] Sat. SLB 6/3/82 Unsat. ____
3. [illegible] Sat. SLB 6/3/82 Unsat. ____
4. [illegible] Sat. SLB 6/3/82 Unsat. ____
5. [illegible] temp. 89 °F ([illegible])
6. Thermometer/[illegible] No. 4931B Date Calibrated 5/20/82
7. [illegible] Gauge No's. G-2 Date Calib. 6/3/82 Range 0 to 100
Date Calib. ____ Range ____ to ____

-7110-M.1
12-SF-143

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
2-SF-143-FW-512	yes	yes	DLS	6/3/82	
2-SF-143-FW-513	yes	yes	DLS	6/3/82	
2-SF-143-FW-514	yes	yes	DLS	6/3/82	
SW-2-SF-143-1A	yes	yes	DLS	6/3/82	
SW-2-SF-143-1B	yes	yes	DLS	6/3/82	
SW-2-SF-143-1C	yes	yes	DLS	6/3/82	
SW-2-SF-143-2A	yes	yes	DLS	6/3/82	
SW-2-SF-143-2B	yes	yes	DLS	6/3/82	
SW-2-SF-143-3A	yes	yes	DLS	6/3/82	

Maximum press. applied 53 psi - Actual time at test press. 75 min.

Post test press. gauge recalibration verified: DLS 6/4/82
Initials & Date

Welds signed off on isometric drawing: DLS 6/3/82
Initials & Date

Test Inspected By: [signature] 6/4/82
QA/QC Inspector Date

Test Witnessed By: J.B. Rhodes AWI 6/4/82
Authorized Nuclear Inspector Date

Reviewed & Accepted: [signature] for G.M. Daniel 6/4/82
Mech. Specialist Date

*Witnessed By: N/A 6/3/82 DLS
Date

*Optional at the discretion of the ...

(11)

QA-26
2/4/82
Rev. 2

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) REV 2
WP-115 REV. 3

Unit No. 2&3 System SPENT FUEL Turnover No. 1-7110.004

Drawing No. 2165-G-411 N/A SLC 3-30-82 Rev. 7 N/A Code Class 3

Isometric(s) 2-SF-149- REV. 1 LINE # 3SF12-1765B-2&3 SLC 3-10-82

Test Boundaries FROM FCV 2-SF-149-FW-108 TO BUT NOT AND INCLUDING INSTRUMENTATION FLANGE; ALL WELDS BETWEEN TO BE TESTED

Design Press. 25 psi Maximum Press. (of lowest component) 188 psi

Test Press. 32* psi Minimum Time at Test Press. 10 min.

Hold Press. 25 psi TEST MEDIUM WATER

*SEE FCR-P-254

Prepared By: [signature] 3/3/82
Mech. Discipline Engineer Date

Verified By: [signature] 3/25/82
Mech. QA/QC Specialist Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & date)
2-SF-149-2	yes	NO	[illegible] 3-10-82
2-SF-149-3	yes	NO	[illegible] 3-16-82
2-SF-149-4	yes	NO	[illegible] 3-25-82

Q A RECORDS
RECEIVED
AUG 04 1983
[illegible] CONSTR. Q A UNIT

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged — Sat. [signature] Unsat. ____
2. System filled; high points vented — Sat. [signature] Unsat. ____
3. Items not to be tested disconnected/isolated — Sat. [signature] Unsat. ____
4. Surfaces to be inspected clear & unobstructed — Sat. [signature] Unsat. ____
5. Test medium temp. 56 °F (minimum 50°F) [signature]
6. (Thermometer) Pyrometer No. CP&L 4990A Date Calibrated 3-22-82
7. Press. Gauge No's. 4639B Date Calib. 3-26-82 Range 0 to 60
   CP&L N/A Date Calib. N/A Range N/A to N/A

2-7110.M-1

QA-26
2/4/82
Rev. 2

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
2 SF-149 FW 408	yes	yes	TG	3-26-82	No Leakage
2 SF-149 FW 407	yes	yes	TG	3-26-82	No Leakage
2 SF-149-2-SW-1	yes	yes	TG	3-26-82	No Leakage
SW-2-SF-149-2A	yes	yes	TG	3-26-82	No Leakage
~~SW-2-SF-149-2B~~	~~yes~~	~~yes~~			Did not test TG 3-26-82
SW-2-SF-149-3A	yes	yes	TG	3-26-82	No Leakage
SW-2-SF-149-3B	yes	yes	TG	3-26-82	No Leakage

Maximum press. applied 43 psi - Actual time at test press. 11 min.

Post test press. gauge recalibration verified: TG 3-29-82
Initials & Date

Welds signed off on isometric drawing: TG 3-29-82
Initials & Date

Test Inspected By:

Tommy Gilbert 3-29-82
QA/QC INSPECTOR Date

Test Witnessed By:

JB Rhodes ANI 6/3/82
Authorized Nuclear Inspector Date

Reviewed & Accepted:

[signature] for G.M. Daniel 6/4/02
Mech. QA/QC Specialist Date

*Witnessed By:

n/a [initials] 6/4/02
Harris Startup Group Date

*Optional at the discretion of the Harris Startup Group

03/539 1037

QA-26
2/4/82
Rev. 2

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) REV 2
WP-115. REV. 3

Unit No. 2 System SPENT FUEL Turnover No. 2-7110.[illegible]

Drawing No. N/A Rev. N/A Code Class 3

Isometric(s) 2-SF-151 REV. 0

Test Boundaries ON 2-SF-151-2; TEST COVERS ALL WELDS BETWEEN BUT EXCLUDING (SLB 6/3/82 WELD AT) 90° ELBOW TO BUT EXCLUDING FIELDWELD 2-SF-143-FW-512.

Design Press. 25 psi Maximum Press. (of lowest component) 188 psi

Test Press. 32 psi Minimum Time at Test Press. 10 min.

Hold Press. 25 psi TEST MEDIUM WATER

TEST TEMPERATURE NO MINIMUM

Prepared By: SEE FCR-P-254 Verified By:

[signature] 6/3/82 — Mech. Discipline Engineer, Date

[signature] G.M. Daniel 6/3/82 — Mech. [illegible], Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Corr. DDR's/NCR's	Verified By: (Initials & date)
2-SF-151-2	yes	DDR 897 partially closed	[initials] 6-3-82

Q-A RECORDS
RECEIVED
AUG 3 1983
SHNPP CONSTR. Q A UNIT

PRE-TEST CHECK-OFF

1. Openings, [illegible], plugged — Sat. SLB 6/3/82 Unsat. ____
2. System filled; [illegible] — Sat. SLB 6/3/82 Unsat. ____
3. Items not to be [illegible] isolated — Sat. SLB 6/3/82 Unsat. ____
4. [illegible] & unobstructed — Sat. SLB 6/3/82 Unsat. ____
5. [illegible] (minimum 50°F)
6. Test [illegible] 59 °F
7. Thermometer No. 4931B Date Calibrated 5/20/82
8. Press. Gauge No's. 6-2 Date Calib. 6/3/82 Range 0 to 100
   Date Calib. ____ Range ____ to ____

2-7110.M.1

0037539 1030

QA-26
2/4/82
Rev. 2

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
SW-2-SF-151-2A	yes	yes	DCS	6/3/82	
SW-2-SF-151-2C	yes	yes	DCS	6/3/82	
SW-2-SF-151-2C	yes	yes	DCS	6/3/82	

Maximum press. applied 53 psi - Actual time at test press. 75 min.

Post test press. gauge recalibration verified: DCS 6/4/82 (Initials & Date)

Welds signed off on isometric drawing: DCS 6/3/82 (Initials & Date)

Test Inspected By: [signature] 6/4/82
QA/QC Inspector — Date

Test Witnessed By: JB Rhodes ANI 6/4/82
Authorized Nuclear Inspector — Date

Reviewed & Accepted: [signature] for G.M. David 6/4/82
Mech. QA Specialist — Date

Witnessed By: N/A 6/3/82 DCS
Harris ... — Date

...at the discretion of the ...

(3)

QA-26
5/8/81
Rev. 1

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) REV. 1
WP-115 REV. 2

Unit No. 2&3 System SPENT FUEL Turnover No. 1-7110

Drawing No. ~~2165-G-413~~ Rev. ~~6~~ N/A 3-12-82 Code Class 3

Isometric(s) 2-SF-159 REV.0

Test Boundaries SOUTHWEST FAB SHOP WELD ON LINE 3SF12-174 SA-2&3 AND ISO. 2-SF-159 AT ELEVATION 264'-2 3/4"

Design Press. 150 psi Maximum Press. (of lowest component) 199.28 psi

Test Press. 188 psi Minimum Time at Test Press. 10 min.

Hold Press. 150 psi TEST MEDIUM WATER

Prepared By: [signature] 12-9-81
Mech. Discipline Engineer Date

Verified By: [signature] 12/10/81
Mech./QA/QC Specialist Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & date)
2-SF-159-1	YES	NO	[initials] 12/9/81

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged Sat. ✓ Unsat. ____
2. System filled; high points vented Sat. ✓ Unsat. ____
3. Items not to be tested disconnected/isolated Sat. ✓ Unsat. ____
4. Surfaces to be inspected clear & unobstructed Sat. ✓ Unsat. ____
5. Test medium temp. 54 °F (minimum 50°F)
6. Thermometer/~~Pyrometer~~ No. 4926-D Date Calibrated ____
7. Press. Gauge No's. CR-G-6 Date Calib. 12/4/81 Range 0 to 300
   CR-4878B Date Calib. 12/8/81 Range 0 to 300

/8/81
:v. 1

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection		
			Intl's	Date	Remarks
-2-SF-159-1A	yes	yes	[signature]	12/17/81	

Maximum press. applied 193 psi - Actual time at test press. [illegible] min.

Post test press. gauge recalibration verified: [signature] [illegible]
Initials & Date

Welds signed off on isometric drawing: [signature] 12/17/81
Initials & Date

Test Inspected By:

[signature]
QA/QC INSPECTOR

[illegible]
Date

Test Witnessed By:

JB Rhodes ANI
Authorized Nuclear Inspector

12/15/81
Date

Reviewed & Accepted:

George Daniel
Mech. QA/QC Specialist

3/12/82
Date

*Inspected & Accepted By:

[signature]
Generation Services
Start-Up Unit

12/17/81
Date

*Optional at the discretion of the Generation Services Start-Up Unit

QA-26
5/8/81
Rev. 1

A0-9-3 ...

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) REV. 1
OP-115 REV. 2

Unit No. 2&3 System SPENT FUEL Turnover No. 1-7110

Drawing No. ~~2165 G 413~~ ~~Rev. 6~~ N/A 3-12-82 Code Class 3

Isometric(s) 2-SF-159 REV. 0 1/26/82

Test Boundaries TEST COVERS ALL WELDS BETWEEN FW-518 SLB 1-20-82 AND LINER RING, ~~INCLUSIVE, AS SHOWN ON ATTACHED SKETCH~~ EXCLUDING LINER RING WELDS AND 2-SF-159-1A

Design Press. 150 psi Maximum Press. (of lowest component) 199.26 psi

Test Press. 188 psi Minimum Time at Test Press. 10 min.

Hold Press. 150 psi TEST MEDIUM WATER

Prepared By: [signature] Mech. Discipline Engineer 12-3-81 Date

Verified By: [signature] Mech. QA/QC Specialist 12/7/81 Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & date)
2-SF-159-1	yes	No	[initials] - 12/7/81

Q A RECORDS
AUG 3 1983
SHNPP CONSTR. Q A UNIT

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged Sat. ✓ Unsat. ____
2. System filled; high points vented Sat. ✓ Unsat. ____
3. Items not to be tested disconnected/isolated Sat. ✓ Unsat. ____
4. Surfaces to be inspected clear & unobstructed Sat. ✓ Unsat. ____
5. Test medium temp. 61 °F (minimum 50°F)
6. Thermometer/~~Pyrometer~~ No. CPL-4931B Date Calibrated 11/30/81
7. Press. Gauge No's. CPL-4878B Date Calib. 2/3/81 Range 0 to 400
CPL-4078? Date Calib. 12/2/81 Range 0 to 600

.M.1

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
F-159-FW-518	YES	YES		12/13/81	
~~SW-2-SF-159-1-A~~	~~YES~~	~~YES~~	12/5/81		
SW-2-SF-159-1B	YES	YES		12/13/81	
SW-2-SF-159-1C	YES	YES		12/13/81	
~~SW-2-SF-159-1D~~	~~YES~~	~~YES~~		12/13/81	12/24/81 JBP A-I 1/26/82
~~SW-2-SF-159-1E~~	~~YES~~	~~YES~~		12/13/81	12/24/81 JBP A-I 1/26/82

Maximum press. applied 193 psi - Actual time at test press. 10 min.

Post test press. gauge recalibration verified: _____ 12/12/81
Initials & Date

Welds signed off on isometric drawing: _____ 12/13/81
Initials & Date

Test Inspected By:

J. Reames — 12/9/81
QA/QC INSPECTOR — Date

Test Witnessed By:

JB Rhodes A-I — 12/15/81
Authorized Nuclear Inspector — Date

Reviewed & Accepted:

George Daniel — 3/12/82
Mech. QA/QC Specialist — Date

*Inspected & Accepted By:

[illegible] — 12/17/81
Generation Services — Date
Start-Up Unit

*Optional at the discretion of the Generation Services Start-Up Unit

(5)

QA-26
5/8/81
Rev. 1

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) REV. 1
UP-115 REV. 2

Unit No. 2&3 System SPENT FUEL Turnover No. 1-7110

Drawing No. ~~2165-G-413~~ ~~Rev.~~ ~~6~~ N/A 3-12-82 Code Class 3

Isometric(s) 2-SF-159 REV. 0

Test Boundaries ~~SHOWN ON ATTACHED SKETCH.~~ SNF 1/20/82 TEST COVERS ALL WELDS BETWEEN AND ~~INCLUDING~~ FW-~~19~~ 519 & LINER RING, EXCLUDING LINER RING SLB 1-20-82

Design Press. 150 psi Maximum Press. (of lowest component) 199.28 psi
Test Press. 188 psi Minimum Time at Test Press. 10 min.
Hold Press. 150 psi TEST MEDIUM: WATER

Prepared By: [signature] 12/3/81
Mech. Discipline Engineer Date

Verified By: [signature] 12/7/81
Mech. QA/QC Specialist Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & date)
2-SF-159-2	Yes	No	[initials] 12/7/81

Q A RECORDS RECEIVED AUG 3 1983 SHNPP CONSTR. Q A UNIT

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged Sat. ✓ Unsat. ____
2. System filled; high points vented Sat. ✓ Unsat. ____
3. Items not to be tested disconnected/isolated Sat. ✓ Unsat. ____
4. Surfaces to be inspected clear & unobstructed Sat. ✓ Unsat. ____
5. Test medium temp. 57 °F (minimum 50°F)
6. Thermometer/~~Pyrometer No.~~ CP&L-4930B Date Calibrated 11-30-81
7. Press. Gauge No's. CP&L-G-9 Date Calib. 12-7-81 Range 0 to 600
CP&L-4926B Date Calib. 12-7-81 Range 0 to 600

D.M.1

5/8/81
Rev. 1

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
SW-2-SF-159-FW-619	yes	yes		12/7/81	
SW-2-SF-159-2A	yes	yes		12/7/81	
SW-2-SF-159-2B	yes	yes		12/7/81	
SW-2-SF-159-2C	yes	yes		12/7/81	JBR AnI 12/04/81
SW-2-SF-159-2D	yes	yes		12/7/81	JBR AnI 12/04/81

Maximum press. applied 201 psi - Actual time at test press. 10 min.

Post test press. gauge recalibration verified: _____ 12/8/81
Initials & Date

Welds signed off on isometric drawing: _____ 12/8/81
Initials & Date

Test Inspected By:

J Siemer 12/8/81
QA/QC INSPECTOR Date

Test Witnessed By:

JB Rhodes AnI 12/15/81
Authorized Nuclear Inspector Date

Reviewed & Accepted:

George Daniel 3/11/82
Mech. QA/QC Specialist Date

*Inspected & Accepted By:

_____ 12/7/81
Generation Services Date
Start-Up Unit

*Optional at the discretion of the Generation Services Start-Up Unit

(190)

QA-26
2/4/82
Rev. 2

Page 1 of 2

Corrected Document
CC 5-8-83
T.K. 9/8/83
Initial Date

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22) R/2
WP 115 R/3 CC 5-8-83

Unit No. 2&3 System SPENT FUEL Turnover No. 1-7110-04

Drawing No. ~~2165-G-413~~ SLB 3-30-82 Rev. ~~6~~ SLB 3-30-82 Code Class 3

Isometric(s) 2-SF-144 REV. 0 AND INCLUDING SLB 3-10-82 LINE # 3SF12-17638-2&3 AND INCLUDING SLB 3-10-82

Test Boundaries FROM 2-SF-144-FW-515 TO SPENT FUEL LINER RING WELD AND ALL WELDS BETWEEN

Design Press. 25 psi Maximum Press. (of lowest component) 188 psi

Test Press. 32* psi Minimum Time at Test Press. 10 min.

Hold Press. 25 psi TEST MEDIUM WATER

*SEE FCR-P-254

Prepared By: [signature] 3/3/82
Mech. Discipline Engineer Date

Verified By: [signature] 3/25/82
Mech. QA/QC Specialist Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials & date)
2-SF-144-1	yes	NO	TD 3-10-82
2-SF-144-2	yes	NO	TD 3-10-82
2-SF-144-3	yes	NO	TD 3-10-82

INCORPORATED ON N-5
INITIALS DLS DATE 6/2/82

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged Sat. [initials] 3/24/82 Unsat. ____
2. System filled; high points vented Sat. [initials] Unsat. ____
3. Items not to be tested disconnected/isolated Sat. [initials] Unsat. ____
4. Surfaces to be inspected clear & unobstructed Sat. [initials] 3/24/82 Unsat. ____
5. Test medium temp. 56 °F (minimum 50°F) [initials]
6. Thermometer/Pyrometer No. CP&L 4990B Date Calibrated 3-22-82
7. Press. Gauge No's. 4689B CP&L Date Calib. 3-26-82 Range 0 to 60
N/A Date Calib. N/A Range N/A to N/A

2-SF-144 1-7110.M.1

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QA-26
2/4/82
Rev. 2

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
2-SF-144-FW-515	yes	yes	TD	3-26-82	
2-SF-144-FW-516	yes	yes	TD	3-26-82	
2-SF-144-FW-517	yes	yes	TD	3-26-82	ARC STRIKE FOUND ON WELD See NDR #69 Closed 6-3-82
SW-2-SF-144-1A	yes	yes	TD	3-26-82	
SW-2-SF-144-1B	yes	yes	TD	3-26-82	
SW-2-SF-144-2A	yes	yes	TD	3-26-82	
SW-2-SF-144-2B	yes	yes	TD	3-26-82	
SW-2-SF-144-2C	yes	yes	TD	3-26-82	
SW-2-SF-144-3A	yes	yes	TD	3-26-82	
SW-2-SF-144-3B	yes	yes	TD	3-26-82	
SW-2-SF-144-3C	yes	yes	TD	3-26-82	
SW-2-SF-144-3D	yes	yes	TD	3-26-82	
SW-2-SF-144-3E	yes	yes	TD	3-26-82	
SW-2-SF-144-3F	yes	yes	TD	3-26-82	
~~SW-2-SF-144-3G~~	~~yes~~	~~yes~~	~~TD~~	~~3-26-82~~ TD 6-4-82	

Maximum press. applied 43 psi - Actual time at test press. 11 min.

Post test press. gauge recalibration verified: TD 3-29-82
Initials & Date

Welds signed off on isometric drawing: TD 3-29-82
Initials & Date

Test Inspected By:

Tommy Gilbert 3-29-82
QA/QC INSPECTOR Date

Test Witnessed By:

J B Rhodes Jr 6/4/82
Authorized Nuclear Inspector Date

Reviewed & Accepted:

Lon G.M. Daniel 6/4/82
Mech. QA/QC Specialist Date

*Witnessed By:

N/A DLS 6/4/82
Harris Startup Group Date

*Optional at the discretion of the Harris Startup Group

QA-26
2/4/82
Rev. 2

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
HYDROSTATIC TEST RECORD
(Procedure CQC-22)

Turnover No. 1-7110.005

Unit No. 2 System SPENT FUEL

Drawing No. N/A Rev. N/A Code Class 3

Isometric(s) 2-SF-143 Rev. 1

Test Boundaries 2-SF-143-3 STAINLESS STEEL LINER PLATE RING WELD SEE FCR-P-254

Design Press. 25 psi Maximum Press. (of lowest component) 188 psi

Test Press. 32 psi Minimum Time at Test Press. 10 min.

Hold Press. 25 psi TEST MEDIUM WATER

MINIMUM WATER TEMP. 50 °F

Prepared By: [signature] 4/29/82
Mech. Discipline Engineer Date

Verified By: [signature] 4/30/82
Mech. QA/QC Specialist Date

COMPONENTS

Ident. No.	Mfg./Fabrication Records Accepted	Open DDR's/NCR's	Verified By: (Initials / Date)
2-SF-143-3	yes	OPEN DDR NO. 888 SEE CONDITIONAL RELEASE ALLOWING HYDROSTATIC TEST	[initials] 4-30-82

INCORPORATED ON N-5
INITIALS [initials] DATE 6/7/02

PRE-TEST CHECK-OFF

1. Openings, except fill & vent points, plugged ... Sat. SEB 4/30/82 Unsat. ____
2. System filled; high points vented ... Sat. SEB 4/30/82 Unsat. ____
3. Items not to be tested disconnected/isolated ... Sat. SEB 4/30/82 Unsat. ____
4. Surfaces to be inspected clean & unobstructed ... Sat. SEB 4/30/82 Unsat. ____
5. Test medium temp. ____ °F (minimum 50°F)
6. Thermometer Serial No. CP&L 49438 Date Calibrated 3-12-82 Range ___ to ___
7. Press. Gauge Ser. No. — Date Calib. — Date Calib. 4-29-82 Range 0 to 100
CP&L G-2

0037539 1034

QA-26
2/4/82
Rev. 2

Ident. No.	Weld Data Records Complete	Shown On Isometric	Visual Leakage Inspection Intl's	Date	Remarks
SW-2-SF-143-3B	yes	yes	TG	4-30-82	No Leakage

Maximum press. applied 43 psi - Actual time at test press. 11 min.

Post test press. gauge recalibration verified: TG 4-30-82
Initials & Date

Welds signed off on isometric drawing: TG 5-12-82
Initials & Date

Test Inspected By:
Tommy Gilbert — 5-12-82
QA/QC Inspector — Date

Test Witnessed By:
James [illegible] — 5-12-82 — test performed 4-30-82 [illegible]
Authorized Nuclear Inspector — Date

Reviewed & Accepted:
George Daniel — 5/17/82
Mech. QA/QC Specialist — Date

*Witnessed By:
N/A
[illegible] — Date

*Optional [illegible]

Pressure Gage
CPL-R-1

DDR-1317
PAGE 8 OF 10

CAROLINA POWER AND LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT

HYDRO TEST FORM

(Nuclear Safety Related) ASME Section III

Description of Pipe to be Tested: 12" SPENT FUEL - CLASS 3
3 SF12-174 SA-2 #3
3 SF12-171 SB-2 #3

System: SPENT FUEL - UNIT #2

Iso No.: 2-SF-1 REV. 1 DCS 3/11/82

Boundaries: ~~AS SHOWN ON ISOMETRIC~~ From ... on ... To ... 2-SF-1-FW-3; From ... on 3SF12-174 SA-2 ... To ...

Drawing No.: ~~EBASCO 1364-6502 R2~~ N/A DCS 3/11/82

Design Pressure: 150 psig Pressure to be held 10 min.: 187.5 psig

Pressure to be held during inspection: 150 psig

Maximum permissible pressure: 198.75 psig

FOR INFORMATION ONLY

	Date/Initials
	1-12-79 EMM
1. All items in paragraph 4.2 of TP-30 completed.	RF 1/12/79
2. Visual inspection of piping completed.	RF 1/12/79
3. All items in paragraph 4.5 of TP-30 completed.	EMM 1-...

Hydro accepted by: Dick [signature] 1/16/79
Engineering and Construction QA Inspector — Date

Hydro witnessed by: Jack M. [signature] 1-16-79
ANI — Date

* N/A ~~5-3-87~~ N/A
Startup Unit Representative — Date

* To be completed if witnessed (optional).

INCORPORATED ON
N-5
INITIALS DCS DATE 3/10/82

DCS 1/13/E

CAROLINA POWER AND LIGHT
SHEARON HARRIS NUCLEAR POWER PLANT

QA HYDROSTATIC INSPECTION FORM

LINE NO.: 3-SF-12-174 SA-283

ISO NO.: 2-SF-1 rev. 6 DCS 3/11/92

SPOOL PIECE, VALVE TAG AND/OR EQUIPMENT NO'S.: F3-236-2-SF-1-4, F3-236-2-SF-1-6, F3-236-2-SF-1-5

Water Temp: 54

Thermometer No.: 6890--04532

Gage No.: 6-4

Calibration Date: 1-09-79

Gage recalibrated after hydro and found satisfactory: (YES) NO

Weld No.'s inspected: 2-SF-1-FW-4, 2-SF-1-FW-5, SW-2-SF-1-4A, SW-2-SF-1-5A SW-2-SF-1-6A, SW-2-SF-1-6B, SW-2-SF-1-6C

Comments: HYDRO WAS SATISFACTORY

FOR INFORMATION ONLY

Dick [illegible] 1/16/92
QA Inspector Date

CAROLINA POWER AND LIGHT
SHEARON HARRIS NUCLEAR POWER PLANT

QA HYDROSTATIC INSPECTION FORM

LINE NO.: 3SF12-171SB-2&3

ISO NO.: 2-SF-1 Rev. 1 DCS 3/11/82

SPOOL PIECE, VALVE TAG AND/OR EQUIPMENT NO'S.: FB-236-2-SF-1-3, FB-236-2-SF-1-2
FB-236-2-SF-1-1

Water Temp: 54

Thermometer No.: C4532

Gage No.: G4

Calibration Date: 1-9-79

Gage recalibrated after hydro and found satisfactory: (YES) NO

Weld No.'s inspected: SW-2-SF-1-1B, 2-SF-1-FW-1, SW-2-SF-1-1A, SW-2-SF-1-2A, 2SF-1-FW-2, SW-2-SF-1-3D, SW-2-SF-1-3A, SW-2-SF-1-3B, SW-2-SF-1-3C

Comments: HYDRO WAS SATISFACTORY

FOR INFORMATION ONLY

Dick Fiedler
QA Inspector

1/10/79
Date

Enclosure 9 to Serial: HNP-99-069

Representative Quality Assurance Audits of the Site Construction Program

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

FILE: QAA/170-4

August 14, 1980

MEMORANDUM TO: Mr. S. D. Smith

FROM: S. McManus

SUBJECT: Quality Assurance Audit of ASME Quality Assurance at SHNPP Construction Site

It is currently planned to conduct a quality assurance audit of ASME Quality Assurance at SHNPP Construction Site on September 15-19, 1980. This audit will be conducted in accordance with Quality Assurance Audit Procedure QAAP-1, "Procedure for Corporate and ASME QA Audits." The attached audit agenda/plan defines the scope and primary areas of the audit. The Lead Auditor will be Mr. A. E. Hall.

The Manager - Engineering & Construction Quality Assurance should regard this memorandum and attached audit agenda/plan as official notification of the audit. ASME quality assurance requirements which were adequately audited during the audit QAA/81-14 will not be audited during this visit to SHNPP.

If there are any questions concerning this audit, please contact me.

LWB/phW9

Attachment

cc: Mr. E. E. Utley (w/att.)
Mr. H. J. Chiangi (w/att.)
Mr. A. B. Cutter (w/att.)
Mr. G. L. Forehand (w/att.)
Mr. R. M. Parsons (w/att.)
Mr. T. H. Wyllie (w/att.)

AUDIT AGENDA/PLAN

Activity: Quality Assurance Audit of ASME Quality Assurance at SHNPP Construction Site

Audit Schedule Date: September 15-19, 1980

Auditors: A. E. Hall - Lead Auditor
L. W. Bissette
F. W. Taylor
I. A. Johnson

Requirements: (1) CP&L ASME QA Manual
(2) ASME Code
(3) SHNPP PSAR

Applicable Documents: (1) E&C QA Construction Site Manual of Procedures
(2) SHNPP Construction Procedures
(3) SHNPP Specifications

Agenda:
1.0 Preaudit Meeting (7:30 a.m., 9/15/80)
2.0 Training and Qualification
3.0 Design Control - ASME Items
4.0 Procurement Control - ASME Items
5.0 Document Control - ASME Items
6.0 Receiving Inspection - ASME Items
7.0 Handling - Cleaning and Storage - ASME Items
8.0 Hydrostatic Tests
9.0 Welding Material Control
10.0 Construction Welding
11.0 Inspection and Tests
12.0 Nondestructive Examination
13.0 Inspection and Test Equipment Control
14.0 Code Data Reports and Nameplate Stamping
15.0 Housekeeping
16.0 Postaudit Meeting

Audit Report No.: QAA/170-4

QAA Procedure No.: QAAP-1

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

October 2, 1980

FILE: QAA/170-4

MEMORANDUM TO: Messrs. Sherwood H. Smith, Jr.
~~J. A. Jones~~
E. E. Utley

~~FROM:~~ S. McManus

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

During the period September 15-18, 22, 1980, a Corporate Quality Assurance Program Audit was conducted at the SHNPP Construction Site. This was conducted by Messrs. A. E. Hall (Lead Auditor), L. W. Bissette, I. A. Johnson, and F. W. Taylor of the Corporate Nuclear Safety & Quality Assurance Audit Section. The purpose of this audit was to evaluate the SHNPP ASME Quality Assurance Program and to verify compliance with the implementing procedures.

The attached audit report summarizes the results of the audit. The completed checklist, which was used as a guide in conducting this audit, is maintained in the CNS&QAA Section files.

As required by Audit Procedure QAAP-1, it is the responsibility of the Manager - Engineering & Construction Quality Assurance to review and investigate the audit findings; to determine and schedule appropriate corrective action, including action to prevent recurrence; and to respond in writing within thirty days after receipt of this report, giving results of the review and investigation and describing corrective action taken to resolve the findings identified in this report. In addition, provide the response as requested for Concerns Numbers 5 and 6.

RLM

LWB/nahTC/tcm

Attachment

cc: Messrs. E. R. Banks (w/a)
N. J. Chiangi (w/a)
A. B. Cutter (w/a)
T. S. Elleman (w/a)
G. L. Forehand (w/a)
J. G. Hammond (w/a)
P. W. Howe (w/a)
R. L. Mayton, Jr. (w/a)
M. A. McDuffie (w/a)
R. M. Parsons (w/a)
S. D. Smith (w/a)
T. H. Wyllie (w/a)

TO: Mr. S. McManus

FROM: J. A. Jones

The attached audit report, QAA/170-4, has been reviewed and is returned for placement in the CNS&QAA files with the following comments.

AUDIT REPORT

Activity Audited: SHNPP ASME Construction

Audit Report No.: QAA/170-4 Date: September 15-18 & 22, 1980

Auditors: A. E. Hall - Lead Auditor
L. W. Bissette
I. A. Johnson
F. W. Taylor

Persons Contacted:

"*" R. M. Parsons, Site Manager
"*" A. M. Lucas, Senior Resident Engineer
* S. Hinnant, Resident Engineer - Electrical
* E. E. Willett, Principal Engineer - Mechanical
* R. Hanford, Principal Engineer - Welding
"*" G. L. Forehand, Principal QA Specialist
* P. W. Howe, Vice President - Technical Services Department
* N. J. Chiangi, Manager - Engineering & Construction QA Section
"*" W. D. Goodman, Daniels Project Manager
R. H. McMillan, Daniels Assistant to Construction Manager
"*" G. M. Simpson, Principal Construction Inspection Specialist
V. Safarian, Welding Senior QA Specialist
D. C. Whitehead, Receiving Senior QA Specialist
** F. Shaikh, Project Engineer - Welding
R. Patterson, Construction Engineer
T. Harrington, Director of Purchasing
* J. S. Clements, Document Control Supervisor
L. Denson, Materials Supervisor
* C. Osman, Project QA Specialist
* T. Lee, Senior QA Records Specialist
G. White, Senior Engineer
E. Harris, Project Engineer
"*" L. Liles, Technical Assistant II
R. Jones, General Foreman
J. Bradford, Pipe Fitter Foreman
G. Thompson, Construction Inspection Specialist
G. Daniels, QA Technician I

* Attended Postaudit Meeting
** Attended Preaudit Meeting
"*" Attended Preaudit and Postaudit Meetings

SCOPE: The audit was conducted in accordance with CP&L's Quality Assurance Audit Procedure, QAAP-1, "Procedure for Corporate and ASME QA Audits." The purpose of this audit was to review and evaluate selected portions of the CP&L ASME QA Program, Site QA Program/Procedures, and verify site compliance with implementing procedures. Areas/activities audited include: (1) Training and Qualification; (2) Design Control; (3) Procurement Control; (4) Document Control; (5) Receiving Inspection; (6) Handling - Cleaning and Storage; (7) Hydrostatic Tests; (8) Welding Material Control; (9) Construction Welding; (10) Inspection and Tests; (11) Nondestructive Examination; (12) Inspection and Test Equipment Control; (13) Code Data Reports and Nameplate Stamping; and (14) Housekeeping During Construction Phase. Within these areas the audit consisted of discussions with personnel, examination of records and procedures, audit team walk-through housekeeping inspection of construction site, and witness of work in progress.

SUMMARY: Within the scope of this audit, the ASME Quality Assurance Program was considered to be adequate. Two of the seven findings identified in this report are related to the ASME Program, and one of the nine concerns is related to the ASME Program. The remaining findings and concerns are against general construction activities.

The inspection tour of storage and construction areas for compliance with the housekeeping requirements of ANSI-N45.2.3 indicated the storage areas to be relatively clean except for one smaller building having a rather dirty floor. The construction areas continued to have wrapping materials in numerous locations and the fabrication shops contained a variety of trash including safety cans filled with flammable material. The electrical storage sheds had heavy equipment, and materials stored overhead in an unsafe manner.

As was reported in Audit QAA/170-3, there were no findings reported; therefore, no corrective actions were required to be verified in this audit.

Personnel contacted during this audit were cooperative and found to be knowledgeable in their areas of responsibility.

Findings and Corrective Action:

During the audit the following items were identified as nonconforming findings. These items will require corrective action and formal response.

Item 1: Training and Qualification

Requirements:

ANSI-N45.2.6 (1975 Edition), Paragraph 8.5.2.c, specifies that for the practical examination (nondestructive examination personnel qualifications), ten different examinations requiring understanding of test variables and procedural requirements shall be included in the practical examination. In addition, Paragraph 8.6.1.f specifies that the practical examination should describe the practical test object.

Nonconformance:

The qualification records for Norman C. Westgage, RT Level II (Daniel) practical examination record did not include ten checkpoints as required and did not describe the test object that was tested. These record nonconformances existed when the CP&L NDE Level III Examiner reviewed the record and certified this individual as RT Level II on 8/8/80. The auditors determined the record files for five other Level II personnel did meet the requirements of ASNT-TC-1A.

Acknowledgement and Response:

The Manager - Engineering & Construction QA stated Daniels (Greenville Office) will be contacted and requested to forward missing documents which are on file.

Item 2: Procurement Control
Requirement:

Site QA Procedure CQA-24, Rev. 0 (7/7/80) Procurement Control, Paragraph 7.1 requires when a vendor is disqualified/removed from Approved Suppliers List, an evaluation will be performed by the cognizant QA Specialist. The evaluation shall be documented and shall indicate if the disqualification affects orders in fabrication and any orders previously received on site.

Nonconformance:

The auditor determined this requirement of the Site QA Procedure was not being implemented by Site QA.

Acknowledgement and Response:

The Site Principal QA Specialist implemented corrective action for the vendors removed from the Approved Suppliers List in the last six months and gave the auditor written action to prevent recurrence of this nonconformance in the future. This action was reviewed by the auditor during this audit and is closed in this audit report. Further response is not required.

Item 3: Document Control
Requirement:

ASME Code Section III, NA-4133.6 Document Control, requires "measures that shall assure that documents, including changes, are reviewed for adequacy..."

Nonconformance:

The auditor determined that a portion of the text of Paragraph 1.3, 10CFR21 requirements, of Site Specification 036, Revisions 1, 2, 3, and 4 which was in the original issue of the document, was inadvertently deleted in Revisions 1, 2, 3, and 4 due to typing error. This discrepancy went undetected throughout the CP&L Site construction and QA organizations. This document was a requirement on eight out of seventeen purchase orders for ASME Code items reviewed by the auditor.

Acknowledgement and Response:

Site management is to issue a memorandum to all site personnel responsible with document issue and revision. This memo is to bring this nonconformance to site personnel's attention and their responsibilities as to how to review a procedure/revision.

Item 4: Receiving Inspection
Requirement:

Procedure WP-112, "Control of Materials and Equipment That May Be Harmful To Stainless Steel," requires materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000 PPM leachable halogenated compounds (including chlorides). A certificate of compliance to the above must be provided by the supplier or sampled and tested upon receipt of the material.

Nonconformance:

There are no suppliers' certification or sample test results on halogen content for the acetone being used on the site for cleaning purposes.

Acknowledgement and Response:

The Senior Resident Engineer stated this item would be reviewed with Engineering and corrective action response would be forwarded.

Item 5: Receiving Inspection
Requirements:

Warehouse storage procedure PGD-002, "Material Maintenance Requirements During Storage for Shearon Harris Nuclear Power Plant," requires polyethylene used in contact with safety related, seismic 1, or stainless steel equipment not to be in excess of 55 PPM for total leachable halogens in pigmented sheeting. Procedure WP-112, "Control of Materials and Equipment That May Be Harmful To Stainless Steel," requires that materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000 PPM halogenated compounds which are leachable. NPPED Memorandum 801022, dated 5/22/80 from L. I. Loflin to T. H. Wyllie, indicates that protective covers must not exceed 1000 PPM for total halogen and sulfur, and 200 PPM for leachable halogen.

Nonconformance:

The fire retardant vinyl received 6/4/80 has manufacturer's certification which states the total leachable halogenated compounds including chlorides are less than 1000 PPM. This material is being used to cover safety related and stainless steel equipment even though there is a conflict between the three documents prescribing leachable halogen limits.

Acknowledgement and Response:

The Site Senior Resident Engineer stated this item would be followed up with Engineering, and then they would respond with corrective action.

Item 6: Welding Material Control
Requirements:

Procedure MP-03, Revision 9, dated September 5, 1980, Paragraphs 3.11 and 3.12 require the Welding Issue Room Attendant to daily check the welding rod holding ovens and to randomly check the welding rod heated portable caddies for their proper operation at the specified temperatures. The procedure requires the above checks to be recorded on Exhibit 2, Revision 6, dated August 1980.

Nonconformance:

The records examined showed that Revision 4, not Revision 6, of Exhibit 2 has been used to record the daily checks of oven temperatures in all three issue rooms to date. Revision 4 of Exhibit 2 did not have a format that provided a designated space for the data results of checking the heated portable caddies. There have been no records made of the issue room attendant's checking of the heated portable caddies since September 5, 1980 when the new requirement became effective.

Revision 6 of Procedure MP-03, which was issued December 7, 1979, revised Exhibit 2 which made it Revision 5. There is no record of Revision 5 of Exhibit 2 having been used for recording oven temperatures by the issue room attendants since that date.

Acknowledgement and Response:

The Senior Resident Engineer stated that the removal of Revision 4 of Exhibit 2 from the welding issue rooms has been accomplished and Revision 6 of Exhibit 2 is now required to be used for the recording of data on the ovens and portable caddies.

Item 7: Nondestructive Examination
Requirements:

For welding repairs to Code Class 3 base material, the CP&L ASME QA Manual requires the QA Welding Inspector to prepare a sketch of the repaired area as required by the Code showing location and size of the prepared cavity, the welding material identifications, the welding procedure, and a report of the results of examinations. For weld repairs requiring radiography, ASME Code Section III, Paragraph ND-2539 requires a sketch showing location and size of the prepared cavity.

Nonconformance:

A radiograph identified as SW-2R1, Drawing 4-SW-8/2165 was reviewed during this audit. A note on the Radiographic Examination Report indicated the area examined to be a pipe wall repair. The sketch of the repaired area and the repair weld data report could not be located during the audit. Only the film and the request for radiography were available for review.

Acknowledgement and Response:

The Manager - Engineering & Construction QA stated work on the pipe spool modification was not yet complete. Although the actual base material repair was completed, the required paperwork was not yet submitted for incorporation in the final package.

Concerns:

The following items were identified as concerns during the audit. A written response to Concerns Numbers 5 and 6 is required, since these two concerns are potential nonconforming conditions. This response shall outline the results of the technical evaluation of these two concerns. It is recommended the balance of these concerns be investigated and evaluated to determine what actions are necessary to prevent them from becoming unsatisfactory conditions.

Concern 1:

Site Procedure AP-XII-01, Paragraph 4.1.2.3 requires a document list showing all attachments to the purchase requisition. At present, the requisition lists the documents attached on the requisition itself. The auditors are concerned that the text of Paragraph 4.1.2.3 as worded does not reflect the actual practice.

Concern 2:

The auditors are concerned the Warehouse Unit Procurement Document files do not contain all the P.O. change orders/supplements, such as P.O.(s) H-27369; and Ebasco P.O.(s) 435018 and 435092.

Concern 3:

Site Procedure AP-VII-06, Housekeeping, Paragraph 3.5 requires that housekeeping in Document Control meet requirements of Site Procedure AP-IX-02, "Document Control and Distribution." The auditors are concerned that this text wording is an error. It is assumed that the intent is to control and distribute housekeeping records per Procedure AP-IX-02.

Concern 4:

Westinghouse letter, dated 9/3/80 to E. Felton, stated stroking and greasing of motor operated valves should be discontinued. This maintenance of Ebasco purchased motor operated valves was also discontinued.

It is of concern that the personnel responsible for this maintenance had not received documented instructions to discontinue this activity on the Ebasco purchased valves.

Concern 5:

NPPED Memorandum 79462, dated 3/12/79, indicates that for duct tape that Westinghouse recommends chloride content of tape not to exceed 15 PPM. NPPED recommends that duct tape purchased with actual chloride content of 20.9 PPM be used. NPPED Memorandum 801022, dated 5/29/80, states higher halogen content can be used if tape residue is removed prior to startup (heating up of equipment). Procedure ~~WP-12~~ WP-1 revision number 3 is in review and approval cycle; this revision will require all tape residue to be removed prior to operation heat-up.

It is of concern that stainless steel pipe that has been embedded may not have tape residue removed in areas that are covered over with concrete.

The Senior Resident Engineer states that pipe embedded in concrete will not reach temperatures high enough to cause damage from halogens.

Concern 6:

Containment spray piping and spent fuel piping was inspected according to Procedure CQC-10, "Cleanness Control of Fluid Systems and Components," and released on "Conditional Release" because the external surfaces of the pipe had not been cleaned in accordance with Procedure WP-113, "Cleaning & Cleanliness Maintenance of ASME Section III Piping Systems."

It is of concern that Procedure WP-113 was inadequate by not containing requirements for external pipe cleaning, and spent fuel piping is embedded in concrete and cannot be cleaned.

The Senior Resident Engineer stated this item would be evaluated.

Concern 7:

The review of radiographs for weld FW-5 in line 2SI14-253-SA1, drawing 1SI1/2165-G-151 disclosed only three penetrameters. They are located in the two upper quadrants and on the dividing line between the two lower quadrants. Paragraph 9.5.4.3, NDEP-101, Revision 3, requires four penetrameters, one in each quadrant. The auditor is concerned that Procedure NDEP-101 is not in compliance with the ASME Code Section V, which requires three penetrameters be used.

Concern 8:

The type of dye penetrant identified on a total of 10 Liquid Penetrant Reports was SKI-HF/S. NDEP-201, Revision 2, Paragraph 6.4.a requires Magnaflux Type SKL-HF/S. The auditor verified by contacting the area Magnaflux representative that no penetrant identified as SKI was manufactured by Magnaflux. Since several inspectors were involved with preparation of these reports, the auditor is concerned that in some cases the type of penetrant used is apparently not being verified to be the type required.

Concern 9:

Procedure CQA-22, Paragraph 6.1 requires the QA Inspector to monitor the activities in the weld material issue rooms for compliance with Procedures MP-01, MP-02, and MP-03, one of the items to be checked is the Qualified Welders List. It is of concern that the Checklist, Exhibit 1, completed September 16, 1980, shows the Qualified Welders List to be dated 9/19/80 which is not the date of issue of the list that was in effect at that time. The issue date of the list, which was shown as Revision 1, was 9/10/80. It is also of concern that the checklist did not show that the inspector had noted that Revision 1 was being used by the weld material issue room attendants.

Submitted By: _____

_____

_____

_____

Approved By: _____
Manager
Corporate Nuclear Safety & QA Audit Section

SHNPP Construction Site/ASME Construction

AUDIT PROCEDURE QAAP-1

NO. QAA/170-4

DATE September 15-19, 1980

QUALITY ASSURANCE AUDIT CHECK LIST

AUDIT SUBJECT: ASME Audit at SHNPP Construction Site

LEAD AUDITOR A. E. Hall AUDITOR(S) L. W. Bissette I. A. Johnson F. W. Taylor

CHARACTERISTICS		COMMENT
1.0	Preaudit Meeting (7:30 a.m., 9-15-80)	1.0 The meeting was attended by site personnel listed in the audit report. The areas scheduled to be covered during the audit were identified. The auditor's responsibilities, as well as the site personnel assignments, were established. It was agreed to conduct a daily de-briefing of each day's activities at 3:45 PM between the auditors and site management personnel to discuss nonconformances, concerns, and comments. The postaudit meeting was tentatively scheduled for September 18, 1980, in the afternoon.
2.0	Training and Qualification	
2.1	Nondestructive Examination Personnel Qualifications - verify by review of records the following:	
2.1.1	Personnel performing NDE operations have current visual examinations to meet Jaeger Number 1.	2.1.1 Yes, verified by review of NDE qualification record files picked at random for six (6) Level II and two (2) Level III personnel.

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CHARACTERISTICS		COMMENTS
2.1.2	CP&L has records on file for NDE personnel which meet the qualification requirements of SNT-TC-1A-1975.	2.1.2 Yes, verified by review of NDE records in 2.1.1; however, the following nonconformance was discovered. A Daniel employee, N.C. Westgate's record file for Radiographic Examination (RT) Level II, contained an incomplete practical examination record. This practical examination does not meet the requirements of paragraphs 8.5.2.c and 9.6.1.f of ASNT-TC-1A, (1975 Edition). The practical examination does not include ten checkpoints that are related to the candidates proficiency or understanding of test requirements. Nor, did this record describe the test piece that was tested. In addition, this missing data was not discovered. CP&L's Level III for RT and this Level III RT examiner certified this Daniel employee for RT Level II on August 8, 1980. The auditor verified this Daniel employee has not performed any RT because of still being in the site orientation program. This nonconformance is listed in the audit report as Finding Item #1.
2.1.3	The certification of Level III NDE personnel has been by examination for technical competence as required by ASME Code NB-5521.	2.1.3 Yes, verified by review of NDE qualification record files for two Level III CP&L personnel, C. Osman and E. Betz.
2.2	Does CP&L have personnel records which support implementation of Procedure TP-25 in document control?	2.2 Yes, verified by review of training records for Procedure TP-25 in document control. The following comment is for audit follow-up on future audits, for a new employee's orientation, it is difficult to determine from record the exact revision of document that was reviewed.
2.3	Does CP&L have personnel records which support implementation of Procedure MP-11 in QA records system?	2.3 Yes, verified by review of MP-11 records maintained by the discipline welding engineering office and the TP-25 records in document control.
3.0	Design Control (AP-IX-15)	
3.1	Review the DCN Implementation Log, verify it is being maintained.	3.1 This log was reviewed; it lists the DCNs and when they are closed out.
3.1.1	Select DCN's from the Implementation Log and verify if log and DCN agree on implementation status.	3.1.1 Selected following DCNs from log: 530-223 implemented 9/3/80 per DCN. DCN had been implemented and closed. 530-197 open. DCN was still active. 530-041 open. DCN had been closed and was reopened [illegible] listed on open DCN Report. See question [illegible] implemented 7/29/80 per DCN. DCN had been [illegible] 560-063 void per DCN 6/2/80. DCN had been [illegible]

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CHARACTERISTICS	COMMENTS
3.1.1 (cont.)	560-063, Revision 1, implemented 7/15/80 per DCN. DCN had been closed. 650-421 open. DCN was still active.

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	CHARACTERISTICS	COMMENTS
3.2	Verify the Document Control Supervisor is preparing a report biweekly for each Area Engineer which lists FCR's and DCN's over 30 days old which have not been closed out.	Procedure AP-IX-15, Revision 6, dated 8/19/80 requires "information only" report to be written on DCNs and FCRs over 30 days old as requested by the Senior Resident Engineer. He has not requested any since that date. Document control is maintaining a current copy of DCN status. It was noted that reopened DCN 530-030 was not on the list. As reopened DCNs may not be on list, the Document Control Supervisor is having the log checked.
3.3	Verify comments were indicated on report by Area Engineer.	Comments were on the last list issued 8/15/80.
3.4	Select actions indicated taken by DCN and verify they were accomplished.	Selected items that had been implemented under question 3.1 DCN 530-223 required Berger Patterson Hanger Drawings C-1-286-1-CI-14-38 to be revised. Drawing had been revised. The other DCNs 550-589, 560-063, 650-403, and 650-130 required work to be done according to DCN and drawings to be revised later. Work in field was not verified.
4.0	Procurement Control	
4.1	Are the proper designated QA Specialist or the Specialist's designee reviewing site purchase requisitions and purchase orders? (Ref. CQA-24, 4.2)	Yes, verified by review of site purchase orders for seventeen PO(s) in 4.7.
4.2	Is the review of the purchase requisitions properly documented?	
4.3	Are the proper QA requirements included on the purchase requisitions?	

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	CHARACTERISTICS	COMMENTS
4.4	Have the reviews and resolution of quality exceptions in the vendor's proposal been documented, and if exception approved by CP&L, the justification for this decision documented? (Ref. CQA-24, 5.3.5)	This area was not audited since there are no examples to review in the last five-year period up to this audit.
4.5	Is the review of the purchase orders properly documented?	Yes, verified by review of QA Vault record files for PO(s) H-27369, H-27377, H-27736, H-24234, H-27368, and H-28258.
4.6	Has the evaluation of vendors been done for those disqualified or removed from the approved suppliers list? (Ref. CQA-24, 7.1)	No, this QA procedure requirement is not being implemented by site QA personnel. This nonconformance is listed in the audit report as Finding Item #2. The Principal QA Specialist completed the following documented corrective action during this audit. An evaluation was completed of the vendors removed from the approved suppliers list during the last six months. One removed supplier was determined to have an active PO and an audit of this supplier was scheduled to be completed prior to shipment on this PO. In addition, the E&C QA Vendor Surveillance Unit will notify by memorandum the site QA Unit of suppliers removed from the list in the future, so the site QA Unit can make the necessary evaluations as required by Procedure CQA-24. The auditors have reviewed and concurred with this corrective action and this finding is closed in this audit report.
4.7	For designed items, does the requisition have requirement of approved site-generated or A-E design specifications? (Ref. AP-XII-1, 4.1.2.2)	Yes, verified by review of Site ASME PO files - PO(s) H-27369, H-27377, H-27736, H-24234, H-27368, H-28258, H-28260, H-25562, H-25561, H-25483, H-27393, H-28872, H-26873, H-21111, H-25565, H-24210, and H-27376.
4.8	Does the purchase requisition have a document list showing all attachments to the requisition? (Ref. AP-XII-1, 4.1.2.3)	No, verified by review of files in 4.7 above. The purchase requisitions (PR) did not have a document list with them; however, the PR did have noted on it the documents attached to the PR. The auditors are concerned the text of Site Procedure AP-XII-01, paragraph 4.1.2.3 does not reflect actual practice in use. This appears in the audit report as Concern #1.
4.9	Do the purchase requisitions contain, where appropriate, statements on 10CFR21? (Ref. AP-XII-1, 4.1.2.4)	Yes, verified by review of files in 4.7 above; however, the following nonconformance was discovered. Site Specification 036, Revisions 1, 2, 3, and 4, paragraph 1.3, lists the requirements of 10CFR21 to the supplier. A portion of the text of paragraph 1.3 as in Revision 0 of this document which was deleted in Revisions 1, 2, 3, and 4 and not

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CHARACTERISTICS	COMMENTS
	4.9 (cont.) challenged by anyone working at the SHNPP site during review, approvals, and subsequent use of the document. This nonconformance is listed in the audit report as Finding Item #3. Revision 3 and 4 of Site Specification 036 were listed on eight out of seventeen PO(s) reviewed in 4.7.

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	CHARACTERISTICS	COMMENTS
4.10	Do the requisitions for ASME Code items contain the requirements that it shall be manufactured/supplied to CP&L approved Vendor's QA program? (Ref. AP-XII-1, 4.1.2.5)	4.10 & 4.11 Yes, verified by review of files in 4.7 above.
4.11	Has the Site Manager approved all requisitions? (Ref. AP-XII-1, 4.7)	
4.12	Are vendor documents requiring review and approval by CP&L, receiving the proper review and approval? (Ref. AP-XII-1, 4.9)	4.12 Yes, vendor documents are sent to site discipline engineer, who coordinates review and approval of vendor documents.
4.13	Are procurement documents being filed as required by Procedure AP-XIII-1, by the warehouse unit?	4.13 Yes, verified by auditors reviewing warehouse unit files of site PO(s) and Ebasco PO(s). The auditors are concerned a few files do not contain all the PO change orders/ supplements, such as PO H-27369 and Ebasco PO(s) 435018 and 435092. This appears in the audit report as Concern #2.
4.14	Has the resident engineer unit compiled a list of known items/materials which are subject to a defined shelf life expiration? (Ref. AP-XIII-3, 4.1.1)	4.14 Yes, issued by attachment of Procedure AP-XIII-03, as Exhibit #5 by document control.
4.14.1	Is this list controlled and distributed by document control? (Ref. AP-XIII-3, 4.2)	4.14.1 Yes, see 4.14 above.

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	CHARACTERISTICS		COMMENTS
4.15	Has QA performed the necessary receiving inspection and review of Vendors QA documentation as required? (Ref. AP-XIII-3, 4.6)	4.15	Yes, verified by review of QA Vault record files for receiving inspection and vendor documents for PO(s) listed in 4.5.
5.0	Document Control	5.1	Yes, verified by review of QA document control logs in QA record vault for CQA, CQC, and CQI(s) procedures/manuals.
5.1	Is a document control log being properly maintained for holders of CQA/CQC procedures/manuals? (Ref. CQA-2, 8.3)	5.2	Yes, however paragraph 7.2 of Procedure CQA-2, Revision 4 (9-9-80), states the "QA procedure deviation notice" is not permitted for the QA procedures that require the designer's approval.
5.2	Are procedure deviations approved by the designer where the designer is required to approve the procedure and its revisions? (Ref. CQA-2, 6.4.1, 7.0, and 8.1.3)	5.3	Yes, verified by review of the QA deviation notice log records in QA office.
5.3	Is a QA deviation notice log being maintained as required? (Ref. CQA-2, 7.4.1)	5.4	The superseded QA documents are rubber stamped with wording, "For Information Only."
5.4	How are documents marked to indicate that they are now a working document, when they are to be retained as a historical issue? (Ref. CQA-2, 10.2)		

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5.5	Are copies of completed QA Review forms being maintained by QA? (Ref. CQA-5)	5.5 Yes, verified by review of QA reviews documented in the QA office.
5.6	Are FCR/PW Log records being properly maintained by document control? (Ref. AP-IX-5)	5.6 Yes, verified by review of FCR/PW logs in document control.
5.7	Are all FCR/PW(s) sent to Design Engineer for approval, where the FCR/PW has received telephone or telecopy resolution? (Ref. AP-IX-5, 4.6)	5.7 Yes, verified by review of document control records.
5.8	Does document control keep separated FCR/PW(s) which are awaiting resolution and FCR/PW(s) which lack completion of implementation?	5.8 Yes, verified by review of document control records. The copies of FCR/PW awaiting telephone resolution are kept separate until approvals are received from designer, Ebasco.
5.9	When Harris Plant Engineering performs the duties of the Design Engineer during the resolution and approvals of a FCR/PW(s), verify that the requirements of Corporate QA Program, Part 1, requirements have been complied with. (Ref. AP-IX-5)	5.9 Harris Plant Engineering (HPE) has not, to present date, implemented the new requirements of Corporate QA Program, Part 1, for Q-List and/or ASME Code items. They are now in implementing planning stage and will later develop departmental procedures which meet these requirements. The auditors verified by review of FCR/PW records in document control, that HPE has not approved any FCR/PW(s) to present date for Q-List or ASME Code items. Note: this should be followed-up on future audits at site when implementation has begun.

CHARACTERISTICS		COMMENTS
5.10	Verify by record review that FCR/PW(s) are being properly processed, signed, and distributed. (Ref. AP-IX-5)	5.10 Yes, verified by distribution records review in document control.
		6.1 This document is produced daily (working days) and its purpose is to inform various individuals at the site as to what items have been received. Copies are distributed the morning after item is received.
6.0	Receiving Inspection	6.2 Yes, a personnel list identifies the warehouse personnel and their classification. Examples of receiving personnel are Material Control Technician and Warehouse Record Clerk.
	AP-XIII-02	
6.1	Verify that a Daily Dock Report is prepared.	6.3 Selected the following purchase orders: 435018, 435092, 435116, 435234, 435174, 435018, 435092, 435116, 435234, and 435174.
		6.3.1 Documents do identify the PO number and the vendors.
6.2	Have Material Receiving personnel been designated by the Materials Supervisor?	6.3.2 Copies of purchase orders were in the folder, however, there was no assurance that all C/O of the PO were in the file or that the C/O for the item received was in the package. This is in the audit report as part of Concern #2.
6.3	Select received items and verify the following:	6.4 Looked at rigging used in warehouse. It is maintained in locked boxes and controlled by Millwright. The rigging is color-coded to indicate inspection. All rigging looked at was adequate.
6.3.1	Documentation identifies vendor and purchase order number.	
6.3.2	Copy of purchase order is maintained by warehouse.	
6.4	Inspect rigging used by warehouse unit and verify it is not frayed, worn or otherwise deteriorated.	

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CHARACTERISTICS		COMMENTS
6.5	Have personnel been authorized to operate equipment assigned to warehouse unit?	6.5 Yes, memorandum dated 4/30/80 from L. Penson identifies personnel authorized to operate material handling equipment for warehouse operations.
	AP-XIII-07	
6.6	Has the Resident Engineer provided written instructions for providing warehouse personnel guidance in determining materials which have defined shelf life?	6.6 Yes, Procedure AP-XIII-03, Exhibit 5, Revision 7, dated 8/79, "Shelf Life for Plant Material In Warehouse Storage."
6.6.1	Are materials with shelf life clearly marked?	6.6.1 Yes, this is either by being on manufacturer label or written in by warehouse personnel on a label. This was verified as to being done.
6.6.2	Are they stored to facilitate issuing on first in, first out basis?	6.6.2 Yes, items are stored so older items are in front and on lower shelves of warehouse. This is verified by monthly inspections. A notification is issued five working days prior to expiration date of the item. This was verified.
6.6.3	Has the Materials Supervisor established a monthly inspection program for materials with defined shelf life?	6.6.3 The Shelf Life Data Report is made for each batch of each purchase order. It identifies date received and expiration date. This was verified (example PO 435172, batch 9085).
6.7	Review the Equipment Maintenance Log and verify the following:	6.7.1 The following purchase orders were selected:
6.7.1	Log indicates description and location of item.	435090 at 3-B-3-18, 164607 at 12-B-4, 435031 at 3-C6-23, 435032 at 3-C6-20, and 162065 at 12-C-7.

CHARACTERISTICS		COMMENTS
6.7.2	Log indicates maintenance required, calibration required and individual performing maintenance initials log	6.7.2 The maintenance records for the purchase orders selected under question 6.7.1 were reviewed. They all had maintenance requirements indicated and an attached maintenance instruction sheet. The working copy of the maintenance log is indicated by the individual who performs the maintenance starting in October 80. It is to be attached to original when equipment is turned over to construction.
6.8	Does the Material Supervisor or his designee conduct periodic in-storage inspections or required maintenance? (on required maintenance)	6.8 Yes, reviewed reports for 9/2/80, 8/18/80, 8/25/80, 7/7/80, and 6/30/80. This inspection is performed weekly. They identify items that require some type of maintenance.
	AP-XIII-07 (PGD-002)	
6.9	Are the Maintenance Log Forms signed by discipline engineer?	6.9 Yes, the form is signed by E. Felton. He attaches the maintenance instruction sheet to the form.
6.10	Are items with nitrogen pressure checked weekly?	6.10 Yes, this was verified by review of log. They are actually checked daily but only recorded weekly.
6.10.1	Verify items with gauge have at least 1 psig indicated.	6.10.1 Reviewed the following items and their gauges all indicated over 1 psig: 162065, 179473, 193014, and 200905.
6.11	Are items with desiccant checked monthly?	6.11 Yes, this was verified by review of log for following items: 150117 - Reactor Vessel Head 1 and 150118 - Reactor Vessel 2. Only the vessel and the head have desiccant except for Brasch Air Handling Control panel which is checked every 3 months. The instructions required the panel to be inspected and after 6 months make evaluation to determine if unit is deteriorating. Desiccant was placed in unit prior to 6 months and evaluation was not made. Evaluation was made and maintenance personnel were told during audit to remove desiccant.
6.12	Are motors (5 hp and up) meggered within 28 days of receipt?	6.12 Yes, reviewed records for the following POs: 162092, 162086, and 435003. Date of receipt and first meggering indicated on maintenance log. NOTE: A Westinghouse letter to E. Felton dated 9/3/80 stated stroking and greasing of motor-operated valves should be discontinued. Were concerned that grease could get in the motor and that valve was being actuated less. Maintenance personnel (Harry Foster) stated he also stopped this maintenance on Ebasco purchased motor-operated valves.

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CHARACTERISTICS	COMMENTS
	6.12 (cont.) He had no documented instructions to do this. The discipline engineer stated he forwarded instructions on Ebasco valves, but apparently they did not get to Gaster. This is in the audit report as Concern #4.

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CHARACTERISTICS		COMMENTS
6.13	Have polyethylenes and tapes used been analyzed for halogens?	6.13 This item is covered in the audit report as Finding #5 and Concern #5.
	AP-XIII-07 (PGE-003)	
6.14	Review documentation on reactor coolant pump motors and verify torque wrench identification number is recorded and that torque used was not over 750 ft. lbs.	6.14 Reviewed Maintenance Log on PO 164607. Torque wrench M4395 cal. status was indicated and all readings were under 750 ft. lbs. The highest was 390 ft. lbs.
6.14.1	Is torque test made weekly?	6.14.1 Yes, verified by review of log for PO 164607.
6.15	Is motor meggered monthly at 500 volts megger for 60 seconds?	6.15 Yes, verified by maintenance log - log indicated 1000V used - wrong scale was used on megger. *
6.15.1	Is temperature recorded?	6.15.1 Maintenance instruction requires space heaters to be de-energized and motor allowed to reach ambient temperature, then megger reading to be recorded. Ambient temperature not required to be recorded.
7.0	Handling - Cleaning and Storage	7.1 The rods are stored in unopened boxes in a locked area of warehouse. They are issued only in unopened box lots.
	AP-XIII-05	
7.1	Inspect storage of welding materials in warehouse to verify they are in unopened original containers.	* This condition will be reaudited during the next audit.

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	CHARACTERISTICS	COMMENTS
7.2	Is good housekeeping maintained in warehouse?	Yes, area appeared adequate to maintain good quality.
7.3	Verify items are stored so they will not become distorted?	Yes, this was verified in warehouse and in field. Some dunnage has been recently replaced.
	AP-XIII-05 (PGD-001)	
7.4	Review following items and verify they are stored in storage level designated in PGD-001 list two. 435018 level B, 435037 level C, 435042-3 level B, 435092-8 level C, 435111 (PORV) level B, 435116 level C, 435234 level B, 435174-51 level B, 435147 level B, and 435263 level B.	These POs were taken from PGD-001 and it was determined during the audit that 435037, 435042-3, 435111, 435147, and 435263 have not been received. The other items were stored at levels indicated except 435116 flammables were stored at Level B (higher level). NOTE: The items when received are stored according to PGD-001. Warehouse personnel refer to this document to determine what storage level is required.
	CQA-21	
7.5	Review Form QA-3 and QA-8 on storage surveillance and verify they indicate the following:	
7.5.1	Surveillance is conducted on a periodic basis.	Each area or warehouse is surveyed monthly with a different area looked at each week and repeated monthly. Reviewed QA-8 for 3/28/80, 4/18/80, 4/25/80, 8/8/80, 8/1/80, 8/15/80, and 8/22/80.
7.5.2	Storage of items is proper or non-conformance reports are written.	QA-8 dated 3/28/80 under remarks stated see NCR #R1107 and R1091. R1107 was closed 7/18/80 and R1091 was closed 7/28/80. QA-8 dated 4/11/80 indicated Field Report R-490 was written on surveillance of Yard 11.

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CHARACTERISTICS		COMMENTS
7.5.3	Form QA-3 indicates maintenance is performed.	7.5.3 Reviewed QA-3 forms R-529 (3/7/80) - Maintenance of Motor Control Valves, R-518 (2/22/80) - Maintenance of Motor Control Valves, R-615 (5/14/80) Maintenance on RHR Pump Motor, R-690 (8/15/80) Maintenance on Hoist of Bridge Crane, R-654 (6/11/80) - Maintenance on Safety Injection Pumps, and R-607 (5/12/80) and R-711 (8/28/80) - Maintenance Surveillance which is to be performed quarterly by schedule.
	CQC-10	
7.6	Select completed **Cleanliness** Inspection Check Lists **(Form QA-10)** and verify the following:	7.6 Inspection of Containment Spray (386' elev.) C1-286-1-CT-3-3 was for visual inspection of internal only. They were conditional accepted. DDR 368 dated 2/21/80 on cleaning and cleanliness maintenance of safety-related piping systems states lines (spent fuel and containment spray) had not been cleaned in accordance with WP-113. The audit report covers this area as Concern #6 since the procedure was not adequate to cover cleaning of the pipe external and the spent fuel piping is now embedded in concrete.
7.6.1	Form was correctly documented?	7.6.1 The QA-10 form was correctly documented.
7.6.2	Documentation on cleaning agent indicates it is acceptable.	7.6.2 Acetone is used to clean pipe. Procedure WP-112 requires certification of compliance or test results of materials that will come in contact with stainless steel. There was no evidence of such documents for acetone being used. This is in the audit report as Finding #4.
7.6.3	If check list indicates unsatisfactory, verify hold tag has been issued.	7.6.3 Hold Tag 444 issued by DDR-368 on ISO-1-SF-2 Service Water Pipe outside not cleaned (it has been installed in concrete), also Hold Tag 449 by DDR-368 on ISO-1-SF-4.
7.6.4	On items where check list indicates conditional acceptance, verify item is tagged accordingly.	7.6.4 Items on conditional release are containment spray and they are installed in dome and could not be reached for verification. The Conditional Release Log indicated Conditional Release Tags' 004 through 026 are assigned to spool pieces of this system for clean inside only.
8.0	Hydrostatic Tests	
	CQC-22	
8.1	Review Hydrostatic Test Records (Form QA-26) and verify it is signed by QA Specialist.	8.1 Reviewed QA-26 for 3-SW-14 signed by Loving on 10/31/79, 3-SW-15 signed by Beane 12/28/79 and 1-SW-[illegible] signed by Loving 11/12/79.

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CHARACTERISTICS		COMMENTS
8.1.1	Is test pressure less than maximum permissible pressure of lowest component?	8.1.1 Yes, 3-SW-14 - Lowest Component 198.75 psi tested at 188 psi, 3-SW-15 - Lowest Component 198.75 psi tested at 188 psi, and 1-SF-132 - Lowest Component 198.75 psi tested at 188 psi.
8.2	Verify pressure gauge used had a range of not less than 1 1/2 times nor more than four times the test pressure.	8.2 For tests identified in question 8.11 gauges CP&L #6 and CP&L #7 were used and their range of 0-300 psi was within range.
	WP-115	
8.3	Are tests witnessed by ANI, and E&C QA Inspector?	8.3 Yes, verified by review of records for Hydro of System identified in question 8.11. 3-SW-14 J. A. Kremer QA and MacSorley ANI, 3-SW-15 Daniels QA and Given ANI, and 1-SF-132 Kremer QA and Given ANI.
8.3.1	Was pressure gauge calibrated?	8.3.1 Yes, 3-SW-14 test performed 10/30/79 and guage calibrated 10/29/79, 3-SW-15 performed 12/28/79, and guage calibrated 12/28/79, and 1-SF-132 performed 11/8/79 and guage calibrated 11/5/79.
8.4	Are pressure boundaries defined?	8.4 Yes, 3-SW-14, "Service Water from Yard 4-SW-3-2 through 4-SW-3-9," 3-SW-15, "Service Water from Yard 4-SW-4-2 through 4-SW-4-9," and 1-SF-132, "Spent Fuel 3-SF-12-171-SF 1 and 4."
9.0	Welding Material Control	
9.1	Does the Material Control QA Specialist monitor material issuance activities? (CQA-8, para. 4.2)	9.1 A review of the monthly reports for the past 6 months shows the inspectors have been monitoring material issuance activities. In addition the Field Welding Activity Monitoring check lists were examined for the same period. It was noted that the inspectors have been showing the date of expiration of the Qualified Welding List, which is published every two weeks, instead of showing the date the list was published. In addition, the check list for 9/16/80 shows no record of the Qualified Welders List as being Revision 1 which was dated 9/10/80. This is written in the audit report as Concern #9.

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CHARACTERISTICS		COMMENTS
9.2	Do the Material Control QC Inspectors make reports of conditions found when performing inspections? (CQA-8, para. 4.3)	9.2 The reports for May, June, and July 1980 were examined. Information on the reports, including the supplementary "in-house" forms shows that conditions found were reported on.
9.3	Are the Material Control QC Inspectors trained and qualified in accordance with Procedure CQA-1? (CQA-8, para. 5.0)	9.3 Four inspectors, Robin Groves, David Holler, Barbara Howe, and Walt Legget, were qualified as shown by their certifications.
9.4	Are actions initiated to correct unsatisfactory conditions found by the QC Inspectors? (CQA-8, para. 6.1)	9.4 Reported items found during inspections were written up on RIRs or DDRs and data showed the nonconformances to have been resolved.
9.4.1	Are the unsatisfacotry conditions shown on a Quality Control Field Report, Form QA-3, and forwarded to the QA Specialist? (CQA-8, para. 6.1)	9.4.1 The reports and nonconformances have been reviewed by the QA Specialist.
9.4.2	Do the Quality Control Field Reports, Form QA-3, show verification of those items required in Procedure CQA-8, para. 6.1?	9.4.2 The items required to be performed were examined and reported on except for Item 1.1 of the "in-house" record form calling for a review of the material requisition forms to assure that they were completely filled out. For the months of June, July, and August 1980, this data was not written on the "in-house" form nor was it recorded on the QA-3 form. During the audit, the "in-house" form was revised to make it more specific about entering data required by the procedure. This was a comment issued to QA during one of the daily debriefings.
9.5	Do the Quality Control Field Reports, Form QA-3, show that reviews required by Procedure CQA-8, paragraph 6.2 have been performed?	9.5 An extra procedure has been written by QA Receiving to cover the shelf life inspections performed. Records show that these inspections are being performed when required.

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	CHARACTERISTICS	COMMENTS
9.6	Is the material issue area arranged so as to minimize unauthorized access to storage areas? (AP-XIII-8, para. 3.2)	9.6 Welding materials are kept in locked issue rooms with only two keys available to authorized material issue personnel.
9.7	Are QA Hold items issued for rework on requisitions that clearly indicate the item is to be reworked and QA approval is noted on the requisition? (AP-XIII-8, para. 3.4)	9.7 Ten rework requisitions were selected from the QA Log and found to contain the rework statements and QA Inspector's signature.
9.8	Is a list of individuals authorized to sign the warehouse requisition (for receipt of material) maintained? (AP-XIII-8, para. 3.5)	9.8 The list of authorized personnel is being properly maintained.
9.9	Are the requisitions for material signed in the proper space by an authorized individual? (AP-XIII-8, para. 4.2)	9.9 Approximately 100 requisitions were examined and found to be signed correctly.
9.10	Has the warehouseman signed the warehouse requisition in the Received space? (AP-XIII-8, para. 4.5)	9.10 Approximately 100 requisitions were examined - all showed a qualified warehouseman had signed the documents.
9.11	Have the warehouse requisitions used for permanent plant equipment been forwarded to the warehouse office for filing in the "Master" Numerical File folder of the purchase order on which the item was purchased? (AP-XIII-8, para. 4.6.1)	9.11 The permanent equipment requisitions are in file as required.

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	CHARACTERISTICS		COMMENTS
9.12	Are all welding materials stored in dry storage areas on devices to keep the material from being in direct contact with the floor? (MP-3, para. 3.4)	9.12	Materials are stored on warehouse shelves or on pallets. No material was found on the floor.
9.13	Is all of the weld material requisitioned from the warehouse release storage area stored in a Weld Material Issue Room? (MP-3, para. 3.6.1 and 3.6.5)	9.13	The materials used for field welding are stored in the issue rooms. The material used for welder training and welding procedure qualifications are kept in the Welding School lockers.
9.14	Is the Weld Material Issue Room under the direct supervision of the Discipline Engineer - Metallurgy/Welding or his designee? (MP-3, para. 3.6.5)	9.14	Yes.
9.15	Are all unused backing rings issued for field use returned to the Weld Material Issue Room at the end of each shift of work? (MP-3, para. 3.6.5)	9.15	Those items not used are returned to the Material Issue Room and noted on the material requisition.
9.16	Are the E7018 low hydrogen electrodes being handled as required in Procedure MP-3, paragraph 3.9?	9.16	The procedure requirements are being performed.
9.16.1	Are the 300 series and Inconel materials being rebaked at 375° - 425° F. for one hour? (MP-3, para. 3.11)	9.16.1	All baking of welding electrodes, including rebaking, has been performed as required by the procedure. Rebaked electrodes are dipped in red paint on their bare ends. The rebaked electrodes are issued only on non-"C" work.

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CHARACTERISTICS		COMMENTS
9.17	Are temperature holding ovens being checked by a calibrated instrument (in the temperature range of normal operation) on a two-week basis? (MP-3, para. 3.11)	9.17 Daily temperature records show all ovens are being checked as required. However, Revision 4, not Revision 6, of Exhibit 2 is being used to record the temperature data. See 9.17.1 below.
9.17.1	Are issue room attendants randomly checking the heated portable rod caddies on a periodic basis to ensure compliance with the 150° to 350° F. temperature requirement? (MP-3, para. 3.12)	9.17.1 The issue room attendants are, according to their statements, checking the heated portable rod caddies to determine that they are functioning. The records of the checks do not appear on any data sheet. The attendants were not aware of the existance of Revision 5 or the latest Revision 6 of Exhibit 2. Revision 9 of Procedure MP-03 was in his file (and did have Revision 6 of Exhibit 2 attached), but the attendants were unaware of the changes calling for them to check and record the data on Exhibit 2. This was written up in the audit report as Finding #6.
9.18	When dissimilar metal welds are made, is a backing ring having the higher "P" number of the two base metals being used? (MP-3, para. 3.16)	9.18 No backing rings have been issued in the recent past for welding two dissimilar metals together.
9.19	Does the Pipe Foreman/Supervisor prepare the Welding Material Requisition for welding materials required by the welder and ensure that the requisition contains the information specified in Procedure MP-3, paragraph 4.5?	9.19 Approximately 100 WMRs were examined and found to be prepared as required by para. 4.5. It was observed that the issue room attendant does closely check the WMRs for completeness as well as specifying the correct welding material for the job to be done.
9.20	Does the Weld Material Issue Room Attendant perform the functions required by Procedure MP-3, paragraph 4.7?	9.20 All of the six requirements were checked at issue rooms 1, 2, and 3. The attendants are completing the tasks listed in para. 4.7. It was noted that para. 4.3.2 has a word missing ("General Welding Procedure"). This was commented on at the daily meeting.

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CHARACTERISTICS		COMMENTS
9.20.1	Does the Weld Material Issue Room Attendant perform the functions required by Procedure MP-3, paragraph 4.9?	9.20.1 All four of the requirements were checked at issue rooms 1, 2, and 3. The attendants are completing the assigned tasks.
10.1	The drawings which are marked up by the Mechanical Engineer are checked against the modification requirements for accuracy. The DCNs or FCRs are also checked for accuracy. The Mech. QA Specialist has signed the Fabrication/Modification Records which have been generated to date. He also signs Pipe Bending Records when required.	
10.0	Construction Welding	
10.1	On receipt of the Pipe Spool Fabrication/Modification Records (F/M) does the Mechanical QA Specialist or his designee verify that the proposed fabrication or modification is in accordance with approved drawing, Design Change Notice, Field Change Request or other design documents and does he sign the F/M (and Pipe Bending Record, if applicable). (CQA-18, para. 5.1.2)	10.1.1 A fabrication package is made up of the marked-up drawings, the F/M Record, the original NPP-1 data report, a hand-written supplement NPP-1 data report having the top 70% completed, and copies of the Material Mill Test Reports/Certificates of Compliance. This fabrication package is then sent to the Welding QA Specialist.
10.1.1	In addition to the requirements of 10.1 above, does he compile a fabrication package, identified with the spool identification number, including the items listed in Procedure CQA-18, paragraph 5.1.5?	10.2 The Welding QA Specialist has obtained the ANI's approval and signature on the attached WDR in the package. The ANI also shows required hold points on the WDR. (Welding QA holds the package until the welding required has been completed and the WDR requirements satisfied. The completed package then goes back to the Mechanical QA Specialist.) Five packages in QA records were monitored and found to be complete with the required signatures.
10.2	Does the Welding QA Specialist or his designee forward the fabrication package (see 10.1.1 above) to the ANI for review and signature which indicates the ANI's acceptance of the proposed modification? (CQA-18, para. 5.2.1)	

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CHARACTERISTICS		COMMENTS
10.3	Does the Mechanical QA Specialist submit the completed Form NPP-1 to the Principal QA Specialist for assignment of the appropriate Code "N" type symbol and the National Board serial number (see CQA-14 and [illegible]) (CQA-18, para. 5.3.2)	10.3 The completed package, with the hand-written NPP-1 Supplement, is sent to Pete Cook who types a final NPP-1 Supplement and submits the form with the package for the Principal QA Specialist's signature and assignment of National Board Serial numbers as required.
10.3.1	Does the Principal QA Specialist forward the completed code form to the ANI for review and certification? (CQA-18, para. 5.4)	10.3.1 The five packages in QA Records were signed by the ANI as required.
10.3.2	When the code form is properly certified, is the fabrication package properly marked and filed in QA Records? (CQA-18, para 5.6)	10.3.2 Yes, all five completed fabrication packages were filed in QA Records.
10.4	Do the QA Inspectors monitor the activities on a weekly basis listed in Procedure CQA-20, paragraph 6.2?	10.4 QA records show the inspection of CBI work being done recently on a two-week basis due to the lack of work at CBI during June, July, and August.
10.4.1	Do the QA Inspectors review randomly selected and specifically selected records, on a monthly basis, to verify compliance with drawings, specifications and procedures the activities listed in Procedure CQA-20, paragraph 6.3.2?	10.4.1 QA records show monthly surveillance of the contractors' records, reports, drawings, and specifications.

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CHARACTERISTICS		COMMENTS	
10.5	Does the Welding QA Specialist, or designee, review the WDR's, Form QA-28, when received from the Mechanical Group, for essential information and mandatory hold points and does he insert additional hold points when required? (CQC-19, para. 6.1.2)	10.5	Twelve WDRs were reviewed and showed proper signatures by Welding Engineer, ANI, when required, and Welding QA as well as designated hold points.
10.5.1	Is the WDR then sent to the ANI for review and insertion of hold points he deems necessary? (CQC-19, para. 6.1.2)	10.5.1	The above WDRs were properly completed by the ANI.
10.5.2	Does the ANI then sign and date the WDR and return it to the Welding QA Specialist? (CQC-19, para. 6.1.2)	10.5.2	The above WDRs were signed by the ANI and returned to the Welding QA Specialist.
10.6	Is the yellow copy of all approved WDR's sent with the isometric work package to the Mechanical Group? (CQC-19, para. 6.1.3)	10.6	The Yellow copy of the WDR is forwarded to the Mechanical Group who forward it to the field Welding Supervisor. (One WDR was a white photocopy not marked as yellow copy substitute. This was commented on to QA).
10.7	When hold points are reached, is a visual inspection performed by the QA Inspector in accordance with Procedure NDE-601? (CQC-19, para. 6.2.1)	10.7	The QA Inspectors have been making visual inspections at the hold points. One such inspection was observed during the audit.
10.8	When unacceptable conditions are found while inspecting welds at hold points, does the QA Inspector issue a NDE Report to the Welding Engineer? (CQC-19, para. 6.2.1.2)	10.8	When unacceptable conditions are found, the QA Inspector issues a request for NDE. The completed NDE report is sent to Welding Engineering for evaluation.

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CHARACTERISTICS		COMMENTS	
10.9	When NDE Requests are initiated by the QA Inspector, is one copy of the request attached to the WDR? (CQC-19, para. 6.3)	10.9	All WDRs checked were accompanied by a copy of the NDE request where applicable.
10.10	Are WDR's which have been completed by the QA Inspector routed and signed as required by Procedure CQC-19, paragraph 9.0?	10.10	All of the completed WDRs inspected did contain the required signatures as specified in the procedure.
10.11	Are pipe weld joints prepared as required in Procedure MP-6, paragraph 4.1.1?	10.11	Preparation of six pipe joints was inspected and all were found to be adequately prepared.
10.12	Are pipe end preparations for open butt welding or when welding against a backing ring done according to references 2.3, 2.2, 2.13? (MP-6, para. 4.1.3)	10.12	Preparation of three pipe welds on service water butt welds was inspected and all were found to be adequately prepared. (Field Weld FW-127 [3-SW-30-55-B-3] was being processed with a white photocopy of the WDR instead of the yellow original copy. All signatures were affixed.)
10.12.1	When backing rings are removed after welding, are the inside surfaces of the root pass examined by MP or LP? (MP-6, para. 4.1.3)	10.12.1	None of the welds examined had backing rings removed. Previously completed WDRs show MP or LP having been used to examine the pipes' inside surface when the backing ring was removed.
10.12.2	Does the QA Inspector document the backing ring being removed on the WDR? (MP-6, para. 4.1.3)	10.12.2	No backing rings have been used to date for fabrication of Class I or Class II pipes. Backing rings have been used and removed on Service Water (Class III) pipes. See 10.12.1 above.

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CHARACTERISTICS		COMMENTS
10.19	Have the welds which will require in-service inspection been prepared per Appendix Q? (MP-7, para. 4.5.9.7 and 4.14.4)	10.19 No welds that will require in-service inspection were being prepared during the audit.
10.20	After removing the spacer blocks by grinding out the tack welds, is the tack weld area visually inspected to ensure freedom from cracks and other defects? (MP-7, para. 4.6.11)	10.20 No spacer blocks were being used during the audit.
10.21	Is an oxygen analyzer being used to measure the presence of oxygen before welding when a purging gas is being used? (MP-7, para. 4.7.2.1)	10.21 Yes, the oxygen analyzer is being used where required. The presence of oxygen is noted on the WDR in the Remarks Section when the analyzer is being used.
11.0	Inspection and Tests	11.1 The construction inspector makes a report of the problem and submits it to the Principal Construction Inspector (not the Area or Discipline Engineer as the present procedure calls for). It was reported that TP-24 is in the process of being revised.
11.1	When the Construction Inspector detects a discrepancy between the design document and the installed pipe or valve, does he immediately notify the Area Engineer, Area Superintendent or Discipline Engineer for resolution? (TP-24, para. 3.5)	

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	CHARACTERISTICS	COMMENTS
10.13	Are the cleaning requirements of Procedure MP-6, paragraph 4.3 accomplished before welding is begun?	All but one of the preparations for welding that were examined had been cleaned as required. The one exception required additional wire brushing on the inside to a distance of two inches from the weld area. Approximately one and one quarter inches had been cleaned.
10.14	Are arc strikes outside the area of permanent welds removed as required by Procedure MP-6, paragraph 4.3.2.2?	No arc strikes were observed outside the permanent weld areas.
10.15	Is work performed beyond a hold point without having the QA Inspector, and ANI when required, sign off on the WDR or RWDR or before corrective action has been initiated? (WP-7, para. 3.8)	All welding supervisors interviewed were knowledgeable about the requirement of no work beyond an unaccepted hold point. No violations of this were observed.
10.16	Are stainless steel pipe weld joints prepared as required in Procedure WP-7, paragraph 4.1.1?	Three pipe joint preparations were inspected by the auditor and the welding inspector. All requirements of MP-7 preparation were met.
10.17	When backing rings are removed after welding, are the inside surfaces of the root pass examined by MP or LP? (MP-7, para. 4.1.3)	No backing rings have been removed to date.
10.18	Before welding has the pipe been cleaned as required in Procedure MP-7, paragraph 4.3?	Cleaning procedures are being followed. All weld joints examined had been properly cleaned.

CHARACTERISTICS		COMMENTS	
11.1.1	When the Construction Inspector detects a discrepancy on a pressure retaining boundary, does he report this to the Principal QA Specialist. (TP-24, para. 3.5)	11.1.1	He would but no occurrence of any such problem has been noted.
11.2	Does the Construction Inspector maintain a marked-up copy of the Ebasco piping drawing indicating the lines he has inspected? (TP-24, para. 4.4)	11.2	Marked-up copies are being used to indicate the piping lines the inspector has examined. Drawings 13641555-Q, -1, -5, -9, 13641556-2, -3, -4 were examined.
11.3	Has the Safety Superintendent ensured that adequate warnings and safety notices appropriate to the activity are posted? (TP-24, para. 4.7)	11.3	The Safety Superintendent was unaware of the requirements for his performance in Procedure TP-24. He does however have a daily meeting with the Welding and Construction Supervisors to discuss problems of safety for the scheduled work.
11.4	Has the Construction Inspector made quarterly reviews of the Equipment Maintenance Log and quarterly checks of equipment installed and documented these checks by initialling the "maintenance performed" section of the Equipment Maintenance Log? (TP-24, para. 4.9)	11.4	The requirement for quarterly reviews has been deleted as a result of the finding in Audit QAA/81-13 when Procedure TP-28 was revised. The requirements in TP-24 are in process of being deleted likewise.
12.0	Nondestructive Examination (IX)		
12.1	Radiographic Examination (NDEP-101, Rev. 3)		

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CHARACTERISTICS		COMMENTS
12.1.1	Select welds examined with radiography and verify the following:	12.1.1 The following welds were selected for review: SW-2, R1, Line 3SW-8-165-SB4, Dwg. 4-SW-8; Ctmt. Spray FW-199R1, Dwg. 1CT9, Line 2CT6-62-SB-1; Ctmt. Spray FW-187, Dwg. 1CT8, Line 2CT8-15-SP1; Ctmt Spray FW-199, Dwg. 1CT9, Line 2CT6-62-SB1; Ctmt. Spray FW-156, Dwg. 1CT3, Line 2CT4-59-SA1; Ctmt. Spray FW-34A, Dwg. 1CT11, Line 2CT-12-39A1; Safety Injection FW-5, Dwg. 1SI1, Line 2SI14-253-SA1.
12.1.1.1	Personnel who performed radiography were qualified in accordance with NDEP-10.	12.1.1.1 Radiographers involved with the above welds: B. Baty, D. Jacobs, A. Myers, J. Toomer, V. Phung, M. Ferretti, and P. West were verified to be qualified.
12.1.1.2	Pentrameters used are in accordance with paragraph 6.5.	12.1.1.2 Penetrameters used on the above welds were in accordance with paragraph 6.5. A concern with the number used when examining one weld is discussed in question 12.1.1.4 of this checklist.
12.1.1.3	Identification and marking are in accordance with paragraph 8.	12.1.1.3 Identification and marking were as required.
12.1.1.4	Radiographic technique is in accordance with paragraph 9.	12.1.1.4 Radiographic technique used for all welds except Safety Injection FW-5, Dwg. 1SI1, Line 2SI14-253-SA1 was acceptable. Three penetrameters as allowed by ASME Code Section III instead of four as required by NDEP-101 were used. This condition is included in the audit report as Concern #7.
12.1.1.5	Exposure technique is in accordance with paragraph 10.	12.1.1.5 Exposure technique used was acceptable and in accordance with paragraph 10.
12.1.1.6	Personnel who interpret radiographs are qualified in accordance with NDEP-10.	12.1.1.6 Interpreters: P. West, E. Betz, V. Phung, J. Toomer, and B. Baty were verified to be qualified.
12.1.1.7	Radiographic examinations are reported as required by paragraph 14.	12.1.1.7 Examinations were reported on the forms required by paragraph 14.

CHARACTERISTICS	COMMENTS
12.1.1.8 Have a formal ALARA program and implementing procedure been developed?	12.1.1.8 Yes. ALARA requirements have been evaluated and the Radiation Safety Manual has been revised to include references to the requirements.
12.2 Liquid Penetrant Examination (NDEP-201, Rev. 2)	
12.2.1 Select items examined by liquid penetrant examination and verify the following:	12.2.1 The following items examined by PT were selected: Ctmt. Spray FW-866, Dwg. 2165-G-103; Spent Fuel Pool Liner, Dwg. SK-AG-0152; Main Steam FW-286, Dwg. 2165-G-067; Main Steam FW-283, Dwg. 1-M-30; Ctmt. Spray SW-26-3, Dwg. 1CT3; Main Steam FW-287, Dwg. A3-261-MS-177; Main Steam FW-282, Dwg. A3-261-MS-65; and Fuel Pool Liner, Dwg. ALFAB 596-SH1.
12.2.1.1 Personnel who performed the PT are qualified in accordance with NDEP-10.	12.2.1.1 Personnel who performed the PT: D. Jacobs, P. West, V. Phung, B. Baty were verified to be qualified.
12.2.1.2 Materials used for PT are in accordance with paragraph 6.4.	12.2.1.2 Materials indicated on the PT reports were in accordance with requirements, except SKI type dye penetrant was recorded on ten of the reports reviewed. The auditor verified by contacting the area Magnaflux Representative that no dye penetrant identified as type SKI was manufactured by Magnaflux. The correct designation is SKL. This condition is included in the audit report as Concern #8.
12.2.1.3 Area of examination is as required by paragraph 8.0.	12.2.1.3, 12.2.1.4, and 12.2.1.5 Review of the reports identified in Item 12.2.1 indicated that the PT examinations were performed in accordance with NDEP-201.
2.2.1.4 Preparation of surfaces to be examined is in accordance with paragraph 9.	
12.2.1.5 Application of penetrant is in accordance with paragraph 10 and 11.	

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CHARACTERISTICS		COMMENTS
12.2.1.6	Drying of surfaces after removal of excess penetrant is in accordance with paragraph 12.	12.2.1.6 Review of the reports identified in Item 12.2.1
12.2.1.7	Application of developer is in accordance with paragraph 13.	12.2.1.7 indicated that the PT examinations were performed
12.2.1.8	Interpretation of indications is in accordance with paragraph 14 and 15.	12.2.1.8 in accordance with NDEP-201.
12.2.1.9	Cleaning after examination is in accordance with paragraph 16.	12.2.1.9
12.2.1.10	Reporting is in accordance with paragraph 19.	12.2.1.10 The reports reviewed were on the correct form and did contain the required information.
12.2.1.11	Personnel who interpret PT are qualified in accordance with NDEP-10.	12.2.1.11 Personnel who performed the tests interpreted the results; they were verified to be qualified; they are identified in Item 12.2.1.1 above.
12.2.1.12	Qualification of procedures for non-standard temperatures is in accordance with Attachment A.	12.2.1.12 No examinations involving non-standard temperatures have been made.

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CHARACTERISTICS		COMMENTS	
12.3	Magnetic Particle Examination (NDEP-301, Rev. 2)	12.3.1	The following items were selected for review:
12.3.1	Select items examined with MT and verify the following:		Pressurizer S/N 1641; Service Water FW-177, Dwg. 1-SW-53; Service Water FW-199, Dwg. 3-SW-30; Service Water FW-98, Dwg. 2-SW-8; Service Water Field Weld FW-133; Dwg. 3-SW-10; Service Water FW-121, Dwg. 2165-G-103; Cooling Tower Make-Up FW-3, Dwg. D-79-655.
12.3.1.1	Personnel who perform the examination are qualified in accordance with NDEP-10.	12.3.1.1	Personnel who performed the examinations, J. Toomer, A. Myers, B. Baty, V. Phung, P. West, and M. Feretts, were verified to be qualified.
12.3.1.2	Equipment and material used are in accordance with paragraph 6.	12.3.1.2	Equipment and material used were the type required.
12.3.1.3	Preparation of surfaces to be examined is in accordance with paragraph 7.	12.3.1.3	Review of the reports identified in Item 12.3.1 above indicated the examinations were performed as required by NDEP-301.
12.3.1.4	Examination technique is in accordance with paragraph 9.	12.3.1.4	
12.3.1.5	Examination coverage is in accordance with paragraph 11.	12.3.1.5	
12.3.1.6	Examination sequence is in accordance with paragraph 12.	12.3.1.6	
12.3.1.7	Examinations are required as required by paragraph 17.	12.3.1.7	The examinations were reported on the correct form and the required information was recorded.

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CHARACTERISTICS		COMMENTS	
12.4.1.7	Personnel who interpret examinations are qualified as required by paragraph 4.	12.5.1	The following welds were selected for review:
			Service Water FW-257 and FW-258 on Dwg. 1-SW-30; and Containment Spray FW-187, FW-188, FW-189, and FW-190 on Dwg. 1-CT-8.
12.5	Visual Examination (NDEP-601, Rev. 2)	12.5.1.1	Personnel performing the examinations; Ward Mercer, T. J. Wait, and A. B. Giles; were verfied to be qualified.
12.5.1	Select welds examined visually and verify the following:	12.5.1.2	Discussion with the inspectors verified that the
12.5.1.1	Personnel performing VT are qualified as required by NDEP-10.	12.5.1.3	proper equipment was used, and that the examinations
		12.5.1.4	were performed and evaluated as required by NDEP-601.
12.5.1.2	Equipment used to aid the inspector is in accordance with paragraph 6.	12.5.1.5	Documentation was on the Weld Data Report as required.
12.5.1.3	Examination is in accordance with paragraph 7.		
12.5.1.4	Evaluation is in accordance with paragraph 8.		
12.5.1.5	Documentation is in accordance with paragraph 11.		

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CHARACTERISTICS		COMMENTS	
12.3.1.8	Personnel who interpret MT are qualified as required by NDEP-10.	12.3.1.8	Interpreters were verified as qualified; they are identified in Item 12.3.1.2 above.
12.4	Ultrasonic Examination (NDEP-402, Rev. 0)	12.4	No UT has been performed on Code items.
12.4.1	Select welds examined with UT and verify the following:		
12.4.1.1	Personnel who performed the examination are qualified as required by paragraph 4.		
12.4.1.2	Equipment used is in accordance with paragraph 5.		
12.4.1.3	Technique used is in accordance with paragraph 6.		
12.4.1.4	Calibration of the test system is in accordance with paragraph 7.		
12.4.1.5	Examination is in accordance with paragraph 8.		
12.4.1.6	Examinations are reported as required by paragraph 14.		

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CHARACTERISTICS		COMMENTS
13.0	Inspection and Test Equipment Control (XII)	
13.1	Calibration of Film Densitometers (QCI-101.1, Rev. 2)	
13.1.1	Are the following calibrated in accordance with paragraph 3.1?	
13.1.1.1	MacBeth TD-504 Densitometer.	13.1.1.1 The MacBeth TD-504 Densitometer in the Film Viewing Room, CP&L #04556A was serviced and calibrated by Chieffe Electronics Southeast November 12, 1979. MacBeth TD-504, CP&L #01172A has been out of service since 5-21-80.
13.1.1.2	X-Rite Company Model 201 Densitometer	13.1.1.2 The X-Rite Company Model 201, CP&L #04550A is being used at another site.
13.1.2	Are periodic tests performed with the density calibration strip as required by paragraph 3.1.9?	13.1.2 Yes, tests are performed daily with the calibration strip.
13.1.3	Is comparison of the reference and working strips made each week as required by paragraph 3.2.3?	13.1.3 Yes, a log of the weekly comparisons is maintained for CP&L #04556A.
13.2	Field Calibration Check of Radiographic Penetrameters (QCI-101.2, Rev. 0)	
13.2.1	Verify penetrameters are purchased with certifications of calibration traceable to NBS. (Para. 4.1)	13.2.1 Certifications for the penetrameters obtained by P.O. H26407 were reviewed.

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	CHARACTERISTICS		COMMENTS
13.2.2	Are penetrameters identified with a traceable number and entered in a log book? (Para. 4.2)	13.2.2	Yes, numbers 1-174 are identified in the log; penetrameters numbered 165-174 have not been issued.
13.2.3	Verify penetrameters are checked for thickness and essential hold size on an annual basis. (Para. 4.3)	13.2.3	The annual check was verified by review of the log in which the checks were recorded.
13.2.4	Are the following used to make the annual check: (Para. 4.4)	13.2.4.1 13.2.4.2 13.2.4.3 13.2.4.4	Yes, use of the 4 items was verified by discussion with personnel responsible for the annual check.
13.2.4.1	Outside micrometer		
13.2.4.2	Quick check hole gauge		
13.2.4.3	Calibrated gauge blocks		
13.2.4.4	Calibrated traceable hole gauge		
13.2.5	Verify the traceable hole gauges and gauge blocks are calibrated annually. (Para. 4.5)	13.2.5	Gauge blocks used are obtained from Robert McNeil, Calibration Specialist. The traceable hole gauges are the plates with test holes provided with the 3 Kwik Chek devices; CP&L #04548A, #04547A, and #04546A. The hole sizes in these test plates were certified when the Kwik Check devices were purchased.

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CHARACTERISTICS		COMMENTS
13.3	Welding Equipment Control (MP-9, Rev. 5)	
13.3.1	Verify that operational checks are performed on welding machines at intervals not to exceed three months. (Para. 3.8)	13.3.3.1 Performance of operational checks at least every three months was verified by checking the following welding machines: W-118, W-488, W-82, W-121, W-159, W-377, W-376, W-467, W-376, W-455, W-456, W-230, W-400, W-349, 3-347.
13.3.2	Are machines tagged to indicate performance of operational checks? (Para. 3.2)	13.3.2 Yes, all the machines identified above were tagged except W-82. This machine was reported to M/E.*
13.3.3	Does M/E maintain an up-to-date record of operational checks? (Para. 3.2)	13.3.3 Yes, M/E receives copies of maintenance reports and maintains a log of welding equipment.
13.3.4	Are machines requiring repair tagged and removed from service? (Para. 3.3)	13.3.4 Yes, this was verified by review of maintenance records for the following equipment: Miller Rectifiers W-361 and W-143, Hobart Rectifier W-313, Miller Gasoline Generator W-73, Lincoln Rectifier W-237A, Westinghouse Grid W-250, and Hobart Rectifier W-301.
13.3.5	Is a Welding Machine Maintenance Report prepared for machines requiring repair? (Para. 3.3)	13.3.5 Yes, copies of these reports are maintained by M/E.
13.3.6	Are records of welding machine operational checks maintained in Document Control? (Para. 3.9)	13.3.6 Yes, copies of the maintenance reports are maintained in Document Control.
		*Machine W-82 had been taken out of service and was awaiting repair.

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CHARACTERISTICS		COMMENTS
14.0	Code Data Reports and Nameplate Stamping (XVII)	14.0 Only seven orifice plates and 1 modification to a spool piece have been stamped. These items are not considered to be typical examples of items to be stamped; therefore, reports and stamping will be audited as soon as more typical items are stamped.
14.1	Application and Control of "N" Stamps (CQA-14, Rev. 0)	
14.1.1	Verify the "N" stamps are stored in a locked drawer or cabinet. (Para. 5.1.2)	
14.1.2	Verify that documentation required to show compliance with the Code is on site prior to application of the "N" stamps. (Para. 5.2)	
14.1.3	Do nameplates contain the information required by paragraph 6.1?	
14.1.4	Verify application of appropriate "N" type symbols is in accordance with paragraph 6.2.	
14.1.5	Is preparation of Code data reports in accordance with paragraph 6.3?	
14.1.6	Is an "N" stamp log maintained as required by paragraph 6.4?	

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	CHARACTERISTICS	COMMENTS
14.1.7	Are Code data reports certified by the ANI prior to application of "N" stamps? (Para. 7.3)	
14.1.8	Are locations of stamped nameplates indicated on the appropriate isometric drawing? (Para. 7.4.3)	
14.2	Assignment and Control of National Board Serial Numbers (CQA-15, Rev. 0)	
14.2.1	Are numbers assigned in accordance with paragraph 5.1?	
14.2.2	Is placement of numbers as required by paragraph 5.2?	
14.2.3	Are numbers recorded in a log as required by paragraph 6.1?	
14.2.4	Are Code data forms submitted in accordance with paragraph 6.3?	

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CHARACTERISTICS		COMMENTS
14.3	Preparation and Submittal of ASME Code Data Reports (CQA-16, Rev. 0)	
14.3.1	Are reports prepared for fabrication or modification of piping subassemblies as required by paragraph 6.1?	
14.3.2	Are reports prepared for piping system or subsystem installation as required by paragraph 6.2?	
14.3.3	Are reports prepared for the nuclear power plant unit as required by paragraph 6.3?	
15.0	Housekeeping	
15.1	Are QA Inspection personnel performing the walk-through inspections assigned them and are they alert to the specific requirements listed in Procedure CQA-3, paragraphs 7.3 and 7.4?	15.1 Yes, verified by review of documented records of 15.1.1 housekeeping inspections.
15.1.1	Are the records created by the QA Inspectors in 15.1 above reviewed for compliance by the Principal QA Specialist or his designee? (CQA-3, paragraph 7.5)	

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	CHARACTERISTICS		COMMENTS
15.2	Are documented reports of housekeeping inspections in the warehouse and material storage areas being completed by the Materials Supervisor? (AP-VII-6, paragraph 3.4)	15.2 15.3	No, this is not being done. The auditors are concerned that Procedure AP-VII-06, paragraph 3.5 is an error in the way it is stated. The reference to Procedure AP-IX-02 probably should be for document control and distribution of Housekeeping records. This appears in the audit report as Concern Number 3.
15.3	Is housekeeping in the Document Control Area being done as required in Procedure AP-IX-2? (AP-VII, para. 3.5)	15.4	Yes, the zones are listed on a chart by zone area, responsible superintendent, responsible construction inspector and QA Inspector.
		15.4.1	Yes, verified by review of Housekeeping Inspection records.
15.4	Are Superintendents designated as responsible for the housekeeping zones as listed in Appendices A through E of Procedure AP-VII-6, paragraph 3.6?	16.0	Meetings between the Site Construction Management, Site QA Management and the auditors were conducted at the end of each audit day to report and discuss any nonconformances, concerns and comments observed by the auditors. The postaudit meeting was held at the conclusion of the scheduled audit to present and discuss the nonconformance and concerns which were to be included in the audit report. Site management personnel at the postaudit meeting indicated that they understood the items presented and their responses were given to all items presented. Attendees of the postaudit meeting are listed in the audit report.
15.4.1	Are the above designated Superintendents maintaining the specified housekeeping conditions in their assigned areas? (These areas, designated by drawing SS/K-G-5008, are to be inspected for cleanliness) (AP-VII-6, para. 4.3)		
16.0	Postaudit Meeting		

Carolina Power & Light Company

Common, Correspondence

March 5, 1981

File: QAA/170-4

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: Resolution of Audit Findings, QAA/170-4
ASME Audit of SHNPP Construction

The corrective actions taken to resolve Finding Items 1, 2, 3, 4, 5, 6, and 7 were audited during Audit QAA/170-5, and these findings have been satisfactorily resolved by those audits. In addition, the response to Concern Nos. 5 and 6 were audited during Audit QAA/170-5. This response to Concern No. 5 satisfactorily resolved this concern. The response to Concern No. 6 is still open as unresolved and is being carried forward as Concern No. 1 in Audit Report QAA/170-5.

Summary: Finding Items 1, 2, 3, 4, 5, 6, and 7 plus Concern No. 5 are closed by report and audit. Concern No. 6 is now Concern No. 1 in Audit Report QAA/170-5. This audit is hereby closed.

Concurrence: S. McManus 3/6/81
S. McManus, Manager
Corporate Nuclear Safety &
Quality Assurance Audit

AH/wcll

cc: Mr. N. J. Chiangi
Dr. T. S. Elleman
Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. S. D. Smith
Mr. T. H. Wyllie

Carolina Power & Light Company

Company Correspondence

December 19, 1980

File: QAA/170-4

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: Resolution of Audit Findings, QAA/170-4
ASME Audit of SHNPP Construction

REFERENCE: E&CQA Letter QA-1995 and Attachments, dated December 12, 1980

The referenced letter QA-1995, dated December 12, 1980, copy attached, with the E&CQA response to Audit QAA/170-4 has been evaluated with the following results. The responses for finding Items 3, 4, 5, and 7 are considered as action taken to resolve these items, and these findings are hereby closed by report. The requested response received for Concern #5 is considered as action taken, and this concern is hereby closed by report. The requested response received for Concern #6 indicates the required action necessary has not been completed, so we will hold this concern as unresolved.

The basis on which finding Item 4 above is closed by report is due to the writer obtaining verbal input from Mr. Kumar V. Hate, E&CQA, that the preventative correction action committed will be the responsibility of E&CQA Harris Site Personnel to assure it will be done.

Summary: Finding Items 1, 3, 4, 5, 6, and 7 are closed by report; Finding Item 2 is closed by report and audit. In addition, Concern #5 is closed by report, and Concern #6 remains unresolved.

AEH/lgp[illegible]

Attachment

cc: Mr. N. J. Chiangi
Dr. T. S. Elleman
Mr. G. L. Forehand
Mr. F. W. Hove
Mr. R. M. Parsons
Mr. S. D. Smith
Mr. T. H. Wyllie

Concurrence:

S. McManus - Manager
Corporate Nuclear Safety &
Quality Assurance Audit

Form 2-4

Carolina Power & Light Company

Company Correspondance

December 12, 1980

File: SH A-2/2 QA-1995

MEMORANDUM TO: Mr. S. McManus

FROM: W. J. Chiangi

SUBJECT: Follow-Up Response to Corporate Audit QAA/170-4

The Corporate Audit Report QAA/170-4 for audit of the Harris Project ASME activities during September 15-18, 22, 1980, listed six (6) findings and two (2) concerns requiring formal response.

Based on our previous response (reference letter QA-1917 dated October 31, 1980) and the attached, with the exception of Concern #6, it is considered that corrective action for each of the items is satisfactory and the items should be closed. Corrective action for Concern #6 is incomplete.

Please let me know if you need any additional information.

GLF/lm

Attachment

cc: Mr. R. M. Parsons (w/a)
Mr. E. W. Howe (w/a)
Mr. S. D. Smith (w/a)
Mr. T. H. Wyllie (w/a)
Mr. G. L. Forehand (w/a)

ASME QUALITY ASSURANCE AUDIT QAA/[illegible]

Follow-Up Response to Findings

Finding #3:

ASME Code Section III, NA-4133.6 Document Control, requires "measures that shall assure that documents, including changes, are reviewed for adequacy..."

The auditor determined that a portion of the text of Paragraph 1.3, 10CFR21 requirements, of Site Specification 036, Revisions 1, 2, 3, and 4 which was in the original issue of the document, was inadvertently deleted in Revisions 1, 2, 3, and 4 due to typing error. This discrepancy went undetected throughout the CP&L Site construction and QA organizations. This document was a requirement on eight out of seventeen purchase orders for ASME Code items reviewed by the auditor.

Corrective Action:

The Senior Resident Engineer generated and distributed a memorandum (reference memorandum MS-7687 dated September 18, 1980) to all supervisors alerting them to the particular problem and the general responsibilities involved.

Site Specification 036 was revised on November 28, 1980 incorporating the missing paragraphs.

A change order was written to purchase order numbers 28261 and 28910 to issue and impose the requirements of revision 6 to Site Specification 036 on the vendors.

Finding #4:

Procedure WP-112, "Control of Materials and Equipment That May Be Harmful To Stainless Steel," requires materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000-PPM leachable halogenated compounds (including chlorides). A certificate of compliance to the above must be provided by the supplier or sampled and tested upon receipt of the material.

There are no suppliers' certification or sample test results on halogen content for the acetone being used on the site for cleaning purposes.

Corrective Action:

A representative sample of acetone in use on the site was sent to the CP&L laboratory for analysis and the results were completed on November 3, 1980. The lab results of the sample indicate 0.1 PPM of total leachable halogen compounds (including chlorides) which is considerably less than the 1000 PPM allowed in procedure WP-112.

When lots and/or batches of acetone are procured in the future more awareness will be applied in assuring that a certificate of compliance is obtained from the supplier or the material is sampled and tested upon receipt.

Finding #5:

Warehouse storage procedure PGD-002, "Material Maintenance Requirements During Storage for Shearon Harris Nuclear Power Plant," requires polyethylene used in contact with safety related, seismic 1, or stainless steel equipment not to be in excess of 55 PPM for total leachable halogens in pigmented sheeting. Procedure WP-112, "Control of Materials and Equipment That May Be Harmful to Stainless Steel," requires that materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000 PPM halogenated compounds which are leachable. NPPED Memorandum 801022, dated 5/22/80 from L. I. Loflin to T. H. Wyllie, indicates that protective covers must not exceed 1000 PPM for total halogen and sulfur, and 200 PPM for leachable halogen.

The fire retardant vinyl received 6/4/80 has manufacturer's certification which states the total leachable halogenated compounds including chlorides are less than 1000 PPM. This material is being used to cover safety related and stainless steel equipment even though there is a conflict between the three documents prescribing leachable halogen limits.

Corrective Action:

Work procedure WP-112 was revised on October 7, 1980, to reflect correct levels of acceptable limits of halogens. Procedure generated document PGD-002 was revised on October 30, 1980, and halogen limit criteria has been eliminated from this document. PGD-002 now references halogen limit criteria back to procedure WP-112.

Finding #7:

For welding repairs to Code Class 3 base material, the CP&L ASME QA Manual requires the QA Welding Inspector to prepare a sketch of the repaired area as required by the Code showing location and size of the prepared cavity, the welding material identifications, the welding procedure, and a report of the results of examinations. For weld repairs requiring radiography, ASME Code Section III, Paragraph ND-2539 requires a sketch showing location and size of the prepared cavity.

A radiograph identified as SW-2R1, Drawing 4-SW-8/2165 was reviewed during this audit. A note on the Radiographic Examination Report indicated the area examined to be a pipe wall repair. The sketch of the repaired area and the repair weld data report could not be located during the audit. Only the film and the request for radiography were available for review.

Corrective Action:

As stated in the initial formal response investigation of the problem was revealed:

(1) The repair was incorrectly identified as a repair to shop weld 2. In actuality, the repair was a base metal repair on piece number 4-SW-8-5(1) adjacent to shop weld 2.

(2) The defect was discovered visually by craft personnel. The area in question was excavated by grinding without notifying QA; thus no DDR was written at that time.

(3) The repair WDR was processed and the repair was completed without the necessary "sketch" of the excavated area. QA failed to note this problem and a DDR was not issued as required.

The repair WDR has been corrected by identifying the repaired area as a base metal repair to piece number 4-SW-8-5(1). A "sketch" of the repair area has been prepared from the radiographic "skin" issued by the QA NDE group and was inserted in the repair package. The excavation depth of the area repaired was determined in an interview with the welder who actually performed the repair (reference memorandum from F. Shaikh to V. Safarian dated 12/3/80).

Craft personnel have been instructed to coordinate repair work with QA personnel to adequately ensure evaluation and documentation of work prior to any future repair work anticipated to be done (reference memorandum from D. Timberlake to D. Turner dated 12/9/80, subject is DDR-483).

QA personnel have been instructed to check DDR and/or NCR files upon receiving a NDE Request or Repair WDR to ensure that base metal defects and/or damage are properly identified, documented and controlled (reference memorandum from V. Safarian to QA Welding personnel dated 12/10/80).

Deficiency and Disposition Report number DDR-483 was issued to facilitate resolution of the audit identified nonconforming condition. The subject DDR was closed on December 10, 1980, based on the aforementioned completed action.

Concern #5:

NPPED Memorandum 79462, dated 3/12/79, indicates that for duct tape that Westinghouse recommends chloride content of tape not to exceed 15 PPM. NPPED recommends that duct tape purchased with actual chloride content of 20.9 PPM be used. NPPED Memorandum 801022, dated 5/29/80, states higher halogen content can be used if tape residue is removed prior to startup (heating up of equipment). Procedure WP-12 revision number 3 is in review and approval cycle; this revision will require all tape residue to be removed prior to operation heat-up.

It is of concern that stainless steel pipe that has been embedded may not have tape residue removed in areas that are covered over with concrete.

Corrective Action:

NPPED has evaluated the potential effects of leaving tape residue on stainless steel pipe which is embedded (NPPED memorandum 801320, dated December 12, 1980). Plant design criteria restrict piping embedded in concrete to a maximum of 150°F operating temperature. This temperature is well below conditions which would cause concern related to failure of piping from the effects of contaminates on the external surface.

Concern #6:

Containment spray piping and spent fuel piping was inspected according to Procedure CQC-10, "Cleanness Control of Fluid Systems and Components," and released on "Conditional Release" because the external surfaces of the pipe had not been cleaned in accordance with Procedure WP-113, "Cleaning & Cleanliness Maintenance of ASME Section III Piping Systems."

It is of concern that Procedure WP-113 was inadequate by not containing requirements for external pipe cleaning, and spent fuel piping is embedded in concrete and cannot be cleaned.

Corrective Action:

The piping in question was released on a Cleanness Conditional Accept because no exterior cleanness criteria was addressed in WP-113. The "conditional release: was used as a vehicle to flag the potential problem without stopping work associated with the piping. WP-113 is being revised to include a statement to address piping exterior cleanness requirements as well as other QA concerns. When this procedure revision is approved and issued, the "conditional release" will be closed. Anticipated date for completion of the above action is January 16, 1981.

Form 244

Carolina Power & Light Company

Company Correspondence

November 6, 1980

FILE: QAA/170-4

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: Resolution of Audit Findings, QAA/170-4
ASME QA Audit of SHNPP Construction

REFERENCE: E&CQA Letter QA-1917 & Attachments, Dated October 31, 1980

The referenced letter QA-1917, dated October 31, 1980, copy attached with the E&CQA response to Audit QAA/170-4 has been evaluated with the following results. The responses for finding Items 1 and 6 are considered as action taken to resolve these items and these finding items are hereby closed by report. The remaining responses to Finding Items 3, 4, 5, and 7 are not sufficient to close these items, due to the response action being incomplete or unacceptable as discussed below.

Finding Item 3: The corrective action response did not include a copy of memorandum MS-7687, dated September 18, 1980 as record of this action taken. When we are notified the date that the specification is corrected and redistributed, we will close this item by report.

Finding Item 4: The corrective action response gives no target date for completion of action stated. In addition, the response does not state what preventative action is being taken to preclude a recurrance of this nonconformance. The closing of this item is delayed until preventative action response is received.

Finding Item 5: The corrective action response is adequate, but incomplete, because it does not state a target date for completion. When we notified the action is complete and the date, we will close this item by report.

Finding Item 7: The corrective action response does not state if action necessary to complete DDR-483 is open or closed, nor if the DDR-483 condition is acceptable to the ANI. The preventative action response does not state how it is to be accomplished, a target date for completion, or if this action is to be documented. The closing of this item is delayed until additional response is received.

The above evaluations of corrective actionresponse cutlines additional response requested. It is requested this additional response be supplied by the Manager - Engineering & Construction Quality Assurance to close these finding items.

The corrective action response to the audit report concerns #5 and #6 does not indicate if these responses are engineering technical evaluations as requested by the QAA/170-4 Audit Report. The response for concern #6 raises additional unanswered questions.

1. Why was this piping released on a "conditional release" based on WP-113, when this procedure did not have external cleanliness requirements?
2. How was this conditional release resolved?

At present these two concerns will remain unresolved, until additional response is received.

Summary: Finding Items 1 & 6 are close by report; Finding Item 2 was previously closed by report and audit, and Finding Items 3, 4, 5, and 7 remain open. In addition, Concerns #5 and #6 remain unresolved.

ALH/tcmH2

cc: Mr. N. J. Chiangi
Dr. T. S. Elleman
Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. S. D. Smith
Mr. T. H. Wyllie

Concurrence:

S. McManus - Manager
Corporate Nuclear Safety &
Quality Assurance Audit

Form 244

Carolina Power & Light Company

Company Correspondence

October 31, 1980

File: SH A-2/2

QA-1917

MEMORANDUM TO: Mr. S. McManus

FROM: N. J. Chiangi

SUBJECT: Corporate Audit QAA/170-4

The Corporate Audit Report QAA/170-4 for audit of the Harris project ASME activities during September 15-18, 22, 1980, listed six (6) findings and two (2) concerns requiring formal response. The attached describes the action taken or being taken to resolve the reported findings.

Based on the attached, corrective action for findings 1 and 6; and concerns 5 and 6 is considered satisfactory and those items should be closed.

The intended corrective action for findings 3, 4, 5 and 7 is considered satisfactory and should be adequate for closing those items when complete.

Please let me know if you need additional information.

NJC/lm

Attachment

cc: Mr. R. W. Howe (w/a)
Mr. R. M. Parsons (w/a)
Mr. S. D. Smith (w/a)
Mr. T. H. Wyllie (w/a)
Mr. G. L. Forehand (w/a)

E QUALITY ASSURANCE AUDIT QAA/[illegible]-4

Response to Findings

Finding #1:

ASNT-TC-1A (1975 Edition), Paragraph 8.5.2.c, specifies that for the practical examination (nondestructive examination personnel qualifications), ten different checkpoints requiring understanding of test variables and procedural requirements should be included in the practical examination. In addition, Paragraph 9.6.1.f specifies that the practical examination should describe the practical test object.

The qualification records for Norman C. Westgate, RT Level II (Daniel) practical examination record did not include ten checkpoints as required and did not describe the test object that was tested. These record nonconformances existed when the CP&L NDE Level III Examiner reviewed the record and certified this individual as RT Level II on 8/8/80. The auditors determined the record files for five other Level II personnel did meet the requirements of ASNT-TC-1A.

Corrective Action:

The identified practical examination for Norman Westgate was determined to be deficient insofar as the record did not include ten checkpoints or describe the object that was tested. Mr. Westgate was reexamined by a CP&L Level III Radiographer, completing the deficient portion of the practical examination. A new certification was issued on October 3, 1980, and the grade point average was readjusted accordingly. It should be noted that Mr. Westgate was not the radiographer of record on any production radiography prior to issue of the new certification. In the future, more emphasis will be exercised in reviewing qualification packages for new NDE contract personnel.

Finding #2:

Item closed in audit report.

Finding #3:

ASME Code Section III, NA-4133.6 Document Control, requires "measures that shall assure that documents, including changes, are reviewed for adequacy..."

The auditor determined that a portion of the text of Paragraph 1.3, 10CFR21 requirements, of Site Specification 036, Revisions 1, 2, 3, and 4 which was in the original issue of the document, was inadvertently deleted in Revisions 1, 2, 3, and 4 due to typing error. This discrepancy went undetected throughout the CP&L Site construction and QA organizations. This document was a requirement on eight out of seventeen purchase orders for ASME Code items reviewed by the auditor.

Corrective Action:

The Senior Resident Engineer generated and distributed a memorandum (MS-7687 dated September 18, 1980) to all supervisors alerting them to the particular problem and the general responsibilities involved. Site Specification 036 is anticipated to be revised to incorporate the missing paragraphs by November 16, 1980. This revised site specification will be incorporated into outstanding purchase orders written against Site Specification 036.

Finding #4:

Procedure WP-112, "Control of Materials and Equipment That May Be Harmful To Stainless Steel," requires materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000 PPM leachable halogenated compounds (including chlorides). A certificate of compliance to the above must be provided by the supplier or sampled and tested upon receipt of the material.

There are no suppliers' certification or sample test results on halogen content for the acetone being used on the site for cleaning purposes.

Corrective Action:

A sample of acetone in use on the site has been sent to the CP&L laboratory for analysis. Once the halogen content has been determined PPCD and NPPED will make a determination of acceptability. Corrective and preventative action will be formulated based on results of the laboratory testing.

Finding #5:

Warehouse storage procedure PGD-002, "Material Maintenance Requirements During Storage for Shearon Harris Nuclear Power Plant," requires polyethylene used in contact with safety related, seismic 1, or stainless steel equipment not to be in excess of 55 PPM for total leachable halogens in pigmented sheeting. Procedure WP-112, "Control of Materials and Equipment Thay May Be Harmful To Stainless Steel," requires that materials that are purchased for a function that will require them to come in contact with stainless steel shall not contain more than 1000 PPM halogenated compounds which are leachable. NPPED Memorandum 801022, dated 5/22/80 from L. I. Loflin to T. H. Wyllie, indicates that protective covers must not exceed 1000 PPM for total halogen and sulfur, and 200 PPM for leachable halogen.

The fire retardant vinyl received 6/4/80 has manufacturer's certification which states the total leachable halogenated compounds including chlorides are less than 1000 PPM. This material is being used to cover safety related and stainless steel equipment even though there is a conflict between the three documents prescribing leachable halogen limits.

Corrective Action:

Work procedure WP-112 is in process of being revised to reflect correct levels of acceptable limits of halogens. Procedure generated document PGD-002 is being reissued to reference halogen limits established in WP-112. This action, once complete, should eliminate further conflict on the prescribed leachable halogen limits.

Finding #6:

Procedure MP-03, Revision 9, dated September 5, 1980, Paragraphs 3.11 and 3.12 require the Welding Issue Room Attendant to daily check the welding rod holding ovens to randomly check the welding rod heated portable caddies for their proper operation at the specified temperatures. The procedure requires the above checks to be recorded on Exhibit 2, Revision 6, dated August 1980.

The records examined showed that Revision 4, not Revision 6, of Exhibit 2 has been used to record the daily checks of oven temperatures in all three issue rooms to date. Revision 4 of Exhibit 2 did not have a format that provided a designated space for the data results of checking the heated portable caddies. There have been no records made of the issue room attendant's checking of the heated portable caddies since September 5, 1980 when the new requirement became effective.

Revision 6 of Procedure MP-03, which was issued December 7, 1979, revised Exhibit 2 which made it Revision 5. There is no record of Revision 5 of Exhibit 2 having been used for recording oven temperatures by the issue room attendants since that date.

Corrective Action:

Corrective Action has been taken and all temperature recordings that were recorded on revision 4 have been transferred and recorded on revision 5 back to effective date of December 7, 1979, with a statement and date attached to each sheet indicating it was transferred from revision 4. All temperature recordings that were required on revision 6 have also been transferred from revision 4 to revision 6 back to effective date of September 5, 1980. A statement and date was attached to each sheet showing the change.

Metallurgy/Welding Unit personnel have been cautioned about failing to destroy superceded and obsolete forms. Measures were taken to ensure that all forms now in use are in compliance with the latest applicable procedures.

Finding #7:

For welding repairs to Code Class 3 base material, the CP&L ASME QA Manual requires the QA Welding Inspector to prepare a sketch of the repaired area as required by the Code showing location and size of the prepared cavity, the welding material identifications, the welding procedure, and a report of the results of examinations. For weld repairs requiring radiography, ASME Code Section III, Paragraph ND-2539 requires a sketch showing location and size of the prepared cavity.

A radiograph identified as SW-2R1, Drawing 4-SW-8/2165 was reviewed during this audit. A note on the Radiographic Examination Report indicated the area examined was a pipe wall repair. The sketch of the repaired area and the repair weld data report could not be located during the audit. Only the film and the request for radiography were available for review.

Corrective Action:

Investigation of the problem revealed:

(1) The repair was incorrectly indentified as a repair to shop weld 2. In actuality, the repair was a base metal repair on piece number 4-SW-8-5(1) adjacent to shop weld 2.

(2) The defect was discovered visually by craft personnel. The area in question was excavated by grinding without notifying QA; thus no DDR was written at this time.

(3) The repair WDR was processed and the repair was completed without the necessary "sketch" of the excavated area. QA failed to note this problem and a DDR was not issued as required.

The repair WDR has been corrected by identifying the repaired area as a base metal repair to piece number 4-SW-8-5(1). A "sketch" of the repaired area has been prepared from the radiographic "skin" issued by the QA NDE group. This sketch shows all dimensions with the exception of the depth of the excavated area. DDR-483 has been issued to facilitate resolution of the nonconforming condition. OPEN

Individuals responsible for the review and issue of Repair WDR's have been alerted to the errors exemplified by this incident and have been instructed to ensure the required sketches of the excavations have been made prior to release for repairs. They have also been instructed to insert the DDR number in the Instructions section of Repair WDR's issued for base metal repairs. Field welding personnel have been instructed to coordinate with QA prior to any weld repairs.

Concern #5:

NPPED Memorandum 79462, dated 3/12/79, indicates that for duct tape that Westinghouse recommends chloride content of tape not to exceed 15 PPM. NPPED recommends that duct tape purchased with actual chloride content of 20.9 PPM be used. NPPED Memorandum 801022, dated 5/29/80, states higher halogen content can be used if tape residue is removed prior to startup (heating up of equipment). Procedure WP-12 revision number 3 is in review and approval cycle; this revision will require all tape residue to be removed prior to operation heat-up.

It is of concern that stainless steel pipe that has been embedded may not have tape residue removed in areas that are covered over with concrete.

Corrective Action:

NPPEI has stated that there is no problem if tape residues were not removed from embedded pipe as operating temperatures will not exceed 200°F. This is well below the critical temperature where halogens could produce deleterious consequences.

Concern #5:

Containment spray piping and spent fuel piping was inspected according to Procedure QAP-10, "Cleanness Control of Fluid Systems and Components," and released on "Conditional Release" because the external surfaces of the pipe had not been cleaned in accordance with Procedure WP-113, "Cleaning & Cleanliness Maintenance of ASME Section III Piping Systems."

It is of concern that Procedure WP-113 was inadequate by not containing requirements for external pipe cleaning, and spent fuel piping is embedded in concrete and cannot be cleaned.

Corrective Action:

Work procedure WP-113 does not have any external cleanliness requirements. There is no known requirement for any external cleanliness contained in any of CP&L commitments. The only on-site requirement is the removal of items on the surface of stainless steel to a visual level of cleanliness (reference WP-112).

Form 24a

Carolina Power & Light Company

Company Correspondence

October 2, 1980

FILE: QAA/170-4

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

REFERENCE: Letter SH A-2/2, dated September 18, 1980

The referenced letter SH A-2/2, dated September 18, 1980, with E&C QA response to Audit QAA/170-4, Finding Item No. 2 has been evaluated and verified as corrected during the audit. The response for Finding Item No. 2 is considered as action to resolve this item and is hereby closed by report/audit.

Summary: Finding Item No. 2 is closed by report/audit. Finding Items 1, 3, 4, 5, 6, and 7 remain open.

AEH:pn
Attachment
cc: Mr. N. J. Chiangi
Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. Sheldon D. Smith
Mr. T. H. Wyllie

CONCURRENCE:

S. McManus - Manager
Corporate Nuclear Safety &
Quality Assurance Audit

Form 24

Carolina Power & Light Company

P. O. Box 101, New Hill, N. C. 27562

Rec'd 9-18-80

Company Correspondence

File: SH A-2/2
(170-4)

September 18, 1980

MEMORANDUM TO: Mr. A. Hall, Lead Auditor

FROM: G. L. Forehand

SUBJECT: Evaluations Related to Disqualified Vendors

To prevent failure to perform evaluations as required by procedure CQA-24, Paragraph 7.1, the E&C QA Vendor Surveillance Unit will notify the site QA Unit by memorandum of vendors removed from the Approved Suppliers List and the reason for removal.

G. L. Forehand

GLF:jp

cc: Mr. N. J. Chiangi
Mr. D. A. McGaw
Mr. D. C. Whitehead

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
QUALITY CONTROL FIELD REPORT

Date 9/18/80
Page 1 of 1
Report No. F-[illegible]

Subject/System	Area/Location/Elevation	Reference Doc. No.
Evaluation of Vendors Removed From The Approved Suppliers List	Shearon Harris Nuclear Power Plant	CP&L PO H-24234

Inspection Details:

The attached list delineates Vendors who have been removed from the Approved Suppliers List whose qualifications/certifications have expired. We performed an evaluation to determine if the removal would affect any orders "in progess". Only Unibraze for CP&L PO H-24234 is an order "in progress". Unibraze has their ASME Certification expire 7/15/80 and is in the process of reapplying for their ASME certification.

The following action will be taken by CP&L:

1. Per Don McGaw, E&C QA will audit Unibraze prior to the proposed shipment date of 11/1/80. He noted that Unibraze has not started production on H-24234.

2. The Site Material Control Unit will "flag" the PO H-24234 for attention when the shipment arrives. Receiving Inspection shall ensure that the Vendor is considered to be approved by CP&L prior to acceptance of any material.

David Satterfield 9/18/80
QA/QC Inspector Date

David Satterfield 9/18/80
QA Specialist Date

cc: Don McGaw
Tom Harrington
G. L. Forehand
A. B. Hall

BY ________ DATE 9/17/80 **POWER PLANT CONSTRUCTION** · SHEET 2 OF 2

CHKD. BY ______ DATE ______ **COMPUTATION SHEET** DEPT ______

SUBJECT QA FIELD REPORT R-718

FORM NO 1630

...DOR	EXPIRATION/ AUDIT DATE	REASON	OPERATIONS IN PROGRESS	EFFECT	FINAL ACTION
...co Steel	Sept 15, 1980	N/A	NONE		N/A
... GA.	Aug 9, 1980	N/A	NONE		N/A
... Pipe ...	Rev. 9	Only used office in N.C.	NONE		N/A
...ida Steel	Rev. 8	N/A	NONE		N/A
...bert	Rev. 8 (expired)	~~N/A~~	NONE		~~N/A~~
...ckwell Intl	Apri 24, 1980	AUDIT Nonconformances	NONE		N/A
...inibraze	July 15, 1980	ASME QUAL. EXPIRED	H-24234		E&C QA WILL AUDIT PRIOR TO SHIPMENT (≈ 11/1/80) PRODUCTION <u>NOT</u> IN-PROCESS
US Steel	Rev. 8 (expired)	~~N/A~~	NONE		~~N/A~~
Edwards & Clyde	Aug. 11, 1980	N/A	NONE		N/A

Enclosure 9 to Serial: HNP-99-069

Representative Quality Assurance Audits of the Site Construction Program

Carolina Power & Light Company

Company Correspondence

February 21, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. D. Smith

FROM: S. McManus

SUBJECT: Quality Assurance Audit of ASME Quality Assurance at SHNPP Construction Site

It is currently planned to conduct a Quality Assurance Audit of ASME Quality Assurance at SHNPP Construction Site on March 19-23, 1979. This audit will be conducted in accordance with Quality Assurance Audit Procedure QAAP-1, "Procedure for Quality Assurance Audit as Required by CP&L Corporate QA Program" and the CP&L ASME QA Manual. The attached audit agenda/plan defines the scope and primary areas of the audit. The lead auditor will be Mr. A. E. Hall.

The Manager - Engineering & Construction Quality Assurance should regard this memorandum and attached audit agenda/plan as official notification of the audit.

If there are any questions concerning this audit, please contact me.

SM:AEH:jwjW1

Attachment

cc: Messrs. N. J. Chiangi (w/a)
G. L. Forehand (w/a)
W. B. Kincaid (w/a)
R. M. Parsons (w/a)
M. F. Thompson, Jr. (w/a)
T. H. Wyllie (w/a)

AUDIT AGENDA/PLAN

Activity: Quality Assurance Audit of ASME Quality Assurance at SHNPP Construction Site

Audit Schedule Date: March 19-23, 1979

Auditors: A. E. Hall - Lead Auditor
L. W. Bissette
F. W. Taylor
I. A. Johnson

Requirements: (1) CP&L ASME QA Manual
(2) ASME Code
(3) SHNPP PSAR

Applicable Documents: (1) E&C QA Manual of Procedures
(2) SHNPP Construction Procedures
(3) SHNPP Specifications

Agenda:
1.0 Preaudit Meeting (8:15 a.m., 3/19/79)
2.0 ASME/Document Control
3.0 Site Procurement - ASME Items
4.0 Receiving Inspection - ASME Items
5.0 Process Control
6.0 Welding Control
7.0 Heat Treating
8.0 Calibration of Equipment & Tools/ASME
9.0 Inspection & Test (Welding & Hydro)
10.0 Nondestructive Testing
11.0 ASME QA Records
12.0 Containment Construction (ACI-359)
13.0 Post Audit Meeting

Audit Report No.: QAA/170-1

QAA Procedure No.: QAAP-1

Carolina Power & Light Company

April 3, 1979

File: QAA/170-1

MEMORANDUM TO: Messrs. Shearon Harris
L. A. Jones

FROM: S. McManus

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

During the period March 19-23, 1979, a Corporate Quality Assurance Program Audit was conducted at the SHNPP Construction Site. This was conducted by Messrs. A. E. Hall (Lead Auditor), L. W. Bissette, I. A. Johnson, and F. W. Taylor of the Corporate Nuclear Safety & Quality Assurance Audit Section. The purpose of this audit was to evaluate the SHNPP ASME Quality Assurance Program and to verify compliance with the implementing procedures.

The attached audit report summarizes the results of the audit. The completed checklist, which was used as a guide in conducting this audit, is maintained in the CNS&QAA Section files.

As required by Audit Procedure QAAP-1, it is the responsibility of the Manager - Engineering & Construction Quality Assurance to review and investigate the audit findings; to determine and schedule appropriate corrective action, including action to prevent recurrence; and to respond in writing within thirty days after receipt of this report, giving results of the review and investigation, and describing corrective action taken to resolve the findings identified in this report.

RLM

AEH:fdcTC

Attachment

cc: Messrs. N. J. Chiangi (w/a)
G. L. Forehand (w/a)
S. Hamilton (w/a)
P. W. Howe (w/a)
J. P. St. Jeffries (w/a)
W. B. Kincaid (w/a)
R. L. Mayton, Jr. (w/a)
M. A. McDuffie (w/a)
W. W. Morgan (w/a)
R. M. Parsons (w/a)
S. D. Smith (w/a)
M. F. Thompson, Jr. (w/a)
T. H. Wyllie (w/a)

TO: Mr. S. McManus

FROM: L. A. Jones

The attached audit report, QAA/170-1, has been reviewed and is returned for placement in the CNS&QAA files with the following comments.

Audit Report

Activity Audited: SHNPP Construction Site/ASME Construction

Audit Report No.: QAA/170-1 Date: March 19-23, 1979

Auditors: A. E. Hall - Lead Auditor
L. W. Bissette
L. A. Johnson
F. W. Taylor

Persons Contacted:

"*"D. C. Whitehead - Senior QA Specialist
"*"G. Simpson - Senior QA Specialist
"*"V. Safarian - Senior QA Specialist
"*"M. G. Loving - Senior QA Specialist
"*"E. L. Betz, Jr. - Senior QA Specialist
W. J. Burnette - Material Supervisor
* W. D. Goodman - Project Manager, Daniels
"*"G. L. Forehand - Principal QA Specialist
J. F. Nevill - Site Engineer, Civil
"*"R. M. Parsons - Site Manager
* T. H. Wyllie - Manager, Nuclear Construction
"*"S. Hinnant - Principal Engineer, Mechanical/Electrical
E. Kelly - Senior QA Specialist
C. Nall, Jr. - Project Office Engineer
* M. E. Reese - Project Engineer/Welding
** T. Harrington - Senior Buyer
* N. J. Chiangi - Manager, Engineering & Construction QA
* P. W. Howe - Vice President, Technical Services
* E. McLean - Senior Engineer, Mechanical
* W. Seyler - Senior Engineer, Civil
J. Schenck - Weld Material Issue Attendant
*S. McManus - Manager, Corporate Nuclear Safety & QA Audit

* Attended the Postaudit Meeting
** Attended the Preaudit Meeting
"*"Attended the Preaudit and Postaudit Meetings

Scope: This audit was conducted in accordance with CP&L's Quality Assurance Audit Procedure QAAP-1, "Procedure for Quality Assurance Audit as Required by CP&L Corporate QA Program, and ASME QA Program." The purpose of the audit was to review and evaluate selected portions of the CP&L ASME QA Program, SHNPP PSAR commitments on concrete containment (Appendix 3H in PSAR), Site QA Program/Procedures, and verify site compliance with implementing procedures. Areas/activities audited included: (1) ASME/Document Control; (2) Site Procurement - ASME Items; (3) Receiving Inspection - ASME Items; (4) Process Control; (5) Welding Control: (6) Heat Treating; (7) Calibration of Equipment and Tools/ ASME; (8) Inspection & Test - Welding

and Welds; (9) Nondestructive Testing; (10) ASME QA Records; (11) Containment Construction - ASME Section III, Division 2; and (12) Housekeeping During Construction Phase. Within these areas, the audit consisted of discussions with personnel, examination of records and procedures, audit team walk through of construction site, and witness of construction work in process.

Summary: Within the scope of this audit, the ASME Quality Assurance Program will be considered adequate when the seven findings identified in this report are resolved. The eleven concerns identified in the general section of this report should be reviewed by the responsible parties to determine if actual problem areas exist.

During this audit, the audit team toured the SHNPP Construction Site and reviewed housekeeping during the construction phase as required by ANSI Standard N45.2.3, titled "Housekeeping During the Construction Phase of Nuclear Power Plants." The auditors, immediately after the housekeeping tour, informed the CP&L Site Manager and the Daniel Project Manager of the conditions found. One nonconforming finding was identified during the housekeeping tour and is detailed in this report, which is the result that the site did not have documented procedures implemented to control housekeeping. The site issued their housekeeping procedures, however, they are not implemented as of this audit date. The auditors reviewed the site housekeeping procedures and they will meet the requirements of ANSI N45.2.3 when implemented.

Personnel contacted during the audit were cooperative and found to be knowledgeable in their areas of responsibility.

Findings and Corrective Action:

During the audit, the following items were identified as nonconforming findings. **The items require corrective action and formal response.** Actions taken to preclude recurrence are also required for Item 2.

Item 1:

Requirement:

ASME Section III, paragraph NB-5111, requires that radiographic penetrameters for single-wall radiographic technique be in accordance with Table NB-5111-1.

Nonconformance:

Penetrameter sensitivity for source side penetrameters in Table 2 of CP&L procedure NDEP-101, Revision 1, for material thickness over 7/8 inch through 1-1/4 inch is not in compliance with Table NB-5111-1. Procedure NDEP-101 requires that the 4T hole in the penetrameter be displayed on the radiograph. The ASME Code, Section III, Table NB-5111-1, specifies that the 2T hole be displayed on the radiograph.

Acknowledgement and Response:

The Manager, E&C QA stated the sensitivity shown in CP&L procedure MDEP-101 will be modified to agree with the requirements of ASME Code, Section III.

Item 2:

Requirement:

Ebasco Specification CAR-SH-AS-55, Circular Liner Plates and ASME Code, Section III, Division 2, paragraph CC-2131.1(c).

Nonconformance:

The Ebasco Purchase Order NY435170, to vendor Hemminger, for containment circular liner plates for Units 1 and 2 required the plate material to meet ASME Code, Section III, Division 2. The Certified Material Test Report (CMTR) supplied by the vendor does not meet the requirements of CC-2131.1(c). The code requires the CMTR to have a statement giving the manner in which the material is identified, including specific marking.

Acknowledgement and Response:

The Principal QA Specialist stated the vendor is being contacted to supply corrected CMTR(s) and he will then review the vendor's identification on the material not yet installed in Unit 2.

Item 3:

Requirement:

ANSI Standard N45.2.3, "Housekeeping During the Construction Phase of Nuclear Power Plants."

Nonconformance:

The ANSI Standard requires that procedures be documented and implemented for housekeeping control. The site does not have a documented procedure implemented for control of housekeeping. The Site QA does not have a documented procedure implemented for surveillance of housekeeping. Both of the site organizations issued documented procedures during this audit which have not been implemented. The auditors reviewed both of these procedures during the audit and find they will meet the intent of ANSI N45.2.3 when implemented.

Acknowledgement and Response:

Both the Site Manager and the Principal QA Specialist stated they will have these new procedures implemented within one month.

Item 4:

Requirement:

Section III, ASME Code, Article NA-4133.10, Examination, Tests, and Inspections, states: "Checklists shall be prepared, including the document numbers and revisions to which the examination or test is to be performed ....."

Nonconformances:

a. The Weld Data Report (WDR) contains the checklist but it does not indicate the procedure or its revision to which the NDE examination or test will be performed.

b. The "Hydro Test Form," Exhibit 1 of TP-30, Revision 1, dated 3/6/79, does not contain a checklist or provisions for listing procedure and its revision.

Acknowledgement and Response:

a. The Manager, E&C QA did not agree with the finding. He stated the type of NDE is marked on the WDR as hold point and the NDE Test Report will be attached to the WDR when documented after the NDE is performed. The NDE Test Report will indicate the procedure and its revision.

b. The Principal Engineer - Mechanical/Electrical stated the Hydro Test Form is in the process of being revised to include requirements.

Item 5:

Requirement:

The Weld Data Report, Form QA-28, requires documenting the piece numbers and heat numbers of items welded together to identify a weld joint.

Nonconformance:

The Weld Data Report for weld joint 3SW13FW169 stated piece number 1-SW-49-17, heat number 98267-23 was welded to piece number 4-SW-2-7, heat number 98534-23; however, piece number 1-SW-49-17, heat number 98151-23 was actually welded to piece number 4-SW-2-7, heat number 98534-23. The pipe, piece 1-SW-49-17, had been flipped over exchanging ends and heat numbers, the weld fit-up inspection had been approved by Site QA Inspector. It was confirmed that the Weld Data Report was corrected during the audit.

Acknowledgement and Response:

The Principal QA Specialist stated that identifications will be reconfirmed at final inspection.

Item 6:

Requirement:

Procedure MP-03, Welding Material Control, Revision 1, states: "Dry rod, rebake and recondition ovens shall be temperature checked by a calibrated instrument on a weekly basis by the control area attendant and documented."

Nonconformance:

Weld Rod Holding Oven H1100 was checked the weeks of 2/26/79 and 3/19/79. It was not checked for two weeks but was still used. The calibration instrument used to check ovens had been damaged, and no spare or replacement instrument was available.

Acknowledgement and Response:

The Welding Project Engineer stated the procedure would be changed to require temperature check every two weeks. He also stated an extra calibrated instrument had been purchased.

Item 7:

Requirements:

ASME QA Manual, Section 3
Administrative Procedure IV-03

Nonconformance:

The ASME QA Manual, paragraph 3.3.7, requires purchase orders to be awarded for code items in accordance with PPCD procedures. The Site Construction Procurement Services Section is issuing and approving purchase orders per PPCD Procedure P-066 which is not written as required in Administrative Procedure IV-03, paragraph 3.7, which requires the scope to contain the sentence, "This is an ASME Section III procedure" when the procedure relates to ASME Code work.

Acknowledgement and Response:

The Manager, E&C QA stated that he did not believe that the P-066 procedure should contain the statement since the procedure is used for all purchase orders issued by PPCD. Further study will be made to resolve the nonconformance.

Concerns:

The following items were identified as concerns during the audit. It is recommended that they be investigated and evaluated to determine what actions are necessary to prevent them from becoming unsatisfactory conditions.

Concern 1:

Paragraphs 8.1 and 8.2 in procedure [illegible]-301, Revision 1, Magnetic Particle Examination, indicate that direct current is to be used for all general work, except when detection of fine surface discontinuities is required or shape of a component or part would prevent use of direct current. The auditors are concerned that these paragraphs do not clearly define when direct current and alternating current are being used. During this audit, magnetic particle examination of a circumferential weld in a 30 inch diameter pipe was witnessed. The completed weld joint was ground only the amount necessary to remove abrupt ridges and the fusion line between the weld and base metal. Direct current would be used to examine this weld joint if the information in paragraphs 8.1 and 8.2 is used to determine current; however, alternating current was used.

The Manager - E&C QA stated that the procedure does contain the information needed because it states that the current used can either be AC or DC as addressed by the code.

Concern 2:

Administrative Procedure IX-10 requires the Document Control Supervisor to distribute the site-generated specifications in accordance with Administrative Procedure IX-02. It is of concern that contrary to distribution of controlled documents, site-generated specifications have been distributed to personnel for procurement purposes without having the stamp "Uncontrolled" applied.

The Manager - E&C QA stated that procedures will be examined to determine the need for corrections to allow unstamped documents to be issued by the Document Control Supervisor.

Concern 3:

A review of eight Construction QA Manuals of Procedures for their control and distribution was made by the auditor. It is of concern that one manual was found issued without having an Approval Page (Page 1) and two manuals were issued without having the number of the manual shown on the Approval Page.

These items were corrected during the audit.

Concern 4:

It is of concern that several code items receiving inspection packages, three of which are numbered QA-169476-3, QA-169476-[illegible] and QA-169476-7 contained cross-reference forms that listed obsolete receiving inspection package numbers in which pertinent information is filed.

The Principal QA Specialist stated that the obsolete numbers would be changed to reflect the correct package numbers.

Concern 5:

It is of concern that two code item receiving inspection packages numbered H0S009-1 and H0S009-2 contained photo copies of chemical analysis reports having unreadable signatures and as such made them incapable of being properly reproduced.

The Principal QA Specialist stated that these reports would be corrected.

Concern 6:

A CP&L PPED letter No. CE-07426 to Ebasco states the A-E will review and approve the Site Procedure AP-IX-11, titled "Construction Surveillance." The auditors are concerned that this procedure has not been reviewed and approved by Ebasco. Per Harris Site Engineering, Ebasco will not sign the site administrative procedures.

Concern 7:

The last survey of Site QA records was performed 9/21/78. Since that time, the Site QA Procedure CQA-3, titled "Construction Site QA Surveys," has been deleted. The auditors are concerned that this now is in conflict with requirements of ASME QA Manual, paragraph 11.1.6 which requires QA records to be surveyed.

The Manager - E&C QA stated that this conflict was an oversight and will be deleted from the ASME QA Manual.

Concern 8:

The Field Weld Number is marked in the pipe using a vibrator marker. It is of concern that this identification is very hard to read.

The Manager - E&C QA stated that as long as the Field Weld Number is readable at the time of installation that the requirements for marking have been met. He also stated that they had suggested stamping for identification.

Concern 9:

Article T752 of Section V of the ASME Code requires for magnetic particle test equipment that each piece of magnetizing equipment shall be calibrated at least once a year. The magnetic particle yoke is being calibrated. It is of concern that there is no documented record of this yoke calibration.

The Manager - E&C QA stated that the blocks are part of the calibration program and there is a record of these blocks being calibrated. The auditor stated that he had no problem with the blocks, but that the Magnetic Particle yoke had no record of calibration. The Manager - E&C QA stated that the calibration requirements are being met and that personnel have gone a step further by requiring that these be calibrated on a daily basis.

Concern 10:

Section III, ASME Code, Article NA 4133.10, Test Control, states: "Tests shall be documented and evaluated to assure that test requirements have been satisfied." It is of concern that the Hydro Test Form does not provide for or indicate that results were evaluated and accepted.

The Principal Engineer, Mechanical/Electrical stated that the form has already been changed to correct the concern.

Concern 11:

Paragraph 4.1.2.2 of Administrative Procedure XII-01 requires purchase requisitions for permanent plant items to include an approved site-generated or A-E generated design specification. It is of concern that site-generated Specification 021 for weld rod which has been included in four purchase requisitions is not an approved design specification.

The Manager - E&C QA stated that the Administrative Procedure XII-01 would be changed to reflect the actual requirements for specifications required to be included in purchase requisitions.

Submitted by: _____

_____

_____

_____

Approved by: _____
Manager - Corporate Nuclear Safety &
Quality Assurance Audit

ACTIVITY

SNEPP Construction Site/ASME Construction

REPORT NO. QAA/170-1

DATE March 19-23, 1979

AUDIT PROCEDURE QAAP-1

9.2.4 thru 9.2.4.3
10.1.3 thru 10.1.4
10.1.6 thru 10.1.8
12.1, 12.1.1, 12.6, 12.11.2

Find / Conc

QUALITY ASSURANCE AUDIT CHECK LIST

AUDIT SUBJECT QA Audit of ASME Quality Assurance

AUDITOR A. E. Hall

AUDITOR(S) I. A. Johnson L. W. Bissette F. W. Taylor

CHARACTERISTICS		COMMENTS
1.0	**Preaudit Meeting**	2.1 In accordance with the ASME QA Manual requirements, Administrative Procedure IV-03 is written and used for the development and approval of technical and work procedures relating to ASME Code items.
2.0	**Document Control**	
2.1	Are the construction technical and work Procedures being developed and approved in accordance with ASME QA Manual, Para. 2.4.4.1?	2.2 The distribution of Construction QA Manuals is being done according to procedures. However, one manual was found to have no approval page and two other manuals were found to have approval pages without showing the assigned number of those manuals. This was written up as Concern No. 3 in the audit report.
2.2	Are the EFC QA site construction, QA and QC procedures being distributed as designated in AQAS procedures? (ASME-QA-2.4.3)	2.2.1 A document control log is being used and was found to be up to date.
2.2.1	Are the above distributed procedures recorded on a document control log? (ASME-QA-2.4.3.)	

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CHARACTERISTICS		COMMENTS	
2.3	Select examples of the following documents for determining if they are being distributed and controlled as described in PPCD procedures on document distribution and control (ASME-QA-2.4.4.2):		
2.3.1	Design Specifications.	2.3.1	A distribution list for Design Specifications has not been considered necessary since there are no requirements for the specifications to be distributed. A record is kept for those specifications which have been issued at the individuals request.
2.3.2	Drawings.	2.3.2	Drawings are being distributed and controlled as required in PPCD procedures. The drawings are not [illegible] Code Item.
2.3.3	Site originated specifications.	2.3.3	Site-originated specifications are not required to be distributed. A record is kept of those specifications that have been distributed. It was found that a few of these site-generated specifications are issued to site engineering personnel as controlled documents (not having the stamp "uncontrolled" affixed) that are intended to be used with purchase requisitions and purchase orders. This is written up as Concern No. 2 in the audit report.
2.4	Are documents received at the site being recorded on the Document Record Form (Exhibit 2-5)? (ASME-QA-2.4.4.2)	2.4	All construction control documents are logged on the Received Document Record.
2.5	Are revisions to specifications and drawings being reviewed and approved by the same organization that performed the original review or other properly authorized personnel? (ASME-QA-2.4.5)	2.5	All revisions to site specifications and site drawings are being reviewed and approved by the same organization that performed the original review.
2.6	Select specifications and drawings and determine if current revisions to same are available for use where the function is being performed. (ASME-QA-2.4.5)	2.6	The current specification - G21 was being used with purchase orders for welding rod. Other ASME Code item specs. and drawings have not been issued for use.

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	CHARACTERISTICS	COMMENTS
2.7	Are procedures that are generated and/or used at the construction site for installation of Code work identified as "ASME Section III" documents? (ASME-QA-2.5.1)	2.7 Yes, all procedures used for the installating of Code items do have the words ASME Section III in the Scope section of the procedures.
3.0	Site Procurement - ASME Items	
3.1	Are field purchase requisitions for Code items prepared as detailed in PPCD procedures on the requisitioning of materials and equipment? (ASME-QA-3.3.2)	3.1 Field purchase requisitions are being prepared as required by Administrative Procedure XII-01 except for (illegible) 4.1.2.3 which requires a document list showing all attachments to the purchase requisition - three of five files examined did not have the list.
3.1.1	Are field purchase requisitions for Code items approved per PPCD procedures? (AP-XII-01-4.1)	3.1.1 Field purchase requisitions are approved per ASME procedure. Purchase orders are approved per Procedure P-[illegible] which does not contain the statement, "This is an ASME Section III procedure." This is written up as Finding Item No. 7 in the audit report.
3.2	Are Purchase Requisiton packages for Code items submitted to the Principal QA Specialist for review prior to bid solicitation? (ASME-QA-3.3.3)	3.2 The purchase requisitions for Code items are submitted to QA for approval and have been so approved.
3.3	Select procurement documents for Code items and verify that the following items are included in the documents: (AP-XII-01-.4.1)	
3.3.1	An approved site-generated or A-E generated design specification?	3.3.1 The site-generated design Specification 021 has not been approved by a registered professional engineer proficient in that field. This is written up as Concern No. 11 in the audit report.

Reviewer

RQ. QAA/110-1

	CHARACTERISTICS		COMMENTS
3.3.2	A document list showing all attachments to the purchase requisition/order?	3.3.2	See 3.1.
3.3.3	Provisions for [illegible] applicable?	3.3.3	When required the 10CFR21 requirement is stated on the purchase requisitions.
3.3.4	For Code Class I, [illegible] items a requirement that [illegible] shall be manufactured/supplied [illegible] ance with the CP&L approved [illegible] QA program?	3.3.4	All Code Items being purchased have requir[illegible] to use an approved QA program in supplyi[illegible] to CP&L.
3.4	Do the procurement documents selected in 3.3 above require objective evidence of quality furnished by the supplier? (Section III-PA-4133.7)	3.4	Yes, objective evidence has been required.
3.4.1	Do the procurement documents selected in 3.3 above require assurance that identification of material and/or item is maintained either on the item or on records traceable to the item throughout fabrication, manufacture or installation? (Section III-PA-4133.8a)	3.4.1	Requirements for identification are listed in [illegible] 021 for welding rod.
3.4.1.1	Do the above procurement documents require permanent or temporary unit identification [illegible] to be applied using methods and [illegible] which are legible and not detrimental to the item involved? (Section III-PA-4133.8b)	3.4.1.1	Temporary identification on the packages for welding rod[illegible] are required by Specification 021.

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	CHARACTERISTICS	COMMENTS
3.5	Does the Site Procurement Unit have documented evidence of E&C QA's approval of suppliers used to furnish Code items on Construction Procurement Services issued purchase orders? (ASME-QA-3.3.5.2)	3.5 Site procurement unit does have a list of approved E&C QA vendors to use for purchases of Code items. The list is updated quarterly unless a vendor is dropped from the list in which case the name of the vendor is immediately transmitted to site procurement unit.
4.0	Receiving Inspection of Code Items	
4.1	Select Code items that have been received by Site QA Inspectors to assure the following requirements have been met? (ASME-QA-4.0)	
4.1.1	Items have been identified by the inspector to provide traceability of those items? (ASME-QA-4.2)	4.1.1 Those inspected items not having identification tags, or heat numbers, etc., are reviewed [illegible] and markings as required are then applied to the item before being placed in storage.
4.1.2	Items have been examined to ensure special packaging, shipping and handling had been carried out during shipment? (ASME-QA-4.3, 4.4)	4.1.2 The receiving inspection report form has a checklist for noting information about special packaging, shipping and handling as observed by the receiving inspector.
4.1.3	Items have been handled according to specifications after receipt? (ASME-QA-4.3)	4.1.3 For items that require special handling such as reactor vessels, a special handling report is written in addition to the receiving inspection report and is placed in QA Records in a Special Handling file.

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CHARACTERISTICS		COMMENTS
4.1.4	Items which are accompanied by a Quality Release or Release for Shipment and have not been damaged are accepted and released after being examined as specified in 4.1.1 and 4.1.2 [illegible] (ASME-QA-4.5)	4.1.4 All Code items must have been source inspected and released by completion of a Quality Release form. This QR form must be available to the inspector before he can inspect the item. Inspection and acceptance then follows standard inspection procedures and is documented on the receiving inspection report.
4.1.4.1	Items of 4.1.4 above are properly inspected when special inspection instructions are specified? (ASME-QA-4.5)	4.1.4.1 Special inspection instructions are noted on the receiving inspection report and information concerning compliance with those special instructions is noted.
4.1.5	Items are tagged/labeled as required?	4.1.5 No special tagging is used for ASME Code items. The standard Accept or Reject tags are used to show the status of the Code items.
4.1.6	Nonconforming items are reported and controlled as required? (ASME-QA-4.8)	4.1.6 In addition to the receiving inspection report (Form 7) being completed for nonconforming items a nonconformance report (Form 7a) is completed to show the nature of the nonconformance. This form becomes a part of the receiving inspection package.
4.1.7	Items have been stored according to the required level of storage? (CQC-6-7.2.2)	4.1.7 The receiving inspection report, revised March 1975, has a checklist space for inclusion of the level of storage required for the item being inspected. All items receiving inspection packages examined did show the level of storage required for those items.
4.2	Receiving inspection packages for items selected in 4.1 above contain Supplier documentation and site-generated inspection documents? (ASME-QA-4.9)	4.2 All receiving inspection packages examined did contain the vendor quality release, proper documentation by the AIJ, and receiving inspection reports with the QA approval sheets. It was noted that several packages contained forms used to show the storage location. Another receiving inspection package number, [illegible] listed obsolete package numbers. (The package QA [illegible] was changed about a year and one-half ago). This item is noted as Comment No. 4 in the audit report.
4.2.1	Have the above packages been reviewed for compliance by the Principal QA Specialist or his designee and transmitted to QA records? (4.10)	4.2.1 All packages reviewed did have an [illegible] by the QA specialist designated to sign the [illegible] and the packages were retained in QA records.

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CHARACTERISTICS		COMMENTS	
4.3	Have the data packages supplied with items purchased by the A-E which were selected in 4.1 above been reviewed and accepted by the A-E Site QA Coordinator? (ASME-QA-4.12)	4.3	The QA records transmittal form in each package reviewed was signed by the resident A-E site QA Coordinator.
4.4	Are site-purchased items received and inspected in accordance with Procedure CQC-6, Paragraph [illegible]	4.4	The site purchased receiving inspection packages [illegible] did show that the items had been received per [illegible] of Procedure CQC-6.
4.5	Do required Certified Material Test Reports include, as applicable, the following: (Section III-NA 3767.4)	4.5.1	The receiving inspection reports examined [illegible] chemical analysis did contain chemical [illegible] However, two chemical analysis reports [illegible] of the vendors form and did not have readable [illegible] on the forms. This is written up as Concern No. 5 in the audit report.
4.5.1	Actual results of all required chemical analysis?	4.5.2	Vendor inspection and test data was included in the packages where required.
4.5.2	Actual test and examination results?	4.5.3	Weld rod has no requirements for repairs.
4.5.3	Results of weld repairs made?	4.5.4	Weld rod has no requirements for radiographs.
4.5.4	Radiographic film required for the evaluation of material or material repair welds?	4.5.5	Heat treatment data where required was included in the packages.
4.5.5	Results of heat treatments required in- [illegible]?		

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	CHARACTERISTICS	COMMENTS
4.6	Do the above selected Test Reports (4.5) results meet the ASME Section II Material Specifications?	Test reports are required to meet the requirements of site-generated Specification Q21 for weld rod. The test reports did meet those requirements.
5.0	Process Control	
5.1	Verify that code items are controlled during fabrication and installation so that their status is known. (Section III, NA-4133.14)	The only welding of Code item in progress was repair of Service Water 1SW48FW15, also selected [illegible] welds 2SW-1FW18 and 4SW-2FW8. The status [illegible] is indicated by the use of Weld Data Report [illegible] containe process control checklist. The WDR for 4SW2FW8 was marked through on 3/7/72 and initialed changing it to 3SW13FW169. Magnetic particle NDE Report still indicates line 4-SW-2 but weld number was changed to 3SW13FW169. Weld item number indicates FW8 acceptable. The WDR indicates Pc. 1-SW-49-17, ht. 98267-23 welded to PC. 4-SW-2-7, ht. 98534-23. The actual condition is that PC 1-SW-49-17, heat 88151-23 is welded to PC 4-SW-2-7, ht. 98534-23. This joint is marked FW8. This could affect FW8 and FW9 of old line 4SW-2. This is in the audit report as Finding Item No. 5. The field weld number is vibrator marked in pipe and is hard to read. This is in the audit report as Concern No. 8.
5.1.1	Is the status indicated by the use of markings (indicators)?	Yes, the status is indicated on the WDR as to accepted or rejected by QA Inspector or ANI. Nonconformances are indicated by status tag, such as "Hold."
5.1.2	Does the method of status identification indicate items that conform to examination and tests, and those that do not?	Yes, see question 5.1.1.
5.2	Do the procedures that control process status cover: (Section III, NA-4133.14)	
5.2.1	Status indicators?	Yes, CQC-19 "Weld Control" covers the use of WDF for inspection of items during installation. CQC-2 "Nonconformance Control" covers tagging of items that nonconformance is indicated.
5.2.2	Authority for application and removal of indicators?	Yes, CQC-7 "Marking & Tagging" gives responsibility of attaching and removing tags to QC inspectors.

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NO. CAA/170-1

CHARACTERISTICS		COMMENTS
5.3	Are processes (such as welding, heat treating, and cleaning) controlled by process sheets, checklists, travelers, or equivalent procedures? (Section III, NA-4133.9)	5.3 They are controlled by WDR which contains checklist which lists procedures such as inspection, welding, preheat, NDE, cleanliness, and joint identification.
5.4	Are processes controlled by the use of checklists? (Section III, NA-4133.9)	5.4 Yes, see question 5.3
5.4.1	Does the checklist provide for reporting results of completion of process?	5.4.1 Yes, the WDR indicates hold points, and [illegible] accepted or rejected.
5.4.2	Does the checklist provide for the signature, initial, or stamp of the A. I.?	5.4.2 Yes, the hold points indicated by the ANI are [illegible] and dated by the ANI when accepted.
5.5	Does the ASME Code Program provide for accomplishment of activities affecting quality under controlled conditions (e.g. appropriate equipment, suitable environment, and assuring prerequisites have been satisfied)? (Section III, NA-4133.9)	5.5 Yes, paragraph 5.3.1 under "Construction Procedures" of the ASME Manual does include these requirements.

REPORT
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CHARACTERISTICS		COMMENTS	
6.0	Welding Control (Section IX)		
6.1	Select weldments being made in accordance with the code and verify that a Welding Procedure Specification was prepared. (Article II, QW-201)	6.1	30 inch OD Service Water field welds FW-15 and FW-36 were being worked. These welds were in ASME Code Section III, Class 3 piping. A "mock-up" Class 1 weld joint was also worked during this audit. These three weldments were used to answer the checklist questions.
6.1.1	Are the following parameters listed in the WPS: (Article II, QW-201.1)	6.1.1	WPS P-8-8-B-4, Rev. 1 P-1-1-A-1, Rev. 1
6.1.1.1	Base metal P numbers to be joined?	6.1.1.1	P8 to P8 P1 to P1
6.1.1.2	Filler metals to be used?	6.1.1.2	A8, F6 A1, F4
6.1.1.3	Range of preheat & postweld heat treatment?	6.1.1.3	Preheat 50°F Preheat 50°F Interpass 300°F Interpass 500°F No PWHT No PWHT
6.1.4	Thickness?	6.1.1.5	Yes Yes
6.1.1.5	Other essential and nonessential variables?	6.2	Yes, both WPS P-8-8-B-4 and P-1-1-A-1 were qualified by welding test coupons and testing specimens.
6.2	Was the WPS qualified by welding of test coupons and testing of specimens? (Article II, QW-201)		

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	CHARACTERISTICS	COMMENTS
6.2.1	Is welding data and test results recorded in a Procedure Qualification Record? (Article II, QW-201)	6.2.1 Yes, welding data and test results are recorded in a PQR for both P-8-8-B-4 and P-1-1-A-1.
6.2.2	Is the following [illegible] in the PQR? (Article II, QW-2[illegible])	6.2.2 WPS P-8-8-B-4 / P-1-1-A-1
6.2.2.1	Essential variables of the welding process?	6.2.2.1 Yes / Yes
6.2.2.2	Deposited weld metal with each process?	6.2.2.2 Yes / Yes
6.2.2.3	Test results?	6.2.2.3 Yes / Yes
6.2.3	Is the PQR certified? (Article II, QW-201.2)	6.2.3 Yes, the PQR for both P-8-8-B-4 and P-1-1-A-1 were certified.
6.2.4	Were tests required by QW-202 on Page 2-2 performed?	6.2.4 Yes, the required tests were performed.
6.3	Is each welder or welding operator for each welding process qualified? (Article III, QW-301.2)	6.3 Yes, the welders (A15, 648, and 683) working on weld joint ISW-43-FW-15 and the make-up were verified to be qualified.

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CHARACTERISTICS		COMMENTS
6.3.1	Were performance qualification tests welded in accordance with qualified Welding Procedure Specifications? (Article III, QW-[illegible])	6.3.1 Yes, performance qualification tests were welded [illegible]
6.3.2	Is an identifying [illegible] letter, or symbol assigned [illegible] to identify the work of each welding operator? (Art[illegible] QW-301.3)	6.3.2 Yes, numbers A15, A48, and A83 were assigned to the welder working on the joints identified in [illegible]
6.3.3	Is information regarding essential variables and test results obtained by each welder recorded on a Record of Performance Qualification Tests? (Article III, QW-301.4)	6.3.3 Yes, this information was verified to be [illegible] performance qualification test records.
6.3.4	Is information regarding essential variables and background data and test results obtained by each welding operator recorded on a Record of Performance Qualification Tests? (Article III, QW-301.4)	6.3.4 Welding operators were not involved with [illegible] audited.
6.3.5	Were the tests required by Article III, QW-301 [illegible] performed?	6.3.5 Yes, the required tests were performed.
6.3.6	Select [illegible] and verify that [illegible] variables were within the [illegible] qualified [illegible] (Article III, QW-301.2)	6.3.6 Values of essential variables used to weld the [illegible] were verified to agree with those in the WPS.

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CHARACTERISTICS	COMMENTS
6.4 Verify the following for Class I piping:	6.4 A "mock" Class 1 weld was made during this audit. The first attempt to weld this mock-up was not successful because the pre-placed insert was not completely fused. The second attempt was successful.
6.4.1 Backing rings are removed as required by NB-4421?	6.4.1 Backing rings were not used in the "mock" [illegible]
6.4.2 Surface of welds [illegible] sufficiently free from coarse ripples, [illegible], overlaps, and abrupt ridges [illegible] [illegible] to meet NB-4424?	6.4.2 The surface of the completed "mock" weld [illegible] with NB-4424.
6.4.3 Reinforcement of welds is in compliance with NB-4426?	6.4.3 Reinforcement was in compliance with NB-4426.
6.4.4 Repair of weld metal defects is in accordance with NB-4450?	6.4.4 No defects were noted in the weld metal during the audit.
7.0 Heat Treating	7.0 No heat treating has been performed; therefore, the questions (7.1 through 7.3.5) were not answered.
Verify the following for PWHT of Class I components:	
7.1.1 Metal temperature is maintained within the temperature range and for minimum holding time specified in Table NB-4622.1-1 and Table NB-4622.3-1?	
7.1.2 The temperature recording are made [illegible], [illegible], or component identified on the recording? (NB-4622.2)	

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CHARACTERISTICS		COMMENTS
7.1.3	Holding times and temperatures are controlled in accordance with NB-4622.4?	
7.1.4	PWHT heating and [illegible] requirements conform to [illegible]	
7.1.5	Methods of PWHT [illegible] NB-4624?	
7.1.6	Components or items repaired by welding are postweld heat treated unless repair is controlled in accordance with NB-4622? (NB-4641)	
7.1.7	Heat treatment after bending or forming is in compliance with NB-4650?	
	Verify the following for PWHT of Class II components:	
7.2.1	Time-temperature recordings are made with weld, item, or component identified on the recording? (NC-4622.2)	
7.2.2	Holding times and temperatures are controlled in accordance with NC-4622.4?	

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CHARACTERISTICS		COMMENTS
7.2.3	PWHT heating and cooling rate requirements conform to NC-4623?	
7.2.4	Heat treatment after repair by welding is in accordance with NC-4640?	
7.2.5	Heat treatment after bending or forming is in compliance with NC-4650?	
7.3	Verify the following for PWHT of Class III components:	
7.3.1	Time-temperature recordings are made with weld, item, or component identified on the recording? (ND-4622)	
7.3.2	Holding times and temperatures are controlled in accordance with ND-4622.4?	
7.3.3	PWHT heating and cooling rate requirements conform to ND-4623?	
7.3.4	Heat treatment after repair by welding is in accordance with ND-4640?	
7.3.5	Heat treatment after bending or forming is in accordance with ND-4650?	

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CHARACTERISTICS		COMMENTS	
8.0	Calibration of Equipment and Tools/ASME		
8.1	Review equipment being used in ASME Code Activities and verify the following calibration requirements are implemented.		
8.1	The following items are marked or have traceable records to indicate calibration status? (Section III, NA-4133.12 (b))		
8.1.1.1	Welding machine voltmeter and ampmeter?	8.1.1.1	The welding machine selected were H1290 and H1155 used 3/20/79 on Service Water piping. These machines do not have meters, so the amperage is tested at the leads by a Tong Tester (#54297 which was calibrated 12/26/78, recalibration due date 6/26/79) and the data is recorded on the WDR. This is a recent requirement. Data indicated on WDR's 1-SF-10-FW57 (dated 2/15/79) and 1-SF-10-FW59 (dated 1/31/79).
8.1.1.2	Weld rod ovens? (holding, portable, and rebake ovens)	8.1.1.2	Checked Holding Oven H-1100. Records indicated unit calibrated, however, it was calibrated the week of 2/26/79 then 3/19/79. It was not calibrated for two weeks because test instrument was broken, This is in the audit report as a Finding Item No. 6. Checked portable ovens 32 and 34 and records indicated calibrated; they were also not checked between 2/26/79 and 3/19/79 but they are only required to be randomly checked. Checked Rebake Oven H730 which was calibrated 8/15/78, recalibration due 8/15/79.
8.1.1.3	NDE Test instruments?	8.1.1.3	Magnetic Particle Yoke Unit No. 4526 was used 9/29/78. ASME Section V Article T752 requires calibration yearly or every time used. There was no documented record of this calibration. The test blocks 4550A and 4311B used to check the yoke were calibrated 3/16/79. This is in the audit report as Concern No. 9.
8.1.1.4	Measuring equipment?	8.1.1.4	Calibrated Records Control List indicates no measuring instruments are in the calibration program.
8.1.1.5	Temperature indicating instruments?	8.1.1.5	Thermometer 4345-A was used 12/14/78 for a hydro and was calibrated 10/8/78, recalibration due 4/8/79. It was removed from the program in January. Digital pyrometer 4532 was calibrated 8/13/78, recalibration due 8/13/79. Due to thermometer being removed from program thermometer M4317A was selected and it was calibrated 1/12/79. There have been no post weld activities performed where heat indicating equipment is used.
8.1.1.6	Pressure testing instruments?	8.1.1.6	Gage G-2 was used on hydro test [illegible] 12/13/78 prior to test and 12/18/78 after test. Observed calibration of Gage G-7 on 3/21/79 - records and calibration per procedure.

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	CHARACTERISTICS	COMMENTS
8.1.2	Do the following calibration standards used to calibrate the items selected under question **8.1.1 have** known relationship to **National Standards**: (Section III, NA-4133.12(a))	
8.1.2.1	Welder voltmeter and ammeter?	8.1.2.1 The Tong Tester used to check welder amperage was No. 11. The unit was purchased new recently and the manufacturer letter stated it was calibrated 12/26/78, and the specification states it is traceable to NBS.
8.1.2.2	Weld rod ovens?	8.1.2.2 Bake Oven H730 control is Partlow Temperature Control Recorder No. 45 which was calibrated 8/15/78, ready for calibration 8/15/79 - its certificate states traceable to NBS. Holding and portable ovens calibrated by Mini-Mite Recorder E-04523 - its certificate states traceable to NBS.
8.1.2.3	NDE Test instruments?	8.1.2.3 The test blocks 4558A and 43113 were calibrated by using Scale C-4356 which was calibrated 1/30/79 and is traceable to NBS.
8.1.2.4	Measuring equipment?	8.1.2.4 No measuring equipment in calibration program.
8.1.2.5	Heat indicating instruments?	8.1.2.5 Thermometer M4317A calibration was traceable to NBS according to calibration data sheet.
8.1.2.6	Pressure testing instruments?	8.1.2.6 Gages G-3 and G-7 were calibrated by Standard Dead Weight Tester M-43478 which was calibrated 12/3/78, recalibration due 6/1/79. Calibration Data Record indicated Standard Dead Weight Tester M-43478 calibrated by Shop Standard Dead Weight Tester TO-50 M&G located at BSFP. TO-50 is traceable to NBS according to Calibration Data Record.
8.1.3	Measures are established to assure that the following items selected under question 8.1.1 are of the proper range, type, and accuracy to verify conformance to established requirements: (Section III, NA-4133.12(a))	

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CHARACTERISTICS		COMMENTS
8.1.3.1	Weld rod ovens?	8.1.3.1 Oven H730 Procedure Specification No. [illegible], and work guides and Procedure MP-03 for Holding and Portable Ovens require the calibration test points to be the points that are critical - see questions under 8.3.
8.1.3.2	Measuring equipment?	8.1.3.2 There are no measuring equipment in the [illegible] program.
8.1.3.3	Heat indicating instruments?	8.1.3.3 The requirement for hydro in that water l[illegible]
8.1.3.4	Pressure testing instruments?	8.1.3.4 The gages for hydro testing are required to be calibrated prior to test and rechecked to see if within calibration after test.
8.2	Were test gauges used for pressure tests tested against a standard dead weight tester or a calibrated master gauge? (Section III, NB-6413)	8.2 Yes, see question 8.1.2.6.
8.2.1	Were the test gauges calibrated before each test or series of tests (not exceeding two weeks)?	8.2.1 Yes, see question 8.1.3.4 and 8.1.1.6.
8.3	Are welding covered electrode bake ovens calibrated to ensure temperature of 800°F ± 25°F? (Section III, NB-4642.3(c))	8.3 Yes, the calibration points are 300°F and 800°F.
8.3.1	Are the ovens calibrated to determine when 300°F maximum temperature is reached?	8.3.1 Yes, see 8.3.

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CHARACTERISTICS		COMMENTS
8.3.2	Are electrode holding ovens controlled and calibrated to maintain 225°F to 300°F?	8.3.2 Procedure MP-03 requires Class 1 Material Welding Activities be according to code. The requirements by code for Class 3 Material is to be controlled according to procedure. Procedure MP-03 requires holding ovens and portable welding containers to be maintained within 150°F to 300°F and this agrees with calibration records and work orders. The welding so far has been Class 3.
8.3.3	Are portable welding electrode containers controlled and calibrated to maintain 225°F to 300°F?	8.3.3 See question 8.3.2.
9.0	Inspection and Test (Welding and Hydro)	
9.1	Review examination of code items and verify the following: (Section III, NA-4133.10)	9.1.1 The Weld Data Report (WDR) contains the checklist for welding inspections and tests, however, the checklist does not indicate the procedure or its revision for NDE to be performed. The Hydro Test Form TP-30, Rev. 1 dated 3/6/79 does not contain checklist, or procedure and its revisions (TP-30, Rev. 0 form did contain checklist). These are in the Audit Report as Finding Item No. 4. 4a, 4c.
9.1.1	Checklists are prepared, and they contain the examination procedure/ instruction no. and its revision?	9.1.2 Yes, this was verified by review of lines 2SW-1-FW18, and 4SW-2-FW8 (changed to 3SW-13-FW169).
9.1.2	The checklist was signed/initialed and dated by the inspector and A.I. where witness points were indicated?	9.1.3 Yes, all points indicated are mandatory and were initialed and dated.
9.1.3	Mandatory holdpoints are indicated on process sheets?	9.1.4 Yes, see question 9.1.3.
9.1.4	Indicated hold points are signed off?	

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CHARACTERISTICS		COMMENTS
9.2	Review tests of code items and verify the following?	
9.2.1	The test procedure for the test included provisions (Section III, NA-4133.11)	
9.2.1.1	For assuring that prerequisites for the test have been met (e.g. calibrated instrumentation, trained personnel, and provisions for data acquisition)?	9.2.1.1 Procedures TP-30, Revision 1, "Hydro Testing of Buried or Embedded Pressure Piping (Nuclear Safety-Related)" and NDEP-301 "Magnetic Particle Examination" do cover these requirements.
9.2.1.2	For assuring adequate instrumentation is available and used?	9.2.1.2 TP-30 requires gage calibration and water temperature of 50°F minimum and NDEP-301 covers equipment calibration.
9.2.1.3	For assuring necessary monitoring is performed?	9.2.1.3 TP-30 requires witnesses and monitoring of test is covered by the WDR.
9.2.2	That test results were documented and evaluated to assure that test requirements were satisfied? (Section III, NA-4133.11)	9.2.2 TP-30, Revision 1, Hydro Test Report does not indicate evaluation and acceptance of results when signed by inspectors. This is in the audit report as Concern No. 10. The Magnetic Particle NDE Report has a remarks' column and space to indicate acceptance or rejection of each examination.
9.2.3	Data report (Form N-5) indicates hydrostatic test was performed at 1.25 times design pressure? (Section III, NB-6221).	9.2.3 Procedures for documentation of Data Reports have not been issued. The Hydro Test Form for pipe line No. 3-SF-12-[illegible] indicates design pressure 150 psig and requires pressure to be held 10 minutes at 187.5 psig with maximum permissible pressure 198.75 psig.

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CHARACTERISTICS		COMMENTS
9.2.3.1	Was the data report signed by the A.I.? (Section III, Subsection NA Appendix V)	9.2.3.2 The Hydro Test Report was signed by A.I. Data Reports have not been documented.
9.2.4	Do the procedures for testing contain? (NA-4133.10)	9.2.4 thru 9.2.4.3 Procedures for these activities have not been [illegible]
9.2.4.1	Provisions for [illegible] report documenting?	10.1 The "mock" weld was processed as a Class 1 component.
9.2.4.2	Provisions for use of the "N" Stamp?	10.1.1 Liquid penetrant examination was performed in accordance with NDEP-201, Revision 1.
9.2.4.3	Provisions for assignment of a National Board number and application of this number on the nameplate?	10.1.2 This procedure was in compliance with Article 6 in Section V of the ASME Code.
10.0	Nondestructive Testing	
10.1	Verify the following for nondestructive examinations being performed on Class I components:	
10.1.1	Examinations are performed in accordance with detailed written procedures that have been proved by actual demonstration? (ND-5112)	
10.1.2	The written procedure comply with the applicable Article of Section V [illegible]	

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CHARACTERISTICS		COMMENTS
10.1.3	Are fluorescent screens used during radiographic examinations? (NB-5111)	10.1.3 & 10.1.4 No radiographic examinations had been performed at the time of the audit.
10.1.4	Does geographic unsharpness during radiographic examinations exceed the limits of T-251 ... Section V, Article 2? (NB-5111)	
10.1.5	Are penetrameters used during radiographic examination in compliance with those shown in Table NB-5111-1? (NB-5111)	10.1.5 Penetrameters specified in Table 2 of NDEP-301, Revision 1, were checked with those shown in Table NB-5111(c)-1. Sensitivity for source side penetrameters specified for all thicknesses from over 7/8 inch through 1 1/4 inches was not in accordance with Table NB-5111-1. This condition is identified in the audit report as Finding ...
10.1.6	Butt welded branch & piping connections in piping, pumps, & valves, with nominal pipe size exceeding 4 inches are radiographically examined? (NB-5242)	10.1.6 No radiography had been performed at the time of the audit.
10.1.7	Butt welded branch & piping connections in piping, pumps & valves with a nominal pipe size 4 inches and less are examined by either the magnetic particle or liquid penetrant method? (NB-5245)	10.1.7 No Class I pipe that size has been fabricated.
10.1.8	Fillet and socket welds are examined by either the magnetic particle or liquid penetrant method? (NB-5250)	10.1.8 No Class I fillet or socket welds have been fabricated.

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CHARACTERISTICS		COMMENTS
10.1.9	Acceptance standards specified in NB-5300 are used?	10.1.9 The acceptance criteria identified of page B-3 of HUPP-203, Revision 1, is the one to use when performing penetrant examinations of Class I piping welds. This criteria is in accordance with NB-5300.
10.1.10	Nondestructive [illegible] personnel are qualified [illegible] by NB-5500?	10.1.10 The inspector that performed the penetrant examination of the "mock" weld was qualified as required.
10.2	Verify the following for nondestructive examinations being performed on Class II components:	10.2 No fabrication on Class II components has been performed.
10.2.1	Penetrameters specified in Table NC-5111.1 are used? (NC-5111)	10.3 Service water field weld 1-SW-68-FW-15 is a Class II piping. Magnetic particle examination of this weld was witnessed.
10.2.2	Circumferential welds in branch piping runs are radiographed? (NC-5242)	
10.2.3	Fillet & socket welds are examined by either magnetic particle or liquid penetrant method? (NC-5261)	
10.2.4	Acceptance standards specified in NC-5300 are used?	
10.3	Verify the following for nondestructive examinations being performed on Class III components:	

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CHARACTERISTICS	COMMENTS
10.3.1 Circumferential weld joints in piping pumps and valves are examined by either magnetic particle, liquid penetrant, or radiographic methods? NC-5222, ND-5252 [illegible] 5242)	10.3.1 According to the information in paragraphs 8.1 and 8.2 of NDEP-301, Revision 1, direct current would be used to magnetic particle examine weld 1-SW-A8-FW-15; however, alternating current was used. This condition is identified in the audit report as Concern No. 1.
10.3.2 Acceptance standards specified in ND-5300 are used? (ND-5222)	10.3.2 The acceptance criteria for magnetic partic[illegible] examination of the service water weld identified in 10.3 [illegible] specified on page A-3 of NDEP-301, Revision 1. This criteria is in accordance with ND-5300.
11.0 ASME QA Records	
11.1 Has the Principal QA Specialist or his designee prepared record checklists for ASME Code structures, systems and/or components and is QA Review documented on checklist? (ASME QA Manual 11.1.3)	11.1 Yes, the welding QA Specialist prepares a "welding document package checklist" which list documents attached, such as, WDR, weld repair WDR, NDE request, NDE reports, DDR(s), corrective action request, etc. Each package is identified by the field weld joint identification number. The civil QA Specialist prepares a document checklist for each concrete placement, with attached documents. This documentation was verified by the auditors review of several documents in the QA vault.
11.2 Is access to the QA Records vault restricted to a list of authorized personnel? (ASME QA Manual 11.1.5)	11.2 Yes, by memo issued by the Principal QA Specialist, dated 3/15/79. This memo is posted on the door of the QA record vault. Keys to the vault are controlled by the Principal QA Specialist, with the keys restricted to the QA Specialist-QA Records Unit personnel.
11.3 Is QA record sign-out log maintained by Principal QA Specialist or his designee? (ASME QA Manual 11.1.5)	11.3 Yes, the QA record sign-out log is maintained by the QA records unit personnel which identify each record checked-out, date checked-out, person checking-out signature and date, and dates and initials of person in vault showing date documents checked-out and returned. Records checked out must be returned by the end of the day shift. A memo issued 1-16-79 by the Principal QA Specialist authorized a few personnel who can check-out records for a period of 24 hours. The above was verified by the auditor's review of records in the vault.
11.4 Has the Principal QA Specialist or his designee conducted periodic internal survey of QA records in the QA vault? (ASME QA Manual 11.1.6)	11.4 The [illegible] survey of QA records was by the [illegible] on [illegible]-78 to a written checklist with no problem [illegible]. Since that time the Site QA Procedure QA-[illegible], "[illegible] Construction Site QA Surveys," has been [illegible]

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CHARACTERISTICS	COMMENTS
	11.4 (cont'd) Harris Site. The auditors are concerned that this action is in conflict with the requirement of ASME QA Manual, paragraph 11.1.6. This appears in the audit report as Concern No. 7.

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	CHARACTERISTICS	COMMENTS
11.5	Has a records index for ASME QA records been prepared for QA vault? (ASME QA Manual 11.2)	Yes, a records file index, QAI-4.1, Revision 8 (3-13-79), titled, "Records Filing Index" is in use by the QA Vault personnel. The auditors verified that the records are identified and filed in accordance with this index.
11.6	Has the records [illegible] the records index taken into consideration the needs of inservice inspection and operation of the plant? (Code NA-4133.17(e)(1))	Yes, the records filing index has requirements to include the filing of documentation which will [illegible] line inspection of each plant. In addition, [illegible] necessary documentation is to be filed so it will be [illegible] for turn-over packages during plant start-up [illegible]
11.7	Has a checklist of documents been prepared for system and structure records by the responsible QA Specialists to ensure accumulation of required documents.	Yes, see 11.1.
11.8	Has A-E and NSSS Supplier-Suppliers' manufacturing records been reviewed against a checklist (Exhibit 4-3) by the A-E Site QA Coordinator? (ASME QA Manual 11.3.3)	Yes, verified by the auditors review of receiving inspection document packages in the QA record vault on Ebasco P.O. NY435035. Four shipments of pipe hangers received from Bergin Patterson. The checklist form QA-6 was completed correctly by the A/E Site QA Coordinator.
11.9	Has Suppliers' records for site purchased items been reviewed against a checklist (Exhibit 4-3) by the responsible QA Specialist? (ASME QA Manual 11.3.3)	Yes, verified by the auditors that on document packages reviewed in 11.8 the QA Specialist did review and sign and date the checklist form QA-6.

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CHARACTERISTICS		COMMENTS
11.10	Have receiving inspection records (material certs, manufacturing records and QA releases) been assigned a QA number which is traceable to the item received. (ASME QA Manual 11.3.4)	11.10 Yes, verified the QA numbers were assigned and marked on the document packages reviewed in 11.8.
11.11	Does the records index include the following as a minimum and are these records in the QA vault? (Code NA-4133.17(a)(1) through (9))	
11.11.1	The certified design specifications?	11.11.1 Yes, the QA records index includes filing of design specifications. These will be filed in the record vault at the conclusion of the construction phase of the project.
11.11.2	The Code Data Reports properly executed?	11.11.2 The Principal QA Specialist is developing a procedure for completing and handling of ASME Code Data Reports. When Code Data Reports are needed, they will be added to Records Index.
11.11.3	The required certified stress reports or stress calculations with verification regarding the applicability of stress reports or calculations to the as-constructed condition.	11.11.3 At present there are none on Barrie Site. They will be added to index when received on site.
11.11.4	The required as-constructed drawings certified as to correctness?	11.11.4 Not now in the records index. Per ASME QA Manual, paragraph 11.3.5.1, the as-constructed drawings and as-built drawings will be filed upon availability.
11.11.5	Copies of all Certified Material Test Reports?	11.11.5 Not listed separately in records index. These are filed by the purchase order number in the receiving inspection document package.

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CHARACTERISTICS		COMMENTS
11.11.6	As-built sketches, drawings, or tabulation of materials?	11.11.6 See 11.11.4
11.11.7	NDE examinations which include results of exam	11.11.7& 11.11.8& 11.11.9 The records index QAI-4.1 in paragraph 4.2.3.-3 states these are filed together as Field Weld Records identified by the field weld identification number.
11.11.8	Final radiographs where radiography has been performed?	
11.11.9	Records of all heat treatments (NC-2200 and NB-4600)?	
11.12	Are ASME QA records at the construction site filed and maintained in facilities that prevent deterioration or damage to documents and are these records controlled to prevent loss?	11.12 Yes, the QA record files are in a fire-proof [illegible] with fire door and halon gas protection where the [illegible] always locked. The vault is posted as nonsmoking [illegible] vault meets the requirements of ANSI N45.2.9.
		12.1 The construction site has issued Procedure AP-13-11, Revision 0, dated 12-7-78, titled, "Construction Surveillance." The implementation of paragraph 4.1 could not be verified during this audit.
12.0	Containment Construction (PSAR Commitment to ACI-359)	
12.1	Has CP&L designated the designer's responsibilities with respect to construction surveillance? (CA-2200(1), CA-3211(12), & CA-3220 (n))	

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CHARACTERISTICS		COMMENTS
12.1.1	Has the designer made any construction surveillance visits and inspections to date and are these visits documented?	The site resident engineer has not to date requested Ebasco to make surveillance visits to site as required by this Procedure AP-IX-11. This could not be verified during this audit.
12.2	Has the containment code boundary as defined by the ASME Section III, Division 2, been established by the Designer or CP&L? (CA-3211(8) and CA-3212)	Ebasco has preliminary plans (3-20-79) to revise the Design Specifications CAR-SH-CH-6, CAR-SH-CH-7, [illegible]-7A, CAR-SH-CH-15, CAR-SH-CH-16, CAR-SH-AS-01, [illegible]-COR-05 to add an addendum "A", titled "Design Life & Construction Surveillian." This addendum contain by reference the definition of the containment code boundary to meet the requirements of ASME Section III, Division 2. As yet the Ebasco Design Specifications have not been so revised.
12.3	Has the designer reviewed and approved the following construction documents: (ref. CP&L letter CE-07426 dated June 8, 1978)	
12.3.1	Construction site procedures pertaining to methods of construction, fabrication, and testing which establishes conformance to ASME Section III, Div.2?	Yes, the auditors verified by review of the following site procedures: WP-1 Cadweld Splices WP-5 Concrete Placement WP-11 Fabrication and Installation of Rebar WP-12 Installation of Waterstops WP-17 Concrete Curing WP-22 Formwork Design and Erection WP-23 Concrete Pumping WP-26 Finishing Concrete Surfaces
12.3.2	Construction Surveillance Procedure No. AP-IX-11, titled "Construction Surveillance?"	A CP&L FPED letter CE-07426 to Ebasco stated that Ebasco will review and approve site Procedure AP-IX-11, titled, "Construction Surveillance. This procedure has not been reviewed and approved by Ebasco. Site engineering stated Ebasco will not sign site administrative procedures. The auditors are concerned this conflict exists. This is noted in the audit report as Conc. [illegible] No. 5.
12.3.3	Field Change Requests.	Yes, the auditors verified by review of the following field change requests: C-476 approved [illegible] 2-9-79 C-492 approved [illegible] C-505 approved [illegible] C-515 approved [illegible] These four field change requests were on initial of the construction design.

REPORT
NO. QAA/170-1

CHARACTERISTICS		COMMENTS
12.4	Has the CP&L Resident Engineer made arrangements to collect and colate the necessary data to provide the certified construction report? (CA-3341 & PSAR [illegible] 5H)	12.4 Site QA is accumulating data and filing in Records Vault. No other arrangements have been made to date.
12.5	Have CMTR's, which meet the requirements of ASME Section III, Div. 2, been received and reviewed for materials purchased by Ebasco, SCGP Site or CBI, which are over and above exceptions listed in PSAR Appendix 5H? (CC-2130)	12.5 The auditors reviewed Ebasco P.O. NY435170, vendor Remsinger Co., for circular containment liner plates for units 1 and 2. The Ebasco design specification CAR-SH-AS-[illegible] required the material to meet the requirements of ASME [illegible] Division 2. The certified material test [illegible] received from the vendor does not meet the Code requirements of CC-2131.1(c). The CMTR did not contain a statement explaining how the material was identified to control material traceability. This appears in the audit report as Finding Item No. 2.
12.6	For materials directly purchased by CP&L, do the supplier of the material appear on the CP&L approved vendors list as having been reviewed and audited by CP&L? (CC-2700 & PSAR Appendix 5H)	12.6 To date, the site has not purchased materials for the containment.
12.7	Has mockup demonstration, and approval of responsible design engineer, of concrete formwork using expanded metal fabric forms? (PSAR-Appendix 5H)	12.7 & 12.7.1 Yes, site engineering provided sketch SK/A-B-061 (dated 12-12-74) for this concrete mock-up. This mock-up was made and three cores were sent to Ebasco for review. Ebasco letter EB-C-03780 (dated 5-21-75) commented on the pour of this mock-up with recommendations. FCR-C-042 was submitted to Ebasco for review and was approved 11-26-77 for use of 3/4" expanded mesh in joints of concrete. Then FCR-C-533 was submitted to Ebasco for review and approved for use of 3/4" expanded mesh in concrete joints.
12.7.1	Has the mockup of concrete formwork demonstration been documented? (PSAR Appendix 5H)	

REPORT
NO. QAA/170-1

CHARACTERISTICS		COMMENTS
12.8	Have arc welded joints been visually examined for presence of cracks, undercut, inadequate size, and other visible defects? (CC-5331)	12.8 Yes, the QA inspectors have daily surveillance of visual inspection performed by Chicago Bridge & Iron Co. (CBI). The auditors verified by review QA inspection field inspection reports.
12.8.1	Have one joint selected at random from each 25 production joints made by each welder been radiographed from two mutually perpendicular directions? (CC-5332)	12.8.1 Yes, the QA inspector has surveillance of [illegible] of weld joints. The auditors verified by review of CBI inspection field inspection reports. The auditors reviewed records at the CBI field office. The CBI records document for each welder which welds were x-rayed. The auditors reviewed the records maintained by the NDE QA Specialist which reflect his review of CBI's radiographic film.
12.9	Have butt welds in all liner thicknesses been radiographed in accordance with CC-5531? (CC-5521)	12.9 Yes, see 12.8.1.
12.10	Have butt welds in liner thicknesses 3/8 and under been leak tested? (CC-5521)	12.10 Yes, by vacuum box method and under daily surveillance by QA inspector. Verified by review of QA inspection field reports.
12.11	Has the Designer provided a program/ specification to test the structural integrity of the concrete containment as required by Div. 2? (CC-6000)	12.11 Yes, Ebasco has issued Specification CAR-SH-CH-22, Revision 0, dated 11-29-78, titled, "Structural Integrity Test of Concrete Containment Structure." Revision 0 has been approved by CP&L.
12.11.1	Has the constructor made preparations for installation of test devices which are installed during construction for structural integrity testing? (CC-6000)	12.11.1 Yes, the auditors reviewed report by Brewer Engineering Laboratories, Marion, Mass., dated 12-8-78 written by Mr. LaVerne Wallace. Brewer was the contractor that installed the strain gages at elevation 216 on inner surface of containment liner Unit #1 and on outside rebar mat in concrete. The higher elevation test devices have not been installed on Unit #1.

REPORT
NO. QAA/170-1

CHARACTERISTICS		COMMENTS
12.11.2	Have provisions been made for protection of overpressure during structural integrity test of containment? (CC-7000)	12.11.2 No, not to date. The auditors are concerned this Code requirement has not been addressed by procedure or specification. The auditors will follow-up on later audit.
13.0	Housekeeping	
13.1	Audit team's check of BVPP Site's housekeeping per requirements of PSAR commitments:	
13.1.1	The site has housekeeping procedures which are properly implemented?	13.1.1 No, as of 3-19-79 the site does not have a documented procedure implemented for control of housekeeping. The site QA did not have a documented procedure implemented for the surveillance of housekeeping at the Marble Hill site. This appears in the audit report as Finding Item No. 3. During the audit the site issued, but has not implemented, Procedure AP-VII-06, Revision 0 (3-20-79), titled, "Project Housekeeping." During the audit the Principal QA Specialist issued, but has not implemented, Procedure CQA-3, Revision 0 (3-21-79), titled, "Housekeeping Control." The auditors reviewed both of these procedures during the audit and find they will meet the intent of ANSI N45.2.3, when implemented.
13.1.2	All areas of construction site have adequate housekeeping?	13.1.2 Reasonably so, the auditors observed the following: Electric Shop - trash on floor and in cardboard containers. Pipe Fabrication Shop - trash on floor and in cardboard containers. Trash in five-gallon container at each weld station which presents fire hazard. Embed Shop - paper and trash on floor. Carpenter Shop - trash barrel overflowing and trash on floor. Construction Areas - at RAB236, RAB216, area outside Unit of Containment #1, Fuel Handling Bldg., and Waste Process Bldg. - soft drink cans and trash everywhere, trash barrels full and overflowing, trash and soft drink cans down through rebar prior to concrete pour.
13.1.3	All areas of Warehouse and Storage Facilities are adequate to ANSI Standards?	13.1.3 Reasonably so, the auditors observed the following: - The warehouse areas had cigarette butts and food wrappers on floors. - Air compressor leaking oil on floor. - Area C-06-22 where building had small hole in outer wall where rodents could enter.
14.0	Postaudit Meeting	

AUDIT
NO. QAA/170-1

CHARACTERISTICS	COMMENTS
	13.1.3 (cont'd) - Outside storage areas, soft drink cans and food [illegible] water accumulating under items stored.
	14.0 The nonconformances and concerns identified in this audit [illegible] were discussed. The management personnel [illegible] meeting indicated understanding of all [illegible] of the meeting are listed in the audit [illegible]
	Meetings were conducted each day of the [illegible] QA Management and Construction Management [illegible] nonconformances and concerns were discussed.

Carolina Power & Light Company

September 24, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

The implementation of corrective action for Finding Item 3 was verified by Audit QAA/170-2, September 17-20, 1979. The SHNPP Site has implemented their housekeeping procedures. Therefore, the Audit Finding Item 3 is hereby closed by audit.

Summary: Finding Items 1, 2, 3, 4a, 4b, 5, 6, and 7 are closed by audit. This audit is closed.

AEH:pn

cc: Mr. N. J. Chiangi
Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. S. D. Smith
Mr. T. H. Wyllie

CONCURRENCE:

S. McManus
Manager
Corporate Nuclear Safety & Quality Assurance Audit

Carolina Power & Light Company

May 15, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

REFERENCE: Memorandum, dated 5-11-79 from G. L. Forehand w/attached calibration log

I have reviewed the referenced memo, dated 5-11-79 with attached calibration log, which confirms that oven H-1100 was in calibration on 3-19-79. Therefore, the Audit Finding Item 6 is hereby closed by audit.

Summary: Finding Items 1, 2, 4a, 4b, 5, 6, and 7 are closed by audit and Finding Item 3 is not closed by audit.

AEH:jwjT5

Attachment

Concurrence: S. McManus
Manager - Corporate Nuclear Safety & Quality Assurance Audit

cc: Mr. N. J. Chiangi
Mr. G. L. Forehand
Mr. T. W. Howe
Mr. T. M. Parsons
Mr. S. D. Smith
Mr. T. C. Wellie

Weekly Electrode Cabinet Temperature Record

DATE	EQUIPMENT #	SAT./UNSAT.	INSPECTOR
WEEK ENDING		3-17-79	
	Oven is	broken	3-16-79
WEEK ENDING		3-24-79	
-17-79	H-1100	262°-295° SAT	
-17-79	H-1384	256°-300° SAT	
-19-79	H-1382	259°-293° SAT	
-19-79	H-1337	268°-298° SAT	
-19-79	H-1383	260°-288° SAT	
3-22-79	H 1567	SAT	
3-22-79	H 1565	Hold SAT	ON Hold for door LATCH repair. repaired 3/22/79
WEEK ENDING		3-31-79	
3-29-79	H-1100	SAT	
3-29-79	H-1384	SAT	
3-29-79	H-1382	SAT	
3-29-79	H-1337	SAT	JS
3-29-79	H-1383	SAT	JS
3-29-79	H-1565	SAT	
3-29-79	H-1567	SAT	JS
WEEK ENDING		4-7-79	
[illegible]	L-1100	SAT	
[illegible]	[illegible]	SAT	
[illegible]	[illegible]	SAT	
[illegible]	[illegible]	SAT	
[illegible]	[illegible]	SAT	
[illegible]	[illegible]	SAT	
[illegible]	[illegible]	SAT	

HEATED OVENS = 275° ± 25°F
ELECTRODE CADDY = 150°F Min.
300°F Max.
REBAKE OVEN = 250°F Min.
800°F Max.

Carolina Power & Light Company

May 14, 1979

File: [illegible]

TO: Mr. S. McManus

FROM: A. B. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

A mini-audit of corrective action response was performed at the SHNPP site May 11, 1979, for the purpose of closing the finding item(s) by audit, with the following results:

1. Finding Item 1, the auditors confirmed by review of revised procedure NDEP-101, Revision 2 (4-5-79) where on page 20, Table 2 was corrected for thickness 7/8" to 1¼" from 4T to 2T holes on source side. This finding is closed by audit.

2. Finding Item 2, the auditors confirmed by review of corrected CMTR(s) now on file for Ebasco P.O. N0435170 do contain the statement that the material was been stamped by steel stamping, the heat numbers and slab number for each plate shipped and received at site. This finding is closed by audit.

3. Finding Item 3, will be reviewed for implementation of site housekeeping during next audit by CNS&QAA Section personnel. This finding is not closed by audit.

4. Finding Item 4a, the auditors confirmed by review of corrected WDR(s) that they have been back-fitted, with the correct NDE procedure and procedure revision listed on the QA record. In addition, the Manager - Engineering and Construction QA states the NDE procedure(s) appropriate will be listed on the future WDR(s) prior to welding. This finding is closed by audit.

Finding Item 4b, the auditors confirm by review of Site Procedure [illegible], revision 2 (4-20-79) that Exhibit 1, Hydro Test Form, Revision [illegible] been revised to list the checklist necessary, including a place for the procedure number and its revision number. As of this [illegible] the form had not been placed in use. This finding is closed

Finding Item 5, the auditors confirmed by review that the Principal QA Specialist had issued the necessary written instructions to QA Specialists to check heat number verification as part of final inspection of welds. This finding is closed by audit.

4. Finding Item 6, the auditors confirmed by review of Site Procedure MI-08, Revision 4 (4-30-79) that it has been revised to require calibration on a two-week basis and documented. Confirmation that oven H-1100 was found to be in calibration on 3-19-79 is to be forwarded to the auditors by the Principal QA Specialist. This finding will be closed by audit when this confirming documentation is received.

5. Finding Item 7, the auditors confirmed by review of PPCD Procedure P-0046, Revision 5, that it has been revised to state the procedure is for ASME Section III. This finding is closed by audit.

Summary: Finding Items 1, 2, 3a, 4b, 5, and 7 are hereby closed by audit. Finding Items 3 and 6 are not closed by audit.

AMH:jwjM7

Concurrence:

S. McManus
Manager - Corporate Nuclear Safety & Quality Assurance Audit

cc: Mr. N. J. Chiangi
Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. Sheldon D. Smith
Mr. T. H. Wyllie

Carolina Power & Light Company

May 11, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

REFERENCE: Letter QA-1112, dated May 11, 1979

The reference letter QA-1112, dated May 11, 1979, with the E&CQA response to Audit QAA/170-1 has been evaluated with the following results:

1. The response for Finding Items 6 and 7 is considered as action taken to resolve these items and these finding items are hereby closed by report.

This completes all action necessary for this audit and all finding items on this audit are closed by report.

Alan E. Hall

AEH:jwjE7

Attachment

Concurrence:

S. McManus
Manager - Corporate Nuclear Safety & Quality Assurance Audit

cc: Mr. G. L. Forehand
Mr. P. W. Howe
Mr. R. M. Parsons
Mr. Sheldon D. Smith
Mr. T. H. Wyllie
Mr. N. J. Chiangi

Carolina Power & Light Company

FILE: NF A-273 QA-1112

July 11, 1979

MEMORANDUM TO: Mr. S. McManus

FROM: N. J. Chiangi

SUBJECT: Response to Corporate QA Audit
No. QAA/170-1, Finding Nos. 6 and 7

With reference to Audit QAA/170-1, Finding No. 6, Revision 4 to Procedure No. MP-3, Welding Material Control, was issued April 30, 1979. This revision changed the requirements for temperature checking of rod ovens with a calibrated instrument on a two-week basis in lieu of weekly.

Rod Oven No. H1100 was rechecked with a calibrated instrument on March 19, 1979, and was found to be in calibration. A copy of the calibration check sheet will be forwarded for your verification.

For Finding No. 7, corrective action has been completed by revision to PSSD Procurement Procedure No. P-066, Revision 5, to indicate that this is an ASME Section III procedure when this procedure relates to ASME Code items.

M. J. Chiangi

cc: W. L. Fernhand
[illegible] Hamilton
[illegible] M. Parsons

Carolina Power & Light Company

May 11, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

REFERENCE: Letter QA-1112, dated May 11, 1979

The reference letter QA-1112, dated May 11, 1979, with the E&CQA response to Audit QAA/170-1 has been evaluated with the following results:

1. The response for Finding Items 6 and 7 is considered as action taken to resolve these items and these finding items are hereby closed by report.

This completes all action necessary for this audit and all finding items on this audit are closed by report.

Arthur E. Hall

AEH:jwjF7

Attachment

Concurrence:

S. McManus
Manager - Corporate Nuclear Safety & Quality Assurance Audit

Mr. G. L. Forehand
Mr. [illegible] W. Howe
Mr. [illegible] Parsons
Mr. [illegible] D. Smith
Mr. [illegible] Willie
Mr. [illegible] Sadangi

Carolina Power & Light Company

Correspondence

April 30, 1979

File: QAA/170-1

MEMORANDUM TO: Mr. S. McManus

FROM: A. E. Hall

SUBJECT: ASME Quality Assurance Audit of SHNPP Construction

REFERENCE: Letter QA-1087, dated April 26, 1979

The referenced letter QA-1087, dated April 26, 1979, with the E&CQA response to Audit QAA/170-1 has been evaluated with the following results:

1. The response for Finding Items 1, 2, 3, 4, and 5 is considered as action taken to resolve these items and these finding items are hereby closed by report.

2. The response for Finding Items 6 and 7 will be adequate when the response can be reported as action completed. Therefore, Items 6 and 7 will be held open until additional response is received from the Manager - Engineering and Construction QA stating the response action has been completed.

AEH:jwjHll

Attachment

Concurrence: S. McManus

Manager - Corporate Nuclear Safety & Quality Assurance Audit

cc: Mr. G. L. Forehand
Mr. T. W. Howe
Mr. R. M. Parsons
Mr. Sheldon D. Smith
Mr. T. E. Wyllie

Carolina Power & Light Company

[illegible] Correspondence

April 26, 1979

File: SH A-2/2

QA-1087

MEMORANDUM TO: Mr. S. McManus

FROM: N. J. Chiangi

SUBJECT: Corporate Audit QAA/170-1

The Corporate Audit Report QAA/170-1 for audit of the Harris project ASME activities during March 19-23, 1979, listed seven findings requiring formal response. The attached describes the action taken or being taken to resolve the reported findings.

Based on the attached, corrective action for findings 1 through 5 is considered satisfactory and those items should be closed.

The intended corrective action for findings 6 and 7 is considered satisfactory and should be adequate for closing those items when complete.

Please let me know if you need additional information.

N. J. Chiangi

GLF/jj

Attachment

cc: Mr. G. [illegible] Forehand (w/a)
Mr. [illegible] (w/a)
Mr. [illegible] Parsons (w/a)
Mr. [illegible] B. Smith (w/a)
Mr. T. H. Wyllie (w/a)
File (w/a)

RESPONSES TO QAA/170-1

Item 1

Procedure MHLP-101 has been revised to conform to ASME Section III, Table NB-5111-1 showing the appropriate hole-sizes.

Item 2

The site has received corrected CMTR's from the Vendor for 3/8" containment liner circular plate. The CMTR's contain the following statement: "THE ABOVE MATERIAL HAS BEEN IDENTIFIED BY STEEL STAMPING THE HEAT NUMBER AND SLAB NUMBER ON EACH PLATE." The heat number and slab number of each plate is included on the CMTR's.

To preclude similar nonconformances on CMTR's for containment liner material purchased by the erection Contractor, Ebasco has added the following statement to the General Instructions for the QA Plan for Purchase Order NY-435204: "For CB&I purchased material ascertain that the requirements of ASME Section III, Division 2, Subsection CC2131.1 1975 Edition are complied with where applicable."

Item 3

Procedure AP-VII-06, Project Housekeeping, has been implemented. Housekeeping Zone Designation forms for the areas now under construction, those that soon will be under construction, warehouses and laydown areas have been approved by the Resident Engineer and distributed to the appropriate personnel. Warehouses and some laydown areas have been designated Zone IV and signs are in the process of being fabricated for posting in these locations. All other areas are designated Zone V. Personnel have been designated to ensure that housekeeping in each area is performed in accordance with the proper Zone Housekeeping Procedures.

Procedure CQA-3, Housekeeping Control, has been implemented. QA Personnel have been designated to provide QA surveillance of the individual Housekeeping Zones within their assigned areas to assure compliance with AP-VII-06.

Item 4

A. The appropriate NDE procedure and revision numbers are now being inserted on the lines below the designated NDE process on the WDR's. A review of all WDR's for code welding has been completed and the NDE procedure and revision numbers were entered.

B. Revision 2 to the "Hydro Test Form" containing a checklist and provisions for listing the procedure and revision numbers was issued 4/20/79.

Item 5

The WDR's were corrected during the audit. The welding inspectors have been instructed to include heat number verification as part of final inspection (hold point #11 on WDR).

Item 6

Procedure MP-03, Welding Material Control, has been revised to read, ". . . Dry rod, rebake and recondition ovens shall be temperature checked by a calibrated instrument on a two-week basis by the control area attendant and documented." The procedure revision is in the review cycle at the present time.

During the audit, the calibration instrument used to check ovens had been damaged and no spare or replacement instrument was available. There are now three (3) calibrated instruments on site. The manufacturer recommended temperature ranges for ovens and electrodes. This change has also been incorporated into MP-03. The Issue Room Attendant has been instructed to use the previous two weeks' calibration to justify the accuracy of the ovens if the instrument is not available for use. He shall document this action on Exhibit 2 of MP-03.

Item 7

PPCD Procedure P-066, Construction Procurement, is being revised to meet the requirements of ASME Section III and to incorporate the statement, "This is an ASME Section III procedure." The revision is currently in the review cycle.

Enclosure 10 to Serial: HNP-99-069

Prefabricated Piping Supplier
(Southwest Fabricators, Inc)

Quality Assurance Documentation:

(1) Quality Assurance Documentation Audit Reports

(2) Representative Vendor Data Package

Form 244

Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina
January 4, 1977

PUPS: - File QAA/702-2

FILE: QAA/702-2

MEMORANDUM TO: Mr. Dallas Locklear

FROM: N. J. Chiangi

SUBJECT: Corporate Quality Assurance Audit of
Southwest Fabricating and Welding Co., Inc.

In your section memorandum No. QAA/702 dated March 3, 1975, it was requested that the E&C QA section advise when Southwest Fabricating and Welding Co., Inc. began their activity on purchase order NY435035 in time to schedule audit No. QAA/702-2.

This is to advise that the aforementioned vendor is currently scheduled to commence fabrication for purchase order NY435035 during the first quarter of 1977.

Should you have any questions, please contact me.

N. J. Chiangi

DAM/mwb

FORM 21-50M

CP&L

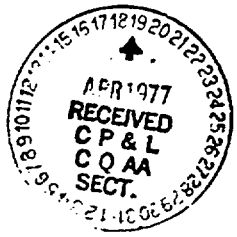
Carolina Power & Light Company

Raleigh, N. C. 27602

CAR 4/21 HENSLEY FILE COPY

File: QAA/702-2
HI/A-1D

CO-00050



April 18, 1977

Mr. J. E. Harris, Project Manager
Southwest Fabricating and Welding Company
7525 Sherman Street
P.O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90 - 3,600 MW - UNITS 1, 2, 3, AND 4
QUALITY ASSURANCE AUDIT OF SOUTHWEST FABRICATING
AND WELDING COMPANY

Dear Mr. Harris:

Attached please find a report of the Quality Assurance Audit conducted during the period of March 22-24, 1977, by Carolina Power & Light Company personnel at your facility located in Houston, Texas. The attachment contains three multi-part findings requiring corrective action, including action to prevent recurrence and two comments requiring your evaluation for resolution.

It is requested that you review this matter and provide Carolina Power & Light Company, within thirty days of your receipt of this letter, individual statements of corrective action taken or intended to each finding in numerical sequence as delineated in the attachment. In the event that corrective action cannot be completed within thirty days, a dual response is required. The initial response should include the intended action and indicate a scheduled completion date. The follow-up response should indicate that the intended corrective action has been completed. Additionally, statements of action taken to prevent recurrence of each finding and your resolution of the general comments are required.

Should you have any questions in this matter, please contact me.

Yours very truly,

Original Signed By
N. J. Chiangi

N. J. Chiangi - Manager
Engineering & Construction
Quality Assurance

DAM/jag
Attachment

cc: Mr. L. V. Thierwechter W/A

bcc: Mr. D. Locklear
Mr. L. I. Loflin
Mr. M. F. Thompson, Jr. W/A
File

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina
April 14, 1977

FILE: QAA/702-2

MEMORANDUM TO: Messrs. Shearon Harris
~~J. A. Jones~~

~~FROM:~~ Dallas Locklear

SUBJECT: Quality Assurance Audit

During the period of March 22-24, 1977, a quality assurance audit was conducted at Southwest Fabricating and Welding Co., Inc., Houston, Texas by C. G. Hensley and A. E. Hall of the Corporate Quality Assurance Audit Section. This audit was conducted to determine Southwest's adherence to the quality system requirements imposed by Ebasco P.O. NY-435035.

The attached audit report summarizes the results of this audit. The checklist, which was used as a guide in conducting this audit, will be maintained in the CQAA Section files. Copies of the audit report will be distributed as noted below.

As required by Quality Assurance Procedure QAAP-1, the Manager - Engineering and Construction Quality Assurance is required to review and investigate the audit findings; to determine and schedule appropriate corrective action, including action to prevent recurrence; and to respond to this report in writing within thirty days after receipt of this report by the audited organization, giving results of the review and investigation and describing corrective action taken to resolve the findings, Items 1, 2, and 3, identified in this report.

Dallas Locklear

DL/CH/dad
Attachment

cc: Messrs. N. J. Chiangi
W. B. Kincaid
P. W. Howe
M. A. McDuffie
W. W. Morgan
S. D. Smith
M. F. Thompson, Jr.

TO: Mr. Dallas Locklear

FROM: J. A. Jones

The attached audit report, QAA/702-2, has been reviewed and is returned for placement in the CQAA Section files with the following comments:

J. A. Jones

AUDIT REPORT

Activity Audited: Southwest Fabricating & Welding Company, Inc.
Houston, Texas

Audit Report No.: QAA/702-2

Auditors: C. G. Hensley - Lead Auditor
A. E. Hall

Date: March 22-24, 1977

Persons
Contacted: Southwest Fabricating:

*G. H. Lockwood - Chairman and Company Executive Officer
*B. J. Goodwin - President
*N. H. Moerke - Vice President - Engineering (QA/QC)
C. Steck - Chief Project Manager
*J. E. Harris - Project Manager
*S. M. Goodwin - Assistant Manager, Quality Assurance
R. P. Bornes - Quality Assurance Manager
M. Finn - Nuclear Design Engineer
H. S. Barber - Manager - Purchases
G. Baumback - QA Receiving Inspector
J. C. Aggers - QA Receiving Inspector
T. Russell - QC Inspector
R. B. Griffith - Rod-Storage Attendant
D. F. Hartman - QC Technician

*These persons were present during the postaudit meeting.

Scope: Guidelines for conducting the subject audit are outlined in CP&L Quality Assurance Audit Procedure QAAP-1, which establishes the methods for auditing the quality system of vendors in accordance with the requirements of CP&L's Corporate QA Program. This audit was conducted in order to assure that Southwest Fabricating & Welding Company, Inc.'s (SF&W) quality assurance program (and its implementation) was in compliance with the requirements imposed by Ebasco PO NY-435035, Supplement No. 3; Specification CAR-SH-M-30 Revision 3; and the associated quality system requirements. The major areas of SF&W Quality Assurance System selected for audit are as follows: (1) Quality Assurance organization and program; (2) design control, including required procedural submittals; (3) procurement document control; (4) control of purchased material and components; (5) marking and identification of material and components; (6) control of special processes; (7) inspection/test control; (8) measuring and test equipment control; (9) handling, storage, and shipping; (10) nonconforming material control and corrective action; (11) internal audit program; and (12) implementation

of corrective action taken to resolve findings identified in Audit Report QAA/702-1. Due to the status of the contract with SF&W, i.e. not released for fabrication, some portions of the checklist were not completed. Specifically, document control; instructions, procedures, and drawings; quality assurance records; and portions of special processes.

Summary: SF&W has been contracted to supply the power plant piping system, including hangers, seismic restraints, supports, and supporting steel for Units 1, 2, 3, and 4 of the Shearon Harris Nuclear Power Plant Project. By contract, SF&W is required to provide a quality assurance system which is in compliance with Appendix B of 10CFR50, Ebasco's Quality System Procedure 860-72 (CAR-SH-ME-12), those portions of Section III of the 1971 ASME Code, including all addenda through Summer 1973, which applies to Code Class 1, 2, and 3 equipment, and ANSI B31.1.0 for power piping.

SF&W's Quality Assurance System applicable to this contract is delineated in their QA Manual (QAM), Revision 8. In turn, the QA Manual will be supplemented by Shop Detail Sheets and Manufacturing Record Sheets, which are prepared for each piping spool configuration and will serve as the detail drawing and shop traveler, respectively.

To date, SF&W has not been "released for fabrication" on this contract; therefore, it was not possible to audit some portions of the quality requirements which are required by this contract. After SF&W is released for fabrication, it will be necessary to further audit implementation of the SF&W Quality Assurance Program.

During the course of this audit the auditors reviewed the NRC's "White Book" on vendor audits for the fourth quarter of 1976 with SF&W quality assurance management personnel. The auditors were concerned with the negative inspection results reported by NRC as the result of their audits conducted on 9/7-10/76 at SF&W and 10/12-15/76 at Bergan Paterson Pipe Support Corporation located in Laconia, N.H. Bergan Paterson is SF&W's subsupplier of the pipe hangers and restraints for the SHNPP Project. Discussions with SF&W personnel revealed that the NRC had conducted a reaudit of SF&W the week of 3/14/77 and all but one of the deviations noted in the 9/76 audit had been satisfactorily resolved. The one unresolved item is being presented as a code case to the ASME Board for resolution. As for Bergan Paterson, NRC has scheduled a reaudit of the Laconia facility the week of 3/28/77. This will be NRC's third attempt to resolve deviations previously identified at the Laconia facility. Upon completion of NRC's audit and publication of the related audit report, SF&W plans to conduct an audit of this same facility.

Implementation of the corrective action taken to resolve the six findings previously identified in Audit Report QAA/702-1 was audited. The action taken to resolve these findings was considered sufficient and audit QAA/702-1 is closed.

SF&W Quality Assurance Program continues to be adequate to meet the requirements of PO NY-435035.

As a result of this audit, three items were identified as findings requiring corrective action.

Findings and Corrective Action:

Item 1:

Requirements:

10CFR50 Appendix B, Criterion II

Nonconformance:

Criterion II requires that the QA Program provide for the indoctrination and training of personnel performing activities affecting quality, as necessary, to assure that suitable proficiency is achieved and maintained. In reviewing paragraph 2.2.3.1 of SF&W's QAM, which outlines the procedures for training, it was observed by the auditors that training and indoctrination requirements for Engineering and upper QA/QC management personnel are not presently covered by written procedures.

Acknowledgement and Response:

The Vice President - Engineering (QA/QC) stated this item will be taken under advisement for necessary corrective action.

Item 2:

a. Requirement:

SF&W Procedure QC-102, titled, "Auditing Personnel," Revision 0 dated 6/7/76

Nonconformance:

In reviewing the qualification records of SF&W's auditors, it was observed that the audit participation records for D. Hartman did not reflect his participation in internal audits as required and N. H. Moerke's records were not approved by a second party to attest to his qualifications as an auditor. The records reviewed for these two individuals do not comply with the intent of Procedure QC-102.

Acknowledgement and Response:

The Vice President - Engineering (QA/QC) stated the necessary additions will be made to the auditor qualification records, including the company president signing the qualifications of Mr. Moerke.

b. Requirement:

SF&W Procedures: QC-104, titled, "Heat Treating Personnel," Rev. 0 dated 6/8/76; QC-105, titled, "Hot Forming & Bending Personnel," Rev. 0 dated 6/8/76; and QC-106, titled, "Machinists," Rev. 0 dated 6/8/76.

Nonconformance:

Personnel training records verifying implementation of those procedures listed above were not available for review.

Acknowledgement and Response:

Vice President - Engineering (QA/QC) stated those people covered under QC-104, -105, and -106 have indeed been properly trained; however, their training has not been documented as required. Proper records will be prepared.

Item 3:

a. Requirement:

SF&W's Quality Assurance Manual (QAM), paragraph 14.3.3

Nonconformance:

Paragraph 14.3.3 requires that control and distribution of SF&W's QAM be verified by audit. However, in reviewing SF&W audit results, it was observed that records are not available to verify control, and distribution of the QAM is being audited.

Acknowledgement and Response:

Vice President - Engineering (QA/QC) stated SF&W will in the future satisfy this requirement.

b. Requirement:

10CFR50 Appendix B, Criterion XVIII

Nonconformance:

Criterion XVIII requires that a system of planned and periodic audits be carried out to verify compliance with all aspects of the QA Program and determine the effectiveness of the program. However, in reviewing Exhibit 13-1, "Internal Audit Report," contained in the SF&W QAM, the auditors observed that all areas and sections of SF&W quality assurance program are not audited to verify compliance with all aspects of the QA Program. Examples of areas cited include Design Control and QA/QC responsibilities.

Acknowledgement and Response:

The Vice President - Engineering (QA/QC) stated that plans are underway to revamp the internal audit plan format and establish an audit file for each section of the manual to assure that all aspects of the program are properly audited.

General: Two items were presented at the postaudit meeting as comments to SF&W's QA System:

1. In reviewing SF&W's procedures and QAM for recertification of Nondestructive Examination Personnel, it was observed that paragraph 9.2.2.1 of the QAM, Rev. 8 requires recertification every three years in compliance with the ASME Code; the auditors also reviewed associated procedure QC-100, Revision 1 titled, "Nondestructive Examination Personnel," to assure the three-year recertification requirement was included. QC-100 was marked with a corresponding "pencil change," but the change had never been typed, approved, and distributed to the affected SF&W personnel.

2. During the course of reviewing the qualification records of inspectors the auditors observed the records of two inspectors, B. Reynolds and G. Baumback, that had not been signed to establish their date of qualification as required by SF&W Procedure QC-103, Revision 0 dated 6/7/76.

Submitted by: Carl B. Hensley
Vincent E. Hall

Approved by: Dallas Lockhart 4/13/77
Manager - Corporate Quality Assurance Audit Section

ACTIVITY

Southwest Fabricating & Welding Co., Inc., Houston, Texas AUDIT PROCEDURE QAAP-1

REPORT
NO. QAA/702-2

DATE March 22-24, 1977

QUALITY ASSURANCE AUDIT CHECK LIST

AUDIT
SUBJECT Implementation of Quality Assurance/Control Program

LEAD
AUDITOR C. G. Hensley AUDITOR(S) A. E. Hall

	CHARACTERISTICS	COMMENTS
1.0	Quality Assurance Program	
1.1	QA Organization and Program	
1.1.1	Do SF&W's organization charts reflect the current organization?	Yes, the Southwest Fabricating & Welding Company (SF&W) has issued Revision 8, dated 3/1/77 to their Quality Assurance Manual (QAM), which lists their organization as Exhibits 1-1, 1-2, 1-3 and 1-4. The auditors verified their organization to comply.
1.1.2	Does SF&W's QA program provide for indoctrination and training of personnel performing activities affecting quality? (Appendix B, Criteria II)	The SF&W, QAM does outline a program and referenced procedures for training, instructions, required examination, and required records of qualification for inspection, and production employees. However, the SF&W, QAM does not contain any procedure to cover the requirement for training as required by 10CFR50, Appendix B, Criterion II for their engineering personnel and the balance of their QA/QC personnel. (This is listed as Finding No. 1 in the Audit Report.) In addition the SF&W, QAM Revision 8, added a requirement in paragraph 9.2.2.1, "Recertification shall be at least every three years." The auditors reviewed Procedure QC-100, Rev. 1, dated 2/25/74, titled, "Nondestructive Examination Personnel," and determined this procedure was marked with a corresponding pencil change which was never typed, approved and distributed to the affected SF&W personnel. (This is listed as Item No. 1 in the General Section of the Audit Report.)
1.1.2.1	Are records maintained to verify that applicable personnel have been properly indoctrinated and trained?	The auditors reviewed the records to verify that SF&W personnel were qualified to the following procedures:

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CHARACTERISTICS		COMMENTS
1.1.2.1 (cont'd)	(1)	QC100, Rev. 1, dated (2/28/74), titled "Nondestructive Examination Personnel" - The auditors verified SF&W personnel are properly qualified by record review.
	(2)	QC101, Rev. 1, dated (5/21/76), titled "Quality Control Inspectors" - The auditors verified SF&W personnel are properly qualified by record review.
	(3)	QC102, Rev. 0, dated (6/7/76), titled "Auditing Personnel" - The auditors verified SF&W personnel are properly qualified by record review. However, the following two problems were found which do not comply with the intent of the procedure: The record of D. Hartman, dated 12/31/76, did not have recorded his prior participation in internal audits. The record of N. H. Moerke, dated 9/3/76, was not approved by his superiors or anyone to attest the fact he was qualified. (This is listed as Finding, Item 2a, in the Audit Report.)
	(4)	QC103, Rev. 0, dated 6/7/77, titled "Receiving Inspection Personnel" - The auditors reviewed two records of B. Reynolds and G. Baumback which were not dated by the individual approving the record to reflect the effective date of the qualification. (This is listed as Item 2 in the General Section of the Audit Report.)
	(5)	QC104, Rev. 0, dated 6/8/76, titled "Heat Treating Personnel", QC105, Rev. 0, dated 6/8/76, titled "Hot Forming & Bending Personnel", and QC106, Rev. 0, dated 6/8/76, titled "Machinists." The auditors determined SF&W did not have any records to show the above procedures have been implemented. (This is listed as Finding, Item 2b, in the Audit Report.)

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CHARACTERISTICS		COMMENTS
1.1.3	Verify that responsible management is reviewing the QA program for revision or updating on a six-month frequency as a minimum. (Section 14.0 of the SF&W Quality Assurance Manual, QAM)	1.1.3 The auditors reviewed SF&W records for compliance with the QAM Paragraph 14.2.1 for a six-month's review. The only record the auditors were able to review was a memo of August, 1976, requesting a review of the QAM for revision and the fact the manual was revised and issued on 3/1/77 which exceed the six-month's interval by a couple of months. The auditors did not find written records as compliance with QAM 14.2.1 reflecting six-month's review which was inconsistent with a practice by the previous Vice President - Engineering, QA/QC, Mr. Green.
1.1.4	Has the most current revision of the QAM been submitted to Ebasco? (Specification 860-72, paragraph 3; Finding No. 2, QAA/702-1)	1.1.4 The auditors verified the latest Revision 8 of the QAM was sent on 3/17/77 to the following Ebasco personnel: Mr. B. R. Mazo - S/N56; Mr. M. S. Brown - S/N125; and Mr. Cesivacius - S/N124.
1.1.4.1	Verify that an acknowledgment receipt has been received from Ebasco. (Section 14.0 of SF&W QAM)	1.1.4.1 The auditors verified the acknowledgements of the SF&W, QAM Rev. 8, listed above have not been received by SF&W.
1.1.5	Assure that the latest revision of SF&W's QAM is being distributed and acknowledged in accordance with Distribution Lists per the requirements of Sections 14.1 and 14.3 of the SF&W QAM.	1.1.5 The auditors verified the latest revision SF&W, QAM was distributed and acknowledged by selected sample of following manuals and verified against the Master Distribution List: R. B. Bornes QAM S/N18, H. R. McAnally QAM S/N4, and Scott Goodwin QAM S/N55.
1.1.6	Assure that SF&W is auditing distribution of QAM as required by Section 14.3.3 of the QAM.	1.1.6 When the auditors reviewed SF&W's control and distribution of their QAM, the auditors determined SF&W did not have any records to show paragraph 14.3.3 of the QAM has been implemented. (This is listed as Finding, Item 3a, in the Audit Report.)
1.2	Design Control	1.2.1 The auditors verified with the SF&W Project Manager's files that a final pre-job conference per QAM 2.1.7 has not been held since the vendor has not been released for fabrication by Ebasco to this date. SF&W has received a new set of job specifications from Ebasco which after evaluation by the vendor and when approval is received from Ebasco to begin fabrication, a final pre-job conference will be held and the meeting minutes recorded.
1.2.1	Assure that pre-job conference to review contractual (design) requirements for P.O. NY-435035 has been held. (Section 2.1.7, SF&W QAM)	

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	CHARACTERISTICS	COMMENTS
1.2.2	Verify that Engineering has verified pressure-temperature limitations for each piping class per requirements of QAM, Section 2.1.8.	The auditors determined QAM Section 2.1.8 in Rev. 8 has been revised to require this to be done only "for contracts that include mechanical design responsibility given to SF&W by the contract." However, the vendor feels PO NY435035 has not given them mechanical design responsibility for the piping subassemblies purchased. However, SF&W is responsible for pipe supports and hangers which they have subcontracted to Bergan-Paterson which in turn is preparing the mechanical design calculations which are being directly given design verification by our A/E Ebasco.
1.2.3	Have the Detail Sheets and Manufacturing Record Sheets (MRS) been prepared for P.O. 435035 by Engineering? (Section 2.2, QAM)	The auditors found that a few Detail Sheets have been prepared but not final checked and issued. No Manufacturing Record Sheets (MRs) have been prepared for PO 435035 for the reason listed in 1.2.1 on the previous page.
1.2.3.1	Assure that Engineering has prepared an "Index Sheet" for this P.O. and index contains necessary information. (Paragraph 2.2.1.9, QAM)	No, see question 1.2.1 on previous page for reason.
1.2.3.2	Are the applicable contract procedures included on the Manufacturing Record Sheet, including revisions and supplements thereto? (QAM, paragraph 2.2.3.3)	Unable to audit at this time. See question 1.2.1.
1.2.4	Is QA's review of design documents documented?	Unable to audit at this time. See question 1.2.1.
1.2.5	Have the following design documents been submitted to and approved by Ebasco: (Spec. CAR-SH-M-30, Appendix E, para. 4)	
1.2.5.1	Applicable welding procedures and procedure qualification test reports?	The auditors verified the following status of SF&W Welding Procedure submittals: 1. #P-1-H-0 Rev. 3 Supplement 1 approved by Ebasco 5/14/74 2. #P-1-H-1 Rev. 4 Supplement 1 approved by Ebasco 5/14/74 3. #P-1-H-2 Rev. 2 Supplement 2 approved by Ebasco 8/5/74 4. #P-1-H-3 Rev. 6 Supplement 2 approved by Ebasco 8/5/74 5. #P-1-HA-1 Rev. 8 Supplement 2 approved by Ebasco 8/5/74 6. #P-1-HA-2 Rev. 6 Supplement 2 approved by Ebasco 8/5/74. 7. #P-1-HM-1 Rev. 8 Supplement 2 approved by Ebasco 8/5/74 8. #P-1-HM-2 Rev. 5 Supplement 2 approved by Ebasco 8/5/74 9. #P-8-H Rev. 4 Supplement 1 approved by Ebasco 5/15/74 10. #P-8-H-1 Rev. 1 Supplement 1 approved by Ebasco 5/15/74 11. #P-8-H-2 Rev. 1 Supplement 1 approved by Ebasco 5/15/74 12. #P-8-HA-7 Rev. 0 Supplement 2 approved by Ebasco 8/5/74 13. #P-8-HM-1 Rev. 5 Supplement 2 approved by Ebasco 8/5/74 14. #P-1-8-H Rev. 4 Supplement 2 approved by Ebasco 8/5/74 15. #P-1-5-2 Rev. 0 Supplement 1 rejected with comment by Ebasco 8/6/74* 16. #P-1-5-3 Rev. 0 Supplement 1 rejected with comment by Ebasco 8/6/74*

*Have not been resubmitted to Ebasco due to delay in SBEEP project.

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CHARACTERISTICS		COMMENTS
1.2.5.2	NDE Procedures - radiographic, liquid penetrant, magnetic particle, and ultrasonic procedures?	1.2.5.2 The auditors verified the following status of SF&W NDE procedures submittals: 1. #PT-1 Rev. 2 Supplement 1 with Attachments 1, 4, and 5 approved by Ebasco 4/15/74 2. #MT-1 Rev. 1 with Attachments 1, 4, and 5 approved by Ebasco 4/15/74 3. #MT-2 Rev. 0 with Attachments 1, 4, and 5 approved by Ebasco 4/15/74 4. #RT-5 Rev. 0 Supplement 1 approved by Ebasco 4/17/74 5. #UT-1 Rev. 1 approved by Ebasco 4/17/74 6. #UT-3 Rev. 1 approved by Ebasco 4/17/74 7. #UT-4 Rev. 2 approved by Ebasco 4/17/74 8. #UT-5 Rev. 0 approved by Ebasco 4/17/74
1.2.5.3	Cleaning, preserving, marking and packing for shipment procedures?	1.2.5.3 The auditors verified the following status of SF&W procedure submittals: 1. #7-101 Rev. 0, titled "Austenitic Stainless Steel" 2. #7-102 Rev. 0, titled "Carbon & Ferritic Alloys" At the present SF&W has not received comments or approvals from Ebasco.
1.2.5.4	Hydrostatic and/or leak test procedures?	1.2.5.4 The vendor considers this requirement to be not applicable for piping subassemblies on PO NY435035.
1.2.5.5	Heat treating and/or stress relieving?	1.2.5.5 The auditors verified the following status of SF&W procedure submittals: 1. #HT-P1-1 Rev. 1 approved by Ebasco 4/18/74 2. #HT-P3-1 Rev. 0 approved by Ebasco 4/18/74
1.2.5.6	Pipe bending and forming (fitting made from pipe or plate)?	1.2.5.6 The auditors verified the following status of SF&W procedure submittals: 1. #4-106 Rev. 0, Supplement 1, approved by Ebasco 8/6/74 2. #4-107 Rev. 0, Supplement 1, approved by Ebasco 8/6/74 3. #4-108 Rev. 0, Supplement 1, approved by Ebasco 8/6/74 4. #4-109 Rev. 0, Supplement 1, approved by Ebasco 8/6/74 5. #8-100 Rev. 1, Supplement 2, approved by Ebasco 8/6/74
1.2.5.7	Weld repair procedure?	
1.2.5.8	Visual inspection procedure?	
1.3	Procurement Document Control	
1.3.1	Verify that QA is reviewing, signing and dating each P.O. and Purchase Requisition for quality-related requirements. (Paragraph 3.3.4, QAM; Appendix B, Criteria IV)	

CHARACTERISTICS		COMMENTS
	1.2.5.7	The auditors verified SF&W has submitted Procedure #9-103 Rev. 1, Supplement 1, and no comments or approval has been received from Ebasco.
	1.2.5.8	The auditors verified that SF&W has not yet submitted this procedure to Ebasco.
	1.3.1	The auditors reviewed approximately ten POs and Purchase Requisitions to verify that QA is indeed reviewing these documents for quality-related requirements. Material Take-Off is responsible for seeing that QA gets the purchase requisition and PO for review. A copy of the requisition, previously reviewed by QA, is attached to the PO routed for approval to QA. All PO and requisitions for nuclear items are routed to QA for review and approval.

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	CHARACTERISTICS		COMMENTS
1.3.1.1	Assure that revisions to P.O.(s) and purchase requisition(s) are approved in like manner. (Paragraph 3.3.6, QAM; Appendix B, Criteria IV)	1.3.1.1	Revisions to requisitions and POs are approved by QA in like manner, verified during the audit.
1.3.2	Assure that Material Control is forwarding the purchasing package to QA for approval as required by paragraph 3.2.3 of the QAM?	1.3.2	The "purchasing package" as required by 3.2.3 of the QAM is referring to special contract terms and conditions, only related special inspections and tests, and machining operations; not customer specifications or drawings as the terminology suggests. The specific requirements are contained in the "purchasing package."
1.3.3	Are there provisions on the purchase document to assure that applicable quality requirements are imposed on SF&W's vendors? (Appendix B, Criteria IV; NA-4441)	1.3.3	Yes. The applicable quality requirements are referenced by coded numbers on the PO and the applicable QA form explaining these notes become part of the PO, i.e. QA-forms 20 and 17 as referenced on some of the POs reviewed under question 1.3.1 of the check list.
1.3.4	Do the procurement documents identify the documentation to be submitted by and retained by SF&W's vendors?	1.3.4	Yes, by reference to specific notes on the attached QA-form; see reply to check list question 1.3.3. This form is noted as Exhibit 3-8, "QA Purchasing Notes" in the SF&W QAM.
	Control of Purchased Material and Components	1.4.1	The most current list of approved suppliers is dated 3/11/77 and the surveillance history of the following suppliers was reviewed for content: (1) Taylor Forge Division (Pa.); (2) Alloy Flanges and Fitting; (3) Coffer Corp.; (4) Guyon Alloy, Inc.; (5) Bergan Paterson Pipe Support Corp. (Laconia, N. H.); (6) Texas Bolt; (7) Bonney Forge Division (Pa.); (8) Flowline; (9) Manufactured Materials Dept. (SF&W); and (10) Meters and Instrument Corp., Houston (calibration service). Each of the history files reviewed contained required surveillance records.
1.4.1	Assure that those vendors on the Approved Manufacturers List (AML), who do not hold a valid Certificate of Authorization, have been properly surveyed. (Paragraph 3.1.4, QAM)	1.4.1.1	Yes. Purchasing did have AM List dated 3/11/77.
1.4.1.1	Assure that the most current revision of the AML has been issued to the Purchasing Department. (para. 3.1.1 of QAM)		

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CHARACTERISTICS		COMMENTS
1.4.1.2	Verify that approved manufacturers have been surveyed (initially) within 15 months and subsequent surveys within 36 months. (para. 3.1.10 of QAM, Comment No. 1 of Audit QAA/702-1)	1.4.1.2 Each of those vendor files listed under check list Item 1.4.1 were reviewed for compliance with paragraph 3.1.10 of the QAM. See response to check list Item 1.4.1.3.
1.4.1.3	Assure that SF&W treats their Manufactured Materials Department as an outside vendor, relative to vendor qualification. (Para. 3.1.11 of QAM)	1.4.1.3 SF&W does treat their Manufactured Materials Department (MMD) as an outside supplier performing audits in accordance with paragraph 3.1.10 of the QAM. In reviewing the initial reaudit of MMD, it was observed that the first reaudit was not performed within 15 months as required but within the time span of 22 months; MMD was last audited on 3/16/77 in conjunction with an NRC audit.
1.4.2	Have receiving inspection procedures been prepared for the incoming inspection operation? (NA-4442; Appendix B, Criteria VII)	1.4.2 Yes. Receiving inspection procedures, QCI-1001-A, -B, -C, and -D, have been prepared for the various types of material received. Also, special inspection/test requirements are detailed on the applicable QA form which is part of the PO package; also, see check list question 1.3.4.
1.4.2.1	Are there provisions to include document number and revision to which examination or test was made? (NA-4442.2)	1.4.2.1 The inspection results are recorded on the Incoming Inspection Form; the PO and associated forms specify the required document and revision or code addendum to be used.
1.4.3	Verify that materials found to be acceptable have been identified with a "green accepted" tag. (Para. 4.1.1.2 of QAM; Finding No. 4, Audit Report QAA/702-1)	1.4.3 The QAM has been revised to now require items which are acceptable to be identified with pink and blue tape or paint as applicable. All material reviewed in the piping yards and fitting storage areas were properly identified.
1.4.4	Verify that materials awaiting disposition for more than ten (10) working days or removed from receiving area have been identified with a pink "Hold" tag. (Paragraph 4.1.1.3 of QAM)	1.4.4 Three areas were checked for proper identification of material with pink "hold tag", stainless steel (SS) and carbon steel (CS) nuclear fitting areas, CS piping area, and SS piping area. Items in these areas were properly identified.

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CHARACTERISTICS		COMMENTS
1.4.4.1	Assure that nonconforming material is properly segregated at receiving inspection. (Appendix B, Criteria VIII)	1.4.4.1 The only items noted as nonconforming material were two small fittings in the receiving fitting area. Each of these were properly segregated and tagged.
1.4.5	Verify that material test reports are checked by QA and are in accordance with Section 1.A, Appendix H of Spec. M-30 and para. 4.1.1 of the QAM.	1.4.5 All material test reports are forwarded to QA for review and approval. One individual in QA is designated to review and approve the material test reports. Required information and approvals were available for review.
1.4.6	Are there provisions for listing the required range of values (acceptance criteria) at receiving inspection? (NA-4442.2; 860-72, para. 5.3)	1.4.6 The ASME Code and ASTM standards, as applicable, list the acceptance criteria. Actual values are noted on the material chemical and physical test reports.
1.5	Identification and Control of Material and Components	1.5.1 Yes. The auditors observed the marking of fitting and piping material at receiving inspection in-process and final; required marking information was etched on the material.
1.5.1	Is the material marked with applicable material specification, grade, and heat numbers (serial number) as required by Appendix H, Section 1.D of Specification M-30?	1.5.1.1 An individual is assigned in the fabrication area to remark material which is cut into more than one piece; this same individual is also responsible for cutting the material as well. Piping subassemblies were examined for proper marking after fitup and welding and required marking was evident.
1.5.1.1	Assure that when material is cut into more than one piece, all material identification is retained on each piece. (para. 5.3.1, QAM)	

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CHARACTERISTICS		COMMENTS
1.5.2	Is marking applied such that only electric etch, vibra tool, or lo-stress or interrupted dot die stencil is used? (Appendix H, paragraphs 2 and 3, to Spec. M-30)	1.5.2 Yes. The required marking requirements are noted on the materials' PO; for in-process fabrication the marking methods and requirements are delineated on the Shop Detail Sheet which travels with the piping subassembly.
1.5.2.1	Is such identification located in an area which does not interfere with functions or quality aspects of the product? (NA-4442.3)	1.5.3 The welding material is stored in the temperature controlled Rod-Storage Room in accordance with weld material control procedure WMC-1, Rev. 2, dated 3/10/77. Distribution and control is maintained by the rod-storage room attendant, who issues and stores all welding material for nuclear work. Coated rod which has been opened is stored in a temperature controlled oven. Only one lot of a given size and type of rod is issued to the floor at a time. Any welding rod returned is then only used for nonnuclear work. The attendant collects all unused rods at the end of each shift.
1.5.3	Verify that welding material is properly inspected and accepted, stored, distributed and reconditioned in accordance with welding control procedure WMC-1. (Paragraph 6.1, QAM)	1.5.3.1 Yes. The Rod-Storage Room Attendant maintains a list of that material which has been approved for release; also, he indicates if this material has been issued to fabrication for use.
1.5.3.1	Assure that QA is maintaining a list of approved welding material. (Paragraph 6.1.6, QAM)	1.5.4 Only one lot of material of a given size and type is released at a time to a welder, and the heat no. is maintained on the Weld Material Issue form which is maintained with the material. Any unused coated electrodes are destroyed or used for nonnuclear jobs.
1.5.4	Verify that welding material identification is maintained in the welding areas and on unused material returned to the storage area.	
1.6	Instructions, Procedures and Drawings	

REPORT
NO. QAA/702-2

CHARACTERISTICS		COMMENTS
1.6.1	Assure that Manufacturing Record Sheets (MRS) are properly completed, including the applicable procedures and instructions, material heat numbers, NDE and heat treatment results, and inspection and test results.	1.6.1 Unable to audit at this time; see question 1.2.1.
		1.7.1 Unable to audit at this time; see question 1.2.1.
		1.7.1.1 Unable to audit at this time; see question 1.2.1.
		1.7.2 Unable to audit at this time; see question 1.2.1.
		1.8.1 The auditors verified that SF&W NDE personnel are properly qualified by review of records in accordance with SNT-TC-1A and Procedure QC-100. Finding No. 3 of Audit Report QAA/702-1 was verified to be corrected.
1.7	Document Control	
1.7.1	Does the MRS list the latest applicable procedures and instructions for this contract?	
1.7.1.1	Verify that the proper revisions of these procedures and instructions are available to those responsible for verification of the product. (Appendix B, Criteria VI)	
1.7.2	Are changes to the customer's drawings reflected on the Detail Sheets for that applicable contract? (Paragraph 2.3.1, QAM)	
1.8	Control of Special Processes	
1.8.1	Assure that NDE personnel are qualified in accordance with SNT-TC-1A and procedure QC-100. (Finding No. 3, Audit Report QAA/702-1)	

REPORT
NO. QAA/702-2

	CHARACTERISTICS		COMMENTS
1.8.2	Review welding procedures and welder qualification records to assure compliance with Section IX, ASME Code. (General Comment No. 2, Audit Report QAA/702-1)	1.8.2	The auditors verified that SF&W Welding Procedures and Welder Qualifications comply with ASME Code Section IX and by review of a sample of records listed in question 1.2.5.1 that the general comment no. 2, Audit Report QAA/702-1 has been resolved.
1.8.3	Is SF&W maintaining Heat Treating Logs for this contract? (Para. 7.2.3, QAM)	1.8.3	Unable to audit at this time; see question 1.2.1.
1.8.4	Assure that weld data records contain the information for weld joints and repairs as required by Para. 6, Appendix G of Specification M-30.	1.8.4	Unable to audit at this time; see question 1.2.1.
1.8.5	Are there provisions to assure that persons performing visual examinations have passed an eye examination equivalent to that required by SNT-TC-1A? (Para. 3, Appendix E to Specification M-30)	1.8.5	The auditors verified by review SF&W record of qualification of their NDE personnel, their eye examinations were current and up to date. Their personnel are tested to Jeager #1 which meets the latest Addenda of the 1974 ASME B&PV Code, Section III.
1.9	Inspection/Test Control	1.9.1	Currently, CP&L's contract has not been released for fabrication; therefore, the Manufacturing Record Sheet (MRS) has not been prepared. The auditors did review other MRSs prepared for present work in the shop - these appeared complete.
1.9.1	Is the MRS being completed by the QC Inspector to indicate completion of the inspection operations? (NA-4530; 860-72, para. 8)	1.9.2	Shop inspection personnel are maintaining a list of material inspected by S.O. number, piece number, and S/N of the equipment used to perform the inspection. Hydrotest charts reflect the pressure gage used to conduct the test.
1.9.2	Are there provisions to assure that adequate test instrumentation is available and used? (860-72, para. 8; Appendix B, Criteria XI)		

REPORT
NO. QAA/702-2

	CHARACTERISTICS	COMMENTS
1.9.3	Assure that acceptance limits are established on the Shop Detail Sheet as required by the QAM.	1.9.3 Dimensional requirements are provided on the Shop Detail Sheet for each piece of the piping subassembly. The Shop Detail Sheets and MRS reference those inspection procedures and instructions which do contain acceptance limits, i.e. Attachments 1, 2, 3, etc. to the procedures which have the actual acceptance limits.
1.9.4	Are there provisions to assure that inspection/test status of material and parts is known throughout manufacturing? (NA-4540; 860-72, paragraph 8.2)	1.9.4 Yes. Inspection/test status (and operation status) is noted on the MRS.
1.9.5	Are there provisions on the Shop Detail Sheet for correct measurement of pressure boundry items for minimum wall thickness?	1.9.5 This type of information is normally referenced on the Shop Detail Sheet prepared for a given job; however, unable to verify due to status of contract.
1.9.5.1	Does this include measurement of all cast fittings in piping systems (Safety Class 1, 2, or 3)? (Part One, para. 8.9 of Spec. M-30)	1.9.5.1 See response to check list item 1.9.5.
1.9.5.2	Is the information required by Part One-Specification M-30, paragraph 8.9, a thru e provided?	1.9.5.2 See response to check list item 1.9.5.
1.10	Control of Measuring and Test Equipment	1.10.1 In order to verify that calibrated instrumentation is properly serialized and tagged, five micrometers, three pressure gages, two thermometers, and four D.C. voltmeters and ampmeters were audited. Each of these instruments was properly labeled and the label properly completed.
1.10.1	Verify that calibration stickers or labels are placed on each item calibrated and include initial of persons performing calibration, date of calibration, and calibration due date. (Para. 8.2.2 of QAM; Finding No. 1, Audit Report QAA/702-1)	

REPORT
NO. QAA/702-2

	CHARACTERISTICS	COMMENTS
1.10.2	Assure that a calibration history log as required by para. 8.2.1 of QAM is being maintained.	1.10.2 A calibration history log is being maintained for each instrument audited under check list item 1.10.1.
1.10.3	Is calibration history traceable to the applicable instrument?	1.10.3 Yes. The calibration history is traceable through the serial number assigned to each instrument.
1.10.4	Are instruments calibrated against certified standards whose accuracies are traceable to nationally recognized standards? (NA-4610; 860-72, paragraph 9)	1.10.4 Yes. The following standards were audited for traceability to nationally recognized standards: (1) "tong tester," Columbia type AX, S/N 35011; (2) Voltmeters, Simpson, S/N 99 and Trippett, S/N 100; (3) gage blocks, S/N 11 and S/N 2; (4) and vernier calipier, S/N 1. The auditors pointed out that the calibration lab performing the calibration for SF&W had not furnished the number of the gage traceability to NBS used to calibrate the "tong tester" and voltmeter, S/N 100. SF&W is, however, currently in the process of requiring all test labs to furnish required S/N of standard traceable to NBS.
1.10.5	Are the acceptance limits and accuracies of the calibration equipment listed?	1.10.5 Yes. The present calibration history log provides for listing the accuracies of the equipment audited under check list item 1.10.1.
		1.11.1 SS piping is handled by either nylon straps or nylon ropes, as evidenced by auditing the SS piping fabrication area.
1.11	Handling, Storage, Shipping	1.11.2 Yes. Cleaning procedures do exist for cleaning prior to final preparation for shipment; the applicable cleaning procedure is normally referenced on the MRS.
1.11.1	Verify that SS piping is handled with nylon straps or cables wrapped with coating of tape or cloth. (Part One, Spec. M-30, para. 9.4)	1.11.3 SS items (fittings and piping) are stored in separate yards and bays from the carbon steel material; verified by audit of these areas.
1.11.2	Assure that procedures exist for cleaning equipment prior to final preparation for storage and shipment. (Para. 5.4.2, QAM)	
1.11.3	Assure that SS items are stored in designated areas and segregated from carbon steel. (Para. 5.4.3, QAM)	

REPORT
NO. QAA/702-2

	CHARACTERISTICS		COMMENTS
1.12	Nonconforming Material Control and Corrective Action		
1.12.1	Verify that SF&W is documenting the cause of reported discrepancies. (Finding No. 5, Audit Report QAA/702-1)	1.12.1	Due to the current status of CP&L's contract, i.e. not released for fabrication, no discrepancy reports (RONs) have been generated. However, did review sample of RONs which have been generated for other contracts. There was evidence to indicate the cause is now being documented.
1.12.2	Verify that SF&W has provisions for notifying customers of nonconformances. (Comment No. 3, Audit Report QAA/702-1)	1.12.2	Customers are notified through the receipt of a copy of the Report on Nonconformance (RON) and a letter requesting documentation of the corrective action and cause. Reviewed two examples of RONs which had been completed by SF&W's vendors.
1.12.3	Are the pink "Hold" tags and red "Reject" tags being applied to those items which are nonconforming? (Para. 10.2, QAM)	1.12.3	Yes. Hold tags were in evidence both at the receiving area and in process. Only two items (small fittings) were observed as requiring red "reject" tags. Each of these were properly tagged.
1.12.4	Are nonconforming items properly segregated and placed in designated hold area as required? (Appendix B, Criteria XV; para. 10.2.2, QAM)	1.12.4	Yes. Those items with pink tags were in designated hold areas.
1.12.5	Verify that the Report of Nonconformances (RON) is being properly completed.	1.12.5	Approximately ten RONs were reviewed for other contracts and were properly completed.
1.12.6	Is corrective action being documented and verified to prevent recurrence? (NA-4800; Appendix B, Criteria XVI)	1.12.6	Corrective action was documented on those RONs reviewed in check list item 1.12.5.

REPORT
NO. QAA/702-2

CHARACTERISTICS		COMMENTS	
1.13	Quality Assurance Records		
1.13.1	Verify that a "Documentation Check List" has been prepared for this contract.	1.13.1	Unable to audit at this time; see question 1.2.1.
1.13.2	Assure that necessary documents for accumulation are noted on the Manufacturing Record Sheet (MRS) for the contract.	1.13.2	Unable to audit at this time; see question 1.2.1.
1.14	Internal Audit Program		
1.14.1	Are audits being conducted at intervals not exceeding 6 months? (Para. 13.1.2, QAM)	1.14.1	Yes, verified by auditor's review of internal audit reports and audit schedule. The auditor did find two audits which exceeded the interval by one month; however, steps were already being taken by vendor to correct.
1.14.2	Verify that the auditors are properly trained in accordance with SF&W's procedure QC-102. (Finding No. 6, Audit Report QAA/702-1)	1.14.2	See question 1.1.2.1(3.)
1.14.3	Is required corrective action being documented and verified by reaudit within 15 working days per paragraph 13.2.2 of QAM. (Finding No. 6, Audit Report QAA/702-1)	1.14.3	The SF&W QAM Rev. 8 dated 3/1/77 revised this 15-day time period to read, "Corrective action shall be verified by reaudit within one month." The one month was verified by review of internal audit records.
1.14.4	Are copies of the audit report being distributed to proper levels of management? (Appendix B, Criteria XVIII)	1.14.4	Yes, after one month reaudit of corrective action, the audit report is distributed to the Company Chairman-Chief Operating Officer, President, and other proper levels of management.

REPORT
NO. QAA/702-2

CHARACTERISTICS		COMMENTS
1.14.5	Are the audits being performed in accordance with written procedures or check lists? (Appendix B, Criteria XVIII)	1.14.5 Yes, the auditors determined SF&W QAM Exhibit, "Audit Report," is being used for their internal audits. However, the auditors determined this exhibit 13-1 is too brief and does not cover all areas or sections of SF&W QAM to be a complete and comprehensive audit of their quality program and cannot determine the effectiveness and implementation of their quality program. (This is listed as Finding 3b in the audit report.)
2.0	Postaudit Meeting	2.0 Three items were identified as findings in the audit report. Applicable portions of the check list that correspond to the items in the audit report and which were discussed at the postaudit meeting are as follows:

Audit Report Reference	Check List Reference
Finding Item 1	1.1.2
Finding Item 2a	1.1.2.1
Finding Item 2b	1.1.2.1
Finding Item 3a	1.1.6
Finding Item 3b	1.14.5
General Item 1	1.1.2
General Item 2	1.1.2.1

FORM 21-50M

CP&L

Carolina Power & Light Company

Raleigh, N. C. 27602

Pope

Pope-File QAA/702-2

COPY

File: QAA/702-2

CO-00202

RECEIVED
C P & L
C.O.A.A
SECT.

September 13, 1977

Mr. N. H. Moarke
Vice President - Engineering (QA-QC)
Southwest Fabricating and Welding Company
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77001

QUALITY ASSURANCE AUDIT

Dear Mr. Moarke:

Reference is made to your letter of August 26, 1977, wherein you provided corrective action to Finding Nos. 1, 2 and 3 of Carolina Power & Light Company Audit No. QAA/702-2. The information provided has been evaluated as satisfactory and, pending revision to Section 1.4.1 of the Quality Assurance Manual, completes the corrective action to the audit.

Should you have any questions concerning this matter, please contact me.

Yours very truly,

Original Signed By
N. J. Chiangi

N. J. Chiangi - Manager
Engineering & Construction
Quality Assurance

DMI/jag

cc: Mr. L. V. Thierwechter

bcc: Mr. N. J. Chiangi
Mr. P. W. Howe
Mr. D. Locklear ✓
Mr. L. I. Loflin

Form 234

CP&L

Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina
September 9, 1977

FILE: QAA/702-2

MEMORANDUM TO: Mr. Dallas Locklear

FROM: A. E. Hall

SUBJECT: Southwest Fabricating Letter, Dated 8/26/77
N. J. Chiangi Letter, Dated 9/8/77

Based on my evaluation of the information contained in the above referenced memorandums (copies attached), I concur that the vendor has taken or is taking adequate corrective action to resolve and correct audit findings. I hereby close audit findings nos. 1, 2a, 2b, 3a, and 3b which closes out the findings on this audit. The above referenced memorandum completes fulfillment of Audit Procedure QAAP-1.

Alvin E. Hall

AEH/nahF4
Attachments

cc: Mr. N. J. Chiangi

CONCURRENCE:

Dallas Locklear 9/12/77
Manager - Corporate Quality Assurance Audit

CP&L

Carolina Power & Light Company

Company Correspondence

File: QAA/702-2

QA-206

September 7, 1977

MEMORANDUM TO: Mr. D. Locklear

FROM: N. J. Chiangi

SUBJECT: Quality Assurance Audit of Southwest Fabricating and Welding Company

Reference is made to my memorandum of June 9, 1977, wherein you were advised of satisfactory corrective action being taken to resolve Finding No. 3b and the need for additional action to resolve Finding Nos. 1, 2a, 2b and 3a for the subject audit. Attached find a copy of Southwest Fabricating and Welding Company letter dated August 26, 1977, which provides the additional corrective action and information intended to resolve the audit findings.

Briefs of the findings and resolution are as follows:

1. Finding No. 1 stated that the training and indoctrination for Engineers and upper QA/QC management personnel were not addressed in the QA program requirements. The vendor intends to revise Section 1.4.1 of the QA Manual to indicate the qualifications of the Chief Engineer and the Vice President - Engineering (QA-QC). The change will be submitted for approval to the ASME as a portion of Revision 9 to the QA Manual and when approved will be incorporated into the manual on or about December 1, 1977. The response is evaluated as satisfactory to resolve the finding, and implementation will be verified by representatives of the Engineering & Construction QA Section subsequent to the aforesaid date.

2. Finding No. 2a stated that qualification records for Mr. D. Hartman and Mr. N. H. Mocrke were deficient. The initial response from the vendor corrected the deficiency, and the response attached hereto provides the action to prevent recurrence. The response is evaluated as satisfactory to resolve the finding.

3. Finding No. 2b stated that records to substantiate training and qualification of personnel implementing various shop special process procedures were not available. The initial response from the vendor displayed numerous shop practices and records utilized to substantiate personnel qualifications. The additional response attached hereto states that the vendor judges those practices of demonstrating personnel qualifications to be adequate. The vendor amplified this position by indicating that should the ASME broaden

the interpretation of training records requirements, they would comply accordingly. The response is evaluated as satisfactory to resolve the finding.

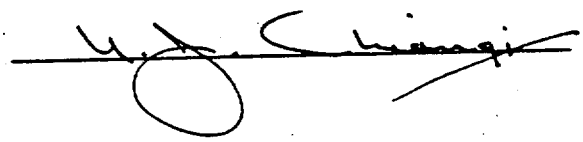
4. Finding No. 3a stated that audit records were not available to verify control and distribution of the QA Manual. The initial response provided the requisite corrective action to resolve the finding, and the follow-up response provides the action taken to prevent recurrence. The response is evaluated as satisfactory to resolve the finding.

5. Finding No. 3b stated that all applicable areas and sections were not audited to verify compliance to the QA program. The vendor's audit program has been expanded to encompass all applicable areas of the QA program and was verified as acceptable during an NRC audit during the week of June 13, 1977. This response is evaluated as satisfactory to resolve the finding.

6. The two general comments have been satisfactorily resolved.

Based on the aforesaid information and the attachment herewith, Audit Finding Nos. 1, 2a, 2b, 3a, 3b and the two general comments have been satisfactorily resolved. This completes the corrective action to Audit QAA/702-2 and this memorandum is written notification of such in fulfillment of Audit Procedure QAAP-1.

Should you have any questions, please contact me.



DAM/jag
Attachment

cc: Mr. P. W. Howe
Mr. M. F. Thompson, Jr.
File W/A

SOUTHWEST FABRICATING & WELDING CO. INC.
A Subsidiary of IU International
7526 Sherman Street / P.O. Box 9449 / Houston, Texas 77011 / (713) 928-3451 / TWX: 910 881-1600

August 26, 1977

Mr. N. J. Chiangi, Manager
Engineering & Construction QA
Carolina Power & Light Company
P. O. Box 1551
Raleigh, NC 27602

Reference: File QAA/702-2
HI/A-ID
Harris Project Units 1, 2, 3 & 4

Subject: QA Audit of Southwest Fabricating & Welding Co., Inc.
March 22-24, 1977

Dear Mr. Chiangi:

In reply to your letter dated June 9, 1977, we are submitting additional information and action to supplement the response and corrective action that was set forth in our letter of May 31, 1977. Although our corrective action on some findings does not fully agree with your views, we feel that our QA Program complies with the requirements of your contract.

As previously stated, the SF&W QA Program and QA Manual specifically address ASME Section III, which was the basis for the approval of our facility for your contract when jointly surveyed on July 31 and August 1, 1973 by Carolina Power & Light Company and Ebasco Services. Further, our Quality Assurance Program was evaluated by the ASME Survey Team in 1976. This resulted in the renewal of our ASME Certificates of Authorization. Copies of our current Certificates N-1458 (N Symbol Class 1, 2, 3 & MC) and N-1459 (NPT Class 1, 2, 3, & MC), expiring July 23, 1979, are in your possession.

Revision 7 of our Quality Assurance Manual was accepted by the ASME Audit Team on June 9, 1976. On March 1, 1977, the current Revision 8 was accepted by our Authorized Inspection Agency for compliance with ASME Section III.

Audit Finding No. 1

Although the response indicates Southwest Fabricating & Welding Co. maintains a report on indoctrination and training for engineers and provides management review of QA/QC management qualifications, the QA Manual does not recognize this training. In view of this, the

response has been evaluated as nonresponsive. Further action is requested to resolve this finding.

Response and Corrective Action

A. In order to provide specific recognition of training and indoctrination in our QA Manual for "engineering and upper QA/QC management personnel," we plan to incorporate the following additions to Section 1.4.1 in Revision 9 of our QA Manual:

Chief Engineer: A Registered Professional Engineer indoctrinated in the application of the rules in ASME Section III to the satisfaction of SF&W management and responsible for appropriate indoctrination and training for all personnel assigned to the Engineering Department.

Vice President-Engineering: The Vice President of Engineering (QA/QC). A Registered Professional Engineer indoctrinated in the application of the rules in ASME Section III to the satisfaction of SF&W management and responsible for appropriate indoctrination and training of all personnel assigned to the Quality Assurance and Quality Control Departments.

This revision will be submitted to our Authorized Inspection Agency for acceptance of the next revision to our QA Manual.

B. Each revision of our QA Manual must be accepted by our Authorized Inspection Agency before the change can be incorporated into the QA Manual. Therefore, since we have not officially submitted this proposed change, we cannot assure you that it is acceptable to our Authorized Inspection Agency. When the changes are authorized, the revised sections of our QA Manual will be distributed to all individuals who have controlled copies of our QA Manual.

C. This change, if accepted, will be incorporated in Revision 9 of the QA Manual which is scheduled for distribution prior to December 1, 1977.

Audit Finding 2a

The response to correct the noted deficiencies has been evaluated as satisfactory, but action to prevent recurrence has not been provided. Therefore, this finding remains open pending receipt of a response stating the action taken to prevent recurrence.

Response and Corrective Action

a. Periodic audits of QA records are conducted to minimize recurrence.

b. The initial audit was conducted by Mr. J. E. Harris on 5/27/77. Reaudits of such items will be conducted at six month intervals.

Audit Finding 2b

Although the response provides numerous actions to verify implementing these procedures by supervisory personnel, it fails to indicate that personnel training records attesting to qualification(s) were, are, or will be maintained to demonstrate compliance to Criterion IX of 10CFR50 Appendix B and NA-4000. The response has been evaluated as nonresponsive; and further action, including action to prevent recurrence, is requested to resolve this finding.

Response and Corrective Action

a. No additions to our QA Program or records are judged to be necessary since, in our opinion, we are in full compliance with the intent of NA-4000 relative to "Qualification of Personnel" and "Personnel Records" as applicable.

b. Presently, we are not aware of any additional mandatory training requirements that must be recorded to be in compliance with our QA Manual or the ASME Code. We have determined that others, including a member of the ASME III Working Group on Quality Assurance, interpret the intent of the Code to require records of formal training and indoctrination programs only where qualification requirements are clearly established, such as they are for NDE, inspector eye examinations, and welding operators' qualification tests. However, it has been indicated to us that this subject of training programs will be pursued at the next meeting of the ASME III Working Group on Quality Assurance.

c. If it is determined that the intent of the Code requires additional training records, we shall comply accordingly.

Audit Finding 3a

The response indicates that QA files and records maintained by the secretary were audited for control of Southwest Fabricating & Welding Company's QA Manuals and no findings were reported. The response to verify correction of the noted deficiency has been evaluated as satisfactory, but action to prevent recurrence has not been provided. Therefore, this finding remains open pending receipt of a response stating action taken to prevent recurrence.

Response and Corrective Action

Audits will be conducted at six month intervals to verify continuing conformance with SF&W QA Manual paragraph 14.3.3.

Audit Finding 3b

It was observed that all areas and sections of SF&W's QA Program were not audited to verify compliance to all aspects of the QA Program. The response indicates that corrective action to resolve the finding will be completed on or before June 30, 1977. The response has been evaluated as satisfactory. The finding will remain open until receipt of a response that the intended corrective action has been implemented.

Response and Corrective Action - Supplementary Comments

a. Your observation that the SF&W internal audits do not include all areas and sections of the QA Manual was also a "Deviation from Commitment," observed during a NRC audit on March 14-18, 1977 and reported officially April 4, 1977. SF&W committed to corrective action in a response dated May 13, 1977:

"The present categories for internal audits will be expanded from the present thirteen (13) elements to include all fifteen (15) sections of the QA Manual. This expansion will assure greater in-depth audits of the QA Program over the present thirteen point internal audit program."

b. The implementation of the above was verified to the satisfaction of the NRC auditor during the QA Program Inspection during the week of June 13, 1977. This acceptance of our implementation is set forth in the NRC letter dated June 29, 1977 under "Action on Previous Inspection Findings" in our files.

General Comment No. 1 - Regarding QC-100 Revision not Completed and Issued

The response indicates the procedure revision was to be issued 6/6/77. The response fails to indicate action taken or intended to preclude recurrence. It is suggested that this matter be given additional attention to prevent future problems of a similar nature.

Response and Corrective Action

a. All procedures have been reviewed to verify contents and assure all reflect the requirements of the latest revision of our QA Manual.

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International

b. As presented in the response to Finding 3b, future audits will address all sections (15) of the QA Manual. These periodic audits will include verification of the referenced procedures.

General Comment No. 2 - Regarding Effective Dates of Two Inspectors' Qualification Records

The response indicates several actions taken as a result of the auditors' comment, but fails to indicate that the inspectors' qualification records have been signed as required by procedure. It is suggested that this matter be given additional attention to prevent future problems of a like or similar nature.

Response and Corrective Action

a. Inspector records have been reviewed and approved as necessary to establish qualification dates.

b. As presented in the response to Finding 3b, future audits will address all sections (15) of the QA Manual. These periodic audits will include verification of applicable personnel records.

If we can be of further service in this matter, please contact us at your convenience.

Very truly yours,

N. H. Moerke

N. H. Moerke
Vice President-Engineering (QA/QC)

NHM:dc

cc: B. J. Goodwin
R. P. Bornes
J. E. Harris

Info. copy: G. H. Lockwood

POPE
FILE
DL

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

August 29, 1977

FILE: QAA/702-2

MEMORANDUM TO: Mr. Dallas Locklear

FROM: A. E. Hall

SUBJECT: CQAA Audit March 22-24, 1977, of Southwest Fabrication & Welding Company, Inc.

I followed up the vendor's response to the three findings on the above audit with Mr. D. A. McGaw on August 29, 1977. Per Mr. McGaw, he had talked to the vendor by phone and learned their response was in preparation and CP&L should receive the vendor's response by August 19, 1977. However, Mr. McGaw has not received any written response from the vendor to date. He stated that if the vendor's response is not received by September 1, 1977, he will discuss with Mr. N. J. Chiangi to see if Mr. Chiangi wants to call or write vendor a letter.

Alvin E. Hall

AEH/sggM4

ca. 12

DL

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina
August 2, 1977

POPE
File
DL

FILE: QAA/702-2

MEMORANDUM TO: Mr. Dallas Locklear

FROM: A. E. Hall

SUBJECT: CQAA Audit of Southwest Fabrication & Welding Company, Inc.

I followed up the vendor's response to the three findings on the above audit with Mr. D. A. McGaw on July 27, 1977. Per Mr. McGaw, he had called the vendor and learned their response was in preparation and CP&L should receive the vendor's response by August 15, 1977. The audit findings remain open at this time.

Alvin E. Hall

AEH/nah

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

Raleigh, North Carolina
June 13, 1977

FILE: QAA/702-2

MEMORANDUM TO: Mr. Dallas Locklear

FROM: A. E. Hall

SUBJECT: Corporate Quality Assurance Audit of Southwest Fabrication & Welding Company, Incorporated

REFERENCE: Southwest Fabrication Letter, Dated 5/31/77
N. J. Chiangi Letter, Dated 6/9/77
N. J. Chiangi Letter #CO-00111, Dated 6/9/77

Based on my evaluation of the information contained in the above referenced memorandums (copies attached), I concur that the vendor has not supplied adequate corrective action to resolve and correct audit findings. The vendor's response was discussed between Mr. D. A. McGaw and Mr. A. E. Hall and the vendor has been so notified by letter no. CO-00111 referenced above. I will hold audit findings nos. 1, 2a, 2b, 3a, and 3b open until I have received confirmation action from the vendor.

Allen E. Hall

AEH/nah
Attachments

cc: Mr. N. J. Chiangi

CONCURRENCE:

Dallas Locklear 6/20/77
Manager - Corporate Quality Assurance Audit

Form 244

CP&L

Carolina Power & Light Company

Company Correspondence

QA-109

File: QAA/702-2

June 9, 1977

MEMORANDUM TO: Mr. D. Locklear

FROM: N. J. Chiangi

SUBJECT: Quality Assurance Audit of Southwest Fabricating and Welding Company

Attached find a copy of Southwest Fabricating and Welding Company letter dated May 31, 1977, which provides the corrective action taken or intended for the audit conducted during the period March 22-24, 1977, at Southwest Fabricating and Welding Company.

Briefs of the findings and resolution are as follows:

1. Finding 1 stated that the training and indoctrination requirements for Engineering and upper QA/QC management personnel are not covered by written procedures. The vendor's response failed to recognize the intent of the finding and has been evaluated as nonresponsive and the vendor so advised.

2. Finding 2a stated that two auditors' records were deficient. The vendor has corrected the noted problems but failed to include action taken to prevent recurrence. The vendor has been requested to provide action taken to prevent recurrence.

3. Finding 2b stated that personnel training records were not available to substantiate qualification for certain special processes. The vendor's response failed to indicate that training records were, are, or will be maintained to comply with requirements and has been evaluated as nonresponsive and the vendor has been so advised.

4. Finding 3a stated that audit records were not available to verify control and distribution of the QA Manual. The vendor has now audited the files and records of the QA secretary for control and distribution of the QA manual. This response is evaluated as satisfactory; but since it fails to provide action to prevent recurrence, it remains open pending receipt of such action. The vendor has been so advised.

5. Finding 3b stated that all areas and sections of the QA program were not subjected to internal audit as prescribed by the QA manual. The vendor is revising the internal audit program to encompass all areas and sections under the QA program with an intended completion date of June 30, 1977. This response is evaluated as satisfactory, and the finding will remain open pending receipt of completion of action.

6. The first general comment has been resolved. The second general comment has been referred back to the vendor with a suggestion that it be given additional attention, since they failed to state that the records were signed to indicate date of qualification.

Based on the aforesaid, satisfactory action is being taken to Finding No. 3b. All findings remain open pending further response from the vendor.

DAM/jag
Attachment

cc: Mr. P. W. Howe
Mr. L. I. Loflin
File

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International
7625 Sherman Street / P.O. Box 9449 / Houston, Texas 77011 / (713) 928 3451 / TWX: 910 881-1900

May 31, 1977

Mr. N. J. Chiangi, Manager
Engineering & Construction Quality Assurance
Carolina Power & Light Company
P. O. Box 1551
Raleigh, North Carolina 27602

Dear Mr. Chiangi:

Reference: File QAA/702-2
HI/A - ID
Harris Project Units 1, 2, 3 and 4

Subject: Quality Assurance Audit of Southwest Fabricating and Welding Co., Inc.
March 22-24, 1977

In response to your letter dated April 18, 1977 that was directed to our Mr. J. E. Harris, we submit our comments to the findings that were reported by your Messrs. C. G. Hensley and A. E. Hall. Our response and corrective action schedule are outlined below:

Findings and Corrective Action:

Item 1:

Requirements:

10CFR50 Appendix B, Criterion II

Nonconformance:

Criterion II required that the QA Program provide for the indoctrination and training of personnel performing activities affecting quality, as necessary, to assure that suitable proficiency is achieved and maintained. In reviewing paragraph 2.2.3.1 of SF&W's QAM, which outlines the procedures for training, it was observed by the auditors that training and indoctrination requirements for Engineering and upper QA/QC management personnel are not presently covered by written procedures.

Response and Corrective Action:

a. Neither 10CFR50 Appendix B Criterion II nor ASME Section III have mandatory requirements that training and indoctrination requirement for Engineering and upper QA/QC management personnel shall be covered by written procedures.

b. The SF&W QA Program as presented in the QA Manual, Rev. 8 dated March 1, 1977 specifically addresses ASME Section III. Article NA-4000 provides the bases for compliance with SF&W management responsibility for assignment of qualified personnel to functions within the scope of Section III to assure training and indoctrination of Engineering and upper QA/QC management personnel:

1. Engineering

The SF&W personnel report titled "Indoctrination Program" that is prepared and periodically updated by the Chief Engineer identified the SF&W personnel trained to perform engineering work on nuclear power plant items within the scope of products furnished by SF&W. This report ennumerates the following disciplines:

a) Squad Supervisor/Nuclear
b) Qualified to Check Nuclear
c) Qualified to Take-off Nuclear
d) Qualified to Detail Nuclear

The current evaluation is dated May 19, 1977.

2. QA/QC management personnel:

a) All QA and QC management qualifications will continue to be evaluated periodically for each individual. A certification of qualification approved by the Vice-President-Engineering (QA/QC) is maintained in the QA records.

b) Nondestructive Examination personnel will continue to be qualified for his individual dicipline(s) in accordance with applicable provisions of the ASME Code and SNT-TC-1A. The certification is approved by the Vice-President-Engineering (QA/QC) and maintained in the QA records.

Item 2:

a. Requirement:

SF&W Procedure QC-102, titled, "Auditing Personnel," Revision 0 dated 6-7-76.

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International

Nonconformance:

In reviewing the qualification records of SF&W's auditors, it was observed that the audit participation records for D. Hartman did not reflect his participation in internal audits as required and N. H. Moerke's records were not approved by a second party to attest to his qualification as an auditor. The records reviewed for these two individuals do not comply with the intent of Procedure QC-102.

Response and Corrective Action:

1. The qualification records of Mr. D. Hartman has been revised to reflect his participation in surveys and audits over the past two years.

2. The auditor qualification record for Mr. N. Moerke, dated 9-3-76, was approved by Mr. B. J. Goodwin, President on 3-25-77 to certify his qualification as an auditor.

b. Requirements:

SF&W Procedures: QC-104, titled, "Heat Treating Personnel," Rev. 0 dated 6-8-76; QC-105, titled, "Hot Forming & Bending Personnel," Rev. 0 dated 6-8-76; and QC-106, titled, "Machinists," Rev. 0 dated 6-8-76.

Nonconformance:

Personnel training records verifying implementation of those procedures listed above were not available for review.

Response and Corrective Action:

Documentation of deficiencies with the "Report of Nonconformance" (RON), properly executed in accordance with the SF&W QA Manual, provides records for SF&W Management to evaluate the effectiveness of the SF&W Training and Indoctrination Programs.

1. The performance of the mechanics who are qualified in accordance with applicable procedures QC-104, 105 and 106 will continue to be monitored continuously by the cognizant foreman in charge of each operation.

SOUTHWEST FABRICATING & WELDING CO. INC.
A Subsidiary of IU International

2. In addition, records to attest to the qualifications and performance are generated and recorded as follows:

   a) QC 104 "Heat Treating Personnel," Rev. 0 dated 6-8-76:

      1) Personnel assigned to this function are monitored periodically by the QA Metallurgist who verifies and records characteristics of furnace temperature controller "cams" and related furnace zone temperatures.

      2) The QA Metallurgist periodically reviews the Heat Treating Log to verify adherence to the QA programs.

      3) The assigned Quality Control Inspector monitors and endorses the furnace temperature recorder charts to signify validity of heat treatment.

      4) Detail of each furnace change for ferritic steel materials are recorded on the Manufacturing Record Sheet (MRS). This includes actual furnace time versus the maximum furnace time shown on the MRS. These data become part of the Code Document Package.

   b) QC-105 "Hot Forming & Bending Personnel" Rev. 0 dated 6-8-76:

      1) Personnel assigned to this function are monitored periodically by the QA Manager or his designated representative, normally the QA Metallurgist, to verify compliance with QC-105 and the applicable project specification.

      2) The bends are subjected to 100% inspection by the QC Inspector to verify conformance to specifications and project specifications, including dimensional tolerance. This continuous monitoring assures SF&W Management that all personnel performing functions are qualified as specified in the applicable Code and Specification.

      3) Hot bending furnace temperature charts are retained by QA.

   c) QC-106 "Machinists," Rev. 0 dated 6-8-76.

      1) When hiring or promoting of the individual mechanic by the Machinist Foreman, he signifies his approval and acceptance of the qualifications of the machinist. This complies with the intent of QC-106.

2) Continual monitoring of the machinists performance is conducted by the QC Inspector in verifying compliance with applicable drawing and tolerance.

3) The issuance of "Report of Nonconformance" (RON) initiated by the cognizant QC Inspector to cover any deviation from Code or specification, and appropriate disposition of the RON is an adequate record to effectively furnish management with information to monitor the effectiveness and adequacy of training and indoctrination of machine shop personnel.

Item 3:

a. Requirement:

SF&W's Quality Assurance Manual (QAM), paragraph 14.3.3

Nonconformance:

Paragraph 14.3.3 requires that control and distribution of SF&W's QAM be verified by audit. However, in reviewing SF&W's audit results, it was observed that records are not available to verify control, and distribution of the QAM is being audited.

Acknowledgement and Response:

QA files and records that are maintained by Ms. D. Cooper, QA Secretary, were audited on 5-27-77 by Mr. J. E. Harris. Records of control and distribution of the SF&W QA Manual, both internal and outside SF&W, were reviewed and found adequate. No findings were reported.

b. Requirement:

10CFR50 Appendix B, Criterion XVIII

Nonconformance:

Criterion XVIII requires that a system of planned and periodic audits be carried out to verify compliance with all aspects of the QA Program and determine the effectiveness of the program. However, in reviewing Exhibit 13-1, "Internal Audit Report," contained in the SF&W QAM, the auditors observed that all areas and sections of SF&W quality assurance program are not audited to verify compliance with all aspects of the QA Program. Examples of areas cited include Design Control and QA/QC responsibilities.

Comments and Corrective Action:

1) The practives that have been employed in conducting internal audits in accordance with Exhibit 13-1 "Internal Audit Report" complies with the SF&W QA Manual. However, as stated, Exhibit 13-1 does not assure that the contents of all fifteen sections of the QA Manual will be fully addressed in the audit program.

2) The internal audit program is being supplemented and the planned future program will separately address all sections of the QA Manual instead of thirteen elements shown on Exhibit 13-1 "Internal Audit Reports." This will assure more comprehensive audits of all elements of the SF&W QA Program.

   Files and the supplemental Internal Audit Report (IAR) have been prepared with a more Detailed "Audit Check List".

   This supplementary audit program to increase in-depth surveillances of the QA Program will be implemented prior to June 30, 1977.

General: Two items were presented at the postaudit meeting as comments to SF&W's QA System:

1) In reviewing SF&W's procedures and QAM for recertification of Nondestructive Examination Personnel, it was observed that paragraph 9.2.2.1 of the QAM, Rev. 8 requires recertification every three years in compliance with the ASME Code; the auditors also reviewed associated procedure QC-100, Rev. 1 titled, "Nondestructive Examination Personnel," to assure the three-year recertification requirement was included. QC-100 was marked with a corresponding "pencil change," but the change had never been typed, approved, and distributed to the affected SF&W personnel:

   a) Revision 2 of Procedure QC-100 "Nondestructive Examination Personnel" had been misfiled at the time of the March 22-24, 1977 audit. The subject "pencil changes" had been incorporated in Rev. 2 on 6-7-76 and approved. However, due to the clerical error, full distribution had not been accomplished.

   b) Distribution of QC-100, Rev. 2 dated 6-7-76, "Nondestructive Examination Personnel" will be distributed during the week of June 6, 1977.

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International

2) During the course of reviewing the qualification records of inspectors the auditors observed the records of two inspections, B. Reynolds and G. Baumback, that had not been signed to establish their date of qualification as required by SF&W Procedure QC-103, Revision 0 dated 6-7-76.

   a) The records of the two inspectors, B. Reynolds and G. Baumback have been reviewed to verify their date of qualification as required by SF&W Procedure QC-103, Rev. 0 dated 6-7-76.

   b) Both men are long term employees and were engaged in inspection activities at SF&W before formal requirements were established for nuclear inspectors.

   c) Written results of the eye examinations in the files establish the certification date of 6-3-76 for Messrs. B. Reynolds and G. Baumback. The results of these examinations were accepted on 6-3-76 by the QA Manager.

If you require additional information in order to complete your records on the Southwest Fabricating & Welding Co., Inc. QA Program, please contact us at your convenience.

Very truly yours,

N. H. Moerke

N. H. Moerke
Vice President-Engineering (QA/QC)

NHM/jd

cc: B. Goodwin
R. Bornes
J. Harris

FORM 21-50M

CP&L

Carolina Power & Light Company

Raleigh, N. C. 27602

COPY

CO-00111

File: QAA/702-2

June 9, 1977

Mr. N. H. Moerke
Vice President - Engineering (QA-QC)
Southwest Fabricating and Welding Company
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

QUALITY ASSURANCE AUDIT OF
SOUTHWEST FABRICATING AND WELDING

Dear Mr. Moerke:

Reference is made to your letter dated May 31, 1977, which provides the corrective action responses to the CP&L Quality Assurance audit of your company during the period March 22-24, 1977. CP&L has completed evaluation of the response, and hereinafter are the results.

Finding No. 1 stated that the QA manual did not address training and indoctrination for engineers and upper QA/QC management personnel. Another review of the QA manual, including Revision 8 forwarded to CP&L on March 17, 1977, confirms that the manual does not address the aforesaid training and indoctrination.

Both Criterion II to 10CFR50 Appendix B and subsection NA4000 to ASME B&PV Code Section III require the QA program to provide for indoctrination and training of personnel performing activities affecting quality, as necessary, to assure that suitable proficiency is achieved and maintained. Also, subsection NA4000 requires the manufacturer to assure that personnel performing functions within the scope of the section are qualified and that personnel training records are retained.

Although the response indicates Southwest Fabricating and Welding Company maintains a report on indoctrination and training for engineers and provides management review of QA/QC management qualifications, the QA manual does not recognize this training. In view of this, the response has been evaluated as nonresponsive. Further action is requested to resolve this finding.

Finding No. 2a stated that qualification records for Mr. D. Hartman and Mr. N. H. Moerke were deficient. The response to correct the noted deficiencies has been evaluated as satisfactory, but action to prevent recurrence has not been provided. Therefore, this finding remains open pending receipt of a response stating the action taken to prevent recurrence.

Finding No. 2b stated that personnal training records to substantiate training and qualification for implementing various shop procedures were not available. Although the response provides numerous actions to verify implementing these procedures by supervisory personnel, it fails to indicate that personnel training records attesting to qualification(s) were, are, or will be maintained to demonstrate compliance to Criterion IX of 10CFR50 Appendix B and NA4000. The response has been evaluated as nonresponsive; and further action, including action to prevent recurrence, is requested to resolve this finding.

Finding No. 3a stated that audit records were not available to verify control and distribution of the QA Manual. The response indicates that QA files and records maintained by the secretary were audited for control of Southwest Fabricating and Welding Company's QA Manuals and no findings were reported. The response to verify correction of the noted deficiency has been evaluated as satisfactory, but action to prevent recurrence has not been provided. Therefore, this finding remains open pending receipt of a response stating action taken to prevent recurrence.

Finding 3b stated that in reviewing the Southwest Fabricating and Welding Company's internal audit exhibit, it was observed that all areas and sections of Southwest Fabricating and Welding Company's quality assurance program were not audited to verify compliance to all aspects of the QA Program. The response indicates that corrective action to resolve the finding will be completed on or before June 30, 1977. The response has been evaluated as satisfactory. The finding will remain open until receipt of a response that the intended corrective action has been implemented.

General Comment No. 1, presented at the post audit meeting, stated that a pencilled revision to QC-100 to bring it into conformance to Revision 8 of Southwest Fabricating and Welding Company's QA manual had not been typed, approved, and issued, due to a clerical error. The response indicates the procedure revision was to be issued June 6, 1977. The response fails to indicate action taken or intended to preclude recurrence. It is suggested that this matter be given additional attention to prevent future problems of a similar nature.

General Comment No. 2 stated that qualification records of two Southwest Fabricating and Welding Company's inspectors had not been signed to establish their date of qualification. The response indicates several actions taken as a result of the auditors' comment, but fails to indicate that the inspectors' qualification records have been signed as required by procedure. It is suggested that this matter be given additional attention to prevent future problems of a like or similar nature.

It is requested that you review these matters and provide to Carolina Power & Light Company within thirty days of your receipt of this letter, additional statements of corrective action taken or intended to each individual finding in numerical sequence. In the event that action can not be completed within thirty days, the initial response should indicate the action intended and a scheduled completion date. The follow up response should state that the intended action has been completed. As indicated in the details of the findings above, statements of action taken to prevent recurrence of each finding is required.

Your prompt attention to this matter is appreciated; and should you have any questions in this matter, please contact me.

Yours very truly,

Original Signed By
N. J. Chiangi

N. J. Chiangi - Manager
Engineering & Construction
Quality Assurance

DAM/jag

cc: Mr. J. E. Harris (SW&F)
Mr. L. V. Thierwechter W/Referenced Letter)

bcc: Mr. P. W. Howe
Mr. D. Locklear ✓
Mr. L. I. Loflin
Mr. M. F. Thompson, Jr.
File

FORM 21-50M

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

COPY

February 13, 1978

File: QAA/702-3 CO-00398

Mr. John Harris, Contract Administrator
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90-3600 MW - UNITS 1, 2, 3, & 4
QUALITY ASSURANCE AUDIT OF SOUTHWEST FABRICATING & WELDING COMPANY, INC.
REFERENCE P. O. NY435035

Dear Mr. Harris:

This will confirm a January 30, 1978 telephone conversation between yourself and our Mr. A. E. Hall, in which the subject audit was discussed. It is planned to conduct a quality assurance audit of Southwest Fabricating & Welding Company, Houston, Texas, during the period March 14-16, 1978. The attachment provides the audit agenda/plan for this audit. It is requested that no formal presentation be prepared for this audit.

Your assistance in assuring your company's readiness for this audit is appreciated, and if there are questions in this matter, please contact Mr. Hall at (919)836-6166.

Yours very truly,
Original Signed By
S. ...
S. McManus - Manager
Corporate Nuclear Safety &
Quality Assurance Audit

AEH:fdcTC452

Attachment

cc: Mr. L. V. Theirwechter (2) w/a

bcc: Messrs. N. J. Chiangi (w/a)
W. B. Kincaid (w/a)
M. F. Thompson, Jr. (w/a)

Audit Agenda/Plan

Activity: Southwest Fabricating & Welding Company, Inc.
Houston, Texas

Audit Schedule Date: March 14-16, 1978

Auditors: A. E. Hall, Lead Auditor
T. L. Kosmatin

Requirements: P. O. NY435035
10CFR50 Appendix B
ASME Section III
CAR-SH-ME-12

Applicable Documents: Southwest Fabricating & Welding Company's QA Manual

Agenda:

1.0	Preaudit Meeting
2.0	Quality Assurance/Control Program
2.1	Quality/Organization Program
2.2	Design Control
2.3	Procurement Document Control
2.4	Document Control
2.5	Control of Purchased Materials
2.6	Identification and Control of Material, Parts, and Components
2.7	Special Process Control
2.8	Inspection/Test Control
2.9	Control of Measuring and Test Equipment
2.10	Handling, Storage, and Shipping
2.11	Inspection, Test, and Operating Status
2.12	Nonconforming Material/Corrective Action
2.13	Quality Assurance Records
2.14	Audits
2.15	Review of Findings/Corrective Action for Audit QAA/702-2
3.0	Postaudit Meeting

Audit Report No.: QAA/702-3

QAA Procedure No.: QAAP-1

Form 21—50M

CAROLINA POWER & LIGHT COMPANY
RALEIGH, NORTH CAROLINA 27602

COPY

March 28, 1978

CO #00457

File: QAA/702-3

Mr. John Harris, Project Manager
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90-3600 MW - UNITS 1, 2, 3, AND 4
QUALITY ASSURANCE AUDIT OF SOUTHWEST FABRICATING & WELDING COMPANY, INC.
REFERENCE P.O. NY435035

Dear Mr. Harris:

Attached please find an audit report of the quality assurance audit conducted during the period March 14-16, 1978, by CP&L personnel at your facility located in Houston, Texas. The attached audit report contains four findings requiring corrective action, including action to prevent recurrence and five general comments requiring your evaluation for resolution.

It is requested that you review this matter and provide CP&L, within thirty (30) days of your receipt of this audit report, individual statements of corrective action taken or being taken to each finding in numerical order as delineated in the audit report. In the event that corrective action cannot be completed within thirty days, a dual response is required. The initial response within thirty days should include a schedule completion date for corrective action remaining incomplete and the corrective action completed. The second follow-up response should indicate that corrective action has been completed. Additionally, statements of actions taken to prevent recurrence of the findings are required.

Yours very truly,
Original Signed By
Samuel McManus
S. McManus, Manager
Corporate Nuclear Safety &
Quality Assurance Audit

AEH/tleH1

Attachment

cc: Mr. J. Harris (2) w/a
Mr. L. V. Theirwechter (2) w/a

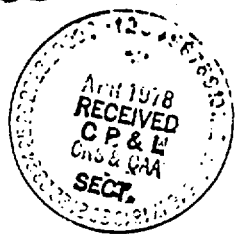
bcc: Messrs. N. J. Chiangi (w/a)
W. B. Kincaid (w/a)
M. F. Thompson, Jr. (w/a)

Form 244

CP&L

Carolina Power & Light Company

file



Company Correspondence

Raleigh, North Carolina
March 28, 1978

10

File: QAA/702-3

MEMORANDUM TO: Messrs. Shearon Harris
~~J. A. Jones~~

~~FROM:~~ S. McManus

SUBJECT: Quality Assurance Audit

During the period of March 14-16, 1978, a quality assurance audit was conducted at Southwest Fabricating & Welding Company, Inc., Houston, Texas, by Mr. A. E. Hall and Mr. T. L. Kosmatin of the Corporate Nuclear Safety & Quality Assurance Audit Section. This audit was conducted to determine Southwest Fabricating & Welding Company's adherence to P.O. NY435035 and the associated quality system requirements.

The attached audit report summarizes the results of the audit. The audit checklist, which was used as a guide, will be maintained in the CNS&QAA Section files.

Follow-up action to ensure corrective action and obtain formal response from the vendor is being taken by the Materials & Code Unit of the CNS&QAA Section. The Materials & Code Unit will evaluate the vendor's response and maintain a record of this evaluation in the CNS&QAA Section files.

RLM

AEH/tlcH3

Attachment

cc: Messrs. N. J. Chiangi
P. W. Howe
W. B. Kincaid
R. L. Mayton, Jr.
M. A. McDuffie
G. McGovern
W. W. Morgan
W. C. Rowles
S. D. Smith
M. F. Thompson, Jr.

TO: Mr. S. McManus

FROM: J. A. Jones

The attached audit report, QAA/702-3, has been reviewed and is returned for placement in the CNS&QAA files with the following comments.

AUDIT REPORT

Activity Audited: Southwest Fabricating & Welding Company, Inc.
Houston, Texas

Audit Report No.: QAA/702-3

Auditors: A. E. Hall - Lead Auditor
T. L. Kosmatin

Date: March 14-16, 1978

Persons Contacted: Southwest Fabricating:

*B. J. Goodwin - President
*N. H. Moerke - Vice President, Engineering (QA/QC)
J. E. Harris - Project Manager
*R. P. Bornes - Quality Assurance Manager
*R. L. Pearson - Manager Welding
E. McAnally - Manager Engineering
J. Brinkley - Manager Material Control
M. Finn - Nuclear Design Engineer
H. McAnally - Pipe Yard Foreman

*These persons were present during the postaudit meeting.

Scope: Guidelines for conducting the subject audit are outlined in CP&L Quality Assurance Audit Procedure QAAP-1, which establishes the methods for auditing the quality system of vendors in accordance with the requirements of CP&L's Corporate QA Program. This audit was conducted in order to assure that Southwest Fabricating & Welding Company, Inc.'s (SF&W) quality assurance program (and its implementation) was in compliance with the requirements imposed by Ebasco's P.O. NY435035, Supplements 1 through 5, Specification CAR-SH-M-30, Revision 3; and the associated quality system requirements. The major areas of SF&W Quality Assurance System selected for audit are as follows: (1) quality assurance organization and program; (2) design control, including required procedural submittals; (3) procurement document control; (4) document control; (5) control of purchased materials, (6) identification and control of material and components; (7) control of special processes; (8) inspection/test control; (9) control of measuring and test equipment; (10) nonconforming material control/corrective action; (11) handling, storage, and shipping; (12) quality assurance records; (13) internal audit program; and (14) implementation of corrective action taken to resolve findings identified in Audit Report QAA/702-2.

Summary: SF&W has been contracted to supply the power plant piping system, including hangers, seismic restraints, supports, and supporing steel for Units 1, 2, 3, and 4 of the SHNPP. By contract, SF&W is required to provide a quality assurance system which is in compliance with Appendix B of 10CFR50, Ebasco's Quality System Procedure CAR-SH-ME-12 (860-72), those portions of Section III of 1971 ASME Code, including all addenda through Summer 1973, which applies to Code Classes 1, 2, and 3 equipment, and ANSI B31.1.0 for power piping.

SF&W's Quality Assurance System applicable to this contract is delineated in their QA Manual (QAM), Revision 9, dated 12-9-77. In turn, the QAM is supplemented by Shop Detail Sheets and Manufacturing Record Sheets, which are prepared for each piping spool configuration and serve as the detail drawing and shop traveler, respectively.

To date, SF&W has begun fabrication for ASME Code Class 3 fabricated carbon steel yard piping. SF&W has not been released to begin fabrication on Code Classes 1 and 2 piping to date.

During the course of this audit, the auditors reviewed the NRC's "White Book" on NRC IE vendor audits of SF&W during 1977 with SF&W quality assurance management personnel. The auditors were concerned with the negative inspection results reported by NRC as a result of their audits conducted 3/14-18/77, 6/13-16/77, and 12-12-77 at SF&W. These three 1977 NRC audits identified: (1) three findings; (2) three findings and one unresolved item; and (3) eleven findings and five unresolved items, respectively. The auditors were able to determine by review of these audit records and SF&W response letters that the findings for the first and second 1977 NRC audits of SF&W have been closed by the NRC. The third audit of 1977 by NRC of SF&W is still not closed by the NRC, however, the auditors determined that SF&W has responsed to the NRC audit report. The NRC has requested additional response on at least three of the findings. SF&W plans to review these problems with the NRC during their next visit, which is scheduled for March 27, 1978.

The auditors reported in the last audit report, QAA/702-2 (March 22-24, 1977), that a review had been conducted with SF&W quality assurance management personnel concerning the NRC IE vendor audits at Bergen Paterson Pipe Support Corporation located in Laconia, N. H. As a point of information, Bergen Paterson (B/P) is SF&W's subsupplier of the pipe hangers and restraints for the SHNPP. As was pointed out in QAA/702-2, SF&W stated they planned to conduct an audit of the B/P, Laconia facility after the NRC scheduled audit. The auditors determined that this audit of B/P had not been accomplished. In addition, the auditors reviewed an Ebasco letter, dated 7-20-77, No. EB-S-252 with SF&W management which in part stated, "We therefore request that SF&W establish a quarterly audit of Bergen Paterson facilities until both Southwest and Ebasco concur

that an adequate confidence level of the B/P Program implementation has been attained." The auditors did learn that SF&W personnel have visited the B/P engineering facility at Hempstead, N. Y., once to audit only their quality assurance system and not B/P's design or design verification capabilities. The auditors further learned that SF&W has not visited the fabrication facility of B/P at Laconia, N. H. The auditors discussed with SF&W's project manager their position in regards to Ebasco's requested quarterly audits of B/P. He stated SF&W does not intend to comply with Ebasco's request, and that he has called Ebasco and discussed the SF&W position. It should be pointed out, however, that SF&W has failed to formally answer in writing Ebasco's letter No. EB-S-252.

Implementation of the corrective action taken by SF&W to resolve the Findings 1, 2a, 2b, 3a, and 3b previously identified in Audit Report QAA/702-2 was audited. The action taken to resolve these findings was considered sufficient except one, Finding Item 1, therefore, this finding is reopened in this audit report as Finding Item 1. The remaining Findings 2a, 2b, 3a, and 3b have sufficient action taken and implemented to resolve them and Audit QAA/702-2 is closed. SF&W Quality Assurance Program continues to be adequate to meet the requirements of P.O. NY435035 when the findings in this audit report are closed.

As a result of this audit, four items were presented at the postaudit meeting as requiring formal correction action and response by SF&W.

Findings and Corrective Action:

During the audit, the following items were identified as nonconforming findings that will require corrective action and formal response.

Item 1:

Requirement:

10CFR50 Appendix B, Criterion II, Quality Assurance Program

Nonconformance:

Criterion II requires that the QA Program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. In reviewing Paragraph 2.2.3.1 of SF&W's QAM, which outlines the procedures for training, it was observed by the auditors that training and indoctrination requirement for engineering personnel and upper management QA/QC personnel are not presently covered by written procedures. This item was presented in Audit Report QAA/702-2 as Finding Item 1 and is being held open. SF&W still has not provided and implemented corrective action as of this audit.

Acknowledgement and Response:

SF&W will develop procedure for each and have referenced in Revision 10 of their QAM. They will implement both required procedures prior to the issuance of Revision 10 of their QAM.

Item 2:

Requirement:

10CFR50 Appendix B, Criteria VI, Document Control and V, Instructions, Procedures, and Drawings

Nonconformance:

The auditors were verifying SF&W's response to General Item 1 of Audit Report QAA/702-2 and corrective action committed by SF&W's letter, dated 3-31-77, to CP&L. Their letter stated the Procedure QC-100, Revision 2, dated 6-7-76, "Nondestruction Examination Personnel," would be distributed during the week of June 6, 1977. The auditors determined that SF&W had placed this procedure in their "Procedures Manual." However, it was determined by the auditors that SF&W has no written document control procedure for the issuance and control of these procedures. In addition, SF&W does not have a document control record which shows the distribution of these procedures by date issued, to whom issued, and by whom distributed.

Acknowledgement and Response:

SF&W will develop a document control procedure for control of these quality documents and develop necessary records for the proper document control.

Item 3:

Requirement:

SF&W QAM Section 13, Audits, Paragraph 13.1.2.4
10CFR50 Appendix B, Criteria XVI, Corrective Action and XVII, Audits

Nonconformance:

a. Auditors reviewed SF&W internal audit report (12-6-77) performed by R. B. Bhavsar, where the reaudit of corrective action was performed by N. H. Moerke on 12-12-77. This was documented by initial and date beside each corrective action listed except one, Number 5d, which was not signed or dated as having been reaudited.

b. Auditors reviewed internal audit report (2-14-78) performed by R. B. Bhavsar. This audit reported five findings. No written corrective action could be presented to the auditors. This audit was followed by audit report (3-8-78) by R. B. Bhavsar which does not document an actual follow-up of the findings of audit dated 2-14-79. The report dated 3-8-78 does not cross-reference or close-out the finding of audit dated 2-14-78. SF&W had intended the later audit to close out the previous audit of 2-14-78 by not finding any problems in the same areas of those nonconformances. This intention of SF&W does not meet the requirements of 10CFR50 Appendix B, Criteria.

Acknowledgement and Response:

SF&W will document each audit finding on a separate page of a new form to be developed. This form will list for each finding; its correction action and effective date; and the documentation of corrective action follow-up by signatures and dates.

Item 4:

Requirement:

10CFR50 Appendix B, Criterion II, Quality Assurance Program

Nonconformance:

Criterion II, states in part, "Management of organizations participating in the QA Program shall regularly review the status and adequacy of that part of the QA Program which they are executing." The auditors determined, contrary to the requirements of Criterion II, the managers of various SF&W Departments whom execute that part of the QA Program for which they have responsibility have not formally documented participation in review of the QA Program prior its revisions being issued and implemented.

Acknowledgement and Response:

SF&W stated they had reviewed the QA Program for necessary revision on an informal basis and had not documented evidence of their reviews. SF&W stated they will, in the future, document their management reviews of their QA Program and maintain these records.

General:

During the postaudit meeting, the following five concerns were discussed:

1. Ebasco's Specification CAR-SH-M-30, Revision 3, "General Power Piping," in Part 2, Paragraph 21.1.c requires "marking pens, ink, and tape shall be certified by chemical analysis and

approved by Purchaser for use on stainless steel." SF&W has decided to use different marking pens and tape for stainless steel than those for which they obtained approval from Ebasco to use. The auditors are concerned if SF&W has obtained Ebasco's approval for the new materials they plan to use, since no evidence of Ebasco's approval was presented to the auditors during this audit.

2. The auditors are concerned that SF&W does not follow-up the corrective actions listed on their "Report of Nonconformaces" (RON's) for any significant conditions adverse to quality or perform any trend analysis of their RON's to determine significant conditions.

3. Ebasco's Specification CAR-SH-ME-12, Revision 0, "Quality Control Requirements for Suppliers of Equipment and Services," (860-72) in Paragraph 8.1 states, "For items and services purchased from subsuppliers, seller shall conduct necessary inspections and tests at points of receipt to verify conformance to applicable physical, chemical, or other technical requirements." The auditors are concerned that SF&W has not established a program for, verifying by outside laboratory analysis, a check against their subsuppliers chemical and physical test reports. SF&W's management stated they have not established such a program because they interpret the above specification requirement to be met by performing a comparison between their subsupplier's chemical and physical test report and the appropriate ASME or ASTM material specification. The auditors agree that the Ebasco requirement as stated above is interpretable. The auditors are also concerned that this Ebasco specification requirement has been removed from CAR-SH-ME-12, Revision 1. The newer revision of the specification which is required by a later revision of Specification CAR-SH-M-30 has not been made a part of the contract in effect during this audit.

4. The auditors are concerned that there are several instances in SF&W material storage areas where carbon steel fittings were being stacked close to stainless steel pipe which was designated for, "QA relate use," (ASME Code Material) by blue and pink markings on the material. In one storage area, a quantity of 12-inch carbon steel ells had fallen from their stack and were within one inch of touching the stainless steel pipe. The concern is that other ells could continue to fall from the stack and come in contact with the stainless steel pipe.

5. The auditors are concerned that in some instances SE&W MRS's contained errors after completion and being drawing checked twice by two different drawing checkers. Several MRS's were reviewed by the auditors and the following two identified

contained errors. MRS No. Q3301-SW, Sheet 42, Revision 2, referenced Procedure PT-1 where the procedure attachment for test acceptance criteria was not referenced as required. In addition, MRS No. Q3301-SW, Sheet 2, indicated an attachment was to be used with a reference procedure, but failed to correctly identify the attachment by its correct number.

Submitted by: Alvin E. Hall

Thomas L. Kosmatin

Approved by:

S. McManus, Manager - Corporate Nuclear Safety & Quality Assurance Audit

ACTIVITY

Southwest Fabricating & Welding Co., Houston, Texas — AUDIT PROCEDURE QAAP-1

REPORT NO. QAA/702-3

DATE March 14-16, 1978

QUALITY ASSURANCE AUDIT CHECK LIST

AUDIT SUBJECT Implementation of Quality Assurance/Control Program

LEAD AUDITOR A. E. Hall — AUDITOR(S) T. L. Kosmatin

CHARACTERISTICS		COMMENTS	
1.0	Quality Assurance/Control Program		
1.1	Quality/Organization Program	1.1	Quality/Organization Program
1.1.1	Do SF&W organization charts reflect the current organization?	1.1.1	Yes. The organization chart in the QAM, exhibit 1-1, was just revised 1/3/78 and does not reflect the current organization.
1.1.2	Verify that an acknowledgement receipt has been received from Ebasco indicating receipt of the most current revision of SF&W QAM.	1.1.2	Three copies of the latest revision (rev. 9) were transmitted to Ebasco on 2/28/78, along with an acknowledgement sheet for each copy. The copy sent to B. R. Mazo of Ebasco was returned signed 3/2/78. The other two copies No. 124 to A. Cesnanicius and No. 125 to M. S. Brown of Ebasco have not yet sent back their acknowledgement sheets.
1.1.3	Verify that a review of SF&W QAM has been conducted upon receipt of an ASME code revision or at intervals not exceeding six months.	1.1.3	A review was conducted and documented on 6/6/77 by an audit which was conducted by J. Harris and W. H. Shemis; however, reviews performed by the managers of the various departments who execute that part of the QA Program that they have responsibility for were not documented and available for audit. This is identified as finding 4 in the audit report.

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NO. QAA/702-3

CHARACTERISTICS		COMMENTS
1.2	Design Control	1.2 Design Control
1.2.1	Assure that a pre-job conference, to review contractual (design) requirements including current job specifications from Ebasco, has been held and the minutes recorded?	1.2.1 The contract is still being negotiated between SF&W and Ebasco and has not yet been finalized. Conferences were held on 1/9/78 and 1/18/78 to list the contract and code requirements. Minutes were not formally kept, but fabrication sheets had been marked up with notes resulting from the meeting.
1.2.2	Assure that SF&W engineering has verified pressure-temperature limitations for each piping class in the piping specification?	1.2.2 SF&W management stated that this is not required for this contract because they do not have design responsibility.
1.2.3	Have the "Detail Sheets" and "Manufacturing Record Sheets" (MRS) been prepared for P.O. 435035 by Engineering?	1.2.3 Yes. Detail Sheets and manufacturing record sheets (MRS) have been prepared for approximately 7000 feet of 30" pipe. This pipe is designated for service water, Class 3, and is the only item that has been released for fabrication to date.
1.2.3.1	Are the applicable contract procedures included on the Manufacturing Record Sheets, including revisions and supplements thereto?	1.2.3.1 Yes. The applicable NDE, weld, heat treat, etc. procedure is identified on the MRS including the latest revision, supplement and revision, and attachment and revision.
1.2.4	Has Engineering prepared an "Index Sheet" for this P.O.?	1.2.4 Yes. Index sheets have been prepared for the 30" pipe identified above. The index sheets list Q3301 SW, sheets 1-56; Q3303 SW, sheets 1-48; Q3305 SW, sheets 1-74; and Q3307 SW, sheets 1-74.
1.2.5	Have the following documents been approved by Ebasco and all the comments resolved?	1.2.5 In addition to the status of procedures indicated in audit check list QAA/702-2, the following status was verified:

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NO. QAA/702-3

CHARACTERISTICS		COMMENTS
1.2.5.1	Applicable welding procedures and procedure qualification test reports?	P-8-M, Rev. 3, Supp. 1, Rev. 0 was rejected by Ebasco. 01.01.930, Rev. 0, Approved by Ebasco 12/9/77. 01.01.931, Rev. 0, Approved by Ebasco 12/9/77. 01.01.937, Rev. 0, Approved by Ebasco 12/9/77. 01.01.940, Rev. 0, Approved by Ebasco 12/9/77. 01.01.947, Rev. 0, Approved by Ebasco 12/9/77. 01.01.948, Rev. 0, Approved by Ebasco 12/9/77. 01.08.906, Rev. 2, Approved by Ebasco 1/20/78. WMC-2, Rev. 0, Approved by Ebasco 12/9/77.
1.2.5.2	Weld repair procedures.	08.08.010, Rev. 0, Rejected by Ebasco. 08.08.011, Rev. 0, Rejected by Ebasco. 08.08.008, Rev. 1, Rejected by Ebasco. 08.08.006, Rev. 2, Approved by Ebasco 12/9/77. 08.08.009, Rev. 2, Accepted with comments by Ebasco 12/9/77. 08.08.007, Rev. 2, Approved by Ebasco 12/9/77. 08.08.005, Rev. 3, Accepted with comments by Ebasco 12/9/77.
1.2.5.3	Applicable NDE procedures.	9-103, Rev. 2, Approved by Ebasco 1/20/78. This is the only weld repair procedure that will be used.
1.2.5.4	Cleaning, preserving, marking and packing for shipment procedures?	Status of NDE procedures has not changed. They are all approved.
1.2.5.5	Heat treating procedures?	M1001, Rev. 1, Approved by Ebasco 1/23/78. M1001, Rev. 2, Approved by Ebasco 3/6/78. EP-7804, Rev. 0, Approved by Ebasco 3/8/78. EP-7710, Rev. 0, Approved by Ebasco 1/11/78. EP-7710, Rev. 1, Approved by Ebasco 3/8/78. 10-123, Rev. 0, Approved by Ebasco 10-124, Rev. 0, Approved by Ebasco 10-127, Rev. 1, Approved by Ebasco 1/23/78. 10-127, Rev. 2, Submitted to Ebasco, but not yet approved.
1.2.5.6	Visual inspection procedures?	HT-P1-1, Rev. 3, Submitted to Ebasco 1/25/78, but not yet approved. HT-P8-1, Rev. 0, Approved by Ebasco.
		10-118, Rev. 0, Submitted 2/10/78 to Ebasco but not yet approved. Also, SF&W stated that all the bending procedures had been approved by Ebasco.
1.3	Procurement Document Control	
1.3.1	Verify that Material Control has reviewed applicable CP&L-related purchase requisitions and classified them for processing.	

CHARACTERISTICS	COMMENTS
1.3	Procurement Document Control
1.3.1	Three CP&L P. O. related requisitions were reviewed: (1) Req. No. 47 had been classified as purchase (none in stock) by Material Control, (2) No. 48 was classified as purchase (none in stock), and (3) No. 49 was manufactured in the SF&W shop on Manufacturing Work Order (MWO) No. 3301-2.

CHARACTERISTICS		COMMENTS
1.3.2	When purchase requisitions are classified as "reclassification orders" (RO) for material from SF&W stock, verify that the RO is signed and dated by QA indicating approval of the material selected for reclassification.	1.3.2 There was only one Reclassification Order (RO) in the file on Requisition No. 4, dated 5/8/74, for SO-3301-SW where material was to be removed and reworked for the proper classification; however, it was decided at the time that the material was not needed and the requisition had been voided. Nevertheless, it was verified from this requisition that QA had approved the (RO) as required by procedure on 5/9/74.
1.3.3	Are purchase orders reviewed against the requisition and approved by QA prior to issuance.	1.3.3 Yes. Requisition No. 48 was reviewed and it was noted that the QA Manager had reviewed and signed it 1/7/78. When the P. O. was completed, it was again reviewed by QA on 2/25/78 to assure it was identical to the requisition.
1.3.4	Verify that the special requirements of this contract are being included in SF&W purchase documents, as applicable. (App. B, Crit. IV)	1.3.4 This was verified by comparing requisition No. 46 against P. O. No. 3301N-5 to Taylor Forge. It was noted that some special requirements had been transferred from the requisition to the P. O. The only material in work at this time is some carbon steel which has few unique requirements.
1.3.4.1	Is Material Control forwarding the purchase package to QA for approval?	1.3.4.1 Yes. The purchase package includes requisitions, reclassification orders when applicable, manufacturing work orders, and requisitions for material on manufacturing work orders when applicable. It was verified that all these documents had been reviewed and signed by QA as noted in the questions above.
1.4	Document Control	1.4 Document Control
1.4.1	Verify that the Manufacturing Record Sheet (MRS) for this contract is properly completed, i.e., identification number, operation numbers, current revision of procedures, and hold points.	1.4.1 It was verified that the identification number on both the Detail Sheet and MRS matched Q3301-SW, Sheet 42, Revision 2. Operations had been completed and initialed by the inspector. All procedure revision numbers were included as required. Both the ANI and SF&W hold points were indicated on the MRS. Ebasco had not requested any on this MRS. However, two of the MRSs reviewed did have omissions on them. One was on Q3301-SW, Sheet 42, Rev. 2, where the reference to PT-1, Attachment 1, the test acceptance criteria was not referenced. In addition, MRS No. Q3301-SW, Sheet 2, indicated an attachment was to be used with a reference procedure but failed to correctly identify the attachment by its correct number. This is identified as Comment No. 5 in the audit report.

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NO. QAA/702-3

CHARACTERISTICS		COMMENTS	
1.4.2	Verify that the proper revisions of the procedures listed on the MRS for this contract are available to those responsible for verification of the product. (Appendix B, Criteria VI)	1.4.2	The following shops were checked to assure that the applicable procedures were available and that the inspection personnel were familiar with them. Yard - checked Bill Malek, yard inspector for the applicable cleaning procedures EP-7804, Rev. 0, M-1001, Rev. 1, EP7710, Rev. 1, and 10-127, Rev. 1; NDE - checked Lloyd Seaman, level II in PT, MT and UT. PT-1, Rev. 2, Supp. 1, Att. 1, Rev. 1; MT-1, Rev. 1, Att. 1, Rev. 0 and MT-2, Rev. 0, Att. 1, Rev. 0, were available; Heat treat - checked Boyce Gilbert, furnace operator who was using PT-1, Rev. 2; Bending Shop - check Travis Russell, QC Inspector who was using bending procedures 4-106, Rev. 1, and 4-107, Rev. 0. No problems were found with assuring that the inspectors had the proper procedures. Additionally, the inspectors were familiar with the procedures when quizzed about them.
1.4.3	Are revisions to customer drawings reflected in the Detail Sheets for that applicable contract?	1.4.3	Yes. This was verified by checking detail sheets which referenced the SF&W isometrics, i.e. SW&F Isometric #1-SW-47, Rev. 2, which references Ebasco Drawing CAR-2165-G211 R/4.
1.4.4	Are changes to the customer's drawings reflected on the Detail Sheets for that applicable contract?	1.4.4	Yes. See answer to 1.4.3.
1.5	Control of Purchased Materials	1.5	Control of Purchased Materials
1.5.1	Verify that Receiving Inspection Procedures are available and in use at receiving. (ASME NA4430) (Spec. ME-12, Par. 8)	1.5.1	It was verified that the Receiving Inspector had the applicable receiving inspection procedures available. He uses Procedures QCI-1001, A thru F, Revision 1, dated 2-5-73 in conjunction with the purchase order and packing slip to perform his inspection.
1.5.2	Verify that measures are documented and established to assure that purchased material is examined for the special requirements of this contract and that the results of these examinations are recorded as applicable. (ASME NA4442.2) (Spec. ME-12, Par. 8)	1.5.2	The QCI-1001A is a check list which is used by the receiving inspector in conjunction with the P. O. to assure the purchased items meet the requirements. To verify that items are received as required by the QAM, Exhibit 4-1, Item 1; P. O. 3301 N-4, dated 8/3/77, to Taylor Forge for 8 - 30" O.D., 90° L.R. ells was reviewed. The applicable requisition was 3301-44 along with the P. O. was used as the acceptance criteria for receiving the items. The QCI-1001A which lists the physical aspects of the items had been completed including the heat numbers which were also on the packing slip. This P. O. was traced to completion as indicated in subsequent questions.

CHARACTERISTICS		COMMENTS	
1.5.3	Verify that Certified Material Test Reports are recieved with all nuclear class material. (Spec. M-30, App. H, ASME 4442.2)	1.5.3	This was verified by checking P. O. 3301 N-4. The notes section is preprinted and includes a requirement for Material Test Reports to be furnished with all materials as was the case with this P. O. This preprinted notes section is attached to all nuclear-related orders.
1.5.3.1	Verify that the MTRs are reviewed by QA and stamped to signify approval by an individual's QA stamp on the MTR and initial and date on the packing slip. (ASME 4442.2, Spec. ME-12, Par. 8.1)	1.5.3.1	This was verified on P. O. 3301 N-4 where the packing slip was initialed and dated by the receiving inspector. The packing slip is put with the Material Test Report (MTR) and the date is stamped by the mail room, and also the inspection report QCI-1001A which is also signed and dated by the Receiving Inspector. The package is sent to the Inspection Clerk who compares the MTR against the applicable ASTM standard. He then stamps the MTR with his inspector's stamp.
1.5.3.2	Verify that the individual doing the review of the MTRs has the required range of chemical and physical test values available to be used as acceptance criteria. (Spec. ME-12, Par. 8) (App. B, Crit. V)	1.5.3.2	This was verified when checking P. O. 3301 N-4 above. The Inspection Clerk has the entire set of ASTM Standards on his desk and uses them to verify the required range of chemical and physical test values are correctly shown on the MTR. However, SF&W has not established a plan for verifying that the values shown on the MTRs are accurate by performing an independent test. SF&W management stated that they have not conducted any tests on this order because they interpret the specification to mean perform a comparison only between the MTR and ASTM standard. The auditors also expressed concern that this requirement has been removed from Ebasco Spec. CAR-SH-ME-12, Rev. 1, which is still under negotiation between SF&W and Ebasco.
1.6	Identification and Control of Material, Parts, and Components	1.6	Identification and Control of Material, Parts, and Components
1.6.1	Have measures been established to control stored material and items to assure that only correct materials and items are used for fabrication and to prevent the use of incorrect material or items? (Spec. ME-12, Par. 6)	1.6.1	Yes. The applicable Material Release lists the pipe's heat number, serial number (unique for each length of pipe), and shop order number. The release is then checked by QA and stamped to verify that this is the proper material for the job. The applicable length of pipe also has stamped on it the heat number, serial number, and shop order number. The pipe, material release and print are cleared by QA before use. While auditing this, it was noted that there were several instances where carbon steel fittings were being stacked close to stainless steel pipe. Two of the stacks of (continued)

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NO. QAA/702-3

CHARACTERISTICS	COMMENTS
	1.6.1 (cont.) fittings had fallen over and, in one case, a large 12-inch fitting was within one inch of the pipe. The auditors expressed concern that other fittings could fall and contact or damage the stainless pipe. This is Concern Number 4 in the audit report.

	CHARACTERISTICS		COMMENTS
1.6.2	Verify that markings are located in an area on the item which does not interfere with the functions or quality aspects of the product. (ASME NA 4442.3, Spec. M-30, Par. 21.1)	1.6.2	This was verified by checking several different items, some not on our order. Pipe over 1/4" is stamped with Low-Stress die stamps on the side. Pipe 1/4" or less is marked with a vibro-etcher to prevent damage. The marking on some thermowells was checked. They had been marked with both vibro-etching on the nut head and the shop order had been written on the stem with a Blaisdell Liquid Tip 1100 black marker. Also checked some large 12", schedule 80 fittings that had been stamped with low stress die stamps. The schedule 40S fittings were stamped with dot die stamps.
1.6.3	Verify that marking of stainless steel is made with material that is not detrimental to the product, is certified by chemical analysis, and is approved by Ebasco for use. (ASME NA 4442.3, Spec. M-30, Par. 21.1)	1.6.3	All marking of stainless steel or carbon steel is either die stamped as described above, vibro-etched, or black ink. The Blaisdell Liquid Tip 1100 black ink marker was certified to be less than .040% total Halogens, and less than .0321% total Sulphur; however, SF&W could not produce evidence that Ebasco had approved the use of these markers for our contract. This is a concern in the audit report.
1.6.4	Are there provisions for identifying and stamping piping in accordance with the N. C. Boiler and Pressure Vessel Code, i.e., registering with the National Board and stamping the NB number on the nameplate?	1.6.4	Yes. Each subassembly of pipe will have two labels, one for ASME N stamp information and one for National Board number and related information. Each detail sheet shows how each applicable label is to be marked. A subassembly of pipe, which contained three 15-foot lengths of 30" pipe welded together, out in the pipe yard was checked and found to be labeled in accordance with the spec. It was noted that each 15-foot length is also identified with a unique P-number to provide even further traceability.
1.7	Special Process Control		
1.7.1	Verify that NDE personnel qualification records, in accordance with SNT-TC-1A, are available and being maintained current. (Spec. ME-12, Par. 7)	1.7.1	The auditors verified that SF&W NDE personnel qualifications records meet the requirements of SNT-TC-1A and ASME Code Section III. Their Level III examiner for MT, LP, VT has been qualified by examination and had current eye examination. Record for Level III review was for R. B. Bornes. The auditors review records for Level II personnel, R. D. Byrd and W. J. Malek, which meet SNT-TC-1A and had current eye examinations.

REPORT
NO. QAA/702-3

	CHARACTERISTICS		COMMENTS
1.7.2	Assure that weld data records contain the information for weld joints and repairs as required by Par. 6, Appendix G of Specification M-30.	1.7.2	The auditors verified by review of piping subassembly on MRS Q3301-SW, Sheet 42, piece marked Yard-SW-49-19. All items required by Para. 6, Appendix G, Spec. CAR-SH-M30, Items 6a, 6b, 6d, and 6f are recorded on the MRS. Postweld heat treatment is not applicable to the piping subassembly.
1.7.3	Verify that welding material identification, weld procedure used, and welder's symbol is verified by the QC Inspector and entered on the MRS.	1.7.3	Verified, See 1.8.2
1.7.4	Is SF&W maintaining Heat Treating Logs for this contract?	1.7.4	Not applicable to ASME Section III, Class 3 carbon steel piping being manufactured during this audit.
1.8	Inspection/Test Control	1.8.1	Yes, verified in 1.8.2.
1.8.1	Is the MRS being completed by the QC Inspector to indicate completion of the inspection operations? (ASME NA 4530, ME-12, Par. 8.2)	1.8.2	Verified by review of pipe assembly in SF&W weld shop on MRS, Q3305-SW-Sheet 42, Serial No. 14763, and National Board No. 559, ASME Code Class 3. The inspector had proper entries on the MRS and verified welder's stamp identification recorded on the MRS--in fact was stamped on pipe subassembly at weld joints.
1.8.2	Verify that the inspection/test and operating status of the material or part is being maintained throughout manufacturing. (NA 4540, ME-12, Par. 8.2)	1.8.3	Yes, SF&W submitted a typical MRS to Ebasco which has been returned with witness points marked, with Ebasco Letter No. 10Q-V-1, dated 1/18/78. Witness points identified were fit-up of weld joints, PT or MT, and cleaning & prep to ship per Procedure EP-7710, Rev. 1.
1.8.3	Has SF&W submitted its fabrication sequence to Ebasco? (Spec. ME-12, Par. 8)		

REPORT
NO. QAA/702-3

CHARACTERISTICS		COMMENTS	
1.8.3.1	Have the examination or witness points been identified by Ebasco on the fabrication sequence. (Spec. ME-12, Par. 8)	1.8.3.1	Yes, see 1.8.3.
1.8.4	Are there provisions on the Shop Detail Sheet for correct measurement of pressure boundary items for minimum wall thickness?	1.8.4	SF&W only checks wall thickness of "C" bore which is recorded on the MRS.
1.8.4.1	Does this include measurement of all cast fittings in piping systems (Safety Class 1, 2, or 3)? (Spec. M-30, Par. 9.9)	1.8.4.1	At present, SF&W piping designs for ASME Code Classes 1, 2, & 3 do not use any cast fittings.
1.8.4.2	Is the information provided as required by part one-Specification M-30, Paragraph 9.9, a through e.	1.8.4.2	Not applicable, see 1.8.4.1.
1.9	Control of Measuring and Test Equipment		
1.9.1	Verify that calibration tags are placed on each item calibrated and include initial of persons performing calibration, date of calibration, and calibration due date.	1.9.1	Verified by review of measuring tool recorded in manufacturing areas and traced to calibration records. Verified were (1) extension micrometer S/N 44, calibrated 3/13/78, due for recalibration 3/20/78, (2) Tube micrometer S/N 8, calibrated 3/13/78, due for recalibration 3/20/78, and (3) Inside micrometer S/N 11 & 12, calibrated 3/13/78, due for recalibration 3/20/78. All were in agreement with calibration labels on instruments and record cards.

CHARACTERISTICS		COMMENTS
1.9.2	How are personally owned inspection equipment used by SF&W QC personnel controlled?	1.9.2 SF&W QAM Section 8, in Paragraph 8.3.2, which states "Equipment, tools, gauges, and instruments used by Quality Control for acceptance are to be the property of SF&W".
1.9.3	Verify that inspection instruments are traceable to the QC Inspector using the instrument and to the item measured.	1.9.3 This is covered by SF&W QAM Section 8, in Paragraph 8.1.5. Was verified by review of Inspector's log in weld shop area. Inspector logged by shop order number, serial number of measuring tool used and date, and sheet number of MRS which is all traceable to each piping subassembly manufactured.
1.9.4	Are instruments calibrated using certified standards which are traceable to national standards where such standards exist? (ASME NA 4610)	1.9.4 Yes, verified by review of following measuring devices and calibration records, which did have traceability to national standards. (1) Gage Block Set - Serial No. 11, calibrated 2/7/78 by outside laboratory, due 2/7/79. (2) Tong tester (Welding Machine Calibration) - Serial No. 35011-6, calibrated 2/20/78 by outside laboratory, due 2/20/79.
1.10	Handling, Storage, and Shipping	1.10.1 Verified by review of MRS, Q3301-SW, Sheet 42, for carbon steel ASME Class 3 yard piping. Exterior of piping cleaned by sand blasting. Per SF&W Procedure EP-7804 and interior of piping cleaned by sand blasting per SF&W Procedure 10-27, Revision 2.
1.10.1	Verify that the procedure for cleaning pipe and pipe components prior to shipment is listed on the MRS. (Spec. M-30, Par. 9.5)	1.10.2 Verified by review of SF&W's subsuppliers certification of tape "Polyken", No. 222, made by Kendall, Boston, Mass., which stated the Halogen compounds were less than 250 P.P.M. The auditors determined this tape is different than the tape previously approved for use by Ebasco. This appears in the audit report as General Item 1.
1.10.2	Verify that stainless steel pipe awaiting shipment has flanges, weld ends, and other openings covered with protective covers and are sealed with certified halogen free waterproof tape.	

REPORT
NO. QAA/702-3

	CHARACTERISTICS		COMMENTS
1.10.3	Verify that all paints and preservatives being used for this contract have been approved by Ebasco prior to use. (Spec. M-30, Part 2, Par. 22.2.d)	1.10.3	Verified by review of SF&W procedures to be used for manufacturing carbon steel ASME Class 3 yard piping. Interior coating Procedure No. 10-127, Revision 2, dated 2/27/78, was approved by Ebasco 3/6/78. Exterior coating Procedure No. EP-7804 was approved by Ebasco 2/13/78.
1.11	Nonconforming Material/Corrective Action	1.11.1	Verified by review of SF&W's, "Report of Nonconformance", (RON) Forms, both in open files and closed out files. The cause and corrective action is listed on the RON form, Exhibit 10-1, in their QAM.
1.11.1	Verify that SF&W is documenting the cause of reported discrepancies.	1.11.2	While a RON is being reviewed by SF&W material review board, this review determines the need to notify their customer of the nonconformance.
1.11.2	Verify that SF&W has provisions for notifying customers of nonconformances.	1.11.3	Verified by review of RON log. SF&W personnel log in for back RON the RON number, shop order number, date issued, sheet number, and date of acceptance of rework or repair.
1.11.3	Verify that Reports of Nonconformances (RONs) are being logged in by sequential number and the authorized Inspector is notified of the RON.	1.11.4	The auditors verified that corrective action is being documented, see 1.11.1. However, the corrective action is not verified to prevent recurrence. The auditors are concerned that SF&W does not follow up the corrective action listed on their RONs for any significant condition adverse to quality or perform any trend analysis of their RONs to determine significant conditions. This appears in the audit report as General Item 2.
1.11.4	Is corrective action being documented and verified to prevent recurrence. (NA 4800, App. B, Crit. XVI)		

REPORT
NO. QAA/702-3

CHARACTERISTICS		COMMENTS	
1.12	Quality Assurance Records		
1.12.1	Verify that a check list of documents to be accumulated for the Documentation Package has been made a part of the MRS.	1.12.1	Unable to verify during this audit. Document packages for ASME Class 3 carbon steel yard piping had not been completed as of this audit.
1.13	Audits	1.13.1	The auditors reviewed SF&W internal audit report (12-6-77) performed by R. B. Bhavsar, where the reaudit of corrective action was performed by N. H. Moerke on 12-12-77. This was document by initial and date beside each corrective action listed except one, Number 5d, which was not signed or dated as having beeen reaudited. This appears in the audit report as Finding Item No. 3. The auditors reviewed internal audit report (2-14-78) performed by R. B. Bhavsar. This audit reported five findings. No written corrective action could be presented to the auditors. This audit was followed by audit report (3-8-78) by R. B. Bhavsar which does not document an actual follow-up of the findings of audit dated 2-14-78. The report dated 3-8-78 does not cross-reference or close out the findings of audit dated 2-14-78. SF&W had intended the later audit to close out the previous audit of 2-14-78 by not finding any problem in the same areas of those nonconformances. This intention of SF&W does not meet the requirements of 10CFR50, Appendix B, criteria. These two problems appear in the audit report as Finding Item 3a and 3b.
1.13.1	Verify that corrective actions to deficiencies found during audits are verified to be corrected by reaudit within one month.		
1.14	Review of Findings/Corrective Action for Audit QAA/702-2		
1.14.1	Verify that the training and indoctrination for Engineers and upper QA/QC management personnel is addressed in the SF&W QA Manual. (Finding No. 1, QAA/702-2)	1.14.1	In reviewing the implementation of SF&W's corrective action for this finding Item 1 of QAA/702-2, the auditors determined SF&W still has not provided and implemented corrective action as of this audit and is being held open. This appears in this audit report as Finding Item 1.
1.14.2	Verify that the auditor qualification records of D. Hartman have been revised to reflect his participation in surveys and audits over the past two years. (Finding 2a, QAA/702-2)	1.14.2	Verified by review of records for D. Hartman which now comply with requirements of SF&W's Procedure QC-102.

REPORT
NO. QAA/702-3

CHARACTERISTICS		COMMENTS	
1.14.2.1	Verify that the auditor qualification record for the V.P. Engineering QA/QC has been approved to certify his qualifications as an auditor. (Finding 2a, QAA/702-2)	1.14.2.1	Verified by review of records N. H. Moerke, V. P. - Engineering (QA/QC), which have been approved by SF&W's President.
1.14.3	Verify that SF&W personnel assigned to heat treating, hot forming and bending and machining are being monitored periodically by the QA Manager or his designee to assure that all personnel performing these functions are qualified to the respective QC procedure. (Finding 2b, QAA/702-2)	1.14.3	Verified by reviewing personnel records which do not meet SF&W's procedures.
1.14.4	Verify that control and distribution of SF&Ws QAM is available and being verified by audit at six-month intervals starting with an audit on 5-27-77. (Finding 3a, QAA/702-2)	1.14.4	Verified that corrective action has been implemented by review of internal audit report (3-9-78) by J. Harris which audit SF&W's document control of their QAM.
.14.5	Verify that the SF&W audit program has been expanded to separately address all sections of the QA Manual instead of the thirteen elements shown on Exhibit 13-1 of the QAM. (Finding 3b, QAA/702-2)	1.14.5	SF&W has established separate file folder for each section of their QAM. They maintain audit records which have been performed to show that all areas of their quality program have been audited.
1.14.5.1	Verify that this expanded program with a more detailed "Audit Check List" has been implemented. (Finding 3b, QAA/702-2)	1.14.5.1	Yes, was verified in 1.14.5.

REPORT
NO. QAA/702-3

CHARACTERISTICS		COMMENTS	
1.14.6	Verify that procedure QC-100, "Nondestructive Examination Personnel," Rev. 2 dated 6-7-76 has been distributed (General comment No. 1, QAA/702-2)	1.14.6	The auditors were verifying SF&W's response to General Item 1 of audit report QAA/702-2 and corrective action committed by SF&W's letter, dated 3-31-77, to CP&L. Their letter stated the Procedure QC-100, Revision 2, dated 6-7-76, "Nondestructive Examination Personnel", would be distributed during the week of June 6, 1977. The auditors determined that SF&W had placed this procedure in their "Procedure Manual". However, it was determined by the auditors that SF&W has no written document control procedure for issuance and control of these procedures. In addition, SF&W does not have a document control record which shows the distribution of these procedures by date issued, to whom issued, and by whom distributed. This appears in the audit report as Finding Item 2.
1.14.7	Verify that the qualification records of Inspectors B. Reynolds and G. Baumback have been signed and the date of their qualifications established. (General comment No. 2, QAA/702-2)	1.14.7	Verified by review of both inspectors which now meet the requirements of SF&W's procedures.
1.14.8	Verify that the audit program assures planned and periodic audits of the following areas and within the noted time span:		
1.14.8.1	Auditor qualification records at intervals not to exceed six months. (Finding No. 2a, QAA/702-2)	1.14.8.1	Verified by review of records which showed reaudit was done on dates 11-7-77 and 3-9-78.
1.14.8.2	Verification that procedures referenced in the QAM reflect the requirements of the QAM, at intervals not to exceed the time established in audit procedures. (General comment No. 1, QAA/702-2)	1.14.8.2	See 1.14.6.

REPORT
NO. QAA/702-2

CHARACTERISTICS	COMMENTS
1.14.8.3 Verification that Inspection personnel qualifications are complete and current, at intervals not to exceed the time established in audit procedures. (General comment No. 2, QAA/702-2)	1.14.8.3 Verified by review of SF&W letter dated 8-26-77 and SF&W records which were current.
.0 Postaudit Meeting	2.0 Postaudit Meeting The postaudit meeting was attended by the following persons: CP&L: A. E. Hall, Lead Auditor T. L. Kosmatin SF&W: B. J. Goodwin N. H. Moerke R. P. Bornes R. L. Pearson There were four findings and five concerns presented at the postaudit meeting.

Kible v

FORM 21-50M

CP&L
Carolina Power & Light Company
Raleigh, N. C. 27602

COPY

August 7, 1978

FILE: QAA/702-3 ✓ CO #00718

Mr. John Harris, Project Manager
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90 - 3600 MW - UNITS 1, 2, 3 & 4
REFERENCES: (1) P. O. MY-435035
(2) SF&W'S LETTER DATED 8/1/78

Dear Mr. Harris:

Reference is made to SF&W's letter, dated 8/1/78, wherein you provided Revision 10 to your Quality Control Manual to satisfy corrective action for Audit Finding 3b of CP&L Audit Report QAA/702-3. The corrective action has been evaluated as satisfactory and closes all four findings of the subject audit. This audit is hereby closed.

Should you have any questions in this matter, please contact me.

Yours very truly,
Original Signed By
Samuel McManus

S. McManus - Manager
Corporate Nuclear Safety &
Quality Assurance Audit

SM/AEH/jsf

cc: Mr. John Harris (2)
Mr. L. V. Thierwechter (2)

bc: Mr. N. J. Chiangi
Mr. P. W. Howe
Mr. J. D. E. Jeffries
Mr. J. M. Johnson
Mr. W. B. Kincaid
Mr. R. L. Mayton, Jr.
Mr. W. W. Morgan
Mr. S. D. Smith
Mr. M. F. Thompson, Jr.

Form 21—50M

CAROLINA POWER & LIGHT COMPANY
RALEIGH, NORTH CAROLINA 27602
July 17, 1978

COPY

File: QAA/702-3

CO #00680

Mr. John Harris, Project Manager
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90-3600 MW-UNITS 1, 2, 3 & 4
REFERENCES: (1) P. O. NY-435035
(2) SF&W'S LETTER, DATED 7/12/78

Dear Mr. Harris:

Reference is made to your letter above wherein you provided corrective action to Finding 3.b. of CP&L Audit Report QAA/702-3. Carolina Power & Light (CP&L) has completed evaluation of SW&F's corrective action response, and comments concerning this review are as follows:

1. When we receive your QA Manual Revision 10, we will evaluate corrective action for Finding 3.b. If it is satisfactory, we will close out this Finding 3.b. and close out this audit.

2. The CP&L Corporate Nuclear Safety & Quality Assurance Audit Section does not have the responsibility for approval of your QA Manual. However, we will forward it to the proper people who have this responsibility. Mr. N. J. Chiangi, Manager - Engineering and Construction Quality Assurance, supervises this QA Section.

Should you have any additional questions, please contact me.

Yours very truly,
Original Signed by
Samuel McManus

S. McManus, Manager
Corporate Nuclear Safety &
Quality Assurance Audit

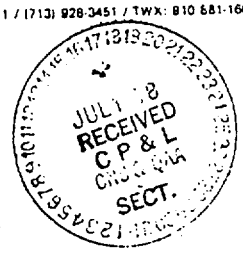
AEH/jsf

cc: Mr. John Harris (2)
Mr. L. V. Thierwechter (2)

Fiw: QAR/702-2

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International

7525 Sherman Street / P.O. Box 9448 / Houston, Texas 77011 / (713) 928-3451 / TWX: 910 881-1600



July 12, 1978

Mr. S. McManus, Manager
Corporate Nuclear Safety & QA Audits
Carolina Power & Light Company
P. O. Box 1551
Raleigh, NC 27602

Subject: Shearon Harris Nuclear Power Plant
Our S. O. 3301/3308 and 4121/4128
SF&W Quality Assurance Manual Revision 10

Dear Sir:

In our recent response to findings reported as a result of your QA Audit, we advised you that Revision 10 of our QA Manual, scheduled to be finalized by July 10, 1978, would address the matter to resolve certain discrepancies that were noted. We further informed you that the changes to the manual were subject to acceptance by the Inspection Specialist of our Authorized Inspection Agency.

Our QA Manual Revision 10 dated 7/10/78 has been accepted by our Authorized Inspection Agency. We are implementing the new provisions into our QA Program. Implementation will be finalized and Revision 10 will be the effective document for our QA Program on July 17, 1978. The changes incorporate requirements through the Winter 1977 Addenda to ASME III, as well as functional changes, and address pertinent provisions of 10 CFR 50, Appendix B, and ANSI/ASME N45.2.

A copy of Revision 10 will be directed to your office as soon as the manual is received from the printer. We shall appreciate your earliest approval of Revision 10 since it is mandatory that the latest QA Manual revision be employed in our QA Program.

Very truly yours,

N. H. Moerke
dc

N. H. Moerke
Vice President-Engineering (QA/QC)

NHM:dc

Form 21—60M

CAROLINA POWER & LIGHT COMPANY
RALEIGH, NORTH CAROLINA 27602

COPY
CO#00633

FILE: QAA/702-3

June 16, 1978

Mr. John Harris, Project Manager
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90 - 3600 MW - UNITS 1, 2, 3, & 4
REFERENCE: (1) P.O. NY435035
(2) SF&W's letter, dated 6/9/78

Dear Mr. Harris:

Reference is made to your letter referenced above, wherein you provided corrective action to Findings 3b and 4 of CP&L Audit Report No. QAA/702-3. Carolina Power & Light (CP&L) has completed evaluation of Southwest Fabricating & Welding Company, Inc.'s (SF&W) corrective action responses, and comments concerning this review are as follows:

1. Your response to Audit Finding 4 is considered adequate to prevent recurrence of the finding. Therefore, Finding 4 is hereby closed.

2. In the case of Audit Finding 3b, your corrective action is to be implemented by 7/10/78 with revision 10 of the SF&W QA Manual. Therefore, we will hold this Finding 3b open until SF&W can supply evidence this corrective action has been implemented.

It is requested that you review these comments to your response and provide CP&L the necessary additional information within thirty (30) days. Your attention to this matter is appreciated, and should you have any questions, please contact me.

Yours very truly,
Original Signed By
Samuel McManus

S. McManus - Manager, Corporate
Nuclear Safety & QA Audit

AKH/nahV2

cc: Mr. John Harris (2)
Mr. L. V. Thierwechter (2)

bcc: Messrs. N. J. Chiangi
P. W. Howe
J. D. E. Jeffries
J. M. Johnson
W. B. Kincaid
R. L. Mayton, Jr.
W. W. Morgan
S. D. Smith
M. F. Thompson, Jr.

SOUTHWEST FABRICATING & WELDING CO., INC.
A Subsidiary of IU International

7525 Sherman Street / P.O. Box 9449 / Houston, Texas 77011 / (713) 928-3451 / TWX: 910 881-1600

June 9, 1978

Mr. S. McManus, Manager
Corporate Nuclear Safety & QA Audits
Carolina Power & Light Company
Raleigh, NC 27602

Reference: P. O. NY435035 - Harris Project Units 1, 2, 3 & 4

Subject: CP&L Audit of Southwest Fabricating & Welding Co., Inc.
March 14-16, 1978

Dear Mr. McManus:

In response to your letter of May 8, 1978 which was directed to Mr. John Harris, we present the following comments for your information:

Audit Finding 3B

Revision 10 of the SF&W QA Manual is scheduled for release and implementation on or about 7-10-78. The revised Internal Audit form which is described in our May 3 letter will be included in Revision 10, provided the Authorized Inspection Agency accepts this change.

Audit Finding 4

The corrective action described in our May 3 letter has been implemented. An example of our implementation provided by the attached form dated 5/31 shows acceptance of the proposed QA Manual changes by the Chief Engineer.

If you have any additional questions, please contact us.

Very truly yours,

N. H. Moerke

N. H. Moerke
Vice President-Engineering (QA/QC)

NHM:dc
encl.

Form (78-150501)

Sheet 2 of 12

To: E. R. McAnally Department: Engineering

From: N. H. Moerke, Quality Assurance Date: May 22, 1978

Subject: REVIEW OF THE SF&W QUALITY ASSURANCE MANUAL SECTION 2.0

The following changes affecting the activities of your department are planned for incorporation in Revision 10 of our QA Manual. We have scheduled this revision to be mandatory on 7/10/78 and fully implemented to assure the adequacy of the SF&W QA Program. This is based upon an evaluation of our QA Manual during the week of 5/18/78 by J. Finn, Team Leader, J. Harris, R. Weber, and K. Powell (part time).

The changes resulted from an evaluation of the following:

Functional Review

2.1.5 This paragraph does not adequately address all areas of Code fabrication for which SF&W is currently authorized.

CORRECTIVE ACTION: Revise to read as follows:

2.1.5 SF&W will require the following information for ASME Section III construction:

1) For Class 1, 2, 3 and MC (NPT Stamp) vessel parts and appurtenances and component supports; Class 1, 2, & 3 pump and valve parts and appurtenances, piping subassemblies and penetration assemblies and Class CS core support structures, the applicable data from the Design Specifications which form the basis for fabrication shall be supplied by the customer (Owner or his agent).

2) For Class 1, 2, 3 & MC (N Stamp) vessels and Class 2 & 3 tanks:

a) A copy of the Design Specifications certified by one or more Design Engineers shall be supplied by the customer (Owner or his agent).

b) A Stress or Design Report, as applicable, certified by one or more Design Engineers shall either be supplied by the customer (Owner or his agent) or SF&W shall generate or cause such a certified report to be generated.

Please sign and return one copy of this memo indicating: X Acceptance

_____ Rejection with comments: _____

Date: 5/31/78 (Signed) _____

Distribution: B. J. Goodwin, R. P. Bornes, Hartford (2), N. H. Moerke, R. L. Pearson, Reviewers

FORM 21-50M

CP&L
Carolina Power & Light Company
Raleigh, N C 27602

COPY

May 8, 1978

File: QAA/702-3

CO#00558

Mr. John Harris, Project Manager
Southwest Fabricating & Welding Company, Inc.
7525 Sherman Street
P. O. Box 9449
Houston, Texas 77011

CAROLINA POWER & LIGHT COMPANY
HARRIS PROJECT
1984-86-88-90 - 3600 MW - UNITS 1, 2, 3, & 4
REFERENCE: (1) P. O. NY435035
(2) SF&W'S LETTER, DATED 5-3-78

Dear Mr. Harris:

Reference is made to your letter referenced above, wherein you provided corrective action to Findings 1, 2, 3a, 3b, and 4 of CP&L Audit Report No. QAA/702-3. Carolina Power & Light (CP&L) has completed evaluation of Southwest Fabricating & Welding Company, Inc.'s (SF&W) corrective action responses, and comments concerning this review are as follows:

1. Your response to Audit Findings 1, 2, and 3a is considered adequate to prevent recurrence of the findings. Therefore, Findings 1, 2, and 3a are hereby closed.

2. In the case of Audit Finding 3b, your corrective action is considered adequate. However, as discussed in your letter referenced above, this corrective action will not be implemented until Revision 10 of your QA Manual is approved and issued. Therefore, we will hold this Finding 3b open.

3. In the case of Audit Finding 4, your corrective action is considered adequate. However, as discussed in your letter referenced above, this corrective action implementation does not explain when by date that this corrective action will be implemented. Therefore, we will hold this Finding 4 open.

It is requested that you review these comments to your response and provide CP&L the necessary additional information within thirty (30) days. Your attention to this matter is appreciated, and should you have any questions, please contact me.

Yours very truly,

Original Signed By
Samuel McManus

S. McManus, Manager
Corporate Nuclear Safety &
Quality Assurance Audit

AEH:fdcM7

cc: Mr. J. Harris (2)
Mr. L. V. Thierwechter (2)

bcc: Messrs. N. J. Chiangi w/a references
P. W. Howe
J. D. E. Jeffries
W. B. Kincaid
R. L. Mayton, Jr.
G. McGovern
W. W. Morgan
S. D. Smith
M. F. Thompson, Jr.

It is requested that you review these comments to your response and provide CP&L the necessary additional information within thirty (30) days. Your attention to this matter is appreciated, and should you have any questions, please contact me.

Yours very truly,

Original Signed By
Samuel McManus

S. McManus, Manager
Corporate Nuclear Safety &
Quality Assurance Audit

AEH:fdcM7

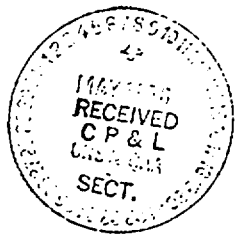
cc: Mr. J. Harris (2)
Mr. L. V. Thierwechter (2)

bcc: Messrs. N. J. Chiangi w/a references
P. W. Howe
J. D. E. Jeffries
W. B. Kincaid
R. L. Mayton, Jr.
C. McGovern
W. W. Morgan
S. D. Smith
M. F. Thompson, Jr.

SOUTHWEST FABRICATING & WELDING CO. INC.
A Subsidiary of IU International

7525 Sherman Street / P.O. Box 9449 / Houston, Texas 77011 / (713) 928 3451 - TWX 910 881 1600

May 3, 1978



Mr. S. McManus, Manager
Corporate Nuclear Safety & QA Audits
Carolina Power & Light Company
P. O. Box 1551
Raleigh, NC 27602

Reference: P. O. NY435035 - Harris Project Units 1, 2, 3 & 4

Subject: CP&L Audit of Southwest Fabricating & Welding Co., Inc.
March 14-16, 1978

Dear Mr. McManus:

In response to your letter dated March 28, 1978, directed to our Mr. J. E. Harris, we submit our comments to the findings that were reported by your auditors, Messrs. A. E. Hall and T. L. Kosmatin. Our response with corrective action and implementation are outlined below.

Item 1

Requirement:

10CFR50 Appendix B, Criterion II, Quality Assurance Program

Nonconformance:

Criterion II requires that the QA Program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. In reviewing Paragraph 2.2.3.1 of SF&W's QAM, which outlines the procedures for training, it was observed by the auditors that training and indoctrination requirement for engineering personnel and upper management QA/QC personnel are not presently covered by written procedures. This item was presented in Audit Report QAA/702-2 as Finding Item 1 and is being held open. SF&W still has not provided and implemented corrective action as of this audit.

Corrective Action

1. In accordance with our commitment to assure that Engineering and upper QA/QC management personnel receive training and indoctrination necessary to assure that suitable proficiency is achieved and maintained, we have prepared and distributed the following procedures:

   a) QC-107, dated 3/15/78, "Training and Indoctrination of Engineering Personnel."

   b) QC-108, dated 3/15/78, "Training and Indoctrination of Quality Assurance Personnel."

2. Paragraph 2.2.3.1 of the QA Manual will be revised to add QC-107 and QC-108 to the listing of procedures. This addition will be incorporated in Revision 10 of the QA Manual that is scheduled to be issued by July 1, 1978.

Implementation

1. QC-107

   The report, "Qualifications of Engineering Personnel," dated 3/24/78 from R. P. Weber, Chief Draftsman, to E. R. McAnally, Chief Engineer, evaluated and updated the competency of each person in the department. The previous evaluation of individual proficiency was distributed 5/19/77.

   The report summarizes the Engineering Department personnel who are classified "Qualified to Nuclear," to the satisfaction of the Chief Engineer in the following disciplines:

   Qualified to Detail Nuclear
   Qualified to Take Off Nuclear
   Qualified to Check Nuclear
   Qualified to be Squad Supervisor/Nuclear

2. QC-108

   Quality Assurance training and indoctrination meetings have been conducted by the Manager of QA and Assistant Manager of QA. The subjects presented and the list of attendees have been recorded and distributed:

March 20, 1978 - Shop Notes
March 22, 1978 - QA Program Requirements
March 27, 1978 - Documentation
April 6, 1978 - Dimensional Control of Fittings Manufactured by SF&W
April 11, 1978 - To Discuss Methods for Processing Bends Through the Shop in Accordance with Approved Procedures Shown on the Shop Drawings
April 13, 1978 - To Establish the Policy of Documenting Temporary Attachment Welds
April 18, 1978 - To Establish the Policies for Issuing Filler Metal Materials in the Bend Shop and Manufacturing Area
April 25, 1978 - To Clarify the Requirements for a Report of Nonconformance (RON) on Piping Released from the Shop and Sent to the Yard
April 25, 1978 - To Establish a Sequential Method of Performing the Necessary Operations to Stainless Steel Bends

Item 2

Requirement:

10CFR50 Appendix B, Criteria VI, Document Control and V, Instructions, Procedures, and Drawings

Nonconformance:

The auditors were verifying SF&W's response to General Item 1 of Audit Report QAA-702-2 and corrective action committed by SF&W's letter, dated 3-31-77, to CP&L. Their letter stated the Procedure QC-100, Revision 2, dated 6-7-76, "Nondestructive Examination Personnel," would be distributed during the week of June 6, 1977. The auditors determined that SF&W had placed this procedure in their "Procedures Manual." However, it was determined by the auditors that SF&W has no written document control procedure for the issuance and control of these procedures. In addition, SF&W does not have a document control record which shows the distribution of these procedures by date issued, to whom issued, and by whom distributed.

Corrective Action

1. A Procedure Control record has been initiated. This provides documentation for the distribution of procedures for the Procedure Manuals required by the QA Manual. The record includes the following:

   Location of Procedure Manual
   Procedure Number, Revision, and Date
   Initials of Person making Distribution, and Date

2. Paragraph 2.2.3.1.2 of the QA Manual establishes the locations of the seven volumes of the Procedure Manual that are currently maintained. The distribution record for all volumes shall be maintained in the office of the QA Technician who is assigned the responsibility for recording and distributing procedures.

Implementation

1. The record for procedure distribution was initiated on 4/27/78 to provide a document to verify issuance of each procedure and insertion into the Procedure Manuals.

2. A revision to the format of the Procedure Control form was made on 5/3/78. This revision was made to provide a format that will also provide a suitable record for planned changes in procedure distribution. These changes will be incorporated into Revision 10 of the QA Manual, when accepted by the Authorized Inspection Agency, to improve the convenience of procedure maintenance and usage by separating manufacturing procedures from administrative procedures.

Item 3

Requirement:

SF&W QAM Section 13, Audits, Paragraph 13.1.2.4
10CFR50 Appendix B, Criteria XVI, Corrective Action and XVII, Audits

Nonconformance:

a. Auditors reviewed SF&W internal audit report (12-6-77) performed by R. B. Bhavsar, where the reaudit of corrective action was performed by N. H. Moerke on 12-12-77. This was documented by initial and date beside each corrective action listed except one, Number 5d, which was not signed or dated as having been reaudited.

b. Auditors reviewed internal audit report (2-14-78) performed by R. B. Bhavsar. This audit reported five findings. No written corrective action could be presented to the auditors. This audit was followed by audit report (3-8-78) by R. B. Bhavsar which does not document an actual follow-up of the findings of audit dated 2-14-79. The report dated 3-8-78 does not cross-reference or close-out the finding of audit dated 2-14-78. SF&W had intended the later audit to close out the previous audit of 2-14-78 by not finding any problems in the same areas of those nonconformances. This intention of SF&W does not meet the requirements of 10CFR50 Appendix B, Criteria.

Corrective Action and Implementation

1. Item 3(a)

   Item Number 5d: 7018 electrode from the shop are stored in the storage room without any identification, which was reported corrected on 12/6/77, was reverified "as corrected," initialed and dated 3/14/78.

2. Item 3(b)

   The inter-office memorandum dated 2/14/78 (R. B. Bhavsar to N. Moerke) reporting QA discrepancies has been placed in a file "QA Surveillance Reports."

   In accordance with the QA Manual, Paragraph 13.1.3, the interval between audits shall not exceed six months. Further, as stated in Paragraph 13.1.2.4 and pointed out during the audit, "an Internal Audit Report (see Exhibit 13-1) shall be completed as the audit progresses." Therefore, as stated, the observations reported by inter-office memo dated 2/14/78 (Bhavsar to Moerke) was not intended to be interpreted as an audit to satisfy the QA Manual requirements.

   The recognized QA Audits during 1977 and 1978, as reported by required Internal Audit Reports, (Exhibit 13-1) were performed 3/4/77, 6/10/77 (partial), 7/18/77, 12/6/77, and 3/8/78.

   Further, implementation of the QA Program auditing practices has been completed. A new audit reporting form has been prepared and approved by management. Each "finding" will be listed on separate pages, together with corrective action and documentation of corrective action, with appropriate signatures and dates. Presently, with Revision 9 of the QA Manual, the Internal Audit Report form must be continued until the new format is accepted by the Authorized Inspection Agency and included in Revision 10 of the QA Manual. Therefore, until this action is completed, audits conducted in the immediate future will be summarized on two forms.

Item 4

Requirement:

10CFR50 Appendix B, Criterion II, Quality Assurance Program

Nonconformance:

Criterion II, states in part, "Management of organizations participating in the QA Program shall regularly review the status and adequacy of that

part of the QA Program which they are executing." The auditors determined, contrary to the requirements of Criterion II, the managers of various SF&W Departments whom execute that part of the QA Program for which they have responsibility have not formally documented participation in review of the QA Program prior its revisions being issued and implemented.

Corrective Action

When future revisions to the QA Manual are contemplated, written documentary evidence acknowledging the change will be solicited from each department head who is affected by the QA Manual change. Copies of the acknowledgment will be retained by the QA Department Secretary.

CONCERNS

1. Ebasco's Specification CAR-SH-M-30, Revision 3, "General Power Piping," in Part 2, Paragraph 21.1.c requires "marking pens, ink, and tape shall be certified by chemical analysis and approved by Purchaser for use on stainless steel." SF&W has decided to use different marking pens and tape for stainless steel than those for which they obtained approval from Ebasco to use. The auditors are concerned if SF&W has obtained Ebasco's approval for the new materials they plan to use, since no evidence of Ebasco's approval was presented to the auditors during this audit.

   Response

   Mr. J. Harris informally presented the manufacturer's certification to Ebasco for comment and acceptance on April 24, 1978. Formal submittal of the certifications for approval will be mailed during the week of May 8, 1978.

2. The auditors are concerned that SF&W does not follow-up the corrective actions listed on their "Report of Nonconformances" (RON's) for any significant conditions adverse to quality or perform any trend analysis of their RON's to determine significant conditions.

   Response

   Copies of each Report of Nonconformance (RON) issued due to discrepant product or documentation for a specific material manufacturer or supplier is placed in the vendor's QA record file.

   These data are reviewed when an additional RON is received to determine if the deviation is a "repeat" of a prior offense. If, in the

opinion of SF&W QA, this is a repetitive condition, the vendor is notified of the large number of rejects and an explanation of preventive measures is requested. Further, these data are reviewed prior to QA vendor audit to be certain that the audit plan includes input from performance history.

3. Ebasco's Specification CAR-SH-ME-12, Revision 0, "Quality Control Requirements for Suppliers of Equipment and Services," (860-72) in Paragraph 8.1 states, "For items and services purchased from subsuppliers, seller shall conduct necessary inspections and tests at points of receipt to verify conformance to applicable physical, chemical, or other technical requirements." The auditors are concerned that SF&W has not established a program for, verifying by outside laboratory anlysis, a check against their subsuppliers chemical and physical test reports. SF&W's management stated they have not established such a program because they interpret the above specification requirement to be met by performing a comparison between their subsupplier's chemical and physical test report and the appropriate ASME or ASTM material specification. The auditors agree that the Ebasco requirement as stated above is interpretable. The auditors are also concerned that this Ebasco specification requirement has been removed from CAR-SH-ME-12, Revision 1. The newer revision of the specification which is required by a later revision of Specification CAR-SH-M-30 has not been made a part of the contract in effect during this audit.

Response

The questions concerning interpretation of applicability of specifications was referred to R. Georgio of Ebasco by J. E. Harris's letter dated 3/9/78. However, only oral comments have been received to date. Also, no schedule for resolution has been established.

4. The auditors are concerned that there are several instances in SF&W material storage areas where carbon steel fittings were being stacked close to stainless steel pipe which was designated for "QA relate use," (ASME Code Material) by blue and pink markings on the material. In one storage area, a quantity of 12-inch carbon steel ells had fallen from their stack and were within one inch of touching the stainless steel pipe. The concern is that other ells could continue to fall from the stack and come in contact with the stainless steel pipe.

Response

Material handling supervision and manufacturing supervision personnel are cognizant of problems associated with storage to minimize

SOUTHWEST
FABRICATING
& WELDING CO. INC.
A Subsidiary of IU International

contamination. It is a continuing daily enforcement problem to enforce the discipline with the rapidly moving inventory of stainless materials in the shop. Therefore, QA surveillance audits are conducted to control this production problem, even though not recorded as an official internal audit.

5. The auditors are concerned that in some instances SF&W MRS's contained errors after completion and being drawing checked twice by two different drawing checkers. Several MRS's were reviewed by the auditors and the following two identified contained errors. MRS No. Q3301-SW, Sheet 42, Revision 2, referenced Procedure PT-1 where the procedure attachment for test acceptance criteria was not referenced as required. In addition, MRS No. Q3301-SW, Sheet 2, indicated an attachment was to be used with a reference procedure, but failed to correctly identify the attachment by its correct number.

   Response

   Engineering has been advised of the apparent checking deficiencies and has taken appropriate action to minimize recurrence.

Please advise us if you desire any additional information.

Very truly yours,

N. H. Moerke

N. H. Moerke
Vice President-Engineering (QA/QC)

NHM:dc

cc: G. H. Lockwood
B. J. Goodwin
R. P. Bornes
R. L. Pearson
W. P. Knight
K. D. Powell
J. E. Harris

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*
(As Required by the Provisions of the ASME Code Rules)

1. Fabricated by Southwest Fab. & Wld. Co. Inc., Houston, Tx. (Name and Address of Fabricator) Order No. S.O. 03304-SF

2. Fabricated for Ebasco Services Inc., New York, N.Y. 10006 (Name and Address) Order No. P.O. NY-435035

3. Owner Carolina Power & Light Co. 4. Location of Plant Raleigh, North Carolina

5. Piping System Identification SPENT FUEL SERIAL #16893 (Brief description of intended use, main coolant etc.)

(a) Drawing No. 03304-SF SHT. 5 Prepared by Southwest Fab. & Wld. Co. Inc.,

(b) National Board No. #766

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class 3

Edition 1971, Addenda Date Summer 1973, Case No. ----------

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report ELL-SWEPCO TUBE CORPORATION (A) S/N-M-8222F-15; Pipe SWEPCO(P1) S/N-M2595-8-22, (P2) S/N-M2595-8-10 & (P3) S/N-M-2595-8-22.
(Name of Part — Item number, Manufacturer's name, and identifying stamp)

7. Shop Hydrostatic Test N/A psi.

8. Description of piping inspected MK: F3-236-2-SF-8-1: SA-358 CL.I- TP-304 WLD
(include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)
12"(.375"W) 5'- 6" & 9'- 6" LENGTHS; SA-403 WP-304 WLD 12" 900 STD.
WT. LR. ELL.

Q A RECORDS
RECEIVED
APR 25 1979
SHNPP CONSTR. Q A UNIT

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY
EBASCO ENGINEERING REVIEW VERIFIED BY
9-27-78
EBASCO VQA REP.

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 9-26-78 Signed SF & W Co. Inc. (Fabricator) By (SR)

Certificate of Authorization Expires July 23, 1979 Certificate of Authorization No. N1459

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Texas and employed by H.S.B.I.&I.Co. Hartford, Conn. have inspected the piping described in this Data Report on 9-26 19 78 and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping in this Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 9-27 19 78 Commissions Nat'l Bd 7580
(Inspector) (National Board, State, Province and No.)

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

3-2 435035

FORM NPP-1 (back)

9. Description of Field Fabrication

10. Field Hydrostatic Test _____ psi.

We certify that the field fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE, Class _____, Edition _____, Addenda Date _____ Case No. _____

Date _____, 19____ Signed _____ By _____
(Fabricator) (Representative)

Our Certification of Authorization to use the _____ Symbol Expires _____ 19____

Certificate of Authorization No. _____

CERTIFICATE OF FIELD FABRICATION INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of _____

and employed by _____ of _____

have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as data items _____, not included in the certificate of shop inspection have been inspected by me and that to the best of my knowledge and belief the manufacturer has constructed this piping in accordance with the applicable section of the ASME CODE SECTION III.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ 19____

_____ Commissions _____
Inspector National Board, State, Province and No.

S.O. No: 22304-SF

Sheet No. 5

Southwest Fabricating & Welding Co., Inc.

LIQUID PENETRANT INSPECTION REPORT

Date 9-26-78

Page _____ of _____

Procedure No. PT/MT.1

CLIENT	MATERIAL DESCRIPTION	MATERIAL TYPE
C.P.&L. Co.	12" Pipe Spool	S.S.

PENETRANT SYSTEM	BRAND NAME	PENETRANT	BATCH NO	REMOVER	BATCH NO.	DEVELOPER	BATCH NO.	SURFACE CONDITION
Solvent Removable ☑ Water Washable ☐	Spot Check	SKL-S ☑ SKL-W ☐	Joint	SKC-S ☑ Water ☐	7E046	SKD-S ☑	18H020	As Welded

TEMPERATURE	PRECLEANER TYPE & BATCH NO	CLEANER DRYING TIME	DWELL TIME	PENETRANT REMOVAL METHOD:
80 °F	SKC-S 7E046	5 Minutes	10 Minutes	Solvent Wiped ☑ Water Spray ☐

REMOVER DRYING TIME	DEVELOPMENT TIME	POST CLEANER	EVALUATED BY:	ASNT LEV.
5 Minutes	10 Minutes	Solvent ☑ Water ☐	C. D. Lee	II

PIECE OR WELD NO.	ACCEPT	REJECT	LINEAR	ROUNDED	DESCRIPTION OF INDICATIONS
W-3	✓				NAD As Welded
W-4	✓				" "
W-7	✓				" "
W-8	✓				" Ground

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY ☑ EBASCO ENGINEERING REVIEW VERIFIED BY ☐

EBASCO VQA REP. 9-27-78

TEST REPORT

SWEPCO TUBE CORPORATION

Swepco

ONE CLIFTON BOULEVARD • CLIFTON, NEW JERSEY 07015

12" S/40 90° ELL

DATE: 7/7/78.

Southwest Fab & Welding P.O. Box 9449 Houston, Texas 77011	SHIP TO: Southwest Fab & Welding 200 No. 76th Street Houston, Texas 77011 T-304

(201) 778-3000
TWX NO. 710-989-7068
TELEX NO. 133321

SWEPCO NUMBER	DISTRIBUTOR P.O. NUMBER	CUSTOMER P.O. NUMBER
M-8222-F	3302-N-4	3302-N-4

PRODUCT DESCRIPTION: Swepco SP grade fittings, T-304 to ASME-SA-240, manfuactured per ASME-SA-403, WP-304W & ASME Sect. III Class 3, 1971 Edition including 1973 Summer Addenda, weld x-rayed 100% per Para UW-51, Sect. VIII, NPT-3 code stamped & inspected, annealed, water quenched to below 800 deg. F within 3 minutes.

BASE METAL HEAT NO.	HEAT TREATMENT	SIZE: 12" STD. 90°, L.R. ELLS
[redacted]	SOLUTION ANNEALED @ 1950/2000 °F	SWEPCO PC. NOS.
WELD WIRE HEAT NO. A. 435489 B.	FOR 26 MINUTES MINIMUM AND RAPID AIR COOLED ☐ WATER QUENCHED ☒	SH M8222-F - 1 THRU 16

CHEMICAL ANALYSIS

	C	Mn.	P	S	Si	Ni	Cr	Mo	Co	Cu	N	Cb & T
CHEMICAL REQUIREMENTS - PLATE	.08	2.00	.045	.030	1.00	8.00 - 10.50	18.00 - 20.00					
HEAT ANALYSIS	.06	1.75	.027	.005	.59	8.58	18.24	.31	.210		.091	
PRODUCT ANALYSIS - BASE METAL												
PRODUCT ANALYSIS - WELD DEPOSIT												
CHEMICAL REQUIREMENTS (Spec SFA Weld Wire)	.08	1.0 - 2.5	.03	.03	.25 - .60	9.0 - 11.0	19.5 - 22.0					
A. HEAT ANALYSIS - WELD WIRE	.068	1.67	.022	.006	.56	9.73	20.11	.32	.05	.10	.040	.02
B. HEAT ANALYSIS - WELD WIRE									Ti .01	.052		
PRODUCT ANALYSIS-UNDILUTED WIRE												

MECHANICAL TESTS

	HARDNESS	YIELD P.S.I.	TENSILE P.S.I.	% ELONG. IN 2"	FACE BEND	ROOT BEND	REV. BEND	FLAT
MECHANICAL TEST REQUIREMENTS	BHN-183 RB-88	30000	75000	40.0				
BASE METAL	BHN-166	59300	91200	77.0				
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY
EBASCO ENGINEERING REVIEW VERIFIED BY
7-27-78
EBASCO VQA REP.

SWEPCO QA 6

EXAMINATIONS

	RADIOGRAPHY	ULTRASONIC	LIQUID PEN.	CORROSION	IMPACT	HYDRO.	P.S.I.
APPLICABLE PROCEDURES	ASME-Sec. III PAR. UW-51	✓					
RESULTS	ACCEPTED						

REMARKS: THE FERRITE CONTENT OF THE DEPOSITED WELD METAL AS DETERMINED BY THE SCHAEFFLER DIAGRAM = 9.0%

This certification affirms that above CMTR is correct and accurate including all test results and operations in compliance with the material specification and customer requirements.

SWEPCO TUBE CORPORATION

A. Olsen

NOTARY PUBLIC OF NEW JERSEY
My Commission Expires March 28 1980

Subscribed and sworn to before me this 26TH day of JULY, 1978

Certification No. N-1418

1-11-79

TELEX NO. 133321 (201) 778-3000 TWX NO. (201) 471-5209

SWEPCO TUBE CORPORATION

ONE CLIFTON BOULEVARD • CLIFTON, NEW JERSEY 07015

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY EBASCO ENGINEERING
REVIEW VERIFIED BY
7-27-78
EBASCO VQA REP.

Swepco

FORM N-2 MANUFACTURERS DATA REPORT FOR NUCLEAR PART AND APPURTENANCES

1. (a) Manufactured by SWEPCO TUBE CORPORATION, 1 CLIFTON BLVD., CLIFTON, N.J.
   (b) Manufactured for Southwest Fab & Welding Houston, TX
   (Name and address of Manufacturer of completed nuclear component)

2. Identification-Manufacturer's Serial No. of Part M-8222-F Nat'l Bd. No. N/A
   (a) Constructed According to Drawing No. ------- Drawing Prepared by ---------
   (b) Description of Part Inspected *16 pcs 12 3/4" O.D. x 3/8"W x 90 deg. LR ELLS (welde
   (c) Applicable ASME Code:Section III, Edition 1971, Addenda date 1973 Summer Case No. - Class 3

3. Remarks: SA-403 Section III Class 3 manufacture (R/M SA-240 T-304 Ht. No. 236662), welds x-rayed 100% per Para UW51, annealed and pickled. S.W.F. No. 3302-N-4.
   *Swepco pc. nos. SNM-8222-F Pc. 1 thru SNM-8222-F Pc. 16.

4. Shell: Material T-304 SA240 T.S. 75000 (Kind & Spec. No) (Min. of Range Specified) Nominal Thickness 3/8 in. Corrosion Allowance 0 in. Dia. 1 Ft. 3/4 in. Length 90 deg LR ELL ft. — in.

5. Seams: Long dbl welded H.T.[1] yes R.T. complete Efficiency 100% %
   Girth ——— H.T.[1] ——— R.T. ——— No. of Courses ———

We certify that the statements made in this report are correct and this vessel part or appurtenance as defined in the Code conforms to the rules of construction of the ASME Code Section III.
(The applicable Design Specification and Stress Report are not the responsibility of the part manufacturer. An appurtenance manufacturer is responsible for furnishing a separate Design Specification and Stress Report if the appurtenance is not included in the vessel Design Specification and Stress Report.)

Date 7/21 19 78 Signed SWEPCO TUBE CORP. (Manufacturer) By John Hendry-Eng. Coord.

Certificate of Authorization No. N-1418 Certificate of Authorization Expires 6/11/79.

CERTIFICATION OF DESIGN FOR APPURTENANCE (when applicable)

Design information on file at
Stress analysis report on file at N/A
Design specifications certified by Prof. Eng. State Reg. No.
Stress analysis report certified by Prof. Eng. State Reg. No.

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of New Jersey and employed by COMMERCIAL UNION INSURANCE COMPANY of BOSTON, MA., have inspected the part of a pressure vessel described in this Manufacturer's Partial Data Report on 7/26 1978, and state that to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Code Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 7/26 19 78

Inspector's Signature

Commissions N.Y. 1613 N.J. 646 OHIO APP'D. PA. COMM. W. C. 2697
National Board, State, Province and No.

[1] If Postweld Heat-Treated.

SHEPCO TUBE CORPORATION

RADIOGRAPHIC INSPECTION REPORT

Pc. No. SN M8222F-Pc 13
" " " " 14
" " " " 15
" " " " 16

CUSTOMER	SPECIFICATION	JOB NO.
Southwest Fill & Welding	ASME Sec VIII Div 1	M8222-F

PIPE OR FITTING SIZE	THICKNESS	LENGTH	MATERIAL TYPE
12 3/4 OD	.385	90° LR ELLS	T-304

FILM SIZE AND TYPE	NO. FILMS	FILM TECHNIQUE	SUPERIMPOSED VIEWS
3½ X 17 Gevaert D7	20 (5 EA. Pc.)	☒ SINGLE ☐ DOUBLE	☐ YES ☐ NO

SOURCE OF RADIATION	KV.	MA.	FOCAL DISTANCE	EXPOSURE TIME
☒ X-RAY ☐ GAMMA RAY	155	10	36"	1½ MIN.

TYPE EXPOSURE	PENETRAMETER THICKNESS AND DESCRIPTION
☒ SINGLE WALL ☐ DOUBLE WALL	ASTM #10 .010

FOCAL SPOT SIZE	LEAD SCREENS	DISTANCE OF FILM TO OBJECT
5 X 5 MM	.010 BACK .005 FRONT	0

PERCENTAGE OF X-RAY REQUIRED	FILM INTERPRETATION BY:	DATE
100 %	SNT-TC-1A Wm. Contreras Level III	7/20/78

SEAM OR PC. NO.	FILM LOCATION NO.	ACCEPT	REJECT	SLAG INCLUSION	POROSITY	CRACK	LACK OF PENETRATION	LACK OF FUSION	SURFACE INDICATIONS	UNDERCUT	SHRINKAGE	BRIEFLY DESCRIBE APPARENT DEFECT. IF NO DEFECTS, STATE "NO APPARENT DEFECTS".
13	1-2	✓										No apparent defects
"	2-3	✓									✓	& shrinkage
"	4-5	✓									✓	" "
"	5-6	✓									✓	" "
"	6-7	✓										No apparent defects
14	1-2	✓									✓	& shrinkage
✓	2-3	✓									✓	" "
✓	4-5	✓									✓	" "
✓	5-6	✓						✓			✓	" "
✓	6-7	✓									✓	" "
15	1-2	✓										No apparent defects
✓	2-3	✓									✓	& shrinkage
✓	4-5	✓									✓	" "
✓	5-6	✓										No apparent defects
✓	6-7	✓										[illegible]
16	1-2	✓										No apparent defects
✓	2-3	✓									✓	& shrinkage
✓	4-5	✓									✓	" "
✓	5-6	✓									✓	" "
✓	6-7	✓									✓	" "

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY [illegible]
EBASCO ENGINEERING REVIEW VERIFIED BY [illegible] 9-27-78
EBASCO VQA REP.

S.W Fabricating & Welding

S.F.&W.CO. Q A 6

ACCEPTED BY AUTHORIZED INSPECTOR [illegible] 7/21/78

FORM 132 CP

TEST REPORT

SWEPCO TUBE CORPORATION

Swepco

(18)

ONE CLIFTON BOULEVARD CLIFTON NEW JERSEY 07015

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY [CJ]

EBASCO ENGINEERING
REVIEW VERIFIED BY P
1-20-78
EBASCO YOA REP.

DATE: 1/30/78

Capitol Pipe & Steel Prod.
P.O. Box 36431
Houston, Texas
77036

Capitol Pipe & Steel Prod.
San Antonio & Orange Sts.
Pearland, Texas
77581

(201) 778-2000
TWX NO 710-989-7000
TELEX NO. 133321

SWEPCO ORDER NO. 111-2595-8 | DISTRIBUTOR P.O. NUMBER D-87716-30N | CUSTOMER P.O. NUMBER 3302-N-5

PIPE DESCRIPTION: Swepco FF grade welded pipe, T-304 to ASME-SA-240, manufactured per ASME-SA-358, Class 1 & ASME Sect. III Class 3 1971 Edition including 1973 Summer Addenda, weld x-rayed 100% per para PW-51, annealed & pickled.

Pipe: 12" S/40S T-304

PLATE METAL HEAT NO. F80819

WELD WIRE HEAT NO. 435489

HEAT TREATMENT
SOLUTION ANNEALED @ 1950°-2000 °F
FOR 32 MINUTES MINIMUM AND
RAPID AIR COOLED ☐
WATER QUENCHED ☒

SIZE 12 3/4" O.D. x 3/8" W. x 20' R/L

SWEPCO PC. NOS.
SN-M2595-8-16
SN-M2595-8-17
SN-M2595-8-22 ✓
SN-M2595-8-24
SN-M2595-8-25
SN-M2595-8-26
SN-M2595-8-27

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Ni	Cr	Mo	Co	Cu	N	Cb & Ta
CHEMICAL REQUIREMENTS - PLATE	.08	2.00	.045	.030	1.00	8.00 - 10.50	18.00 - 20.00					
PLATE ANALYSIS	.048	1.35	.022	.014	.46	8.24	18.24		.16		.070	
PRODUCT ANALYSIS - BASE METAL	.033	1.26	.0239	.0132	.46	8.00	18.0					
PRODUCT ANALYSIS - WELD DEPOSIT	.033	1.30	.026	.0139	.47	8.40	18.45					
CHEMICAL REQUIREMENTS Spec. SF-A5.9 Weld Wire	.08	1.0 - 2.5	.03	.03	.25 - 1.00	9.0 - 11.0	19.5 - 22.0					
HEAT ANALYSIS - WELD WIRE	.068	1.67	.022	.006	.56	9.73	20.11	.32	.05	.10	.040	.02
HEAT ANALYSIS - WELD WIRE									Ti .01	V .022		
PRODUCT ANALYSIS-UNDILUTED WIRE												

MECHANICAL TESTS

	HARDNESS	YIELD P.S.I.	TENSILE P.S.I.	ELONG. IN 2"	FACE BEND	ROOT BEND	REV. BEND	FLAT
MECHANICAL TEST REQUIREMENTS	BHN-183 RB-85	30000	75000	40.0				
PLATE METAL	HB 160	44500	89500	55.0				
PIPE WELD-TRANSVERSE		43500	87000	58.0	OK	OK		
PIPE WELD-TRANSVERSE		45400	87300	52.0	OK	OK		
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								

Trans 8-4-78

EXAMINATIONS

	RADIOGRAPHY	ULTRASONIC	LIQUID PEN.	CORROSION	IMPACT	HYDRO.	P.S.I.
APPLICABLE PROCEDURES	NB-WE-SEC III PAR. PW-51					ASME SA-358	1325
RESULTS	Satisfactory						OK

REMARKS: Pipe was solution annealed at a temperature above 1900 deg. F and water quenched to below 800 deg. F in less than 3 minutes.

% FERRITE OF THE DEPOSITED WELD METAL AS DETERMINED BY THE SCHAEFFLER DIAGRAM = 9.0%

This certification attests that above CMTR is correct and accurate including all test results and operations in compliance with the material specification and customer requirements.

SWEPCO TUBE CORPORATION

Sworn to and subscribed before me this 30th day of Aug. 1978 NOTARY PUBLIC OF NEW JERSEY N-1418
My Commission Expires March 28 1983

TELEX NO 133321 (201) 778-3000 TWX NO (201) 471-5209

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY EBASCO ENGINEERING
REVIEW VERIFIED BY
9-27-78
EBASCO VQA REP.

SWEPCO TUBE CORPORATION

Swepco

ONE CLIFTON BOULEVARD • CLIFTON, NEW JERSEY 07015

FORM N-2 MANUFACTURERS DATA REPORT FOR NUCLEAR PART AND APPURTENANCES

1. (a) Manufactured by SWEPCO TUBE CORPORATION, 1 CLIFTON BLVD., CLIFTON, N.J.
   (b) Manufactured for Southwest Fab & Welding Houston, TX (Capitol Pipe Houston)
   (Name and address of Manufacturer of completed nuclear component)

2. Identification-Manufacturer's Serial No. of Part M-2595-8 Nat'l Bd. No. N/A
   (a) Constructed According to Drawing No. ------ Drawing Prepared by -----
   (b) Description of Part Inspected 7 pcs. 12 3/4" O.D. x 3/8"W x 20' R/L (welded pipe)
   (c) Applicable ASME Code: Section III, Edition 1971, Addenda date Summer 1973 Case No. - Class 3

3. Remarks: SA-358, Class 1, Section III, Class 3, manufacture (R/M SA240, T-304, Ht. No. F80817), welds x-rayed 100% per Para PW-51, annealed and pickled, hydro tested @ 1324 P.S.I. minimum. S.W.F. No. 33-2-N-5. Swepco No. SN M-2595-8. Pc. No. 16,17,22,24,25,26,27.

4. Shell: Material T-304 SA240 T.S. 75000 (Kind & Spec. No) Nominal Thickness 3/8 in. Corrosion 0 in. Allowance Dia. 1 Ft 3/4 in. Length 20' R/L ft in. (Min. of Range Specified)

5. Seams: Long Dbl welded H.T.[1] Yes R.T. Complete Efficiency 100 %
   Girth ____ H.T.[1] ____ R.T. ____ No. of Courses ____

We certify that the statements made in this report are correct and this vessel part or appurtenance as defined in the Code conforms to the rules of construction of the ASME Code Section III.
(The applicable Design Specification and Stress Report are not the responsibility of the part manufacturer. An appurtenance manufacturer is responsible for furnishing a separate Design Specification and Stress Report if the appurtenance is not included in the vessel Design Specification and Stress Report.)

Date 7/26 19 78 Signed SWEPCO TUBE CORP. (Manufacturer) By John Hendry
John Hendry-Eng./Coord.

Certificate of Authorization No. N-1418 Certificate of Authorization Expires 6/11/79.

CERTIFICATION OF DESIGN FOR APPURTENANCE (when applicable)

Design information on file at N/A
Stress analysis report on file at
Design specifications certified by Prof. Eng. State Reg. No.
Stress analysis report certified by Prof. Eng. State Reg. No.

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of New Jersey and employed by COMMERCIAL UNION INSURANCE COMPANY of BOSTON, MA., have inspected the part of a pressure vessel described in this Manufacturer's Partial Data Report on 8/3/78 19 , and state that to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Code Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 8/3/78 19 ____

N. Y. 1213 N.J. 646 OHIO APP'D. PA. COMM. W. C. 2697

Inspector's Signature Commissions National Board, State, Province and No.

[1] If Postweld Heat-Treated

TEST REPORT (9)

SWEPCO TUBE CORPORATION

78

Swepco

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY [ ]
EBASCO ENGINEERING REVIEW VERIFIED BY [ ]
EBASCO VQA REP.

DATE: 6/30/78

Capitol Pipe & Steel Prod.
P.O. Box 36431
Houston, Texas
77036

Capitol Pipe & Steel Prod.
San Antonio & Orange Sts.
Pearland, Texas
77581

(201) 778-3000
TWX NO 710-989-7066
TELEX NO. 133321

SWEPCO NUMBER	DISTRIBUTOR P.O. NUMBER	CUSTOMER P.O. NUMBER
M1-2595-8	D-87716-30N	3302-N-5

PRODUCT DESCRIPTION: Swepco FF grade welded pipe, T-304 to ASME-SA-240, manufactured per ASME-SA-358, Class 1 & ASME Sect. III Class 3 1971 Edition including 1973 Summer Addenda, weld x-rayed 100% per para PW-51, annealed & pickled.

12" T-304 Pipe

BASE METAL HEAT NO.	HEAT TREATMENT	SIZE
E80827	SOLUTION ANNEALED @ 1950°/2000° °F	12 3/4" O.D. x 3/8" W. x 20' R/L
WELD WIRE HEAT NO.	FOR 35 MINUTES MINIMUM AND	SWEPCO PC. NOS.
435489	RAPID AIR COOLED [ ]	SN-M2595-8-1 THRU 12 ✓
	WATER QUENCHED [X]	SN-M2595-8-14

CHEMICAL ANALYSIS

	C	Mn.	P	S	Si	Ni	Cr	Mo	Co	Cu	N	Cb & Ta
CHEMICAL REQUIREMENTS - PLATE	.08	2.00	.045	.030	1.00	8.00 - 10.50	18.00 - 20.00					
HEAT ANALYSIS	.037	1.25	.026	.020	.49	8.20	18.28		.19		.098	
PRODUCT ANALYSIS - BASE METAL	.031	1.21	.026	.0177	.47	8.12	18.0					
PRODUCT ANALYSIS - WELD DEPOSIT	.021	1.15	.027	.0177	.46	8.15	18.07					
CHEMICAL REQUIREMENTS Spec SFA 5.9 Weld Wire	.08	1.0 - 2.5	.03	.03	.25 - .60	9.0 - 11.0	19.5 - 22.0					
HEAT ANALYSIS - WELD WIRE	.068	1.67	.022	.006	.56	9.73	20.11	.32	.05	.10	.040	.02
HEAT ANALYSIS - WELD WIRE									Ti .01	.022 ✓		
PRODUCT ANALYSIS-UNDILUTED WIRE												

MECHANICAL TESTS

	HARDNESS	YIELD P.S.I.	TENSILE P.S.I.	% ELONG. IN 2"	FACE BEND	ROOT BEND	REV. BEND	FLAT
MECHANICAL TEST REQUIREMENTS	BHN-183 RB-87	30000	75000	40.0				
BASE METAL	HB 156	41600 ✓	84600	58.0 ✓				
PIPE WELD-TRANSVERSE		48400	88000	61.0	OK	OK		
PIPE WELD-TRANSVERSE		46100	87200	60.0	OK	OK		
PIPE WELD-TRANSVERSE	SOUTHWEST FABRICATING & WELDING							
PIPE WELD-TRANSVERSE	PO #3302N-5 HN 21274							
PIPE WELD-TRANSVERSE	H93704-HN		Q.A. Reviewed					
PIPE WELD-TRANSVERSE	ITEM 1		EBASCO 5/8/78					
PIPE WELD-TRANSVERSE								

S.F.&W.CO. Q A 6

EXAMINATIONS

TELEX NO. 133321 (201) 778-3000 TWX NO. (201) ...

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY
EBASCO ENGINEERING
REVIEW VERIFIED BY
[signature] 9-27-78
EBASCO VQA REP.

SWEPCO TUBE CORPORATION

Swepco

ONE CLIFTON BOULEVARD • CLIFTON, N.J. 07015

FORM N-2 MANUFACTURERS DATA REPORT FOR NUCLEAR PART AND APPURTENANCES

1. (a) Manufactured by SWEPCO TUBE CORPORATION, 1 CLIFTON BLVD., CLIFTON, N.J.
   (b) Manufactured for Southwest Fab & Welding Houston, TX (Capitol Pipe Houston)
   (Name and address of Manufacturer of completed nuclear component)

2. Identification-Manufacturer's Serial No. of Part M-2595-8 Nat'l Bd. No. N/A
   (a) Constructed According to Drawing No. ----- Drawing Prepared by -----
   (b) Description of Part Inspected 7 pcs. 12 3/4" O.D. x 3/8"W x 20' R/L (welded pipe)
   (c) Applicable ASME Code:Section III, Edition 1971, Addenda date Summer 1973 Case No. - Class 3

3. Remarks: SA-358, Class 1, Section III, Class 3, manufacture (R/M SA-240 T-304, Ht. No. F80827), welds x-rayed 100% per Para PW-51, annealed and pickled, hydro tested @ 1324 P.S.I. minimum. S.W.F. No. 3302-N-5 Swepco No. SN M-2595-8, Pc. 1-2-3-5-7-10-11.

4. Shell: Material T-304 SA240 (Kind & Spec. No) T.S. 75000 (Min. of Range Specified) Nominal Thickness 3/8 in. Corrosion Allowance 0 in. Dia. 1 Ft. 3/4 in. Length 20' R/L in.

5. Seams: Long Dbl welded H.T.[1] Yes R.T. Complete Efficiency 100% %
   Girth ____ H.T.[1] ____ R.T. ____ No. of Courses ____

We certify that the statements made in this report are correct and this vessel part or appurtenance as defined in the Code conforms to the rules of construction of the ASME Code Section III. An appurtenance manufacturer is responsible for furnishing a separate Design Specification and Stress Report if the appurtenance is not included in the vessel Design Specification and Stress Report.) (The applicable Design Specification and Stress Report are not the responsibility of the part manufacturer.

Date 7/26 1978. Signed SWEPCO TUBE CORP. (Manufacturer) By [signature] John Hendry Eng. Coord.

Certificate of Authorization No. N-1418 Certificate of Authorization Expires 6/11/79

CERTIFICATION OF DESIGN FOR APPURTENANCE (when applicable)

Design information on file at N/A

Stress analysis report on file at SWF

Design specifications certified by PO #3302N-5 Prof. Eng. State ____ Reg. No. ____

Stress analysis report certified by HN 2127A H03704-HN ITEM 1 Prof. Eng. State ____ Reg. No. ____

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of New Jersey and employed by COMMERCIAL UNION INSURANCE COMPANY of BOSTON, MA., have inspected the part of a pressure vessel described in this Manufacturer's Partial Data Report on 7/26/78 19 , and state that to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Code Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 7/28 1978

N.Y. 1513 N.J. 646 OHIO APP'D. PA. COMM. W. C. 2597

[signature] Inspector's Signature Commissions National Board, State, Province and No.

[1] If Postweld Heat-Treated.

77

SOUTHWEST FABRICATING & WELDING CO. INC. 1103

HOUSTON, TEXAS 12-12-77

Test XXXXX NO 01528

CUSTOMERS' ORDER NO

AN-TECH LAB. REPORT NO. 9213

DETAILED ANALYSIS REPORT

Corrected copy. Added wire size. 1-27-78

DESCRIPTION	PHYSICALS OF MATERIALS FROM WHICH MADE: HEAT TREATMENT	YIELD POINT PER SQUARE INCH	TENSILE STRENGTH PER SQUARE INCH	PERCENT ELONGATION IN 2"	PERCENT REDUCTION IN AREA	CHEMICAL ANALYSIS: C	MN	P	S	SI	CR	NI	MO	Cu	HEAT OR LOT NO.	SPECIFICATION OF MATERIAL FROM WHICH MADE
1/8"			Reported			.072	1.96	.023	.004	.27	21.09	9.65	.10	.11	91098	
1/32" Combustion Engr. T-308						Va	Ti	cb+ Ta	Co							
Stainless Steel Weld						.01	.07	.02	.06							
Wire. Specification:																
SFA-5.9 Class ER-308								Check Analysis								
						.071	2.39	.014	.006	.46	21.97	9.93	.02	.22	Chemical Analysis	
						Va	Ti	cb+ Ta	Co						For Information	
						.06	.08	.041	.09						Purposes Only.	
						Ferrite 8-9% calculated from the Check Analysis										
						using Schaeffler Diagram.										
						FN-11 using ASME Section III Div. 1 Fig. NB-2433.1										
						Ferrite-Severn Guage more than 7.5% less than 10%										
						FN more than 5 less than 8.										

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY EBASCO ENGINEERING

REVIEW VERIFIED BY [signature] 1-27-78

EBASCO VQA REP.

S.F.A.W.CO Q A 6

I HEREBY CERTIFY THIS REPORT TO BE TRUE AND CORRECT ACCORDING TO RECORDS IN THE POSSESSION OF THIS CORPORATION

Lane F. Patterson

POWER SYSTEMS

Combustion Engineering, Inc.
C-E Wire
4224 Shackleford Road
Norcross, Georgia 30093

MANUFACTURERS OF TECHNICALLY CONTROLLED WIRE
STAINLESS STEEL, NICKEL, MONEL, INCONEL, INCONEL X
LOW ALLOY STEELS, WELDING ALLOYS, LOW, MEDIUM, HIGH

CUSTOMER'S ORDER NO.	SHOP ORDER NO.	DATE SHIPPED	SPECIFICATION
77-2810	2833	12-2-77	1/8" (.125") .094" Dia. Type: 308 S.S. Weld Wire Spec. SFA 5.9

SHIPPED TO: Southwest Fabricating & Welding
7525 Sherman
Houston, Texas 77011

MARKED:
ITEM: 5 Coils(1 skid)
CONSISTING OF 311
Coils 1 thru 5

GENTLEMEN: WE HEREBY CERTIFY THAT MATERIAL REFERRED TO ABOVE CONFORMS TO THE PHYSICAL AND CHEMICAL TESTS AS FOLLOWS AND IS IN ACCORDANCE WITH SPECIFICATIONS:-

HEAT	C.	Mn.	Si.	S.	P.	Cr.	Ni.	Cu.	Mo.	N. XXXX	Va. XXX	Ti.	Cb + Ta.	Mo.	Co.
91998	.072	1.96	.27	.004	.023	21.09	9.65	.11		.045	.01	.07	.02	.10	.06
Ferrite	10FN														

ITEM	TENSILE STRENGTH	YIELD STRENGTH	ELON.	GRAIN SIZE	ROCKWELL	SHEAR
	Welding Temper					

YOU REQUESTED THIS IMPORTANT INFORMATION.

S.F.&W.CO. QA 6

Very truly yours,
COMBUSTION ENGINEERING, INC.

NOTARY

AUTHORIZED OFFICIAL

Notary Public, County, State at Large
My Commission Expires May 14, 1978

PLEASE GIVE TO YOUR PURCHASING AGENT.

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY
EBASCO ENGINEERING
REVIEW VERIFIED BY
EBASCO VQA REP.
12-27-77

78

110

SOUTHWEST FABRICATING & WELDING CO. INC.

AN-TECH LAB. REPORT NO. 78-1377

DETAILED ANALYSIS REPORT

HOUSTON, TEXAS 3-28-78

Test Order No 01580

Customers' Order No

DESCRIPTION	PHYSICALS OF MATERIALS FROM WHICH MADE					CHEMICAL ANALYSIS									HEAT OR LOT NO	SPECIFICATION OF MATERIAL FROM WHICH MADE
	HEAT TREATMENT	YIELD POINT PER SQUARE INCH	TENSILE STRENGTH PER SQUARE INCH	PERCENT ELONGATION IN 2"	PERCENT REDUCTION IN AREA	C	MN	P	S	SI	CR	NI	MO	Cu		
3/32", 1/8", 5/64" Combustion			Reported			.072	1.96	.023	.004	.27	21.09	9.65	.10	.11	91998	
Engr. T-308 Stainless						Va	Ti	cb+ Ta	Co	N						
Steel Weld Wire.						.01	.07	.02	.06	.045						
Specification: SFA-5.9																
Class ER-308								Weld Deposit								
						.058	2.45	.025	.013	.50	20.23	10.13	.12	.09	Chemical Analysis	
30% ST-100 Flux HT. #J-27						Va	Ti	cb+ Ta	Co	N					For Information	
70% 860 Flux HT #L-37						.05	<.01	.005	<.01	.018					Purposes Only.	
						Ferrite 8% Calculated from a										
						Chemical Analysis of Weld Deposit										
						Using Schaeffler Diagram										
						FN-9 Using ASME Section III Div. I Fig. NB-2433.1										
						Ferrite - Severn Gauge more than 7.5% Less Than 10%										
						FN More Than 8 Less Than 10										
Welded Per 08.08.005																

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY

EBASCO ENGINEERING REVIEW VERIFIED BY

EBASCO VQA REP 3-27-78

I HEREBY CERTIFY THIS REPORT TO BE TRUE AND CORRECT ACCORDING TO RECORDS IN THE POSSESSION OF THIS CORPORATION

David E. Hartsman

QA

1 5 2 2 2 1 5 4 0

POWER SYSTEMS

Combustion Engineering, Inc.
C-E Wire
1224 Shackleford Road
Norcross, Georgia 30093

MANUFACTURERS OF TECHNICALLY CONTROLLED WIRE
STAINLESS STEEL, NICKEL, MONEL, INCONEL, INCONEL X
LOW ALLOY STEELS, WELDING ALLOYS, LOW, MEDIUM, HIGH

REVIEWED FOR CORRECTNESS AND COMPLETENESS BY [✓]
EBASCO ENGINEERING
REVIEW VERIFIED BY [ ]
[signature] 5-27-78

CUSTOMER'S ORDER NO.	SHOP ORDER NO.	DATE SHIPPED	SPECIFICATION
77-2810	2833	12-9-77	1/8" (.125") & 5/64" (.078) .094" Dia. Type: 308 S.S. Weld Wire Spec. SFA 5.9

MARKED:

ITEM CONSISTING OF 3,065#

SHIPPED TO

Southwest Fabricating & Welding
7525 Sherman
Houston, Texas 77011

50 Coils shipped (2 skids)
Coil# 6 through 55

GENTLEMEN: WE HEREBY CERTIFY THAT MATERIAL REFERRED TO ABOVE CONFORMS TO THE PHYSICAL AND CHEMICAL TESTS AS FOLLOWS AND IS IN ACCORDANCE WITH SPECIFICATIONS:-

HEAT	C.	Mn.	Si.	S.	P.	Cr.	Ni.	Cu.	Mg.	N.	Va.	Ti.	Cb. + Ta.	Mo.	Co.
9199b	.072	1.96	.27	.004	.023	21.09	9.65	.11		.045	.01	.07	.02	.10	.06
Ferrite	10FN														

ITEM	TENSILE STRENGTH	YIELD STRENGTH	ELON.	GRAIN SIZE	ROCKWELL	SHEAR
	Welding Temper					

S.F.& W. CO. QA 6

YOU REQUESTED THIS IMPORTANT INFORMATION.

Very truly yours,
COMBUSTION ENGINEERING, INC.

Sue Kelley
NOTARY

Lucy Cox
AUTHORIZED OFFICIAL

PLEASE GIVE TO YOUR PURCHASING AGENT.

Notary Public, Georgia, State at Large
My Commission Expires May 14, 1978

Enclosure 11 to Serial: HNP-99-069

Generic Code Data Report for Completion of Code Related Activities in the Spent Fuel Pool Activation Project

(2 Pages)

OWNER'S REPORT
FOR
CONSTRUCTION ACTIVITIES ASSOCIATED WITH COMPLETION OF THE HARRIS SPENT POOL COOLING FACILITITES.

1. Owner / Constructor: Carolina Power & Light Co.

   PO Box 1551, Raleigh, NC 27602 - 1551

2. Plant: Shearon Harris Nuclear Power Plant

   PO Box 165, New Hill, NC 27562 - 0165

3. Work performed by: _____
   Name

   _____
   Address

4. Identification of System _____

5. Applicable Code of Construction _____ 19__ Edition, _____Addenda, _____ Code Case

6. Identification of Components Constructed

Name of Component	Name of Manufacturer	Manufacturer Serial No.	National Board No.	Other Identification	Year Built	ASME Code Stamped? (Yes or No)

7. Description of Work _____

   WR/JO No. _____

8. Tests Conducted Hydrostatic __ Pneumatic __ Nominal Operating Pressure __

   Other __ Pressure __ psi Test temperature _____ °F

9. Remarks _____

_____

_____

Certificate of Inspection

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of _____, and employed by _____ of _____ have inspected the components described in this Owner's Report during the period _____ to _____, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken measures described in this Owner's Report in accordance with design requirements of the ASME Code, Section III, and Quality Assurance requirements of the Owner's 10CFR50 Appendix B Quality Assurance Program Manual as augmented by the "Supplemental QA Requirements" section of ESR 95-00425

_____ Commissions _____

Inspector's Signature National Board, State, Provide and Endorsements

Date _____ 19 _____

Notes: 1) Attach supplemental sheets and sketches as required
2) Applicable manufacturer's Data Reports to be attached.

Enclosure 12 to Serial: HNP-99-069

Representative WDR for Construction of the Units 2 & 3 Spent Fuel Pool Cooling System

(1 Page)

CP&L
QA-28

WELD DATA REPORT
(PROCESS CONTROL CHECKLIST)
(PROCEDURE QQC-19)

REV. 2 5/24/78

PAGE 2 OF 10

TURNOVER NO. 122

WELD JOINT RECORD I.D. F3-236-2-SF-01-FW-5-

SYSTEM	CAT.	ISO. NO./ENG. DWG. NO.	WELD I.D.	DESIGN LINE NO.
SF	3	2-SF-1/56-411 R2	2-SF-1-FW-5	3SF12-174SA

BASE METAL SPEC. & GRADE: SA 312 TP 304 TO SA 312	JOINT TYPE - (BU), BR, F, OB, SKT, OTHER	PIPE/COMP SIZE 12"
PC NO. 2-SF-1-5 TO PC NO. 2-SF-1-6	WELDING PROCEDURE & REV. NO. P-8 & P-B-4 (Rev. 1)	MATERIAL THICKNESS .37
HT NO. E80817 TO HT NO. E80817		
FILL METAL TYPE: ER 308L	PWHT PROCEDURE & REV NO.: N/A	ITEM CARD NO. H

WELDING ENG. VERIFICATION	DATE	ANI REVIEW FOR HOLD POINTS	DATE	RELEASED FOR WELDING QA	
Charles Griffin	12-27-78	Jack M. Davis	12/27/78	Vicken Soghoian	12

PART II - ERECTION TRAVELER PROCESS CHECK POINTS

A - ACCEPTED
R - REJECTED
H - ✓ IN H COLUMN MEANS HOLD FOR QA OR ANI AS APPLICABLE
INSERT N/A WHERE AN OPERATION DOES NOT APPLY
USE BLANK LINES FOR ADDITIONAL CHECKS OR REINSPECTIONS

WELDER(S) SYMBOL

TACK: A-1/15
ROOT: A-1/15
INTERMEDIATE: A-1/15
FINAL: A-1/15

	ITEMS	QA INSPECTOR H	A	R	DATE	INSP.	ANI H	A	R	DATE
1	VERIFY SPOOLS BEING JOINED	✓	✓		12/27	BG	NA			
2	PRE FIT-UP INSPECTION	✓	✓		12/27	BG	NA			
3	FIT-UP INSPECTION	✓	✓		12/28	BG	✓	✓		12/28
4	CHECK PURGE GAS	✓	✓		12/28	BG	✓	✓		12/28
5	CHECK PREHEAT TEMPERATURE	✓	✓		12/28	BG	NA			
6	ROOT PASS NDE UT-RT-MT-PT	NA					NA			
7	CHECK INTERPASS TEMPERATURE	NA					NA			
8	INTERMEDIATE NDE UT-RT-MT-PT	NA					NA			
9	VISUALLY INSPECT FINAL WELD	✓	✓		12/29	(illegible)	NA			
	ID 3 (UT) NDEP 601 REV 0	NA					NA			
10	RECORD FERRITE - 2 LOCATIONS	NA					NA			
11	INSPECT FOR JOINT IDENTIFICATION	✓	✓		12/29	(illegible)	NA			
12	CHECK FINAL CLEANLINESS	✓	✓		12/29	(illegible)	NA			
13	FINAL NDE RT (MT) (PT) UT	✓	✓		12/29	(illegible)	NA			
	NDEP 701 REV 8 BG.									
14	RELEASED FOR PWHT	NA					NA			
15	PWHT NDE RT-MT-PT-UT-VT	NA					NA			
	FOR INFORMATION ONLY									

BACKING TYPE (CI) BR	BASE FILL METAL SPEC SFA 5.4	SIZE 3/32	HT NO. 760427
METAL SPEC. SFA 5.9		1/8	782784
HEAT NO. E2156 T308			

NO. OF REPAIRS - COMMENTS (INCLUDE NCR NUMBERS): NONE

PWHT CHART NO: N/A

REMARKS: Checked Amps with Amptongs
CP&L-E04357
CALIBRATION DATE 7/13/78
DUE 1/13/78

QA INSPECTOR: J. M. Larson
QA FINAL ACCEPTANCE: Vicken Soghoian
VERIFIED BY ANI: [illegible]

Enclosure 13 to Serial: HNP-99-069

Alternative Plan Letter of Endorsement from
The Hartford Steam Boiler Inspection and Insurance Co.

(1 Page)

Dr. Richard E. Feigel
Vice President

Post-it® Fax Note 7671	Date	# of pages ▶ 1
To BARRY BOBO	From STEVE FEIGEL	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

The Hartford Steam Boiler
Inspection and Insurance Co.
P.O. Box 5024
One State Street
Hartford CT 06102
(860) 722-5652
(860) 722-5530 (Fax)
rfeigel@ibm.net (Email)

March 8, 1999

Mr. Steve Edwards
Manager, SFP Activation Project
Carolina Power & Light Company
Harris Nuclear Plant
P.O. Box 165
New Hill NC 27562

Subject: 10CFR50.55a Alternative Plan
HH/99-001
HNP-98-188 a

Dear Mr. Edwards:

I have reviewed your letter to Mr. Bobo and the referenced attachments addressing various spent fuel pool piping systems. I have discussed the subject at length with Mr. Bobo, who is in responsible direct charge of Hartford Steam Boiler's (HSB) ASME Section III and XI inspection activities. Subject to detailed verification of completion of unfinished tasks and their compliance with commitments described, we believe that the plan proposed provides an acceptable alternative to code compliance in accordance with 10CFR50.55(a)(3). Our concurrence extends to both dispositioning issues related to the as-built condition of the systems and future activities under 'III. Alternative Plan for Continuance of Design and Construction.'

Our position is based principally on the following:

1. Site wide use of an integrated QA program at the site with evidence of adequacy provided by licensing of Unit 1.
2. Consistent reference by final acceptance documentation, e.g. hydrostatic test reports, of first tier inspection reports which establish review of records of welder qualification and similar code requirements.
3. Plan provisions to verify code compliance or establish technical equivalency. .e.g. deposited weld metal analysis.

Very truly yours,

Richard E. Feigel, Ph.D.
Vice President, Engineering

Cc: B. Bobo R. Howard

Enclosure 14 to Serial: HNP-99-069

Present Corporate (Appendix B) Quality Assurance Manual

CP&L

NGG PROGRAM MANUAL

Title: Quality Assurance Program Manual

Lead Department: PERFORMANCE EVALUATION & REGULATORY AFFAIRS

NGG Program Manual Number:	Revision Number:	Effective Date:
NGGM-PM-0007	Rev. 1	July 10, 1998

Revision 1:

Sections 19.0 and 20.0 were combined into Section 19.0 to provide more detailed requirements in establishing the Graded Approach to Quality for Software. The procedures implementing the requirements of these Sections will become effective August 18, 1998, after training has been presented on the implementing procedures and the changes to the QA Program Manual. Therefore the changes to this manual will also have an effective date of August 18, 1998. In addition, Section 3.4.2 was revised to correct an error in performing design verification, and Enclosure 1, CP&L Quality Assurance Program Policy, was added to ensure that the Quality Assurance Program Policy on the Intranet is appropriately controlled.

HNP CONTROLLED COPY # 774

RECEIVED
JUL 09 1998
HNP
DOCUMENT CONTROL

Approved By:

C S Hinnant
Senior Vice President and Chief Nuclear Officer

7-7-98
Date

TABLE OF CONTENTS

ACRONYMS

A/E - Architect-Engineer

ANI - AUTHORIZED NUCLEAR INSERVICE INSPECTOR for ASME Code compliance activities and items at the site

AIA - AUTHORIZED INSPECTION AGENCY for ASME Code compliance activities with which CP&L has contract for AUTHORIZED INSPECTOR coverage for each site

ANSI - American National Standards Institute, Inc.

ASME - American Society of Mechanical Engineers

ASTM - American Society of Testing & Material

BNP - Brunswick Nuclear Plant

BSEP - Brunswick Steam Electric Plant

BWR - Boiling Water Reactor

CMMS - Corporate Materials Management System

CP&L - Carolina Power & Light Company

10CFR50 - Title 10 (Atomic Energy), Code of Federal Regulations, Part 50, "Licensing of Production and Utilization Facilities."

ESR - Engineering Service Request

FSAR - Final Safety Analysis Report

HBRSEP - H. B. Robinson Steam Electric Plant, Unit 2

HNP - Harris Nuclear Plant

INPO - Institute of Nuclear Power Operations

M&TE - Measuring and test equipment

NAS - Nuclear Assessment Section

NIST - National Institute of Standards and Technology

NDE - Nondestructive examination

NED - Nuclear Engineering Department

ACRONYMS

NRC - Nuclear Regulatory Commission

N-Stamp - Official N-type symbol provided by the ASME and applied to plant items upon certification of compliance with applicable rules of the ASME Code

OESD - Operations & Environmental Support Department

PES - Performance Evaluation Support Unit

PO - Purchase order

PR - Purchase requisition

PWR - Pressurized Water Reactor

RFO - Released for operation

RNP - Robinson Nuclear Plant

SAR - Safety Analysis Report. The most recently updated collection of information pursuant to 10CFR50.34(b) and which the NRC uses to conclude that the facility may be operated without undue risk to the public health and safety, including, but not limited to , the following:

- UFSAR and FSAR (HNP), including its text, figures, drawings, and approved changes which have not yet been incorporated,
- Documents incorporated by reference including, but not limited to , the Emergency Plan, Security Plan, Operating License(s), Technical Specifications, and NRC Safety Evaluation Reports (SERs) (Documents merely listed as references are excluded), and
- Docketed correspondence related to 10CFR50.34.

SHNPP - Shearon Harris Nuclear Power Plant

SNM - Special Nuclear Material

SNT-TC-1A - Publications of the American Society for Nondestructive Testing which present recommended practices for qualifying and certifying personnel performing specific methods for nondestructive examination and evaluation of the examination results.

SSC - Structures, systems, and components

UFSAR - Updated Final Safety Analysis Report

DEFINITIONS

Certain terms are applied in the Carolina Power & Light Company (CP&L) Quality Assurance Program Manual (QAP Manual) with a special meaning or in a more restrictive sense than defined in a standard dictionary. The definitions listed are applicable to Nuclear Regulatory Commission (NRC) regulated activities and are generally used throughout the QAP Manual. All items which are defined in this section will appear as boldface type throughout this manual.

ACCEPTANCE CRITERIA: A limit or limits placed on the variation permitted in the characteristics of an item expressed in definitive engineering terms such as dimensional tolerances, chemical composition limits, density and size of defects, temperature ranges, time limits, operating parameters, and other similar characteristics. (ANSI N45.2.8)

ACTIVE SAFETY-RELATED INSTRUMENT: A permanently installed instrument that has been determined to be **safety-related** because it provides some required signal/output in the event of an accident.

ACTIVITIES AFFECTING QUALITY: Activities that affect or reasonably could affect the safety related functions of nuclear plant structures, systems, components, and parts. Activities included are design changes, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling and modifying.

ALGORITHM (COMPUTER): 1) A finite set of well-defined rules for the solution of a problem in a finite number of steps; for example, a complete specification of a sequence of arithmetic operations for evaluating sine *x* to a given precision. 2) Any sequence of operations for performing a specific task.

***ANNUALLY**: Once per year, not to exceed 366 days.

APPROVED SUPPLIERS LIST (ASL): A listing of suppliers/contractors whose quality assurance programs have been evaluated to meet applicable requirements and found capable of supplying particular items or **services** to specified requirements.

BASIC COMPONENT: A structure, system, or component, or part thereof that affects its safety function necessary to assure the item is safety related. (10CFR21)

BENCHMARK (SOFTWARE): - See **qualification**

***BIANNUAL**: Every 6 months, not to exceed 184 days.

***BIENNIAL**: Every 2 years, not to exceed 732 days.

***BIMONTHLY**: Every 2 months, not to exceed 62 days.

***BIWEEKLY**: Every 2 weeks, not to exceed 14 days.

BUGS (SOFTWARE): Unexpected defects, faults, flaws, or imperfections.

CALIBRATION: Comparison of an item of **Measuring and Test Equipment (M&TE)** with a reference standard or with an item of **M&TE** of equal or closer tolerance to detect and quantify inaccuracies and to report or eliminate the inaccuracies.

COMMERCIAL GRADE: A structure, system, or component, or part thereof that affects its safety function, that was not designed and manufactured as a **basic component**. (10CFR21)

COMPLETED QUALITY ASSURANCE (QA) RECORD: A document becomes a QA record when the last reviewer or evaluator has completed his or her review or evaluation as prescribed in procedures. Completion includes being stamped, initialed, signed, or otherwise authenticated, and dated by authorized personnel. In the case of a record package (Engineering Service Request, Equipment Qualification, and so forth) made up of several individual documents, the package will be considered to be the document for the purpose of determining when the document is complete.

COMPUTER SOFTWARE: - Computer programs, procedures, and possibly associated documentation and data pertaining to the operation of a computer system. A sequence of instructions or actions implemented by procedure or **algorithm**, that may or may not be taken, suitable for processing by a computer.

CONDITION ADVERSE TO QUALITY (CATQ): See Section 12.0.

CONDITIONAL RELEASE: A document permitting limited work progression on nonconforming items.

CONSUMABLE/EXPENDABLE ITEM: Those designated items whose quality is necessary for the functional performance of **safety-related** structures, systems, and components and thus are subject to applicable provisions of 10CFR50, Appendix B. These designated items are purchased and controlled in accordance with plant procedures.

CONTRACT: The various documents which describe the scope of the contracted work and the conditions under which CP&L and the contractor have agreed to participate. The **contract** may include either the procurement of labor and/or **services** together with materials necessary in their performance.

DESIGN BASES: That information which identifies the specific functions to be performed by a structure, system, or component of a facility and the specific values or ranges of values chosen or controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted state-of-the-art practices for achieving functional goals or (2) requirements derived from analysis based on calculation and/or experiments of the effects of a postulated accident for which a structure, system, or component must meet its functional goals (refer to 10CFR50.2).

CP&L has provided the following clarification to the NRC. A system's Design Basis, as defined by CP&L, consists of:

- System and Component functional requirements (Reference 10CFR50.2),
- Regulatory Requirements and Commitments relative to system and component design (Reference 10CFR50, Appendix B, Criterion III),

- Original System and Component design codes and standards of record, unless clearly superseded by a Regulatory commitment to a later code or standard (Reference 10CFR50.2)

DESIGN CHANGE OPERABILITY: The installation of a completed design change such that the affected equipment is capable of performing its intended function, when sufficient acceptance testing has been completed to verify the changes will perform as specified by the design and to fulfill any testing requirements resulting from the change, and when sufficient documentation exists to support operation.

DESIGN DOCUMENTS: Specifications, calculations, drawings, and procedures derived from regulatory requirements and **design bases** that delineate item design, quality assurance and process requirements for use in procurement, fabrication, installation, examination, and testing; and analyses and reports that substantiate design characteristics or evaluate item performance.

DESIGN INPUTS: Those criteria, parameters, bases or other design requirements, updated to reflect all approved changes, upon which detailed final design is based.

DESIGN ORGANIZATION: An organization within CP&L or a contractor supporting CP&L assigned responsibility for development or revision and documentation of the design of a plant structure, system, equipment, or parts thereof.

DESIGN SPECIFICATIONS: The document describing the engineering and performance requirements which provide a basis for designing an item and/or the technical information necessary for purchasing an item.

DESIGN OUTPUT: Documents such as drawings, specifications, and other documents that define the technical requirements of Safety Systems and Components (SSC).

ENGINEERING EVALUATION: A documented assessment performed to disposition a concern, indeterminate condition, or other circumstance that provides a basis for the disposition and is reviewed and released as specified in procedures.

ENVIRONMENT (COMPUTER): The conditions under which a program is developed or run. This includes the type of processor, storage media, and other software-dependent hardware used, as well as the operating system used to run the program.

FIRE PROTECTION RELATED: Those fire protection systems and components that provide direct protection to **safety-related** items from fire or whose failure could prevent those fire protection systems and components from operating. Those components used for indication, backup, or information purposes are not considered fire protection related.

HOLDPOINT: A point beyond which work shall not proceed until mandatory verification, inspection, or approval is obtained from appropriate inspection/ verification organization(s).

INFORMATION MANAGEMENT SYSTEM: A data base or computing system containing information used to support a **safety-related** activity, i.e., Equipment Data Base System (EDBS).

MEASURING AND TEST EQUIPMENT (M&TE): Instrument, tools, gauges, fixtures, reference and transfer standards, and nondestructive test equipment which are used in the measurement, inspection, and monitoring of **safety-related** components, systems, and structures. (This includes [1] instrumentation permanently installed as required by the plant Technical Specifications, [2] instrumentation used to verify Technical Specifications but which are not specified in the Technical Specifications, and [3] **active safety-related instruments. M&TE** does not include rulers, tape measures, levels, and other such devices if normal commercial practices provide adequate accuracy, or installed or portable instruments used for preliminary or qualitative checks, where accuracy is not required, such as a circuit checking multimeter.)

***MONTHLY**: Once per month, not to exceed 31 days.

PORTABLE MEASURING AND TEST EQUIPMENT (P-M&TE): **M&TE** items that are not permanently installed in the facility (e.g., test gauges, voltmeters, deadweight tester).

PURCHASE ORDER (PO): A formal agreement for procurement of items and those **services** allowed to be obtained without a **contract.**

QUALIFICATION: The process of demonstrating, through test methods, a given input for the software produces the expected output..

QUALITY CLASS B ITEMS: Nonsafety related, seismically designed items as discussed in Regulatory Guide 1.29, Regulatory Positions C2 and C4, and Category 2 instruments subject to Regulatory Guide 1.97, Revision 3.

QUALITY RELEASE: A document used by a vendor or CP&L to release item(s) for shipment from a vendor's facility.

QUALITY SOFTWARE/COMPUTING SYSTEMS: Computer software and/or computing systems used to support processes that have a direct or indirect affect on nuclear safety and/or operation.

***QUARTERLY**: Every 3 months, not to exceed 92 days.

RECEIPT INSPECTION: Inspection activities performed by qualified personnel during the receiving of items to determine the conformance of those items to predetermined requirements.

REFERENCE CALIBRATION STANDARDS: Standards (e.g., primary, secondary, working, field, and shop where appropriate) used in a **calibration** program. These standards establish the basic accuracy limits for the program.

REPAIR: The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still may not conform to the original requirement. (ANSI N45.2.10)

REWORK: The process by which a nonconforming item is made to conform to a prior specified requirement by completion, remachining, reassembling or other corrective means. (ANSI N45.2.10)

SAFETY-RELATED: A term applied to those plant features relied upon during or following a design basis event to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate the consequences of accidents which could result in off-site exposures comparable to the guideline exposures of NRC Regulation 10CFR100.

***SEMIANNUAL**: Every 6 months, not to exceed 184 days.

***SEMIMONTHLY**: Every 2 weeks, not to exceed 16 days.

***SEMIWEEKLY**: Twice per week, not to exceed 4 days.

SERVICES: The performance by a Supplier of activities such as design, fabrication, inspection, non-destructive examination, **repair**, or installation. (ANSI N45.2.13)

SIGNIFICANT CONDITION ADVERSE TO QUALITY (SCATQ): See Section 12.0.

TRACEABILITY: The ability to trace the history, application, or location of an item or activity by means of recorded identification.

USE-AS-IS: A disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit, and safety. (ANSI N45.2.10)

***WEEKLY**: Every week, not to exceed 7 days.

*These frequency dependent terms are defined for application if not specifically defined in plant documents.

1.0 INTRODUCTION

1.1 CP&L QUALITY ASSURANCE (QA) PROGRAM - SCOPE

This manual amplifies the CP&L committed 10CFR50 Appendix B Quality Assurance Program (QAP) requirements described in (U)FSAR Section 17.3 and establishes measures for assuring that organizations performing **safety-related** activities perform their responsibilities in a manner which results in safe nuclear power production. This manual also establishes the QA programs for the non-safety related areas of RW-Q, FP-Q, and **Quality Class B**. Additional QA requirements imposed on individual plants by regulations and commitments shall be considered a part of the QAP. Other QA programs are established in this manual to comply with requirements, either required by regulators, or determined to assist the company implement structured programs beneficial to the operation of the nuclear plants.

The guidance provided in this manual is not all inclusive. It is intended to be used in conjunction with Sections 1.8 and 17.3 of the (U)FSARs to develop procedures that implement the CP&L Quality Assurance Program.

1.2 SCOPE OF APPLICATION

The measures described in this manual have been written to comply with the Quality Assurance requirements of certain regulatory documents identified in Sections 1.8 and 17.3 of the (U)FSARs. The applicable regulatory commitments are identified in each section.

The manual is arranged in functional sections to facilitate its use and includes additionally Appendix I which cross-references functional subjects with the applicable criteria of 10CFR50, Appendix B, and Appendix II which contains QA program regulatory guide references.

A list or system identifying items to which Sections 1.0 through 19.0 apply shall be maintained at each nuclear plant or work location. The responsibility for maintaining this list or system shall be identified in procedures or interface documents.

1.2.1 Sections 1.0 through 14.0--Scope of Application

For compliance with 10CFR50, Appendix B, and 10CFR72 the provisions of Sections I.0 through 14.0 shall be applied to activities associated with **safety-related** materials, equipment, and **services**.

1.2.2 Section 15.0--Scope of Application

This section identifies measures for compliance with the QAP requirements for fire protection systems, components, parts, and administrative programs.

1.2.3 Section 16.0--Scope of Application. (HNP Only)

This section identifies measures for compliance with the QAP requirements for radioactive waste systems, components, and administrative programs.

1.2.4 Section 17.0--Scope of Application

This section identifies measures for compliance with the QAP requirements for the IF-300 irradiated fuel shipping cask.

1.2.5 Section 18.0--Scope of Application

This section identifies measures for compliance with the QAP requirements for shipping "non LSA greater than Type A" packages.

1.2.6 Section 19.0--Scope of Application

This section identifies measures for compliance with the QAP requirements for **computer software** for **safety-related** applications.

1.2.7 Section 20.0--Scope of Application

This section has been deleted and the requirements incorporated into Section 19.0.

1.2.8 Section 21.0--Scope of Application (HNP only)

This section identifies QAP requirements for Class B items.

1.2.9 Section 22.0--Scope of Application (BNP and RNP only)

This section identifies QAP requirements for nonsafety related systems and equipment used to meet the Station Blackout Rule.

1.2.10 Section 23.0--Scope of Application

This section identifies requirements for the issuance of interpretations of the QAP by the Manager - Performance Evaluation and Regulatory Affairs (PERAS). Interpretations issued are included in this section.

2.0 ORGANIZATION AND RESPONSIBILITIES

2.1 SCOPE

This section sets forth the organizational structure and responsibilities for implementation of the Quality Assurance Program (QAP). While general managerial and supervisory responsibilities are delineated in this section, each organization performing activities described in this manual is responsible for assuring proper implementation of the applicable requirements for the activity being accomplished. Specific duties and responsibilities should be delineated in procedures and interface documents.

2.2 MANAGEMENT RESPONSIBILITIES

Ultimate responsibility for operation of the nuclear plants rests with the Senior Vice President, Nuclear Generation/Chief Nuclear Officer reporting to the Executive Vice President, Energy Supply who reports to the President/Chief Executive Officer.

Nuclear Generation - The Senior Vice President/Chief Nuclear Officer reports to the Executive Vice President, Energy Supply. This position is responsible for managing the company's nuclear plants and assuring they are in compliance with applicable regulations, codes, and other requirements. There are five departments in the Nuclear Generation Group: (a) the Brunswick Nuclear Plant Department, (b) the Harris Nuclear Plant Department, (c) the Robinson Nuclear Plant Department, (d) the Nuclear Engineering Department, and (e) the Operations and Environmental Support Department. Their responsibilities are summarized below:

2.2.1. The Brunswick Nuclear Plant Department - The Vice President, Brunswick Nuclear Plant Department reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for managing all aspects of: configuration control of the plant's design basis; services associated with the procurement, design, and modification installation; outage management; direct plant support functions; operation; and maintenance of the Brunswick Nuclear Plant. The department includes: (1) Director of Site Operations, (2) Plant General Manager, (3) Manager - Plant Support Services, (4) Manager - Regulatory Affairs, (5) Manager - Training, (6) Manager - Brunswick Engineering Support Services, (7) Manager - Nuclear Assessment, and (8) Manager - Environmental & Radiation Control.

2.2.2 The Harris Nuclear Plant Department - The Vice President, Harris Nuclear Plant Department reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for managing all aspects of: configuration control of the plants design basis; services associated with the procurement, design, and modification installation; outage management; direct plant support functions; operation; and maintenance of the Harris Nuclear Plant. The department includes: (1) Director of Site Operations, (2) Plant General Manager, (3) Manager - Plant Support Services, (4) Manager - Harris Engineering Support Services, (5) Manager - Training, (6) Manager - Regulatory Affairs, (7) Manager - Nuclear Assessment and (8) Manager - Environmental & Radiation Control.

2.2.3. The Robinson Nuclear Plant Department - The Vice President, Robinson Nuclear Plant Department reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for managing all aspects of: configuration control of the plant's design basis; services associated with the procurement, design, and modification installation; outage management; direct plant support functions; operation; and maintenance of the Robinson Nuclear Plant. The department includes: (1) Director of Site Operations, (2) Plant General Manager, (3) Manager - Plant Support Services, (4) Manager - Regulatory Affairs, (5) Manager - Training, (6) Manager - Robinson Engineering Support Services, (7) Manager - Nuclear Assessment and (8) Manager - Environmental & Radiation Control.

2.2.4. The Nuclear Engineering Department - The Vice President, Nuclear Engineering Department (NED) reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for complimenting the Plant Engineering Support Sections by providing an integrated technical, design control and configuration management function. The VP, NED is also responsible for engineering, procurement, and fabrication of nuclear fuel, probabilistic risk assessment (PRA) and spent fuel management services for the nuclear plants . Reporting to the Vice President - Nuclear Engineering Department are: (1) Manager - Nuclear Fuel Management and Safety Analysis, and (2) Chief Engineer.

2.2.5. The Operations and Environmental Support Department - The Director - Operations & Environmental Support Department reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for materials acquisition and administrative services for the Nuclear Generation Group; as well as providing analytical, chemistry, and metallurgy services; operations, maintenance, and configuration control of plant computing systems; environmental programs support; and radiological support for the company. The Department consists of: (1) Manager - Material Services, (2) Manager - Environmental Services, (3) Manager - Nuclear Information Technology, and (4) Manager - Business Planning & Budget Services.

The Manager - Performance Evaluation and Regulatory Affairs (PERAS) reports to the Senior Vice President/Chief Nuclear Officer. This position is responsible for generic licensing, independent oversight of the plant's Nuclear Assessment Sections, and maintenance of the Quality Assurance Program Manual.

The Manager - PERAS, as necessary, is responsible for updating this manual to maintain consistency with commitments, mandatory regulations, and codes. The Manager - PERAS shall assure a review of the status and adequacy of this manual is performed at least once a year by appropriate CP&L management and submit any recommended revisions to the Senior Vice President/Chief Nuclear Officer for approval. Revisions and distribution to the QAP Manual will be in accordance with NGGM-PM-0005, Development and Approval of Documents in the NGG Document Hierarchy.

The Senior Vice President - Administrative Services reports to the President/Chief Executive Officer. This position operates through the Vice President - Corporate Services to provide procurement activities and security access for each nuclear plant.

The three plant Nuclear Assessment Sections (NAS) independently monitor and assess the Company's nuclear programs on a continuing basis. The NAS performs assessments which incorporate the previous QA audits. These evaluations are primarily performance based with emphasis on quality of the end product.

Quarterly (approximately) a briefing of NAS activities, along with any potential issues and recommendations, shall be presented to the Senior Vice President/Chief Nuclear Officer. The Managers - NAS shall have access to the corporate management up to and including the Senior Vice President/Chief Nuclear Officer to resolve any quality or nuclear safety related concerns if the concerns cannot be resolved satisfactorily at a lower management level.

The Performance Evaluation Support Unit (PES) of PERAS is responsible to ensure that the results and effectiveness of the NAS organization and its processes in accomplishing its assigned objectives is regularly evaluated on a frequency not to exceed 24 months.

2.3 RESPONSIBILITY

The primary responsibility for quality performance, including the identification and effective correction of problems potentially affecting the safe and reliable operation of the Company's nuclear facilities, resides with the line organization. The term "line organization" used in this program refers to the production organization reporting to the Senior Vice President/Chief Nuclear Officer.

The managers of functions involving engineering, modification, maintenance, nuclear fuel, and operations shall assure that their personnel are adequately trained for their jobs and they have the experience and education required to carry out their assigned responsibilities. These managers shall ensure that adequate resources and procedures are available for correctly implementing the work activities to support the QA program.

Independent inspections are conducted in accordance with procedures to verify specific critical quality attributes. Individuals performing these inspections have access to necessary information to ensure that activities and equipment meet established **acceptance criteria**.

Procurement documents prepared in accordance with procedures require suppliers to operate in accordance with QA programs which are compatible with the applicable requirements of CP&L's QAP and procedures where their **services** are used in support of plant activities.

2.4 AUTHORITY

The QAP and procedures require that the authority and duties of persons and organizations performing **activities affecting quality** be clearly established and delineated in writing. In addition, the QAP requires that these individuals and organizations have sufficient authority and organizational freedom to:

1. Identify quality, nuclear safety, and performance problems.

2. Order unsatisfactory work to be stopped and control further processing, delivery, or installation of nonconforming material.

3. Initiate, recommend, or provide solutions for **conditions adverse to quality**.

4. Verify implementation of solutions.

3.0 OPERATING PLANT DESIGN ACTIVITY CONTROL

3.1 SCOPE

This section sets forth minimum requirements for control of design activities affecting systems, components, and structures. The major areas covered by this section are design, reviews and approvals, work execution, documentation, and design interface controls.

3.2 RESPONSIBILITIES

The responsibility for implementing this section is assigned to each nuclear plant department and the Nuclear Engineering Department. Responsibilities delegated to other Carolina Power & Light (CP&L) departments or contractors shall be documented through approved interface documents.

3.3 REGULATORY COMMITMENTS

This section used in conjunction with Regulatory Guides 1.64 and 1.33 and American National Standards Institute N45.2.11 and N18.7, as committed by Sections 1.8 and 17.3 of the (U)FSAR, establishes the requirements essential for compliance with the applicable portions of 10CFR50 Appendix B.

3.4 DESIGN PROCESS

The designated **design organization** shall have access to pertinent background information needed to fulfill its responsibility and shall have personnel with adequate understanding of the requirements and intent of the original plant design commensurate with the scope and complexity of the design activity to be performed.

Design activities carried out to develop final **design documents** or to support development of final **design documents** shall be accomplished in accordance with procedures of a type sufficient to ensure that design input requirements are correctly applied, the activity is documented in sufficient detail to permit verification, appropriate quality standards are identified, and the results of the activity are reviewed and approved. Design activities include such work as preparation of design input requirements, specifications, drawings, analyses, and procedures.

3.4.1 Design input requirements.

Applicable design input requirements shall be developed and documented. The **design inputs** shall be specified to a level of detail sufficient to allow translation into other **design documents** such as specifications, drawings, analyses, procedures, etc. Changes to design requirements during the design process shall be controlled to ensure such changes are factored into other ongoing design activities.

3.4.2 Design verification.

Sufficient design verification shall be performed by one or more methods to substantiate that the final design documents meet the appropriate design inputs. Verification activities shall be clearly documented, identifying the verifier and the results of the verification. Acceptable verification methods include but are not limited to:

3.4.2.1 Design reviews.

3.4.2.2 Alternate calculations.

3.4.2.3 Qualification testing using the most adverse specified design condition.

The design verification shall be performed by a competent individual or group of individuals, but shall not be performed by individuals who prepared the original design or the designer's immediate supervisor unless the immediate supervisor is the only one capable of verifying the design. Objective evidence documenting the completion of and satisfactory resolution of any concerns raised in the design verification shall be provided with the package prior to relying on the structure system or component to perform its function. A design verification of the completed design package shall be performed to verify the following:

3.4.2.3.1 Design interface between design disciplines is adequately established.

3.4.2.3.2 Sufficient **design documents** and procedures are included or referenced to allow implementation to be carried out in a planned and controlled manner.

3.4.2.3.3 Adequate provisions for in-process or post-installation examinations, inspections, and testing have been specified to assure quality of work and verification that the design performs as intended.

3.4.2.10.4 Adequate provisions have been provided to document installation and results of examinations, inspections, and testing within the package or documents referenced.

3.4.2.10.5 Consideration has been given to **design change operability**, reliability, maintainability, safety, and adherence to appropriate codes, standards, and regulatory requirements.

3.4.2.10.6 Appropriate design verification has been performed for applicable documents contained in the package.

3.4.2.10.7 Specified materials and processes are suitable for the intended application.

3.4.2.10.8 The design is technically adequate with respect to the **design bases**.

3.5 DESIGN CHANGE PACKAGE

For design changes that produce a physical modification to the plant, an approved design change package shall be issued. The design change package shall be prepared by the responsible **design organization** and shall include or reference **design documents** or procedures to provide for:

3.5.1 Installation of the physical change.

3.5.2 Identification of required inspections and **acceptance criteria**.

3.5.3 Identification of required testing and **acceptance criteria**.

3.5.4 Identification of specified materials for installation.

3.5.5 Identification of necessary revisions to existing **design documents** such as design basis documents, specifications, drawings, procedures, and manuals.

3.5.6 Identification of new **design documents**.

3.5.7 Identification of functional quality class and boundaries.

3.5.8 Control of design change package.

The content, revisions, format, reviews and approvals, issuance control, and interface with other processes affected by the design change shall be established in procedures. The procedures shall establish controls to assure that changes to Plant Operating Manual, **information management systems**, or other documents important to the configuration or to work execution are identified.

3.5.9 Design change package implementation.

Implementation including installation, examinations, inspections, and tests shall be performed in accordance with the procedures provided in the design change package or procedures referenced in the design change package. Deviations from the design change package, except where authorized in the package or referenced procedures, require an approved revision to the package prior to work execution.

3.6 SAFETY EVALUATION

Any proposed activity/change or discovered change to the facility or procedure or test or experiment as described in the applicable SAR whether permanent or temporary shall be evaluated for 10CFR50.59 applicability as described in procedures.

3.7 DESIGN CHANGE OPERABILITY AND CLOSEOUT

3.7.1 Prior to **design change operability**, verification of the work and a review of documentation shall be performed to assure work has been satisfactorily accomplished including examinations, inspections, and tests. Measures shall be established to document any exceptions identified by this review. These exceptions shall be either cleared prior to **design change operability** or exceptions shall be approved and tracked to ensure timely completion.

3.7.2 Training to familiarize plant personnel with the hardware, procedure changes, and Technical Specification changes resulting from the implementation of the design change package shall be conducted, as appropriate.

3.7.3 As part of a declaration of **design change operability**, measures shall be initiated to revise documents and **information management systems** identified per Section 3.5.8 in accordance with approved procedures. Methods shall be implemented to ensure that potential users of affected documents are notified of outstanding changes to documents and **information management systems**. The controlling procedures for design change packages shall provide a documented method for declaration of **design change operability**.

3.7.4 Final closeout of a design change package shall not be done until all exceptions and outstanding changes to documents and **information management systems** have been dispositioned.

3.8 TEMPORARY DESIGN CHANGES

3.8.1 Temporary design changes to the plant to support testing shall be accomplished in accordance with procedures. The procedure shall:

3.8.1.1 Control the installation of the change.

3.8.1.2 Require removal of the change upon test completion.

If the equipment or system affected is to remain in service during the change, the following additional requirements shall apply:

3.8.1.3 Design Verification

3.8.1.4 10CFR50.59 safety evaluation.

3.8.2 Temporary design changes including temporary **repairs** to the plant for reasons other than test or surveillance activities shall be controlled by procedures. The procedure may be for a specific change or a controlling process for a certain type of change. In either case, the document authorizing the change shall:

3.8.2.1 Provide instructions to implement the change.

3.8.2.2 Control removal of the change.

If the system is to remain in service during the change, the following additional requirements shall apply:

3.8.2.3 Perform a Design Verification

3.8.2.4 Perform a 10CFR50.59 safety evaluation.

3.8.2.5 Designate the responsible organization for control and removal of the change.

3.8.2.6 Provide appropriate notification and instruction, if needed, to operational personnel.

3.8.2.7 Identify drawing and procedure changes to be in effect during the time the temporary design change is in place.

3.8.2.8 Identify training requirements.

Such temporary changes shall be tracked to assure removal or permanent dispositioning within a specified time limit.

3.9 DISPOSITION OF DEVIATIONS BETWEEN DESIGN DOCUMENTS AND PLANT CONFIGURATION

When deviations are discovered between plant **design documents** and actual configuration, they shall be dispositioned in accordance with Sections 3.0, 11.0, or 12.0.

3.10 DESIGN INTERFACE CONTROL

Documented interface control over design activities assigned by each nuclear plant department to other CP&L organizations shall address the following:

3.10.1 Delegated areas of responsibility.

3.10.2 How the assistance is requested and the scope of work specified.

3.10.3 Methods of communication between the assisting organization and each nuclear plant department.

3.10.4 Applicable procedures which govern the conduct of design activities, design change authorizations, and work execution.

3.10.5 Handling and dispositioning of documentation and Quality Assurance Records generated during the performance of the requested activity.

The interface document shall be established prior to initiation of design. The interface may be in a document specific for a given assistance request, procedures concurred with by the affected departments, or a standardized interface agreement.

4.0 PROCUREMENT CONTROL

4.1 SCOPE

This section establishes requirements for controlling the activities and documents associated with procurement of items and **services**. It includes requirements for procurement document content and reviews, vendor selection and qualification, and surveillance after award.

4.2 RESPONSIBILITY

The responsibility for implementing this section is designated to the Carolina Power & Light (CP&L) organization having responsibility for the project or work function that determines the need for procurement. Delegation of tasks or functions related to this responsibility shall be accomplished through approved interface documents or procedures. The CP&L organization having primary responsibility shall retain the responsibility.

4.3 REGULATORY COMMITMENTS

This section used in conjunction with Regulatory Guides 1.33, 1.123, 1.144, and 1.146 and American National Standards Institute (ANSI) N45.2.12, N45.2.13, N45.2.23, and N18.7, as committed in Sections 1.8 and17.3 of the (U)FSAR, establishes the requirements for compliance with the associated portions of 10CFR50, Appendix B.

4.4 APPROVAL OF VENDORS

Where procurement documents require the vendor to implement a quality assurance (QA) program that complies with 10CFR50, Appendix B, the vendor's program shall be approved by CP&L before issuance of the **purchase order (PO)** or **contract**. Procurement from other nuclear plant facilities licensed for construction or operations by the NRC are exempt from this requirement. The Procurement, Dedication, and Vendor/Equipment Services Unit (PD&V/ES) of OESD shall maintain a list of approved vendors **(ASL)**. The qualification of a vendor's QA program shall be based on an evaluation of the adequacy of the program compliance with the applicable requirements of 10CFR50, Appendix B, for the type of items or **services** supplied.

4.4.1 Vendor qualification shall be documented by one or more of the following methods:

4.4.1.1 The vendor's QA capabilities as determined by a direct survey/audit of the vendor's facilities and personnel and the implementation of the QA program.

4.4.1.2 Evaluation of the vendor's history of providing a product which performs satisfactorily in actual use. The following information should be considered:

4.4.1.2.1 Experience of users in identical or similar products of the same prospective vendor.

4.4.1.2.2 CP&L's records that have been accumulated in connection with previous procurement actions and product operation experience. Historical data should be representative of the vendor's current capability. If there has been no recent experience with the vendor, or the vendor is a new supplier, the prospective vendor shall be requested to submit information on a similar item or service for evidence of his current capabilities.

4.4.1.3 Evaluation of the vendor's current quality records supported by documented qualitative and quantitative information which can be objectively evaluated. This would include review and evaluation of the vendor's QA program manual and procedures, as appropriate, to ensure that the applicable requirements of 10CFR50, Appendix B, are appropriately applied and effectively implemented.

4.4.1.4 Verification that the vendor holds an active CERTIFICATE OF AUTHORIZATION from the American Society of Mechanical Engineers (ASME) to supply or manufacture item(s) described in the procurement document.

4.4.1.5 Evidence that material manufacturers or material suppliers hold an ASME Quality System Certificate (Materials).

4.4.2 Where procurement documents for **commercial grade** items take credit for the vendor's **commercial grade** quality assurance program for verifying any critical characteristics for acceptance, the vendor's program shall be approved by CP&L before issuance of the **purchase order**. Procurement from other nuclear plant facilities licensed for construction or operations by the NRC are exempt from this requirement. PD&V/ES shall maintain a list of approved **commercial grade** vendors. The qualification of a vendor's **commercial grade** QA program shall be based on an evaluation of the ability of the program and/or manufacturing processes to provide reasonable assurance that the critical characteristics for acceptance are verified for the items or **services** supplied.

4.4.2.1 Qualification of a vendor shall be documented by one or more of the following methods:

4.4.2.1.1 The vendor's QA and/or manufacturing process control capabilities as determined by a direct survey/audit of the vendor's facilities and personnel and the implementation of the QA program and/or manufacturing process controls.

NOTE: **Commercial grade** surveys/audit of distributors should not be employed alone unless the distributor has a **commercial grade** quality assurance program capable of verifying the applicable critical characteristics. Otherwise, a survey/audit of the distributor must also include a survey/audit of the original part manufacturer(s).

4.4.2.1.2 Evaluation of the vendor's history of providing a product which performs satisfactorily in actual use. The following information should be considered:

- Monitored performance of the item through user historical performance and evaluated results.
- Industry product tests.
- Manufacture of the item(s) to national codes and standards.
- Industry data bases on item performance.

The item performance record is required to be specific to the item and directly applicable to the item's critical characteristics and intended **safety-related** applications.

The vendor history method alone is not acceptable for dedication of **commercial grade** items and must be used in combination with supplier survey/audit, source inspection or special tests and inspection methods, provided the evaluation results are acceptable and the following are performed:

- **Receipt inspection** in accordance with a documented **receipt inspection** plan.
- Periodic revalidation of performance evaluation bases and results.

4.4.3 The evaluation of the adequacy of the vendor's QA program shall be performed by PD&V/ES and updated **annually**. Records supporting the vendor's listing on the ASL will be maintained as described in procedures.

4.5 ITEMS AND SERVICES PROCUREMENT BY PURCHASE ORDER

This subsection applies to the procurement by POs of items and **services**. Activities associated with the procurement process, including document preparation, reviews, approval, and changes to the **PO**, shall be controlled by procedures.

4.5.1 Initiation of purchase requisition (PR)

Procurement shall be initiated by preparation of a PR. The term "PR" shall apply to any document which initiates the process of procurement and is subject to the controls of this section. This may include manually processed or computer-generated documents. For computer-generated PRs, the technical and QA requirements applicable to the item being procured may be coded and recorded in a controlled data base. Text associated with technical and QA requirement codes shall be retrievable or included with the PR, as appropriate.

4.5.2 General requirements for PRs

PRs shall include a description of the item or service and delivery instructions. The quality class shall be specified on each PR.

4.5.3 Requirements for PRs, except **Commercial Grade**

This subsection applies to the procurement of items from a vendor who is required to implement an approved QA program that complies with the applicable requirements of 10CFR50, Appendix B, for the purpose of assuring quality and compliance with the order requirements.

4.5.3.1 Technical and documentation requirements

The PR shall specify:

4.5.3.1.1 The design technical requirements that adequately specify each item requirement imposed on the vendor. The requirements shall be established by:

4.5.3.1.1.1 Reference to applicable codes/standards, regulations, approved drawings, approved specifications, or other controlled documents including appropriate revision, editions, and addenda.

OR

4.5.3.1.1.2 Included in the PR based on requirements established in controlled engineering documents.

OR

4.5.3.1.1.3 A combination of both the above.

4.5.3.1.2 Fabrication requirements and controls essential to the item's final quality, as appropriate.

4.5.3.1.3 Required vendor inspection and tests, as appropriate.

4.5.3.1.4 Vendor shelf-life limitations specified by the vendor, if applicable, unless they are to be established by CP&L.

4.5.3.1.5 Packaging and shipping requirements, as appropriate.

4.5.3.1.6 Documentation submittal requirements including schedule for submittal and any limitations on work progression related to their review, if appropriate.

4.5.3.1.7 As applicable, record retention requirements by the vendor including type of records and retention time if the vendor is to retain custody of final QA Records.

4.5.3.2 QA requirements

The PR shall require the vendor to:

4.5.3.2.1 Implement a documented QA program that complies with the applicable requirements of 10CFR50, Appendix B, and is approved by CP&L.

4.5.3.2.2 Allow CP&L and other parties authorized by CP&L right of access to the vendor's facilities and QA Records for source inspection and QA audits.

4.5.3.2.3 Incorporate appropriate QA program requirements in subtier procurement documents.

4.5.3.2.4 Notify CP&L of nonconformances to the order requirements which consist of one or more of the following. Documented vendor notification shall include the vendor's recommended disposition and technical justification.

4.5.3.2.4.1 Technical or material requirement is violated.

4.5.3.2.4.2 Vendor documents approved by CP&L are violated.

4.5.3.2.4.3 Nonconformance(s) cannot be corrected by continuation of the original manufacturing process or by **rework**.

4.5.3.2.4.4 The item does not conform to the original requirements even though the item can be restored to a condition such that the capability of the item to function is unimpaired.

4.5.3.3 Waiver of requirement for vendor-approved QA program.

The requirement for a vendor to have a CP&L-approved QA program may be waived under the following circumstances:

4.5.3.3.1 For procurement of replacement or spare parts where the original design, fabrication inspection, and test requirement are adequate; the vendor is the original equipment manufacturer; and the original specification or order did not require the vendor's QA program to be approved.

4.5.3.3.2 For procurement of items and **services** where CP&L is substituting its QAP, in whole or in part, in place of the vendor's normal controls. Such circumstances will require the requisition, as a minimum, to reference the documents and methods (e.g., **Engineering evaluations**, ESRs, modifications, etc.) which will be used to invoke CP&L's QAP on the applicable activities such that appropriate 10CFR50, Appendix B, controls are assured.

4.5.3.3.3 Special procurement in accordance with Section 4.10.

4.5.3.3.4 When there has been no recent experience with the supplier, the prospective supplier shall be evaluated by reviewing appropriate procedures, instructions, and specifications on a similar item (or service) for evidence of current capabilities.

The requisition shall include, as appropriate, that the vendor have approved procedures for the specific work being performed, that personnel be qualified to perform the specific activity, that **calibration** of instrumentation shall be traceable to nationally recognized standards, and that the activity being performed shall be evaluated by CP&L, or its agent, at the supplier facility. These activities shall be in accordance with Section 4.8.

4.5.4 Determination of **Commercial Grade** Items.

An evaluation shall be performed in accordance with approved procedures to determine the applicability of using **commercial grade** items for the intended **safety-related** application(s) and should include:

4.5.4.1 A confirmation that the item meets the criteria as defined in the definition section.

4.5.4.2 Identification of the critical characteristics of the item to be verified. Critical characteristics are identifiable and measurable attributes/variables of the item which, once verified, provide reasonable assurance that the item received is the item specified on the PR.

4.5.4.3 Identification of methods to be employed for verification of critical characteristics including **acceptance criteria**.

4.5.4.4 Identification of technical and QA requirements sufficient to assure the product requirements are clearly specified to vendor.

4.5.5 Requirements for **Commercial Grade** PRs.

Establishment of technical requirements, quality requirements, documentation requirements, dedication methodologies, etc., for **commercial grade** items shall be performed in accordance with approved procedures.

4.5.6 **Measuring and test equipment (M&TE) calibration** service PRs

A PR for **M&TE calibration services** shall include the following requirements:

4.5.6.1 Description of the **calibration** service being requested including calibration ranges; accuracy and repeatability requirements, where appropriate; and any restrictions on service, if warranted.

4.5.6.2 Traceability of **calibrations** to a nationally recognized standard. Where no nationally recognized standard exists, the method and standard used in performing the **calibration** shall be documented by the vendor.

4.5.6.3 Written notification to purchaser when equipment is found out of **calibration**, including the amount of out of **calibration**.

4.5.6.4 Specific documentation to be submitted.

4.5.7 PR review and approval

4.5.7.1 PRs shall be reviewed prior to release for purchase by qualified individuals knowledgeable in technical and QA requirement considerations to assure that the PRs are adequate for the intended item. The responsible organization(s) designated to perform the review(s) shall be established in procedures.

This review shall determine, as appropriate, that:

4.5.7.1.1 The PR has been prepared in accordance with procedures.

4.5.7.1.2 Adequate technical and quality requirements are specified.

4.5.7.1.3 References and attachments are appropriate for the intended item.

4.5.7.1.4 Adequate QA documentation requirements have been specified.

4.5.7.2 After satisfactory completion of the review(s), the reviewer(s) shall document concurrence in a manner specified in procedures. The PR is considered approved within the context of this QAP upon satisfactory completion of the review(s).

4.5.8 PR changes

Once the initial PR has been reviewed by the reviewer(s), any changes to the technical and quality requirements including references or attachments of the PR shall be reviewed for adequacy. The review shall be equivalent to that performed on the initial PR and performed by the organization(s) assigned this responsibility in approved procedures.

4.5.9 Request for quotation/proposal

4.5.9.1 When required or requested, a request for quotation (RFQ) shall be prepared from an approved PR and issued to selected bidders. Items on a PR may be regrouped in the RFQ; however, each item and its requirements shall remain unchanged in transcription from the PR to the RFQ.

4.5.9.2 Quotations received with exceptions to the technical or quality requirements of the PR shall be evaluated by the department initiating the PR. Changes to the technical or quality requirements resulting from acceptance of vendor exceptions shall be translated into a change to the PR per Section 4.5.8 prior to issuance of a **PO** to the selected vendor.

4.5.10 POs

4.5.10.1 POs shall be prepared from an approved PR. When required by the PR, the vendor's QA program shall be approved by CP&L prior to issuance of the **PO**.

4.5.10.2 POs may be issued to agents or distributors of a vendor. In such cases, the **PO** shall include the name and location of the approved vendor. The agent or distributor does not have to appear on the **Approved Suppliers List (ASL)** provided that the items are shipped directly from the approved vendor.

4.5.10.3 PR items may be regrouped in the **PO** to facilitate procurement; however, each item and its requirements shall remain unchanged in the transcription from the PR to the **PO**. Validation of the accuracy of the **PO** against the approved PR will be performed in accordance with approved procedures.

4.5.10.4 Any exceptions to the **PO** received from the vendor involving the technical or quality requirements of the order shall be forwarded to the appropriate materials acquisition organization for evaluation. Any exceptions granted to technical and quality requirements shall be translated into a change to the initial **PO** as per Section 4.5.8.

4.6 PROCUREMENT BY CONTRACT

This subsection applies to the procurement by **contract** of items and **services**. Activities associated with the **contract** process including document preparation, review, approval, and changes to the **contract** document shall be controlled by procedure.

4.6.1 **Contract** Requisition

A **contract** will be generated from an approved **contract** requisition. The requisition shall be reviewed, prior to release, by qualified individuals knowledgeable in technical and QA requirement considerations to assure the requisition is adequate for the intended scope of work.

The review shall verify, as appropriate, that:

4.6.1.1 The requisition has been prepared in accordance with procedures.

4.6.1.2 Adequate technical and QA requirements are specified.

4.6.1.3 References and attachments are appropriate for the intended work scope.

4.6.1.4 When required, the vendor's QA program has been approved by CP&L for the scope of work. The vendor's QA program does not have to be approved prior to issuance of a RFQ.

4.6.1.5 Appropriate QA documentation requirements have been specified.

4.6.1.6 The record of reviews shall be retained as a QA record.

4.6.2 General requirements

Each **contract** shall specify:

4.6.2.1 Vendor's name and address.

4.6.2.2 Location where the work will be performed.

4.6.2.3 Scope of work requested.

4.6.2.4 QA requirements.

4.6.2.5 Special conditions the vendor shall comply with to be able to perform the work.

4.6.2.6 Documentation submittal requirements.

4.6.2.7 Material requirements, if applicable.

4.6.3 CP&L designated representative

The organization requesting a **contract** shall identify a CP&L designated representative, and the individual shall be specified by name in the **contract**. Changes in the assigned CP&L designated representative should be communicated to the vendor in writing. This individual will function as the **contract** administrator and, as such, shall be a person knowledgeable of the:

4.6.3.1 Work scope requested.

4.6.3.2 Technical and quality requirements of the work.

4.6.3.3 Responsibilities of a designated representative in monitoring the vendor, handling changes in work scope, and processing any documentation resulting from the service.

4.6.4 Technical requirements

The work scope of the **contract** shall clearly specify technical requirements which govern the work and establish an interface process for transmittal of requirements not identified in the work scope. Consideration shall be given to the following areas when developing the **contract** work scope description:

4.6.4.1 Applicable codes, standards, regulations, etc.

4.6.4.2 Methods of interface between vendor and CP&L for transmittal of **design inputs** and outputs, documents for review and approval, and other applicable design information.

4.6.4.3 Applicable specifications, drawings, or documents which shall be invoked.

4.6.4.4 Submittals required for CP&L review and approval with any limitations on work progression related to their approval by CP&L.

4.6.4.5 Reference to existing interface documents between vendor and CP&L if the document will be used to govern the interface.

4.6.4.6 For **M&TE calibration services**, the requirements of Section 4.5.6 shall apply.

4.6.5 QA requirements

4.6.5.1 The **contract** shall identify whether the work will be performed under the controls of the vendor's QA program and resultant procedures or under the control of CP&L's QAP with work performed to CP&L procedures. For work performed under CP&L's program, the CP&L designated representative will be responsible for identifying applicable procedures and making available a copy of these procedures and the QAP to the vendor or vendor's personnel.

4.6.5.2 For vendors implementing their QA program the **contract** shall required the vendor to:

4.6.5.2.1 Implement a documented QA program that complies with the applicable requirements of 10CFR50, Appendix B, and is approved by CP&L prior to the initiation of any work.

4.6.5.2.2 Allow CP&L and/or other parties authorized by CP&L right of access to the vendor's facilities, work areas, and records for the purposes of audits, surveillances, and inspections.

4.6.5.2.3 Incorporate appropriate QA requirements of the **contract** in subtier procurement documents.

4.6.5.2.4 Notify CP&L's designated representative of any nonconformances to the **contract** or any CP&L-approved document that results in one or more of the following. Documented vendor notification shall include the vendor's disposition and technical justification.

4.6.5.2.4.1 Technical or material requirement is violated.

4.6.5.2.4.2 Vendor documents approved by CP&L are violated.

4.6.5.2.4.3 Nonconformance(s) that cannot be corrected by continuation of the original manufacturing process or by **rework**.

4.6.5.2.4.4 The item or work product does not conform to the specified requirements even though the item or work product can be restored to a condition such that the capability of the item or work product is unimpaired.

4.6.5.3 Documentation submittal requirements to CP&L shall be specified or referenced. If any QA Records are to be retained by the vendor for CP&L, the **contract** shall specify the records to be retained, retention period for each record, and appropriate storage requirements.

4.6.6 **Contract** reviews

The **contract** shall be reviewed prior to release to assure the **contract** requisition requirements have been incorporated in accordance with approved procedures.

4.6.7 **Contract**/contract requisitions (CR) changes

Once the **contract**/CR has been reviewed by the reviewer(s), any changes to the technical and QA requirements including the scope, references, and attachments shall be reviewed for adequacy. The review shall be equivalent to that performed on the initial **contract**/CR and performed by the organization(s) assigned this responsibility in approved procedures.

4.6.8 Request for quotation/proposal

4.6.8.1 When required or requested, a RFQ shall be prepared and issued to selected bidders. The RFQ shall be reviewed for compliance with the contract requisition prior to issuance.

4.6.8.2 Quotations received with exceptions to the technical or quality requirements of the RFQ shall be evaluated by the organization responsible for the work. Changes to the technical or quality requirements resulting from acceptance of vendor exceptions shall be reflected in the final **contract** with final reviews performed per Section 4.6.7.

4.6.8.3 If the vendor's QA program is required to be approved by CP&L, qualification of the vendor's program shall be approved per Section 4.4 prior to issuance of the formal **contract**.

4.6.9 Approved **contract**

A copy of the approved **safety-related**, FP-Q, RW-Q, 10CFR71-Q, 10CFR72-Q, or Q Class B **contract** including attachments shall be provided to the Procurement, Dedication and Vendor/Equipment Services Unit and the CP&L designated representative, except for **contracts** controlled by the Nuclear Fuel Management & Safety Analysis Section of NED.

Copies of all **safety-related contracts** shall be retained as QA Records.

4.7 DISPOSITION OF VENDOR NONCONFORMANCES

Nonconformances reported by a vendor and the recommended disposition shall be evaluated by the responsible individual/group within the initiating department of the procurement documents. Approval of the vendor's disposition or CP&L-selected alternate disposition shall be provided to the vendor in writing. A copy of the nonconformance report and CP&L's disposition approval shall be retained as QA Records.

4.8 VERIFICATION OF VENDOR ACTIVITIES

4.8.1 Verification activities shall be a function of relative importance, complexity, and quantity of the item or service being procured and the vendor's past quality performance.

4.8.2 Verification activities shall be documented and executed by a surveillance or audit plan for an awarded **PO** or **contract**. These plans shall include the following provisions as required:

4.8.2.1 For in-process and final source surveillance of vendor's product or activities at the vendor's facilities or facilities of subtier vendors. The source surveillance shall be documented in a report and a copy of all reports sent to the appropriate plant's materials acquisition organization.

4.8.2.2 For surveillance or audits, as necessary, to assure that vendor planning and execution of work at the work location is controlled in accordance with the procurement document requirements.

4.9 MATERIAL UPGRADING

Material may be upgraded providing the item complies with the specification or applicable requirements for the intended application. Upgrades shall be performed by documented **engineering evaluations** or in accordance with criteria established in a procedure. The results of the evaluation of intended application requirements to the actual attributes of the item to be upgraded shall be documented and auditable. The upgrade evaluation shall assess the adequacy of QA data. The upgrade process shall address the need for **receipt inspection** based on the circumstances of the situation. Upon approval, the upgrade evaluation, along with the relevant vendor documentation and **receipt inspection** package, shall form the equivalent to a **PO** for item **traceability**.

4.10 SPECIAL PROCUREMENT

Items and **services** may be procured from other nuclear plant facilities licensed for construction or operations by the NRC that are not on CP&L's ASL so long as the technical and quality attributes of the item or service comply with the necessary requirements of specifications or intended application. The methods to be used for procurement in such special cases shall be set forth in procedures and shall provide adequate controls to assure technical and quality requirements are met.

4.11 VENDOR AUDITS

Audits, including preaward and periodic audits, are performed at the facilities of contractors providing material, parts, components, and **services** to CP&L. Preaward audits are performed when alternate methods of qualification are not sufficient to support the initial qualification of contractors. Periodic audits are performed when the results of periodic evaluations and the status and nuclear safety importance of items and **services** indicate that an audit is required. Audits shall be planned, conducted, and reported in accordance with procedures.

4.11.1 Personnel performing audits shall be appropriately trained, indoctrinated, and qualified to plan, conduct, and report audits.

4.11.2 Personnel qualified as lead auditors shall be responsible for: leading audits; audit notification, audit agenda preparation; auditor assignments, checklist preparation, auditor orientation, leading and scheduling preaudit and postaudit meetings, audit report preparation, and audit follow-up action.

4.11.3 Audits shall be conducted using checklists as guidelines. The checklists shall be prepared to cover the scope of the contractor's QA program for the desired items and **services**.

4.11.4 Audit planning shall include a review of previous audit reports of contractors. Unresolved **conditions adverse to quality** from previous audits shall be documented on the checklist.

4.11.5 Audits are performed to evaluate contractors' abilities to comply with the QA requirements of CP&L's procurement documents. Audits include an evaluation of QA practices, procedures, and instructions; assessment of contractors' QA programs implementation; review of work activities and processes; and review of quality-related documents and records.

4.11.6 Audit reports will include any identified findings, concerns, comments and, when appropriate, recommended corrective action. Audit reports will be maintained as QA Records.

4.11.7 Audit reports will be distributed to the appropriate CP&L and contractor management.

4.11.8 The contractor shall be requested to respond to the **conditions adverse to quality**. The request shall indicate the period of time required to respond to the **conditions adverse to quality**.

4.11.9 The lead auditor is responsible for the evaluation of corrective action. The results of this evaluation shall be documented. Follow-up audits will be planned and conducted to verify implementation of corrective action when necessary.

4.11.10 A system shall be maintained which indicates the status of nonconformances identified during audits.

5.0 MATERIAL AND EQUIPMENT CONTROL

5.1 SCOPE

This section establishes the requirements for controlling items which by definition include material, parts, and components. It includes requirements for the verification of identification, inspection status, handling, and storage of items. Material and equipment control assures that items used or installed in nuclear plants comply with the QAP, regulatory requirements, applicable technical requirement, and codes and standards.

5.2 REGULATORY COMMITMENTS

This section used in conjunction with Regulatory Guides 1.33, 1.38, and 1.146, and American National Standards Institute N45.2.2, N45.2.23 and N18.7, as committed in Sections 1.8 and 17.3 of the (U)FSAR, establishes the requirements for compliance with the associated portions of 10CFR50 Appendix B.

5.3 MATERIAL ACCEPTANCE

5.3.1 Personnel responsible for receiving material shipments shall verify that items do not exhibit shipping damage.

5.3.2 The determination of the need for, methods to be used, and **acceptance criteria** for material acceptance shall be determined prior to acceptance.

5.3.3 For acceptance by **receipt inspection**, the **acceptance criteria** shall be determined in accordance with guidance set forth in procedures. The following shall be considered in establishing the **receipt inspection** requirements and **acceptance criteria**:

5.3.3.1 Identification, marking, and labeling

5.3.3.2 Packaging requirements

5.3.3.3 Cleanliness

5.3.3.4 Physical attributes and electrical characteristics

5.3.3.5 Special inspections

5.3.3.6 Special environmental conditions (such as inert gas atmospheres, specific moisture content, and temperature levels)

5.3.3.7 Statistical sampling methods that may be used for **receipt inspection** of groups of similar items

5.3.3.8 Documentation required and the review requirements (such as legibility and completeness)

5.3.4 Results of the receipt inspection shall be documented. If the items and supporting documentation are found to be acceptable, the items shall be identified as acceptable. Acceptable items shall be released for storage or installation. Acceptable items shall indicate information that will provide **traceability** to procurement documents.

5.3.5 When necessary, source inspection shall be performed to verify that contractors have performed manufacturing, testing, and inspecting of items in accordance with the requirements of procurement documents. A **quality release** shall be prepared which authorizes contractors to ship items that are acceptable. Personnel responsible for **receipt inspection** shall verify

that source-inspected items are marked, labeled, and traceable to documentation packages and that documentation packages include records required by procurement documents, as a minimum. Any inspections or tests required per Section 5.3.3 which are not performed during source inspection shall be performed by appropriately qualified personnel upon receipt of the item(s) by CP&L.

5.3.6 Measures shall be taken to assure that items, including those subdivided, are properly identified from the time of receipt to the point of installation. Identification markings shall be applied in a manner that will not affect the function of the item.

5.3.7 The required identification and status markings shall be retained with the items or records traceable to the items. The identification of each item shall be included in the record of assembly or installation. For uninstalled items in work areas, status indicators such as markings, tags, or notations on work control documents shall be applied to show the latest status.

5.3.8 When items or required documentation for the items do not conform to requirements, the items shall be identified as nonconforming. Nonconforming items will be identified and controlled until proper disposition is made.

5.3.9 A receipt inspection documentation package shall be prepared and will include or reference for **traceability** the procurement documents, receipt inspection report, special inspection reports, certifications, plant-generated documents, and contractor-furnished documents. The documentation package shall be retained as QA Records.

5.4 CONDITIONAL RELEASE OF NONCONFORMING ITEMS

5.4.1 A **conditional release** may be initiated to permit progression of work involving a nonconforming item awaiting resolution. The request shall contain the necessary justification and limitations prior to review and approval.

5.4.2 If reasonable control and **traceability** can be maintained, a **conditional release** may be issued to permit limited use, installation, or testing of an item. The item shall be clearly tagged or otherwise traceable to show the status and the permitted actions.

5.5 MATERIAL STORAGE AND RELEASE

5.5.1 Items shall be stored in designated storage areas. Identification tags or marks and the inspection status shall be retained on items or on records which are traceable to the items. Release of accepted items shall be controlled to prevent damage, deterioration, or unauthorized storage and release.

5.5.2 Nonconforming items shall be segregated and stored in a designated storage area, when practical, to await disposition. When it is not practical to segregate nonconforming items, they shall remain tagged and held in storage areas until properly dispositioned.

5.5.3 Items shall be controlled to assure that they are properly dispositioned at the end of their specified shelf life or qualification period.

5.5.4 The appropriate handling equipment shall be provided and controlled to assure safe and adequate handling. Designated equipment shall be periodically inspected and tested to criteria established in procedures.

5.6 STORAGE INSPECTION PROGRAM

5.6.1 Inspection shall be maintained over items in storage areas. This program shall include:

5.6.1.1 Periodic inspections to assure that items are properly controlled, maintained, and protected. Inspections shall be documented.

5.6.1.2 The identification and control of nonconforming items until proper disposition is made.

6.0 PROCEDURES AND DRAWINGS

6.1 SCOPE

This section establishes requirements for preparation, review, approval, and control of procedures and drawings for **activities affecting quality.**

6.2 RESPONSIBILITY

Each organization performing **activities affecting quality** is responsible for ensuring this section is properly implemented in their area of responsibility.

6.3 REGULATORY COMMITMENTS

This section utilized in conjunction with Regulatory Guide 1.33 and American National Standards Institute N18.7 as committed in Sections 1.8 and 17.3 of the (U)FSAR, establishes the requirements essential to comply with the associated portions of 10CFR50 Appendix B.

6.4 PROCEDURES AND DRAWINGS

6.4.1 Appropriate procedures shall be developed for the preparation, review, approval, and issue of procedures and drawings.

6.4.2 The accomplishment of **activities affecting quality** shall be in accordance with approved procedures and/or drawings which are appropriate to the circumstances.

6.4.3 Procedures and drawings shall include the following elements in their content as applicable:

6.4.3.1 Prerequisites.

6.4.3.2 Precautions.

6.4.3.3 Qualitative/quantitative **acceptance criteria**.

6.4.3.4 Inspection points.

6.4.3.5 Checklists.

6.4.4 Measures shall be established to assure that procedures for **activities affecting quality** are reviewed prior to issue to ensure appropriate criteria have been specified. Appropriate criteria to be met include the Final Safety Analysis Report, Technical Specifications, operating license, commitments to regulatory agencies, regulations, and the Quality Assurance Program.

6.4.5 The approved, current revision, of procedures and drawings shall be strictly followed in accomplishment of work and shall be available at the work location where the activity will be performed (when applicable) prior to commencing work. Measures shall be established to assure continued use of approved, current revision documents.

6.4.6 Provisions shall be made for the review of procedures (Those procedures described in Reg. Guide 1.33) as required by plant commitment by an individual knowledgeable in the area affected to determine the need for changes.

7.0 INDOCTRINATION AND TRAINING

7.1 SCOPE

This section establishes the requirements for providing indoctrination and training for personnel performing **activities affecting quality.**

7.2 RESPONSIBILITY

Each department head responsible for **activities affecting quality** shall ensure the requirements of this section are implemented within his area of responsibility.

7.3 REGULATORY COMMITMENTS

This section utilized in conjunction with Regulatory Guides 1.8, 1.33 and 1.58, American National Standards Institute ANSI N3.1, ANSI N18.7 and ANSI N45.2.6 as committed in Sections 1.8 and 17.3 of the (U)FSAR, establishes the requirements essential to comply with the associated portions of 10CFR50 Appendix B.

7.4 GENERAL REQUIREMENTS

7.4.1 Training procedures shall be developed and implemented which encompass training, retraining, qualifications, and certifications of qualification, as required. Scope, method and objective of indoctrination and training shall be documented.

7.4.2 Personnel, both on-site and off-site, within the Carolina Power & Light (CP&L) organization performing **activities affecting quality** shall be indoctrinated and trained such that they are knowledgeable in the applicable quality-related procedures and requirements. Provisions to assure that these personnel remain proficient shall be made. The indoctrination and training program assures that:

7.4.2.1 Personnel responsible for performing **activities affecting quality** are instructed as to the purpose, scope, and implementation of the quality-related manuals and procedures.

7.4.2.2 Personnel performing/verifying **activities affecting quality** are trained and qualified in the principles and techniques of the activity being performed.

7.4.2.3 Proficiency and knowledge of personnel performing **activities affecting quality** is maintained by retraining, reexamining, and/or recertifying.

7.4.2.4 Formal training and qualification programs require documentation which includes objective, content of program, attendees, and dates of attendance.

7.4.3 Temporary personnel, both CP&L and/or contractors, are also trained in the categories in Section 7.4.2 to the extent necessary to assure safe execution of their duties.

7.4.4 Personnel within the operating organization performing duties of a licensed operator are indoctrinated, trained, and qualified as required by 10CFR55.

7.4.5 When specified in procedures, personnel performing welding, weld **repair**, brazing, heat treating, or other special processes shall be qualified and certified as set forth in the American Society of Mechanical Engineers Code, Section IX, and/or other applicable requirements.

7.5 TRAINING RECORDS

Records of personnel qualification and certification shall be maintained as required by procedures.

7.6 QUALIFICATION AND CERTIFICATION OF INSPECTION AND NONDESTRUCTIVE EXAMINATION (NDE) PERSONNEL

7.6.1 Personnel performing inspection, review, examination and testing, evaluations of inspection data, and reporting of inspection and test results will be qualified and certified, based on CP&L's commitment to Regulatory Guide 1.58.

7.6.2 Prior to certification, NDE personnel shall have satisfactorily passed an examination administered under the jurisdiction of a certified Level III in accordance with Recommended Practice SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing." Authority to certify CP&L Level III NDE personnel will be specified in CP&L's NDE procedures.

8.0 CALIBRATION CONTROL

8.1 SCOPE

This section sets forth the requirements to establish those measures which will assure that measuring and test equipment (**M&TE**) is properly controlled and calibrated.

8.2 RESPONSIBILITY

Each organization has the responsibility for the **calibration** of the items in the **Calibration** Program. As a minimum, the following types of items shall be included in the Calibration Program:

8.2.1 Instruments and control equipment required to be calibrated by the plant Technical Specifications

8.2.2 Instruments and equipment used to verify data points required by the plant Technical Specifications

8.2.3 **Active safety-related instrumentation**

8.2.4 Special tools: e.g., torque wrenches, micrometers, etc.

8.2.5 **Portable measuring and test equipment (P-M&TE)**

8.2.6 **Calibration** standards

8.2.7 Nondestructive examination (NDE) equipment utilized for NDE examinations/inspections. (NDE instruments used by NDE are not traceable to NIST or any other nationally recognized standard and do not fall under the chart depicted in Section 8.4.2).

NOTE: UT **calibration** blocks (used to set up ultrasonic NDE equipment); hardness test blocks (used to verify proper operation of the QC Receipt Inspection portable hardness testers); and Alloy Analyzer Test Specimens (used to verify proper operation of the QC Receipt Inspection Alloy Analyzers), are not considered as **M&TE** under CP&L's QAP, and as such, are not included in the **calibration** program. This does not preclude controls necessary

to assure that each block meets applicable requirements prior to their initial release for use.

The responsibility for carrying out the requirements of this section shall be established by the appropriate section manager in procedures. The following sections define the structure within which **calibration** shall be controlled.

8.3 REGULATORY COMMITMENTS

This section utilized in conjunction with (U)FSAR Section 17.3 establishes the requirements essential to comply with the associated portions of 10CFR50 Appendix B.

8.4 GENERAL

8.4.1 **Calibration** frequency

For those instruments and devices required to be calibrated by the Technical Specifications, the frequency shall be at least as frequent as the Technical Specification frequency. Special tools shall be calibrated at specified frequencies or prior to use. Frequency of **calibration** for the other items in the **Calibration** Program shall be based upon one or more of the following:

8.4.1.1 Required accuracy

8.4.1.2 Purpose

8.4.1.3 Degree of usage

8.4.1.4 Stability characteristics

8.4.1.5 Other conditions affecting the measurement

8.4.1.6 Manufacturer's recommendation

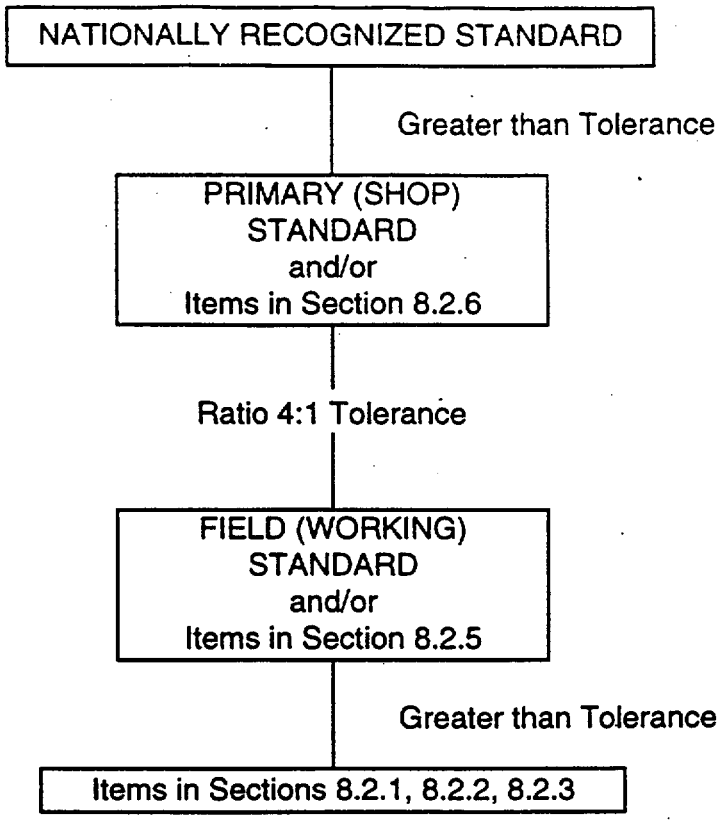
8.4.1.7 Governing Codes and Specifications

Special **calibrations** shall be performed when the accuracy of either installed or calibrating equipment is questionable

8.4.2 **Calibration** standards

Items in the **Calibration** Program shall have a known valid relationship to a nationally recognized standard; or where national standards do not exist, the basis for the **calibration** shall be documented.

The relationship between items in the Calibration Program and the devices that they are calibrated to shall be:



Equipment used both for **calibration** of installed instruments and to calibrate other standards shall be considered as **P-M&TE.**

Special tools (8.2.4) shall be calibrated to within the accuracy of the manufacturer's guarantee. Standards used in the **calibration** of special tools shall have a relationship to a calibrating standard which is equal to or greater than the accuracy of the special tool calibration standard.

In those cases where the given accuracy is not achievable or practicable, an evaluation shall be performed and documented to justify acceptability of the **calibration** accuracy in question.

8.5 CALIBRATION PROGRAM

A **Calibration** Program shall be developed and maintained up to date. The program will cover the type of equipment identified in Section 8.2 and, as a minimum, the program shall include:

8.5.1 Provisions for the review and approval of **calibration** procedures or instructions to include the review and approval of any vendor technical manual/document used in lieu of step-by-step directions for **calibration.**

NOTE: Procedures used by vendors on the **Approved Supplier's List** for **calibration services** have been reviewed as part of the original qualification. For specific applications, requesting organizations should ask for and review **calibration** procedures prior to use. This section allows a CP&L organization to incorporate vendor instructions (after suitable review) instead of writing their own should they

desire to perform the **calibration**.

8.5.2 Provisions to properly control **calibrations** performed by vendors and contractors. The vendor/contractor shall certify the **traceability** in accordance with the procurement document.

8.5.3 Provisions for performing the required **calibration** at the prescribed frequencies.

8.5.4 Provisions for the establishment and maintenance of a master schedule reflecting the status of planned **calibrations**.

8.5.5 Unique identification of each item in the **Calibration** Program so that **traceability** to the **calibration** data is possible. This identification shall be clearly visible on or with the equipment; e.g., Test Gauge 8, 2-CAC-AQH-I264.

8.5.6 Status of **calibration** for **M&TE** is provided for through the use of tags, stickers, labels, routing cards, computer programs, or other suitable means. The status indicators indicate the date recalibration is due or the frequency of recalibration.

8.5.7 Provisions as to the action required if **P-M&TE** is out of **calibration**. Such action shall include a documented review to determine the validity of past **calibrations**, measurements, or monitored parameters.

8.5.8 Action to be taken in the case of repetitive out of **calibration** of any **M&TE** and the cause of the out-of-calibration conditions shall be determined. Corrective action such as **repair**, replacing the equipment, or increasing the frequency of its **calibration** shall be taken to prevent recurrence. Identification of the condition, the cause, and the corrective action taken shall be documented and reported to the appropriate foreman/supervisor.

8.5.9 Provisions to provide for the evaluation of the **calibration** data to ensure conformance to **acceptance criteria** by a responsible group or individual.

8.5.10 Provisions to require and document corrective actions required following **calibrations** which do not meet the **acceptance criteria**.

8.5.11 Provisions to document the permission by operating personnel to remove from service installed items to be calibrated.

8.5.12 Provisions for providing the environmental conditions required for the performance of the **calibration** (e.g., location, cleanliness requirements, temperature, etc.).

8.5.13 Provisions to ensure items in the **Calibration** Program that are calibrated by CP&L are calibrated in accordance with procedures. These procedures shall:

8.5.13.1 Identify the item(s) to which it applies.

8.5.13.2 Contain a description of objectives.

8.5.13.3 Contain the **acceptance criteria** that will be used to evaluate the results.

8.5.13.4 Contain prerequisites for performing the **calibration** including any special conditions to be used to simulate normal or abnormal operating conditions.

8.5.13.5 Contain limiting conditions.

8.5.13.6 Specify special equipment or **calibrations** required to conduct the **calibration.**

8.5.13.7 Prescribe the appropriate documentation requirements (e.g., data forms to be used, test data to be recorded, etc.).

8.5.13.8 Contain step-by-step instructions in the degree of detail necessary for performing the **calibration.**

8.5.13.9 Require the recording of:

8.5.13.9.1 **Calibration** date.

8.5.13.9.2 Identification of those performing **calibration.**

8.5.13.9.3 As-found condition.

8.5.13.9.4 As-left condition.

8.5.13.9.5 The standard or other item of **M&TE** used to perform the **calibration** in order to maintain **traceability,** including the **calibration** date and serial number or unique instrument identification number.

8.6 RECORDS

The following documents shall be filed as QA Records:

8.6.1 Out-of-**calibration** documentation.

8.6.2 **Calibration** certificates for reference standards.

8.6.3 Completed **calibration** document(s).

9.0 SURVEILLANCE

This section was deleted with the implementation of the assessment program.

10.0 PLANT OPERATIONS CONTROL

10.1 SCOPE

This section sets forth requirements for the control of plant operations. Plant operations control assures that the quality of installed plant items is not degraded and that the quality of operations is not compromised.

10.2 REGULATORY COMMITMENTS

This section utilized in conjunction with (U)FSAR Section 17.3 establishes the requirements essential to comply with the associated portions of 10CFR50 Appendix B.

10.3 OPERATIONAL CONTROL

10.3.1 Plant operations shall be controlled and conducted in accordance with procedures. These procedures shall be contained within the Plant Operating Manual and shall provide for normal and emergency plant operations including response to abnormal operating conditions and the conditions described in the emergency plan.

10.3.2 Procedures shall be developed and approved which prescribe those measures to be employed when the operating capability of plant items is restricted or limited. These conditions shall be positively identified by tagging or other controls as a means to prevent inadvertent operation or use.

10.4 OPERATING LOGS AND RECORDS

Applicable logs and records shall be maintained to support the reporting and record-keeping requirements of the plant Technical Specifications. Completed logs and records relating to plant operations shall be reviewed for accuracy and completeness and maintained in accordance with Section 14.0.

10.5 INSTALLED PLANT ITEMS

10.5.1 Installed items shall be tested in accordance with procedures.

10.5.2 When an installed item does not conform to test, design, installation specifications, or other requirements, action shall be initiated as set forth in Sections 3.0, 11.0, or 12.0 to correct or replace the item.

10.5.3 Whenever an installed item is inoperative, nonconforming, or malfunctioning, the system and/or item shall be tagged or otherwise identified in accordance with procedures to prevent erroneous operation and, if necessary, inadvertent use. Corrective action shall be documented in accordance with Sections 3.0, 11.0, or 12.0.

11.0 MAINTENANCE CONTROL

11.1 SCOPE

This section sets forth requirements for procedures to be applied at operating plants for maintenance. This section includes requirements for work planning and preparation to assure that maintenance procedures are adequate, prerequisites are met, maintenance is accomplished under suitably controlled conditions, and the functional capability and quality intended by the design is maintained.

11.2 REGULATORY COMMITMENTS

This section utilized in conjunction with (U)FSAR Section 17.3 establishes the requirements essential to control maintenance activities in accordance with the associated portion of 10CFR50 Appendix B.

11.3 MAINTENANCE PROCEDURES

11.3.1 Procedures shall be applied to control maintenance of **safety-related** items. Maintenance procedures will include the following information, as appropriate:

11.3.1.1 Requirements for indoctrination, training, and skills.

11.3.1.2 Prerequisites for special environments, equipment, tools, and material preparation.

11.3.1.3 Provisions for data collection and reporting.

11.3.1.4 Instructions for documentation of work performed.

11.3.1.5 Requirements for verification of functional capability and quality by inspection, witnessing, examination, testing including specified mandatory holdpoints, and special processes.

11.3.1.6 Quantitative and qualitative criteria for determining that important steps or functions have been satisfactorily accomplished.

11.3.2 Certain maintenance activities which involve skills normally possessed by qualified personnel may not require detailed step-by-step delineation in a procedure. The following types of activities are among those that may not require detailed step-by-step written procedures:

11.3.2.1 Gasket replacement.
11.3.2.2 Troubleshooting electrical circuits.

11.3.2.3 Changing chart or drive speed gears or slide wires on recorders.

11.3.2.4 Packing adjustment or replacement.

It is the responsibility of maintenance supervision to determine if the job is within the skill of the craftsman.

11.4 CORRECTIVE MAINTENANCE

11.4.1 Maintenance activities at the plant which affect the quality of items shall be prescribed in procedures and accomplished as prescribed therein. To meet this requirement, one or more procedures are necessary for:

11.4.1.1 Processes of **rework** or **repair** that establish the functional capability or quality of items which require step-by-step delineation.

11.4.1.2 Tests and examinations that determine or verify the functional capability or quality of items.

11.4.1.3 Material protection measures that prevent damage and deterioration of items during handling, storage, and other maintenance activities.

11.4.1.4 Processes, tests, and handling which, unless controlled, may degrade the functional capability or quality of an item.

11.4.2 Work planning.

11.4.2.1 Maintenance programs shall prescribe the preplanning and preparation necessary to ensure the required materials and equipment are available and that work procedures are adequate.

11.4.3 Work execution.

11.4.3.1 Maintenance of items shall be accomplished as prescribed in procedures. Work execution shall include, as a minimum:

11.4.3.1.1 Assurance that prerequisites have been satisfied prior to performance.

11.4.3.1.2 The establishment of prescribed environmental conditions for accomplishing the activity such as adequate cleanliness or an inert atmosphere.

11.4.3.1.3 The use of appropriate equipment.

11.4.3.1.4 Control and accomplishment of special processes by qualified personnel and procedures.

11.4.3.1.5 Provisions for assuring that proper item identification for **traceability** is maintained.

11.4.3.2 Tests shall be conducted when necessary to determine that a new, reworked, or **repaired** item will perform satisfactorily in service.

11.5 PREVENTIVE MAINTENANCE

A preventive maintenance program shall be developed and implemented in accordance with procedures. Preventive maintenance procedures shall consider manufacturer recommendations and plant operating and maintenance experience.

11.6 USE OF MATERIAL

Items used for maintenance shall be in accordance with requirements contained in controlled documents or as specified in a controlled **information management system**. If items cannot be determined to be correct for the intended application, the responsible personnel shall request engineering determination of the adequacy of the item for its intended use. This determination shall be documented and referenced on or attached to the work request, or shall be documented in accordance with approved procedures.

12.0 CONDITIONS ADVERSE TO QUALITY (CATQ) AND CORRECTIVE ACTION

12.1 SCOPE

This section sets forth requirements for reporting, controlling, and dispositioning **CATQ**.

12.2 RESPONSIBILITY

The responsibility for carrying out the requirements of this section shall be established by procedures.

12.3 REGULATORY COMMITMENTS

This section utilized in conjunction with (U)FSAR Section 17.3 establishes the requirements essential to comply with the associated portions of 10CFR50 Appendix B.

12.4 GENERAL

12.4.1 Personnel are responsible for reporting to their supervision **conditions adverse to quality (CATQ),** discovered as a result of inspections, observations, surveillance, assessments, monitoring, audits, tests, checks, and review of documents.

12.4.2 **CATQ** shall be documented, controlled, and dispositioned in accordance with this section. In-process control documents may be used provided:

12.4.2.1 The condition is corrected before final acceptance of the work.

12.4.2.2 Work does not go beyond a holdpoint to the point of prohibiting the required inspections.

12.4.2.3 The condition does not adversely affect work previously accepted.

12.5 IDENTIFICATION, CONTROL, AND DISPOSITION

12.5.1 Procedures to control **CATQ** shall provide for the following:

12.5.1.1 Identification of nonconforming items by tags, labels, or other appropriate status indicators. This status identification shall remain with the item or in records traceable to the item until the disposition is complete and accepted.

12.5.1.2 Segregation of uninstalled nonconforming items, if practical, to prevent inadvertent use pending proper disposition and/or reinspection.

12.5.1.3 Identification and prompt notification of individuals or organizations responsible for disposition of the condition.

12.5.1.4 Preparation of appropriate documents which identify and describe the condition; provide for proper evaluation; and provide for disposition including reinspection, testing, or other verification to determine the acceptability and proper implementation of the disposition.

12.5.1.5 Verification of the acceptability of **rework/repair** of items by reinspection or testing of the item as originally performed or by methods equivalent to the original inspection or testing methods.

12.5.1.6 Assurance that corrective action appropriate for the condition is determined and scheduled for timely implementation.

12.5.1.7 Initiation of stop-work action in the event an activity or condition presents a threat to personnel safety or plant equipment.

12.5.1.8 Escalation to appropriate levels of management to obtain resolution of disagreements between responsible organizations.

12.5.2 Documents identifying **CATQ** should be reviewed in a timely manner and, if a **CATQ** is confirmed, evaluated for significance and issued. Guidance for this evaluation is provided in Section 12.7. Action to determine appropriate disposition and corrective measures should be initiated.

If the condition is not confirmed, the initiating document shall be canceled, the basis for cancellation noted on the document, and the document shall be placed in a permanent file.

12.5.3 For **significant conditions adverse to quality (SCATQ),** the root cause of the condition, corrective action, and action to preclude repetition shall be determined, documented, and reported to appropriate levels of management.

12.6 REPAIR OR USE-AS-IS DISPOSITIONS

12.6.1 When it is proposed to **repair** or to **"use-as-is"** a nonconforming item, an **engineering evaluation** shall be conducted before performing the **repair** or using the item.

12.6.2 **Engineering evaluations** to **repair** or **"use-as-is"** shall include documentation verifying the acceptability of the nonconforming item or condition being repaired or used as is.

12.6.3 **Engineering evaluations** shall be performed in accordance with procedures by personnel technically competent in the area of the nonconforming item or condition.

12.7 SIGNIFICANCE EVALUATION GUIDANCE

12.7.1 In determining if a condition is significant, the following criteria should be considered:

12.7.1.1 Adverse condition.

A deficiency, failure, malfunction, deviation, abnormal occurrence, defective material or equipment, or nonconformance in an item or activity which has affected or reasonably could affect:

12.7.1.1.1 Nuclear safety or quality.

12.7.1.1.2 Compliance with other regulations not included in nuclear safety or quality above.

12.7.1.1.3 Personnel safety.

12.7.1.1.4 Plant reliability.

12.7.1.1.5 Commercial concerns.

Adverse conditions may be performance-based, reliability-based, dimensional, material properties, testing, supporting documentation, etc.

12.7.1.2 **CATQ.**

An adverse condition associated with activities affecting the quality of structures, systems, components, programs, procedures, or documents that are subject to this QAP (i.e., Q-List, FP-Q, RW-Q, 10CFR71-Q, 10CFR72-Q, seismically qualified, equipment used to verify technical specification requirements, etc.)

12.7.1.3 **SCATQ.**

A **CATQ** which is important to the degree that action to preclude repetition is deemed appropriate by management. At a minimum, the following **CATQs** shall be considered **SCATQs**:

12.7.1.3.1 Severe or unusual plant transients.

12.7.1.3.2 A significant degradation in the ability of a safety system to perform its function.

12.7.1.3.3 Events involving nuclear safety that had a strong potential to be more severe if different conditions that could be reasonably expected had been present.

12.7.1.3.4 Discovery of a deficiency in an area such as design, analysis, operation, maintenance, testing, procedures, or training that is likely to cause a **SCATQ** in any of the items above.

13.0 ASSESSMENTS

13.1 SCOPE

The Assessment Program is designed to independently evaluate those company functions which have potential Nuclear Safety, Reliability or Quality Implications. The process is performance based using real time observation, interview and review techniques. Included in the program is the determination of each Nuclear Generation Group organization's ability to self evaluate its activities, identify needed improvements and deficiencies, and accomplish the appropriate corrective action.

13.2 QUALIFICATIONS

Personnel performing assessments shall have appropriate training and qualifications. They shall have no direct responsibilities in the areas they assess.

13.3 REGULATORY COMMITMENTS

This section used in conjunction with Regulatory Guides 1.144 and 1.146, American National Standards Institute N45.2.12, N45.2.23 and N18.7 as committed in Section 1.8 and Section 17.3.3.3, Independent Assessments, of the (U)FSAR, establishes the requirements essential for compliance with the associated portions of 10CFR50 Appendix B.

13.4 GENERAL

Assessments will be performed at nuclear plants and CP&L locations where functions affecting **safety-related** activities are performed. Assessments are regularly scheduled on the basis of the status and safety importance of the activity being performed. Assessments will verify compliance, determine the effectiveness, and evaluate the QAP against performance objectives and QAP requirements. Assessment frequencies are based on the Plant Technical Specifications, (U)FSAR commitments, and QAP Manual requirements and are maintained in commitment matrices by each assessment organization. Assessments shall be planned, conducted, and reported in accordance with procedures.

13.4.1 Assessments will focus on areas of potential improvement based on indicators such as previous assessment data, industry experience, regulatory sensitivity, and input from NGG Management.

13.4.2 The assessment process may include objective evaluation of line management's self assessment effectiveness, inspection of areas, observation of work activities and processes, interviews with personnel and review of documentation and procedures.

13.4.3 Assessment personnel are to maintain their independence of activities for which they are responsible for assessing. This independence should be sufficiently clear so as to avoid even the perception that they are in some way not independent. This, however, should in no way impede or dilute meaningful dialogue between assessors and assessed individuals and organizations.

13.5 ADVERSE CONDITIONS

Adverse conditions identified during the assessment process will be documented in accordance with Section 12.0.

13.6 REPORTS

Assessment results will be documented and distributed to appropriate levels of management.

Each assessment report will include documentation indicating the areas assessed, the appropriate QAP Manual requirement, and the commitment met by the assessment, as appropriate.

13.7 FOLLOW-UP

Follow-up is accomplished to assure that corrective action is taken as a result of the assessment and that deficient areas are reassessed, when necessary, to verify effectiveness of corrective actions.

14.0 QUALITY ASSURANCE (QA) RECORDS AND DOCUMENT CONTROL

14.1 SCOPE

This section establishes the requirements for accumulation, maintenance, and retention of QA Records associated with the nuclear plants and establishes requirements for control of documents relative to **activities affecting quality**. QA Records are those records which furnish documentary evidence of the quality of items and of **activities affecting quality**.

14.2 REGULATORY COMMITMENTS

This section used in conjunction with American National Standards Institute N45.2.9 and N18.7, and Sections 1.8 and 17.3 as committed in the (U)FSAR establishes the requirements for compliance with the associated portions of 10CFR50 Appendix B.

14.3 QA RECORDS

14.3.1 Requirements for implementation.

As required by procurement documents, vendors and contractors shall provide for accumulation and organization of those documents generated in their work that are required to be submitted for retention as QA Records. Upon completion of work by vendors and contractors, these records shall be transferred to Carolina Power & Light (CP&L) or its agent unless, by contractual agreement, the vendor or contractor will retain the records for CP&L for the required periods mutually agreed upon. Collection, storage, and maintenance of records shall be in accordance with commitments to Regulatory Guide 1.88 and/or ANSI N45.2.9 and the plant Technical Specifications.

14.3.2 QA Records accumulation, maintenance, and retention.

14.3.2.1 The responsible individual or organization shall provide for accumulation and organization of documents designated as QA Records in accordance with procedures. Documents shall be identifiable and retrievable.

14.3.2.2 Documents designated for retention shall be transferred in an organized manner for filing as QA Records. The documents shall be checked to verify that they are complete, properly identified, and that required documents are included.

14.3.2.3 QA Records shall be retained as part of the records system at the plant, unless by contractual agreement they are retained by an agent, vendor, or contractor for CP&L. QA Records may be maintained by other CP&L organizations as agents for a nuclear plant department as long as the agreement is covered by an approved document. The QA Records will be filed and maintained in facilities that prevent deterioration or damage to documents and shall be controlled to prevent loss. QA Records shall be organized and filed so that each document is identifiable, retrievable, and shall preclude deterioration of the records. QA Records shall be indexed.

14.4 DOCUMENT CONTROL

14.4.1 Appropriate document control procedures shall be established to identify those individuals or groups responsible for reviewing, approving, revising, and issuing documents.

Examples of documents which are to be controlled include:

14.4.1.1 **Design documents** (e.g., calculations, drawings, specifications, and analyses) including documents relating to computer codes.

14.4.1.2 Procurement documents

14.4.1.3 Quality Assurance Program Manual

14.4.1.4 Maintenance, modification, engineering, and operating procedures

14.4.1.5 Final Safety Analysis Report

14.4.1.6 **Conditions adverse to quality.**

14.4.1.7 Operating license/Technical Specification.

14.4.2 Procedures shall require that changes to documents be reviewed and approved prior to implementation by the same organization that performed the original review and approval or by other designated, qualified responsible organizations.

14.4.3 Procedures shall establish measures that assure current approved documents are used in accomplishment of work activities as well as in procedure and design document development or changes. Methods shall be implemented that preclude the use, or inadvertent use, of obsolete or superseded documents.

14.4.4 Controlling procedures for document control shall specify methods for identifying the current revision and status of plant procedures, **design documents**, modifications and change documents. These procedures shall also provide methods for identifying outstanding changes to procedures and **design documents**.

15.0 QUALITY ASSURANCE (QA) PROGRAM FOR FIRE PROTECTION SYSTEMS

15.1 SCOPE

This section sets forth the QAP requirements for permanent plant fire protection related systems, equipment, and administrative programs.

15.2 REGULATORY COMMITMENTS

The QAP delineated in this section incorporates the appropriate requirements of Branch Technical Position 9.5.-1, Appendix A; Appendix R to 10CFR50; commitments to the 1977 Nuclear Regulatory Commission "Administrative Controls for Fire Protection for Nuclear Power Plants" letter; and appropriate National Fire Protection Association codes and standards to the extent required by plant commitments. This section is to be used in conjunction with the (U)FSAR and Technical Specifications of each nuclear plant. Sections 1.0 through 14.0 of the QAP Manual apply only to the extent referenced in this section.

15.3 PROGRAM MANAGEMENT AND OBJECTIVES

15.3.1 The Plant General Managers at the three nuclear plants are responsible for the overall administration of the Fire Protection Program and provide the plant point of control and contact for contingencies. They may delegate their authority as appropriate to others; however, they shall not delegate their responsibility. The Plant General Managers/Director - Site Operations shall direct a documented program of QA for items designated as fire protection related. The program shall accomplish the following:

15.3.1.1 Provide controls for inspection, installation, corrective maintenance, modifications, and material acceptance activities for designated fire protection related items.

15.3.1.2 Verify compliance with governing procedures of the Fire Protection Program.

15.3.1.3 Provide adequate QA controls for designated fire protection related items to ensure the maintenance of an effective Fire Protection Program.

15.3.2 The Fire Protection Program shall include procedures and controls to accomplish the following:

15.3.2.1 Coordinate Fire Protection Program activities.

15.3.2.2 Prepare procedures and instructions which implement the Fire Protection Program.

15.3.2.3 Assure development and technical adequacy of training materials and sources related to fire protection related and assign qualified fire protection instructors.

15.3.2.4 Listing those fire protection items which are subject to the Fire Protection Program.

15.3.2.5 Periodic monitoring of fire protection related activities.

15.3.2.6 Assure that corrective maintenance and modifications of the fire protection related systems comply with Technical Specifications and as appropriate, applicable NFPA Codes and Standards; 10CFR50.48; and 10CFR50, Appendix R Sections III.G, III.J, and III.O.

15.3.2.7 Coordinate the arrangements for off-site fire company support and training.

15.3.2.8 Schedule and implement the Fire Drills Program.

15.3.2.9 Establish and maintain minimum equipment for the fire brigade teams.

15.3.2.10 Assign personnel to fire brigade teams.

15.4 DESIGN AND MODIFICATION CONTROL AND DOCUMENTATION

Design activities shall be accomplished in accordance with procedures that assure the applicable design requirements are included and that appropriate reviews are conducted. Design change of fire protection related items shall be prepared, approved, accomplished, and documented in accordance with Section 3.0.

15.5 PROCEDURES AND DRAWINGS

Activities such as design, installation, inspection, tests, maintenance, and modification of fire protection related systems shall be accomplished in accordance with procedures and drawings controlled in accordance with Sections 6.0 and 14.0.

15.6 CONTROL OF PURCHASED MATERIALS, EQUIPMENT, AND SERVICES

Control of plant purchased materials, equipment, and services with respect to fire protection related items shall be accomplished in accordance with the following for procurement, receiving, and storage:

15.6.1 Procurement.

Procurement documents for fire protection related items shall be completed in accordance with plant procedures. These procedures shall require:

15.6.1.1 Items to be either Underwriters Laboratories, Inc., listed and/or Factory Mutual approved or accepted, or accepted by American Nuclear Insurance, formerly NEL-PIA or Nuclear Mutual Limited.

or:

15.6.1.2 The item(s) technical and quality requirements are established during the review and approval process for the purchase requisition.

15.6.2 Receiving.

15.6.2.1 Fire protection related items shall be receipt inspected in accordance with procedures, noting in particular:

15.6.2.1.1 Any damage to the item.

15.6.2.1.2 Item identification and marking.

15.6.2.1.3 Any required vendor-supplied documentation.

15.6.2.1.4 Conformance with purchase requirements/ specifications.

15.6.2.2 A **receipt inspection** report shall be completed for received fire protection related items. Noted deficiencies shall be documented in accordance with Section 12.0.

15.6.2.3 Fire protection related items shall be tagged in accordance with procedures.

15.6.3 Storage.

Fire protection related items shall be stored in accordance with plant procedures.

15.7 FIRE PROTECTION SYSTEM TAGOUTS

Fire protection related system tagouts shall be accomplished in accordance with procedures.

15.8 CONDITIONS ADVERSE TO QUALITY (CATQ)

CATQ of fire protection related items shall be identified, reported, dispositioned, and corrected in accordance with Section 12.0.

15.9 QUALITY CONTROL INSPECTIONS

A documented program of quality control inspections is required when **rework** or design changes to those items can impair the ability of the system, equipment, component, or installation to accomplish its intended function.

15.10 FIRE PROTECTION INSPECTIONS

The Plant General Manager is responsible for implementing a documented program of periodic inspections which verifies compliance with governing procedures for the following fire protection related activities:

15.10.1 Housekeeping.

15.10.2 Surveillance tests of the fire protection related systems.

15.10.3 Control of ignition sources.

15.10.4 Use of fire watches.

15.10.5 Control of combustibles.

15.10.6 Fire protection related training documentation.

15.10.7 Preventive Maintenance Program.

15.11 PREVENTIVE MAINTENANCE

A Preventive Maintenance Program for designated fire protection related items shall be established and implemented in accordance with Section 11.0.

15.12 TESTING

Corrective maintenance which affects the function of designated fire protection related items requires post-maintenance testing except where such testing would be destructive. The specific test requirements shall be delineated in accordance with procedures and applicable NFPA codes and standards.

Design changes to fire protection related items require testing to demonstrate that design criteria and the function of the modification are met. The specific test requirements will be delineated in accordance with procedures.

15.13 ASSESSMENTS

Assessments shall be conducted in accordance with Section 13.0.

15.14 AUDITS

Fire protection related audits will be performed in accordance with plant Technical Specification.

15.15 RECORDS

Those records required to verify compliance with criteria of the Fire Protection Program shall be identifiable and retrievable and shall be assigned retention requirements.

15.16 MATERIAL UPGRADING

Items not originally procured for application in fire protection related systems shall be evaluated for the intended use prior to installation in accordance with procedures.

16.0 QUALITY ASSURANCE (QA) PROGRAM FOR RADIOACTIVE WASTE MANAGEMENT SYSTEMS (Harris Plant Only)

16.1 SCOPE

This section establishes the QAP requirements for radioactive waste management systems for use at the Harris Nuclear Plant only.

Maintenance and operation of radioactive waste management systems shall be in accordance with procedures to assure the original design requirements or evaluated alternatives are not compromised.

16.2 REGULATORY COMMITMENTS

This section establishes the QAP requirements of Regulatory Guide 1.143 for radioactive waste management systems. These requirements should be applied for design, installation, and initial testing of new radioactive waste management systems when specified by the **design organization**.

16.3 RESPONSIBILITIES

The responsibility for implementation of these requirements is assigned to the applicable department head unless specified in an interface agreement.

16.4 DESIGN AND PROCUREMENT ACTIVITIES

16.4.1 Design and procurement activities shall be accomplished in accordance with procedures. These procedures shall assure that the applicable design requirements are included in design and procurement documents and that appropriate reviews of these documents are conducted. Design changes shall be prepared, approved, accomplished, and documented in accordance

with Section 3.0.

16.4.2 Procurement procedures shall include measures for evaluation of the supplier to assure an appropriate QA system is in place for the items or **services** to be provided. As an alternative to such a system for American Society of Mechanical Engineers (ASME), Section VIII, or American National Standards Institute (ANSI) B31.1 items, the supplier shall only be required to have a QA system which satisfies the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, or ANSI B31.1 for boiler external piping.

16.5 MATERIAL CONTROL

16.5.1 Material purchased for radioactive waste management systems shall be receipt inspected to assure conformance to technical and QA requirements of the procurement document.

16.5.2 Measures shall be established to control handling, storage, and preservation of material to prevent damage or deterioration.

16.5.3 Measures shall be established to provide for identification of material which has satisfactorily passed required inspections or tests. These measures may include tags, labels, stamps, computer programs, or other suitable means.

16.5.4 Material not originally purchased for radioactive waste management systems may be used providing appropriate evaluations and inspections are performed in accordance with procedures.

16.6 CONTROL OF MEASURING AND TEST EQUIPMENT (M&TE)

Control of **M&TE** used to support activities described in this section shall be in accordance with Section 8.0.

16.7 PROCEDURES AND DRAWINGS

Activities described in this section shall be accomplished in accordance with procedures and drawings. These procedures and drawings shall be controlled in accordance with Sections 6.0 and 14.0.

16.8 CORRECTIVE ACTION

Conditions adverse to quality shall be identified, reported, dispositioned, and corrected in accordance with Section 12.0.

16.9 RECORDS

Measures shall be established to assure sufficient records are maintained to furnish evidence that the activities described in this section are being implemented. These records shall be identifiable and retrievable.

17.0 IF-300, IRRADIATED FUEL SHIPPING CASK

17.1 SCOPE

This section specifies the quality assurance (QA) requirements for the IF-300 irradiated fuel shipping cask.

17.2 REGULATORY COMMITMENTS

This section provides for the implementation of the IF-300 Irradiated Fuel Shipping Cask QA program criteria required to comply with the "QA Program Approval for Radioactive Material Packages," Docket 71-0345 which complies with the QA Program requirements of 10CFR71 Subpart H.

17.3 GENERAL

17.3.1 Classification of cask components

The following components and parts are 10CFR71 "Important to Safety" and are classified as **safety-related**. They are subject to QA program requirements contained in this section.

17.3.1.1 Containment

- Cavity End Plate
- Inner Shell
- Vent Pipe Assembly
- Locating Key
- Body Flange
- PWR Head Forging
- PWR Head Subassembly
- BWR Head Forging
- BWR Head Liner
- Trunnion Assembly
- Valve Boxes
- Rupture Disk Device
- BWR Head End Plate
- BWR Head Liner Ring
- BWR Sleeve Nuts
- PWR Sleeve Nuts
- Studs
- Cavity Globe Valves
- Valve Pipe Cap or Plug
- Valve Hardware
- Grayloc Seal Ring
- Fins
- Cavity Drain Line Assembly

17.3.1.2 Nuclear shielding:

Uranium shield (cask barrel, closure head, bottom, basket shield), neutron shield (corrugated barrel, valve boxes, expansion tank, piping, valves, blind flanges, liquid).

17.3.1.3 Criticality control:

- BWR basket

- PWR basket

17.4 ORGANIZATION

Organization and responsibilities are as described in Section 2.0.

17.5 DESIGN CONTROL

Design control shall be controlled as required by Section 3.0.

17.6 PROCUREMENT DOCUMENT CONTROL

The procurement of **safety-related** items and **services** shall be per the requirements of Section 4.0. To the extent necessary, suppliers are required to implement a QA program that meets Appendix B to 10CFR50 or Subpart H, 10CFR71. **Safety-related** parts shall be inspected, stored, and handled in accordance with plant procedures which meet Section 5.0.

17.7 PROCEDURES AND DRAWINGS

Cask loading, unloading, tests, and inspections are performed in accordance with procedures and drawings which are approved in accordance with Section 6.0. These procedures and drawings shall implement the requirements of the cask Certificate of Compliance.

17.8 DOCUMENT CONTROL

Documents relative to IF-300 activities shall be controlled as required by Section 14.0.

17.9 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

The identification and control of materials, parts, and components for the IF-300 cask shall be as described in Section 5.0.

17.10 CONTROL OF SPECIAL PROCESSES

Special processes shall be performed per the requirements of Section 11.0.

17.11 INSPECTIONS AND TEST CONTROL

Inspections and tests required by the IF-300 Certificate of Compliance shall be performed in accordance with the applicable portions of Section 11.0.

17.12 CONTROL OF MEASURING AND TEST EQUIPMENT (M&TE)

M&TE used for the IF-300 shall be calibrated and controlled as required by Section 8.0.

17.13 HANDLING, STORAGE, AND SHIPPING

Shipping of the IF-300 shall be in accordance with 49CFR and 10CFR71. Handling and storage shall be performed in accordance with procedures.

17.14 INSPECTION, TEST, AND OPERATING STATUS

Prior to placing the IF-300 cask in operation, certain preliminary tests shall be performed in accordance with procedures. These functional tests are designed to meet the requirements of the Certificate of Compliance for the IF-300 and Carolina Power & Light administrative controls.

Routine inspection of cask systems and components shall be accomplished in accordance with procedures. Where applicable, the manufacturer's recommended inspection intervals should be followed.

17.15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Conditions adverse to quality (CATQ) shall be controlled and dispositioned in accordance with Section 12.0.

17.16 CORRECTIVE ACTION

CATQ shall be controlled and dispositioned in accordance with Section 12.0.

17.17 QA RECORDS

Measures shall be established to assure sufficient records to furnish evidence that the activities described in this section are being implemented and records required by 10CFR71 are maintained in accordance with Section 14.0.

17.18 AUDITS/ASSESSMENTS

Audits/Assessments of the IF-300 cask activities shall be conducted in accordance with Sections 4.0 & 13.0.

18.0 RADIOACTIVE MATERIAL PACKAGES QUALITY ASSURANCE (QA) PROGRAM

18.1 SCOPE

This section establishes the QA requirements for activities associated with the procurement, testing, maintenance, **repair**, and use of "non LSA greater than Type A" packages as required by 10CFR71, Subpart H, other than the IF-300. The Quality Assurance Program (QAP) for the IF-300 is provided in Section 17.0 of the QAP Manual. This section also provides for management-controlled audits as required by 10CFR20.311.

18.2 REGULATORY COMMITMENTS

This section provides the implementation criteria required to comply with the "QA Program Approval for Radioactive Material Packages," Docket 71-0345 which complies with the QA Program requirements of 10CFR71 Subpart H.

18.3 ORGANIZATION

Organization and responsibilities are provided in Section 2.0.

18.4 DESIGN CONTROL

Design control shall be the responsibility of the package owner or manufacturer in the case of packages that are purchased by CP&L.

18.5 PROCUREMENT DOCUMENT CONTROL

Procurement documents:

Procurement documents shall:

- Require the package owner/manufacturer/ to have a Nuclear Regulatory Commission (NRC) approved QA program that meets the requirements of 10CFR71, Subpart H.
- Require the owner/manufacturer to submit current documentation attesting that the packaging was designed, procured, fabricated, assembled, tested, modified, repaired, and maintained in accordance with an NRC-approved quality assurance program.
- Designate other pertinent documentation to be furnished with the packaging (e.g., certificate of compliance, as-built drawings, photographs, sketches, use and maintenance manuals)

Approval of Vendors

Where procurement documents require the vendor to implement a quality assurance (QA) program that complies with 10CFR71, Subpart H, approval of this program by the NRC shall be confirmed prior to issuance of the **purchase order** or **contract**. Monitoring of supplier performance and continued qualification shall be documented in accordance with procedures. In the event replacement parts for the packagings are required, procurement of the parts shall be made by the packaging owner in accordance with the packaging owner's QA program.

18.6 PROCEDURES AND DRAWINGS

Package loading, unloading, filling, and inspections are performed in accordance with procedures and drawings which are approved in accordance with Section 6.0 and comply with the package Certificate of Compliance.

18.7 DOCUMENT CONTROL

Documents relative to activities performed by Carolina Power & Light (CP&L) shall be controlled as required by Section 14.0.

18.8 CONTROL OF PURCHASED MATERIALS, EQUIPMENT, AND SERVICES

Inspections shall be performed upon receipt of packaging to verify compliance with procurement documents. The criteria for acceptance of each of these inspections and the action to be taken if noncompliance is encountered is established in applicable plant procedures.

18.9 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Reference Section 18.5.

18.10 CONTROL OF SPECIAL PROCESSES

Special processes required shall be performed by the package owner.

18.11 INSPECTIONS

While packages are at CP&L facilities, inspections required by the Certificate of Compliance and by the package owner/manufacturer will be performed in accordance with Section 11.0. Packages owned by CP&L shall be inspected and maintained in accordance with procedures and drawings that are approved in accordance with Section 6.0.

18.12 TEST CONTROL

Tests required by the Certificate of Compliance shall be performed by the package owner/manufacturer in accordance with their NRC-approved QA program while the package is in their physical possession. Prior to a shipment, CP&L shall perform tests as required by the Certificate of Compliance and 10CFR71.

18.13 CONTROL OF MEASURING AND TEST EQUIPMENT (M&TE)

M&TE used by CP&L shall be calibrated and controlled as required by Section 8.0.

18.14 HANDLING, STORAGE, AND SHIPPING

Shipping of packages shall be in accordance with 10CFR71. Handling shall be performed in accordance with procedures. In the event CP&L stores a package, storage shall be in accordance with the package owner instructions.

18.15 INSPECTION, TEST, AND OPERATING STATUS

While a package is located on CP&L property, the status of the package shall be in accordance with the applicable sections of the QAP Manual.

18.16 CONDITIONS ADVERSE TO QUALITY (CATQ) AND CORRECTIVE ACTION

CATQ identified while on CP&L property shall be controlled and dispositioned in accordance with Section 12.0.

18.17 QA RECORDS

Those records required by 10CFR71 which are generated by CP&L shall be retained in accordance with Section 14.0.

18.18 AUDITS/ASSESSMENTS

Audits/Assessments of the Radioactive Material Packaging Program including the package contractor's activities shall be conducted in accordance with Sections 4.0 and 13.0.

19.0 SOFTWARE QUALITY ASSURANCE (QA) PROGRAM

19.1 SCOPE

19.1.1 This section provides detailed requirements which establish the Graded Approach to Quality for Software. The purpose of this section is to prescribe software configuration control requirements, define controls applicable to **quality software/computing systems**, and identify software life cycle requirements that establish the Nuclear Generation Group (NGG) Software Quality Assurance Program. Procedures that meet the requirements delineated in this section for **quality software/computing systems** shall be used to implement these controls. Controls are applied in a graded manner to **software/computing systems** which are outside safety related processes.

19.1.2 Items which have "self contained" digital processors or software (i.e. components that do not rely upon or interface with other software) that are periodically verified and validated are exempted from the scope of this program. This includes the following examples:

1. Digital instrumentation and control equipment (e.g. digital transmitters) subject to technical specification surveillance testing or periodic testing (e.g. periodic maintenance route).

2. Measuring and Testing Equipment (M&TE) which has in-process calibration to recognized standards or is in a site's calibration program.

3. Laboratory instruments utilizing software recognized as a national standard.

4. Changes to the simulator computer are exempted from this program because they are controlled by direct regulatory commitments.

19.1.3 Industry guidance documents on software quality assurance such as IEEE, ANSI; ANS, ASME, NUSMG, and NIRMA may be used for reference purposes.

19.2 REGULATORY COMMITMENTS

None.

19.3 RESPONSIBILITIES OF CAROLINA POWER & LIGHT (CP&L)

The responsibility for implementing this section is assigned to each nuclear organization that procures, develops, tests, verifies, uses, changes, maintains or retires **quality software/computing systems**. All **quality software/computing systems** shall be developed, tested, verified, used, and maintained under controlled conditions as appropriate based upon its importance to nuclear safety. A list of **quality software/computing systems** that support safety related work shall be maintained.

19.4 PROGRAM

19.4.1 Graded Approach to Software Quality Level Determination

The Software Quality Level is commensurate with the software's importance to nuclear safety. The most rigid controls are applied to **quality software/computing systems** based on the need for compliance with regulations, equipment reliability, or other factors. These controls are applied to the Software Life Cycle, which is the systematic approach to software development, maintenance, use, and retirement. The extent to which the individual requirements are applied depends upon the importance of software/computing systems as explained by Software Quality Assurance Program implementing procedures.

19.4.2 Software Life Cycle

1. Procurement

Procurement of **quality software/computing systems** shall be in accordance with Section 4.0 of this manual as specified in the Software Quality Assurance Program implementing procedures.

2. Development Phase

a. Baseline software life cycle documents are produced during the Development Phase in accordance with the Software Quality Assurance Program implementing procedures.

b. Vendor supplied life cycle documents for **quality software/computing systems** shall meet the requirements of this section.

3. **Installation Phase**

Installation of **quality software/computing systems** shall be controlled by Software Quality Assurance program implementing procedures.

4. **Operation and Maintenance Phase**

a. During the Operation and Maintenance Phase the software has been approved for operational use and the computing environment is established.

b. Maintenance (changes to **quality software/computing systems**) to remove latent errors, to respond to new or revised requirements, or to adapt to changes in the operating environment shall be performed under the established change control process as defined by Software Quality Assurance program implementing procedures.

5. **Retirement Phase**

a. During the Retirement Phase the support for a software product is terminated, and the routine use of the software is prevented.

b. The software is de-installed from CPUs, Servers, etc. and returned to the software librarian who controls software. Diskettes, tapes and other media shall be labeled "RETIRED".

19.4.3 Configuration Management

1. Configuration management refers to the controls for hardware and software items that constitute a system. This includes the release and change of those items throughout the system life cycle including the documentation of modification activities.

2. The baseline version of **quality software/computing systems**, source code and life cycle documentation shall be stored per Records Management procedures and Software Quality Assurance Program implementing procedures.

3. Error notification, evaluation and resolution information shall be controlled for **quality software/computing systems** used in NGG.

4. Life Cycle Baseline documentation requirements shall be imposed upon modification of the existing product.

5. **Quality software/computing systems** that exist and are in production prior to the effective date of this program shall be included on a controlled list. Minimal information shall be software name, version, software quality level, software quality level justification and software owner name.

6. Each organization utilizing **quality software/computing systems** shall keep track of safety-related work resulting from the use of such software, including version numbers or issue date of the software. If significant errors are later determined, safety-related work can be reviewed to determine any impact of software errors.

19.4.4 Qualification Requirements

Qualification is the process of demonstrating that for a given input which may be defined in an Acceptance Test Plan, Benchmark Test Case or Calibration Test Procedure, the software produces the expected output

1. Acceptance Test Requirements

Plant computer systems shall undergo acceptance testing per applicable plant procedures to demonstrate required performance over the range of operation of the controlled function or process. The results of tests that are Quality Assurance or Vital records shall be designated and stored in Records Management in accordance with procedures.

2. Calibration and Control Test Requirements

Computer based calibration and control equipment shall be calibrated, adjusted, and maintained at prescribed intervals or prior to use per applicable plant procedures. The results of tests that are Quality Assurance or Vital records shall be designated and stored in Records Management as required by procedures.

3. Benchmark Test Requirements

The benchmark test process is typically used to demonstrate design analysis software products perform as expected. This includes development of appropriate test cases to access the software functionality and execution of these test cases. The benchmark test proves, for a given input, a known result is obtained.

19.4.5 Error Management

1. A method of describing user-identified errors or problems to the developer or the owner of the software shall be established. Errors for **quality software/computing systems** shall be identified and documented per Software Quality Assurance Program implementing procedures.

2. A list of errors, error reports to users, resulting evaluation and corrections, error impact statement, and error resolutions shall be maintained in a controlled manner.

3. Impact on NGG shall be determined and appropriate corrective action taken with any related errors introduced into NGG and with the software source code, if appropriate. In case of misuse, the causes of misuse shall be clarified and positive action taken to prevent future misuse.

4. Error reports shall document error impact and will be identified as a Quality Assurance or Vital records upon error resolution. These records shall be designated and stored in Records Management as required by procedures.

19.4.6 Self Assessment

Self assessments of the Software Quality Assurance Program shall be performed.

19.4.7 Records Management

Documentation resulting from the development, modification or use of **quality software/computing systems** shall be maintained as QA records as required in procedures.

20.0 NONSAFETY-RELATED COMPUTER SOFTWARE QUALITY ASSURANCE.

THE CONTENTS OF THIS SECTION HAVE BEEN INCLUDED IN SECTION 19.0.

21.0 QUALITY ASSURANCE (QA) PROGRAM REQUIREMENTS FOR QUALITY CLASS B ITEMS

21.1 SCOPE

This section sets forth the QA requirements for **quality Class B items** and activities. Items subject to these requirements shall be identified in appropriate plant procedures.

Sections 1.0 through 14.0 of the QAP Manual apply only to the extent referenced in this section.

21.2 REGULATORY COMMITMENTS

This section is to be utilized in conjunction with Regulatory Guides 1.29 and 1.97 as committed in Section 1.8 of the (U)FSAR.

21.3 MANAGEMENT RESPONSIBILITIES

Each department head has responsibility for determining if this section applies to plant activities being performed, for implementation of these requirements, and for establishing the necessary interfaces with other organizations.

21.4 DESIGN ACTIVITIES

Design change activities shall be accomplished in accordance with Section 3.0. (Not applicable to BNP/RNP)

21.5 PROCUREMENT

Preparation, review, and approval of procurement documents shall be in accordance with Section 4.0 or acceptable alternatives delineated in procedures.

21.6 MATERIAL CONTROL

Receiving inspection, storage, and equipment control shall be in accordance with Section 5.0. (For BNP and RNP, these items are not required to be stored in specifically designated storage areas.)

21.7 CONDITIONS ADVERSE TO QUALITY (CATQ)

CATQ shall be identified, reported, dispositioned, and corrected in accordance with Section 12.0.

21.8 OPERATIONS CONTROL

Plant operations of these items shall be in accordance with Section 10.0.

21.9 CALIBRATION CONTROL

Calibration activities shall be in accordance with Section 8.0.

21.10 MAINTENANCE

Maintenance activities shall be in accordance with Section 11.0. (Not applicable to BNP or RNP.)

21.11 ASSESSMENTS/AUDITS

Assessments/Audits may be conducted in accordance with Sections 4.0 & 13.0.

21.12 QA RECORDS

Measures shall be established to assure sufficient records are maintained to furnish evidence that the activities described in this section are being implemented. These records shall be identifiable and retrievable. These records shall be maintained in accordance with Section 14.0.

22.0 QUALITY ASSURANCE PROGRAM FOR NONSAFETY RELATED SYSTEMS AND EQUIPMENT USED TO MEET THE STATION BLACKOUT RULE

22.1 SCOPE

This section sets forth the QAP requirements for nonsafety related systems and equipment used for meeting the Station Blackout (SBO) Rule (10CFR50.63) which are not otherwise covered by a quality assurance program.

22.2 REGULATORY COMMITMENTS

The QAP delineated in this section incorporates the appropriate requirements of 10CFR50.63 and Reg. Guide 1.155. Sections 1.0 through 14.0 of the QAP Manual apply only to the extent referenced in this section.

22.3 PROGRAM MANAGEMENT AND OBJECTIVES

The Plant General Manager is responsible for the overall administration of the Station Blackout Quality Assurance Program and provides the plant point of control and contact for contingencies. He may delegate his authority as appropriate to others; however, he shall not delegate his responsibility.

22.4 DESIGN CONTROL

Design activities shall be accomplished in accordance with procedures that assure the applicable design requirements are included and that appropriate reviews are conducted. Design changes of Station Blackout items shall be prepared, approved, accomplished, and documented in accordance with Section 3.

22.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Activities such as design, installation, inspection, tests, maintenance, and modification of non-safety systems used to meet the Station Blackout Rule shall be accomplished in accordance with instructions, procedures and drawings in accordance with Section 6.

22.6 PROCUREMENT DOCUMENT CONTROL AND CONTROL OF PURCHASED MATERIAL,EQUIPMENT, AND SERVICES

Control of plant purchased materials, equipment, and **services** with respect to nonsafety related systems and equipment used to meet the SBO rule (SBO Items) shall be accomplished in accordance with the following for procurement, receiving, and storage:

22.6.1 Procurement

Procurement documents for SBO items shall be completed in accordance with plant procedures. These procedures shall require the item(s) technical and quality requirements be established during the review and approval process for the purchase requisition.

22.6.2 Receiving

22.6.2.1 Material, equipment and **services**, including spare and replacement parts for the nonsafety related systems and equipment used to meet the Station Blackout Rule shall be inspected, stored, issued, and controlled in accordance with procedures, noting in particular:

22.6.2.1.1. Any damage to the item.

22.6.2.1.2 Item identification and marking.

22.6.2.1.3 Any required vendor-supplier documentation.

22.6.2.1.4 Conformance with purchase requirement/specification.

22.6.2.2 A **receipt inspection** report shall be completed for received SBO Items. Noted deficiencies shall be documented in accordance with Section 12.

22.6.2.3 SBO Items shall be tagged in accordance with procedures.

22.6.3 Storage

SBO Items shall be stored in accordance with plant procedures.

22.7 NONCONFORMING ITEMS AND CORRECTIVE ACTIONS (CONDITIONS ADVERSE TO QUALITY)

Conditions Adverse To Quality (CATQ) of SBO items shall be identified, reported, dispositioned, and corrected in accordance with Section 12.

22.8 INSPECTIONS

Independent inspections of activities will be performed in accordance with procedures to verify compliance with documented installation drawings and test procedures for accomplishing activities related to the Station Blackout program.

22.9 TESTING AND TEST CONTROL

Testing will be performed and verified by inspection to demonstrate conformance with design and system readiness requirements. These tests will be performed; test results properly evaluated, and appropriate action taken in accordance with plant procedures.

22.10 ASSESSMENTS

Assessments shall be conducted in accordance with Section 13.0.

22.11 RECORDS

Those records required to verify compliance with criteria of the Station Blackout program shall be identifiable and retrievable and shall be assigned retention requirements.

22.12 MATERIAL UPGRADING

Items not originally procured for application in SBO systems shall be evaluated for the intended use prior to installation in accordance with procedures.

23.0 INTERPRETATIONS

23.1 SCOPE

This section sets forth requirements for issuing official CP&L Quality Assurance Program interpretations by the Manager - Performance Evaluation and Regulatory Affairs (PERAS). These interpretations are issued on an as-needed basis for the purposes of clarifying Company policy in areas pertaining to this program. It includes requirements for the issuance, control, and removal of interpretations and a listing of current interpretations.

23.2 REGULATORY COMMITMENTS

None

23.3 REQUIREMENTS

Interpretations shall be requested and issued in accordance with the following requirements:

23.31 Requests for interpretation shall require the signature of a section manager or above.

23.3.2 The Manager - PERAS is the sole authority for determining whether a response to a request for interpretation is to be included in this section.

23.3.3 A request for an interpretation will be responded to regardless of whether or not it will be included in this section.

23.3.4 Current and historical interpretations shall be listed in Section 23.5 by sequential number and by subject.

23.3.5 Interpretations, once issued, shall remain a part of this section until the manual is revised. After manual revision, interpretation will be withdrawn and a line added to the listing in Section 23.4 identifying that portion of the manual revised to incorporate that interpretation or noted for clarification only.

23.4 CONTENTS

The following is a listing of interpretations contained in Section 23.4. Both current and historical interpretations are included by number and subject line. Historical interpretations can be found in the historical files.

23.5 LISTING OF INTERPRETATIONS

Current and Historical

INTERPRETATION NUMBER	SUBJECT	DATE	STATUS
23.5.1	Interpretation of Inspector Qualification/Independence Requirements	7/19/89	Deleted by Revision 18
23.5.2	Interpretation of UT Block **Calibration** Requirements (QAP Manual Sections 4.5.6 & 8.0) for clarification only	1/15/90	Incorporated into Section 8.0 in Revision 18
23.5.3	Interpretations to Commitments to ANSI 18.7 via Final Safety Analysis Reports - (Requirements for Inspection By Other Than Quality Control Personnel) (QAP Manual Section 7.6) for clarification only	1/6/92	Deleted by Revision 18
23.5.4	Interpretation of the QAP Manual, Paragraph 6.4.7 of the Procedures and Drawings Section	1/17/92	Canceled Section 6.4.7 Deleted
23.5.5	Interpretation of **Calibration** accuracy requirements for **M&TE** (QAP Manual Section 8.4)	9/2/93	Incorporated in Rev. 17

(Note: This policy statement is a reprint of the CP&L Quality Assurance Program Policy statement on the Intranet. Any changes to this document requires the policy statement to be revised on the Intranet).

Document title

CP&L Quality Assurance Program Policy

Document number

REG-CPL-000

Keywords

Policy; CPL; Regulatory; Quality Assurance; Program

It is the policy of Carolina Power & Light Company to operate and maintain nuclear power plants to safeguard the health and safety of its employees and the public. The operation of nuclear power plants is in accordance with the facility operating license issued by the Nuclear Regulatory Commission (NRC). A Quality Assurance (QA) program is implemented and updated as necessary to assure that systems used for generating electricity using nuclear fuel are designed, constructed, and operated in a safe manner. Deviations from the requirements of this program are permitted only with written authority from the corporate management position which originally approved the program or implementing procedures.

CP&L's QA Program ensures compliance with NRC regulations specified in Title 10 of the US Code of Federal Regulations. The CP&L QA Program for 10CFR50 Appendix B requirements is established by and defined in Sections 1.0-14.0 of NGGM-PM-0007, *Quality Assurance Program Manual*. A description of this program is also contained in Section 17.3 of each nuclear plant's (U)FSAR. Implementing procedures are contained in the Plant Operating Manuals (POMs). CP&L QA programs for Fire Protection Systems, Radioactive Waste Management Systems, IF-300 Shipping Cask, Radioactive Material Packages, Computer Software, Quality Class B items, and Station Blackout are also contained in the NGGM-PM-0007.

The Senior Vice President - Nuclear Generation/Chief Nuclear Officer has the ultimate company responsibility for the safe operation of the nuclear power plants. Plant Vice Presidents and the Manager - Performance Evaluation and Regulatory Affairs (PERAS), have the responsibility and authority to identify and correct quality problems and are responsible for monitoring the effectiveness of quality assurance activities through a system of planned assessments and inspections. Plant Vice Presidents and the Manager - PERAS effect this responsibility by maintaining a strong self evaluation culture in the line organization supplemented with independent monitoring and systematic assessments performed by the Nuclear Assessment Sections and Performance Evaluation Support.

The Manager - PERAS is responsible for maintaining and monitoring the overall effectiveness of QA Program implementation and communicates directly with Senior Management up to and including the President/Chief Executive Officer, and if appropriate, with the Board of Directors, to resolve any quality concerns which cannot be resolved satisfactorily at a lower management level.

PES and NAS Managers review the effectiveness of the QA Program on a regular basis with the Senior Vice President - Nuclear Generation/Chief Nuclear Officer.

Although specific position and responsibilities are delineated in this policy statement the achievement of quality is the responsibility of each individual involved in nuclear generation.

W. S. Orser
Executive Vice President - Energy Supply

APPENDIX I

This Appendix provides a cross-reference between the QAP Sections I.0 through I4.0 and Title I0, Code of Federal Regulations, Part 50, Appendix B (I0CFR50, Appendix B), titled, "Quality Assurance Criteria for Nuclear Power Plants."

The references to the QAP contained in this appendix are limited to those that have a direct connection, or describe the immediate activity addressed by I0CFR50, Appendix B. The program references are identified by paragraph number, indicating a description of implementation somewhere within the text of the referenced paragraph. References to the 18 criteria of I0CFR50, Appendix B, are identified by roman numerals. Sentences within each Appendix B criterion are further subdivided by Arabic numbers and aspects of each sentence by lower case letters.

APPENDIX I

10CFR50 (APPENDIX B)	CP&L QA PROGRAM MANUAL
I. ORGANIZATION	
1. The applicant shall be responsible for:	
a. Establishment of the QA Program.	1.1
b. Execution of the QA Program.	1.1, 1.2, 2.1
2. The applicant may delegate to others, such as contractors, agents, or consultants the work (or any part thereof) of:	
a. Establishing the QA Program.	2.2
b. Executing the QA Program.	1.1, 2.1, 2.2
But the applicant shall retain responsibility therefore.	
3. The authority and duties of persons and organizations performing activities affecting the safety-related functions of structures, systems, and components shall be clearly established and delineated in writing.	2.2
4. These activities include both the performing functions of attaining quality objectives and the quality assurance functions.	2.2, 2.3, 2.4
5. The QA functions are those of:	
a. Assuring that an appropriate QA Program is established and effectively executed.	1.3, 2.2, 4.11, 13.1
b. Verify, such as by checking, auditing, and inspection, that activities affecting the safety-related functions have been correctly performed.	2.2, 4.11, 13.1

6.	The persons and organizations performing QA functions shall have sufficient authority and organizational freedom to:	
	a. Identify quality problems.	2.2, 4.11, 13.1
	b. To initiate, recommend, or provide solutions.	2.2, 4.11.6, 13.5
	c. To verify implementation of solutions.	2.2, 4.11.8, 13.7
7.	Such persons and organizations performing quality assurance functions shall report to a management level such that this required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations are provided.	2.2
8.	Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location or locations where activities are performed, the organizational structure for executing the QA Program may take various forms provided that the persons and organizations assigned the QA functions have this required authority and organizational freedom.	2.2
9.	Irrespective of the organizational structure, the individual(s) assigned the responsibility for assuring effective execution of any portion of the QA Program at any location where activities subject to this Appendix are being performed shall have direct access to such levels of management as may be necessary to perform this function.	2.2

II. QUALITY ASSURANCE PROGRAM

1.	The applicant shall establish at the earliest practical time, consistent with the schedule for accomplishing the activities, a QA Program which complies with the requirements of	1.1, 1.2, 2.2

this Appendix.

2.	This Program shall be:		
	a.	Documented by written policies, procedures or instructions.	2.2.
	b.	Carried out throughout plant life in accordance with those policies, procedures or instructions.	2.2, 6.0
3.	The applicant shall identify:		
	a.	The structures, systems and components to be covered by the QA Program.	1.2
	b.	The major organizations participating in the Program, together with the designated functions of these organizations.	2.2
4.	The QA Program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.		1.2
5.	Activities affecting quality shall be accomplished under suitably controlled conditions.		5.3, 6.4, 8.5, 10.3, 11.1, 11.3
6.	Controlled conditions include:		
	a.	The use of appropriate equipment.	5.2, 6.3, 8.4, 10.2, 11.1, 11.3
	b.	The use of suitable environmental conditions for accomplishing the activity, such as adequate cleanliness.	5.3, 6.4, 8.5, 10.3 11.1, 11.3
	c.	Assurance that all prerequisites for the given activity have been satisfied.	4.9, 4.11, 5.3, 6.4, 8.5, 13.1

7.	The Program shall take into account the need for:		
	a.	Special controls.	5.3, 5.5, 10.3, 11.3
	b.	Processes.	10.3, 10.5, 11.3, 11.4
	c.	Test equipment.	8.2
	d.	Tools.	5.4, 8.2
	e.	Skills to attain the required quality.	7.0
	f.	Verification of quality by inspection.	4.5, 4.6, 5.3, 5.5, 11.3, 11.4
	g.	Verification of quality by test.	3.4, 3.5, 4.5, 11.3
8.	The Program shall provide for:		
	a.	Indoctrination.	Section 7.0
	b.	Training.	Section 7.0
	Of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.		
9.	The applicant shall regularly review the status and adequacy of the QA Program.		1.3
10.	Management of other organizations participating in the QA Program shall regularly review the status and adequacy of that part of the QA Program which they are executing.		2.1, 2.2

III. DESIGN CONTROL

1.	Measures shall be established to assure that applicable regulatory requirements and the design bases, as defined in 10CFR50.2 and as specified in the license application for those structures, systems, and components to which this Appendix applies, are correctly translated into	3.3, 3.4

specifications, drawings, and instructions.

2. These measures shall include provisions to assure that appropriate quality standards:

   a. Are specified and included in design documents. 3.3, 3.4

   b. Deviations from such standards are controlled. 3.3, 3.4, 3.9

3. Measures shall also be established for:

   a. Selection. 3.4, 3.5

   b. Review. 3.4, 3.5

   For suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.

4. Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. 3.10

5. These measures shall include the establishment of procedures among participating design organizations for:

   a. Review of documents involving design interfaces. 3.10

   b. Approval of documents involving design interfaces. 3.10

   c. Release of documents involving design interfaces. 3.10

   d. Distribution of documents involving design interfaces. 3.10

   e. Revision of documents involving design interfaces. 3.10

6. The design control measures shall provide for verifying or checking the adequacy of design, such as by one or more of the following means:

a.	Performance of design reviews.	3.4, 3.5, 3.6
b.	Use of alternate or simplified calculational methods.	3.4, 3.5, 3.6
c.	Performance of a suitable testing program.	3.4, 3.5, 3.6
7.	The verifying or checking process shall be performed by individuals or groups other than those who performed the original design, but who may be from the same organization.	3.4, 3.5
8.	Where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking process, it shall include suitable qualification testing of a prototype unit under the most adverse design conditions.	3.3, 3.4, 3.5
9.	Design control measures shall be applied to items such as the following: reactor physics; stress, thermal, hydraulic, and accident analyses; compatibility of materials; accessibility for in-service inspection, maintenance, and repair; and delineation of acceptance criteria for inspections and tests.	3.3, 3.4, 3.5
10.	Design changes, including field changes, shall be:	
a.	Subject to design control measures commensurate with those applied to the original design.	3.5
b.	Approved by the organization that performed the original design unless the applicant designates another responsible organization.	3.5

IV. PROCUREMENT DOCUMENT CONTROL

1.	Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or references in the documents for procurement of material, equipment, and services, whether purchased by the applicant or by its Contractors or Subcontractors.	4.5
2.	To the extent necessary, procurement documents shall require Contractors or subcontractors to provide a QA Program consistent with the pertinent provisions of this Appendix.	4.4

V. INSTRUCTIONS, PROCEDURES AND DRAWINGS

1.	Activities affecting quality shall be:	
	a. Prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances.	6.0
	b. Accomplished in accordance with these instructions, procedures or drawings.	6.0
2.	Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.	6.0

VI. DOCUMENT CONTROL

1.	Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality.	6.1, 6.34, 14.4
2.	These measures shall assure that documents, including changes:	
	a. Are reviewed for adequacy.	6.4, 14.4

b. Approved for release by authorized personnel. 6.4, 14.4

c. Distributed to the location where the prescribed activity is performed. 6.4, 14.4

d. Used at the location where the prescribed activity is performed. 6.4, 14.4

3. Changes to documents shall be reviewed and approved by the same organization that performed the original review and approval unless the applicant designates another responsible organization. 6.4, 14.4

VII. CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

1. Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through Contractors and Subcontractors, conform to the procurement documents. 4.8, 5.3

2. These measures shall include provisions, as appropriate, for:

a. Source evaluation and selection. 4.4, 4.8

b. Objective evidence of quality furnished by the Contractor or Subcontractor. 4.4, 4.8

c. Inspection at the Contractor or Subcontractor source. 4.4, 4.8

d. Examination of products upon delivery. 5.3

3. Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plant site prior to installation or use of such material and equipment. 5.5

4.	This documentary evidence shall be:		
	a.	Retained at the nuclear power plant site.	5.3
	b.	Sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material and equipment.	5.3
5.	The effectiveness of the control of quality by Contractors and Subcontractors shall be assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services.		2.2, 4.8, 4.11
VIII.	**IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS**		
1.	Measures shall be established for the identification and control of materials, parts, and components, including partially fabricated assemblies.		5.3, 5.4, 5.5
2.	These measures shall assure that identification of the item is maintained by heat number, part number, serial number or other appropriate means, either on the item or on records traceable to the item, as required throughout fabrication, erection, installation, and use of the item.		3.5, 3.7, 5.3, 5.4 5.5, 10.5
3.	These identification and control measures shall be designed to prevent the use of incorrect or defective material, parts, and components.		5.3, 5.4, 5.5, 10.3, 11.4, 11.6
IX.	**CONTROL OF SPECIAL PROCESSES**		
1.	Measures shall be established to assure that special processes, including welding, heat treating, and nondestructive testing are:		
	a.	Controlled.	7.4, 11.3

b.	Accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.	7.4, 11.3

X. INSPECTION

1.	A program of inspection of activities affecting quality shall be:	
	a. Established.	2.2, 5.3, 5.6
	b. Executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures and drawings for accomplishing the activity.	2.2, 5.3, 5.6
2.	Such inspection shall be performed by individuals other than those who performed the activity being inspected.	2.2, 5.3
3.	Examinations, measurements, or tests of material or products processed shall be performed for each work operation where necessary to assure quality.	2.2, 3.4, 4.5, 4.6, 4.8, 5.3, 5.5, 6.4
4.	If inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel shall be provided.	2.2, 4.4, 4.8, 5.3, 5.6
5.	Both inspection and process monitoring shall be provided when control is inadequate without both.	2.2, 4.4, 4.8, 5.3, 5.6, 6.4
6.	If mandatory inspection holdpoints, which require witnessing or inspecting by the applicant's designated representative are required:	
	a. Work shall not proceed beyond these holdpoints without the consent of the designated representative.	2.2, 3.4, 3.7

b. Specific holdpoints shall be indicated in appropriate documents. — 3.4, 4.5

XI. TEST CONTROL

1. A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is:

   a. Identified. — 3.4, 3.7, 4.5

   b. Performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. — 3.4, 3.7, 4.5

2. The test program for structures, systems and components shall include, as appropriate:

   a. Proof tests prior to installation. — 3.4, 3.7, 4.5, 11.3

   b. Preoperational tests. — 3.4, 3.7, 4.5, 11.3

   c. Operational tests during nuclear power plant operation. — 3.4, 3.7, 4.5, 11.3

3. Test procedures shall include provisions for assuring that:

   a. All prerequisites for the given test have been met. — 3.4, 3.7, 4.5, 11.3

   b. Adequate test instrumentation is available and used. — 3.4, 3.7, 4.5, 11.3

   c. The test is performed under suitable environmental conditions. — 3.4, 3.7, 4.5, 11.3

4. Test results shall be:

   a. Documented. — 3.4, 3.7, 4.5, 11.3

   b. Evaluated to assure that test requirements have been satisfied. — 3.4, 3.7, 4.5, 11.3

XII. CONTROL OF MEASURING AND TEST EQUIPMENT

1.	Measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly:	
	a. Controlled.	8.4, 8.5
	b. Calibrated and adjusted at specified periods to maintain accuracy within necessary limits.	8.4, 8.5

XIII. HANDLING, STORAGE AND SHIPPING

1.	Measures shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration.	5.3, 5.5, 5.6
2.	When necessary for particular products, special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be specified and provided.	5.3, 5.5, 5.6

XIV. INSPECTION, TEST, AND OPERATING STATUS

1.	Measures shall be established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear power plant.	5.3, 5.4, 5.5, 5.6
2.	These measures shall provide for the identification of items which have satisfactorily passed required inspection and tests, where necessary to preclude inadvertent bypassing of such inspections and tests.	5.3, 5.4, 5.5, 5.6

3.	Measures shall also be established for indicating the operating status of structures, systems, and components of the nuclear power plant, such as by tagging valves and switches, to prevent inadvertent operation.	5.3, 5.4, 5.5, 5.6

XV. NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

1.	Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation.	12.4, 12.5, 12.6, 12.7
2.	These measures shall include, as appropriate, procedures for:	
	a. Identification.	12.4, 13.5
	b. Documentation.	12.5
	c. Segregation.	12.5
	d. Disposition.	12.5
	e. Notification to affected organizations.	12.5
3.	Nonconforming items shall be:	
	a. Reviewed.	5.3.8, 12.4, 12.5, 12.7
	b. Accepted or rejected.	5.3.8, 12.4, 12.5, 12.7
	c. Repaired or reworked in accordance with documented procedures.	5.3.8, 12.4, 12.5, 12.7

XVI. CORRECTIVE ACTION

1.	Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deviations and defective material and equipment are promptly identified and corrected.	12.4, 12.5
2.	In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken	12.4, 12.5

to preclude repetition.

3. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be:

   a. Documented. — 2.4, 12.5, 12.7

   b. Reported to appropriate levels of management. — 12.4, 12.5, 12.7

XVII. QUALITY ASSURANCE RECORDS

1. Sufficient records shall be maintained to furnish evidence of activities affecting quality. — 14.3

2. The records shall include at least the following:

   a. Operating logs. — 14.3, 14.4

   b. Results of reviews. — 14.3, 14.4

   c. Inspections. — 14.3, 14.4

   d. Tests. — 14.3, 14.4

   e. Audits. — 14.3, 14.4

   f. Monitoring of work performance. — 14.3, 14.4

   g. Material analyses. — 14.3, 14.4

3. The records shall also include closely-related data such as qualifications of personnel, procedures, and equipment. — 5.2, 7.4, 14.3, 14.4

4. Inspection and test records shall, as a minimum, identify:

   a. The inspector or data recorder. — 5.2, 14.3, 14.4

   b. The type of observation. — 5.2, 14.3, 14.4

   c. The results. — 14.3

   d. The acceptability. — 14.3

e.	The action taken in connection with any deficiencies noted.	14.3
5.	Records shall be identifiable and retrievable.	14.3
6.	Consistent with applicable regulatory requirements, the applicant shall establish requirements concerning record retention, such as:	
a.	Duration.	14.3, 14.4
b.	Location.	14.3, 14.4
c.	Assigned responsibility.	14.3, 14.4

XVIII. AUDITS

1.	A comprehensive system of planned and periodic audits shall be carried out to:	
a.	Verify compliance with all aspects of the QA Program.	4.11, 13.1, 13.4
b.	Determine the effectiveness of the Program.	4.11, 13.1, 13.4
2.	The audits shall be performed:	
a.	In accordance with written procedures or checklists.	4.11, 13.1, 13.4
b.	By appropriately trained personnel not having direct responsibilities in the areas being audited.	4.11, 13.2, 13.4
3.	Audit results shall be:	
a.	Documented.	4.11, 13.6
b.	Reviewed by management having responsibility in the area audited.	4.11.7, 13.6
4.	Follow-up action, including reaudit of deficient areas, shall be taken where indicated.	4.11, 13.7

APPENDIX II

This appendix provides a matrix of specific plant commitments to *QA Program related Regulatory Guides and referenced documents* and is included in this manual as a "quick reference". This appendix is not intended to be all inclusive of all commitments and has no specific relationship with the other sections of this manual.

It must be noted that the information depicted in the appendix reflects only those commitments found in Section 1.8 of each plant's (U)FSAR. It must also be noted that exceptions/clarifications taken by CP&L to these Regulatory Guides are not indicated in the reference and must be obtained from the applicable plant (U)FSARs.

Regulatory Guides are listed by number, title, and revision applicable to each plant. The document primarily endorsed by each Regulatory Guide are also listed with revision or date of issue, where applicable, for each plant. If a Regulatory Guide and/or an endorsed document is not applicable to a particular plant, it is so noted as "N/A" in the appropriate Commitment columns. In cases where Regulatory Guides do not endorse specific documents, "none" appears in the corresponding Primary Endorsed Documents column.

CP&L COMMITMENT MATRIX

APPENDIX II

Reg. Guide	Commitments			Regulatory Guide	Primary Endorsed Documents	Commitments		
	Reg. Guide Rev.					Document Rev		
	SHNPP	BSEP	HBR			SHNPP	BSEP	HBR
1.8	R2 2/79 Draft	3/71	9/75	Personnel Selection and Training	ANSI N18.1 ANSI 3.1	N/A 9/79	N/A N/A	N/A N/A
1.29	R3	R3	R3	Seismic Design Classification	None	-	-	-
1.30	R0	8/72	8/72	QA Requirements for the Installation and Testing of Instrumentation and Electrical Equipment	ANSI N45.2.4	3/72	3/72	3/72
1.33	R2	11/72	2/78	QA Program Requirements (Operation)	ANSI N18.7	2/76	2/76	2/76
1.37	R0	3/73	3/73	QA Requirements for Cleaning Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	ANSI N45.2.1	2/73	2/73	2/73
1.38	R2	3/73	3/73	QA Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants	ANSI N45.2.2	12/72	12/72	12/72
1.39	R2	3/73	3/73	Housekeeping Requirements for Water-Cooled Nuclear Power Plants	ANSI N45.2.3	3/73	3/73	3/73
1.54	R0	6/73	-	Quality Assurance Requirements for Protective Coatings Applied to Water-cooled Nuclear Power Plants	ANSI N101.4	1972	-	-
1.58	R1	9/80	9/80	Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel	ANSI N45.2.6	8/78	8/78	8/78
1.64	R2	10/73	10/73	QA Requirements for the Design of Nuclear Power Plants	ANSI N45.2.11	6/74	6/74	6/74
1.74	R0	2/74	2/74	QA Terms and Definitions	ANSI N45.2.10	5/73	5/73	5/73

CP&L COMMITMENT MATRIX

APPENDIX II

Reg. Guide	Commitments			Regulatory Guide	Primary Endorsed Documents	Commitments		
	Reg. Guide Rev.					Document Rev		
	SHNPP	BSEP	HBR			SHNPP	BSEP	HBR
1.88	R2	8/74	N/A	Collection, Storage, and Maintenance of Nuclear Power Plant QA Records	ANSI N45.2.9	6/74	6/74	5/79
1.94	R1	N/A	4/76	QA Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants	ANSI N45.2.5	7/74	7/74 (Std. Only)	-
1.116	R0-R	N/A	N/A	QA Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	ANSI N45.2.8	5/75	5/75 (Std. Only)	5/75 (Std. Only)
1.120	N/A	N/A	N/A	Fire Protection Guidelines for Nuclear Power Plants	None	-	-	-
1.123	R1	N/A	N/A	QA Requirements for Control of Procurement of Items and Services for Nuclear Power Plants	ANSI N45.2.13	2/76	Draft 2 Rev. 4 4/74	Draft 2 Rev. 4 4/74
1.143	R1	N/A	N/A	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light Water-Cooled Nuclear Power Plants	None	-	-	-
1.144	RO	1/79	1/79	Auditing of QA Programs for Nuclear Power Plants	ANSI N45.2.12	11/77	11/77	11/77
1.146	RO 8/80	RO 8/80	RO 8/80	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	ANSI N45.2.23	4/78	4/78	4/78

Enclosure 15 to Serial: HNP-99-069

QA Program - Pertinent Quality Control Procedures for Implementation

(1) List of Mechanical Modification Procedures (1 page)

(2) Index of Corporate Welding Manual Procedures (2 pages)

(3) Index of Corporate NDE Manual Procedures (7 pages)

HNP Mechanical Modification Procedures Applicable to Completion of Spent Fuel Pool Cooling Systems:

MMP-002	Installation of Piping and Piping Components
MMP-003	Instrumentation
MMP-004	Installation of Pipe Supports
MMP-006	Installation of Structural Steel and Electrical, Instrumentation, and HVAC Supports
MMP-007	Mechanical Equipment Installation
MMP-012	Hydrostatic and Pneumatic Testing of Piping Systems

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Does Not Contain Plant Procedure Change Notices (PCNs) Per NW-i Paragraph 5.3.3

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CP&L

NGG PROGRAM MANUAL

Title: Nuclear NDE Manual

Lead Department: NUCLEAR ENGINEERING DEPARTMENT

Program Manual Number:	Revision Number:	Effective Date:
NGGM-PM-0011	0	February 15, 1999

Revision Summary:

This initial issue of this Program Manual is a conversion from the Corporate NDE Manual of Procedures to the NGG Procedure Hierarchy as the Nuclear NDE Manual.

1. The Table of Contents describing the status of NDE procedures has become the controlling document.

2. The individual personnel qualification and certification and procedure developmen and qualification procedures in the Corporate NDE Manual of Procedures have been consolidated into one procedure to form the process description for the Nuclear NDE Manual and is numbered NDEP-A .

3 To ensure smooth transition for users of the Nuclear NDE Manual, the following steps were taken:

- The individual inspection and examination procedures in the Corporate NDE Manual of Procedures have retained their same title and number with sligh change to four digit format.
- Procedures were revised to meet requirements of PRO-NGGC-0201 Procedure Writers Guide.
- Recent code requirements were incorporated.
- Existing Interim Procedure Changes were incorporated.
- Fossil and unneeded nuclear procedures were retired
- Revision numbers were incremented by 1

4 The NDE Forms are provided as a separate Appendix in a manner similar to th previous Manual. Slight form revisions were made and the revision numbers wer incremented by one.

Approved By: J R Wagner **Date:** 2/4/99

Table of Contents

Number	TITLE	Effective Revision	Interim Change	Two Year Review
	NUCLEAR NDE MANUAL			
	PROCESS PROCEDURES			
NDEP-A	Nuclear NDE Procedures and Personnel Process	0	None	12/1/00
	EXAMINATION PROCEDURES			
	100 SERIES - RADIOGRAPHIC METHOD			
NDEP-0101	Radiographic Examination	16	None	12/1/00
NDEP-0102	Radiographic Examination for AWS	Retired 01/16/98		
NDEP-0103	Radiographic Examination of Castings	Retired 01/16/98		
NDEP-0104	Radiographic Examination for Fossil Power Plants	Retired 2/15/99		
NDEP-0105	Radiographic Examination of Welder Qualification Test Assemblies	7	None	12/1/00
NDEP-0107	Radiography for 1989 Edition Including All Addenda Through 1995 with 1996 Addenda ASME Code at Nuclear Power Plants	3	None	12/1/00
NDEP-0108	Radiography for "R Stamp"	1	None	12/1/00
NDEP-0109	Digitization of Radiographic Images	Retired 2/15/99		
	200 SERIES - PENETRANT METHOD			
NDEP-0201	Liquid Penetrant Examination (visible dye, solvent removable)	22	None	12/1/00
NDEP-0202	Fluorescent Penetrant Examination	9	None	12/1/00
NDEP-0203	Water Washable Penetrant Examination	7	None	12/1/00
NDEP-0204	High Temperature Liquid Penetrant Examination (Visible Dye, Solvent Removable) 90E - 200EF	Retired 3/25/94		
	300 SERIES - MAGNETIC PARTICLE METHOD			

Number	TITLE	Effective Revision	Interim Change	Two Year Review
NDEP-0301	Magnetic Particle Examination (dry powder, prods and yoke)	13	None	12/1/00
NDEP-0302	Magnetic Particle Examination (dry powder, coil or cable wrap)	6	None	12/1/00
NDEP-0303	Wet Magnetic Particle Examination	11	None	12/1/00
NDEP-0304	Not Used			
NDEP-0305	Wet Fluorescent Magnetic Particle Examination of TDI Delivery Valve Assembly Bodies	Retired 2/15/99		
400 SERIES - ULTRASONIC METHOD				
NDEP-0401	Not Used			
NDEP-0402	Ultrasonic Examination of Welds (ASME)	Retired 01/16/98		
NDEP-0403	Digital Ultrasonic Thickness Measurement (D-Meter)	Retired 9/3/93		
NDEP-0404	Ultrasonic Examination of Plate (Longitudinal Wave)	Retired 2/15/99		
NDEP-0405	Ultrasonic Examination of Welds (AWS D1.1)	Retired 10/6/95		
NDEP-0406	Ultrasonic Mapping of Anchor Bolt to Embed Plate Welds	Retired 2/15/99		
NDEP-0407	Digital Ultrasonic Thickness Measurement (DIGI-SONIC 502)	Retired 9/3/93		
NDEP-0408	Ultrasonic Thickness Measurement (A-Scan)	10	None	12/1/00
NDEP-0409	Ultrasonic Examination of Forgings and Bars	Retired 9/3/93		
NDEP-0410	Digital Ultrasonic Thickness Measurement (NOVA 201)	Retired 2/15/99		
NDEP-0411	Digital Ultrasonic Thickness Measurement (KBI DM LCD or LED)	Retired 2/15/99		

Number	TITLE	Effective Revision	Interim Change	Two Year Review
NDEP-0412	Ultrasonic Examination of Thermowells and Gamma Plugs	Retired 2/15/99		
NDEP-0413	Digital Ultrasonic Thickness Measurement, Krautkramer-Branson Model DM2E	1	None	12/1/00
NDEP-0414	Ultrasonic Examination of Babbitted Bearings	2	None	12/1/00
NDEP-0415	Digital Ultrasonic Thickness Measurement (Model CL204)	5	None	12/1/00
NDEP-0416	Ultrasonic Examination of Plate Material (Angle Beam)	Retired 01/16/98		
NDEP-0417	Digital Ultrasonic Thickness Measurement - Krautkramer Branson DME DL	1	None	12/1/00
NDEP-0418	Not Used			
NDEP-0419	Ultrasonic Examination of Butt Welds	4	None	12/1/00
NDEP-0420	Ultrasonic Examination of Studs	4	None	12/1/00
NDEP-0421	Ultrasonic Examination of Welds (ASME VIII)	Retired 2/15/99		
NDEP-0422	Ultrasonic Examination of Pipe and Tubing	Retired 2/15/99		
NDEP-0423	Ultrasonic Examination of Embedded Type Wedge Anchors to Determine Length	Retired 2/15/99		
NDEP-0424	Ultrasonic Examination Using Cylindrically Guided Wave Technique	Retired 2/15/99		
NDEP-0425	Ultrasonic Examination Procedure for Piping Systems	2	None	12/1/00
NDEP-0426	Ultrasonic Test Sizing of Planar Flaws	1	None	12/1/00
NDEP-0427	Digital Ultrasonic Thickness Measurement (Panametrics Model 26DL Plus)	3	None	12/1/00
NDEP-0428	Ultrasonic Examination of Accumulator Tank Nozzles (H. B. Robinson Unit 2)	1	None	12/1/00
NDEP-0429	Ultrasonic Examination of Piping Systems for H.B. Robinson, Unit 2	2	None	12/1/00
NDEP-0430	Ultrasonic Examination of Diesel Engine Cylinder Liners (Harris Plant)	1	None	12/1/00

Number	TITLE	Effective Revision	Interim Change	Two Year Review
NDEP-0431	Calibration of A-Scan Ultrasonic Instruments	1	None	12/1/00
NDEP-0432	Manual Ultrasonic Examination of Pressure Retaining Vessel Welds 2" and Less in Thickness	2	None	12/1/00
NDEP-0433	Procedure for Manual Ultrasonic Examination of Bolting Greater Than Two Inches Diameter	2	None	12/1/00
NDEP-0434	Ultrasonic Examination of Ferritic Welds in Ferritic Pipe (ASME V)	1	None	12/1/00
NDEP-0435	Ultrasonic Thickness Measurement - NOVA 800+	1	None	12/1/00
NDEP-0436	Manual Ultrasonic Examination Of Similar And Dissimilar Metal Piping Welds	0	None	12/1/00
500 SERIES - EDDY CURRENT METHOD				
NDEP-0501	Eddy Current Examination Method of Non-Ferromagnetic Heat Exchanger Tubing (Zetec MIZ-12 System)	Retired 01/16/98		
NDEP-0502	Eddy Current Examination Method of Non-Ferromagnetic Heat Exchanger Tubing	Retired 2/15/99		
NDEP-0503	Eddy Current Examination for Detecting Welded Seams In Piping	Retired 2/15/99		
NDEP-0504	Eddy Current Examination for Measuring Coating Thickness	Retired 2/15/99		
NDEP-0505	Eddy Current Examination for Sorting Ferrous Versus Nonferrous Materials on Piping System Gamma Plugs and Thermowells	Retired 2/15/99		
600 SERIES - VISUAL METHOD				
NDEP-0601	VT Visual Examination of Piping System and Component Welds at Nuclear Power Plant	13	None	12/1/0(
NDEP-0602	Visual Examination of Welds (BSEP)	Retired Date NA		
NDEP-0603	Visual Examination of Welds (HBR)	Retired Date NA		
NDEP-0604	Visual Examination of Welds (Fossil)	Retired 2/15/99		

Number	TITLE	Effective Revision	Interim Change	Two Year Review
NDEP-0606	Remote Visual Examination	4	None	12/1/00
NDEP-0607	Not Used			
NDEP-0608	Visual Examination of Welds (Boiler Tube and Socket Welds)	Retired 2/15/99		
NDEP-0609	Not Used			
NDEP-0610	Not Used			
NDEP-0611	VT-1 Visual Examination of Nuclear Power Plant Components	13	None	12/1/00
NDEP-0612	VT-2 Visual Examination of Nuclear Power Plant Components	14	None	12/1/00
NDEP-0613	VT-3 Visual Examination of Nuclear Power Plant Components	16	None	12/1/00
NDEP-0614	VT-4 Visual Examination of Nuclear Power Plant Components	Retired 2/15/99		
NDEP-0615	Visual Examination of Hydraulic Snubbers at Brunswick Steam Electric Plant	Retired Date NA		
NDEP-0616	VT-3 Visual Examination of Nuclear Power Plant Components at Robinson Nuclear Project	Retired 2/15/99		
NDEP-0617	Modified VT-1 and Enhanced VT-1 Examinations for the Brunswick Nuclear Plant	3	None	12/1/00
NDEP-0618	Not Used			
NDEP-0619	Not Used			
NDEP-0620	VT-1 and VT-3 Visual Examination of MC and CC Components for HNP, BNP, RNP Nuclear Projects	1	None	12/1/00
700 SERIES - LEAK TEST METHOD				
NDEP-0701	Leak Test (Vacuum Box)	Retired 2/15/99		
NDEP-0702	Leak Testing-Pressure Strength/Bubble Formation (SHNPP)	Retired 01/16/98		
NDEP-0703	Leak Testing (Bubble Test)	Retired 2/15/99		
800 SERIES - MISCELLANEOUS				

Number	TITLE	Effective Revision	Interim Change	Two Year Review
NDEP-0801	Replication (Mold Reproduction)	Retired 2/15/99		
NDEP-0802	Crack Depth Measurement Using CC-800B Instrument	Retired 2/15/99		
1000 SERIES - ADDITIONAL EXAMINATION CRITERIA				
NDEP-1000	Additional Examination Criteria for PSI/ISI Surface Examinations	Retired 2/15/99		
NDEP-1001	Not Used			
NDEP-1002	Not Used			
NDEP-1003	Not Used			
NDEP-1004	Not Used			
NDEP-1005	Not Used			
NDEP-1006	Not Used			
NDEP-1007	Not Used			
NDEP-1008	Not Used			
NDEP-1009	Not Used			
NDEP-1010	Recording Data From Direct Visual, Liquid Penetrant and Magnetic Particle Examinations	2	None	12/1/00
NDEP-1011	Weld Joint Identification Marking of Datum Points and Identification	4	None	12/1/00
NDEP-1012	Gridding of Components for Erosion/Corrosion	5	None	12/1/00
APPENDIXES				
Appendix A	NDE Forms	35	None	N/A

Supplemental Quality Assurance Requirements for the Design Change Packages Associated with Completion of the Units 2 & 3 Spent Fuel Pool Cooling System

SUPPLEMENTAL QA REQUIREMENTS

The following is a set of supplemental QA requirements developed for the implementation and turnover of Code items associated with the completion and activation of the Unit 2 & 3 Spent Fuel Pools at Harris Nuclear Plant. This document will be incorporated directly into the "Design Requirements" section of the design change packages for the pertinent modifications, and then by specific instructions in the appropriate sections (installation, testing, turnover, etc) as necessary to ensure that its requirements are implemented.

1.0 GENERAL

1.1 Scope

This document defines the set of QA requirements which will be used to govern the engineering, construction and startup of the Section III, Class 3 portions of the Spent Fuel Pool Facilities originally intended to service HNP Units 2 & 3. This portion of the plant was partially installed during original plant construction, but was suspended subsequent to cancellation of these units. The development of a supplement specific to this scope is necessitated by the following concerns:

- The original N-certificate associated with this program has long since been discontinued, and no partial turnover was conducted for the partially installed piping and equipment.
- The field construction documentation packages for partially installed piping have been discarded and are no longer available

As a result of the above, it is not possible to complete these systems in full compliance with Section III utilizing the previously installed piping and equipment. Since the N stamping process is the prescribed method for demonstrating quality assurance in construction activities, it is necessary to define a suitable alternate program which will ensure that the requisite level of quality exists upon completion and turnover. Generally, the corporate Nuclear Generation Group's Quality Assurance Manual is of suitable rigor to accomplish this. However, the program defined in the corporate QA manual was developed to comply with 10CFR50 Appendix B as it concerns operating plants, and was not intended to specifically conform to the requirements of Section III. For example, the corporate QA program outlines condition reporting requirements which govern field activities and meets the requirements of Appendix B in this regard. However, this program does not integrate involvement of the ANI in documenting adverse conditions, nor does it require the ANI to participate in the closeout of adverse condition reports. In addition, the current site procedures pertaining to field activities are generally oriented towards meeting the requirements of Section XI for inservice inspection, rather than Section III.

To address this issue, a set of QA requirements have been developed and are presented herein to supplement the corporate Appendix B QA Program. Generally, these requirements were the result of a review of the current corporate Appendix B Quality Assurance Program against the requirements of the approved ASME Section III QA

Manual utilized for construction of the Harris Nuclear Plant. These requirements are not intended to delete or revise any requirements in the corporate QA manual, but rather are to provide additional criteria in supplement of the existing program. These criteria will be implemented in one of the following manners:

Revision of site procedures: Since this supplement is not intended to contradict approved site procedures, this might be necessary to reconcile conflicts between the Supplemental QA Requirements and that of existing site procedures.

Incorporation through the work control process: When criteria are stipulated that are not already reflected in site procedures, it may be more suitable to add these through work planning and specific instructions in the work package. The requirements for additional involvement of the ANI would be an example of this.

Procedure revisions will be reflected by markups and inclusion on the Document Update Form (DUF), while work package implementation will be accomplished by specific instruction in the appropriate section of the modification package (implementation, testing, etc.).

1.2 Responsibilities

General - Programmatic responsibilities for implementation of the Corporate Appendix B program, including the site's Section XI Repair and Replacement Program, are as defined in the Corporate Quality Assurance Program Manual and supporting documents, including site procedures. The involvement of site organizations as pertains to the implementation of these supplemental requirements will be subject to their review and approval during the modification approval process.

AIA (ANI) - The Authorized Inspection Agency is responsible for providing the support necessary for implementation of the supplemental requirements described in this ESR. Acceptance of these requirements will be based upon NRC review and approval of the 10CFR50.55a Alternative Plan. Formal AIA endorsement of these supplemental requirements from a programmatic perspective will accomplished by review and approval of the modification packages which incorporate them.

Modification Engineer - The Modification Engineer for the affected ESR is responsible for implementing the requirements found herein in the most appropriate manner. This would include either revision of site procedures or through direct incorporation into the modification package, as described above.

Modification Responsible Engineer - This supplement pertains only to modification activities completing construction of the spent fuel cooling systems originally intended to service Units 2 & 3. As such, the ultimate responsibility for adherence for this rests with the RE for these modifications. Since this supplement will be incorporated into the

modification packages, the RE is responsible for ensuring that the modification package contains sufficient instructions and guidance to implement it as written.

2.0 DESIGN AND DOCUMENT CONTROL

2.1 Design Control

Design Control over the modification design is directed and coordinated by CP&L in accordance with corporate and site procedures governing the modification process and design activities by outside organizations. This process results in rigorous design review process (including independent design verification) by the A/E and detailed owner's reviews by CP&L engineering personnel.

This supplement pertains only to modification activities completing construction of the spent fuel cooling systems originally intended to service Units 2 & 3. Generally, it is intended that completion of this portion of the plant will be governed by the same revisions of the Code that were utilized for original design and construction. To that end, the applicable version of the Code associated with a particular aspect of construction, and the boundaries of that applicability shall be clearly defined as design inputs in the modification packages. Later versions of the Code may be used only with reconciliation of any differences between it and the Code that was utilized for original design and construction.

2.2 Design Specifications

2.2.1 Design specifications will be prepared for all Code stamped items, in accordance with corporate and site procedures, and will be subject to the following requirements:

- The specification shall clearly delineate Code classification and boundaries and the pertinent code revision associated with the item.
- The specification shall address Code requirements for data reports, including any that may pertain to transmittal to enforcement authorities.
- The specification shall fully conform to Section III design requirements.
- The design specification shall be certified to be correct, complete, and in compliance with the code by one or more Registered Professional Engineers competent in the applicable field of design of components and related nuclear power plant requirements. It is noted that some of site's existing design specifications date back to the construction era, but may have been revised since the plant began operation. In these instances, it is acceptable to use previous certified revisions of design specifications, so long as a reconciliation of any subsequent revisions is performed to assess design impact and integration into the current the Appendix B Program.

2.3 Design Control

2.3.1 Design control shall be as directed in the corporate QA program as implemented by corporate and site procedures.

2.3.2 Design of Code stamped items shall conform to the version of the Code which would have been utilized during original plant construction. Later versions can be utilized only with documented reconciliation. Design criteria of Section III, Subsection ND shall apply to all Class III piping, equipment and components.

2.3.3 Subsequent revision to the affected modification packages shall also be subject to the supplemental requirements defined herein through completion of construction and the turnover process.

2.3.4 This supplement is "frozen" as it is incorporated into the 10CFR50.55a Alternative Plan and approved by the NRC. Design changes and modification revision packages shall not delete or revise the content or applicability of these supplemental requirements, in whole or part, without NRC approval.

2.4 Applicability of existing site procedures

2.4.1 It is appropriate to use the site Section XI Repair and Replacement as a guide for integration of site procedures with the construction of Code related items. Generally, existing site procedures shall apply as if the Code portions of construction were being performed as a Section XI Repair and Replacement activity. However, where this supplement contradicts existing procedure or program requirements, the requirements in this supplement shall take precedent and the affected procedure or program be revised as appropriate.

2.4.2 Welding, including weld procedures, welder qualification, weld material control, use and control of welder ID symbols and preparation of Weld Data Reports, will be done using the Corporate Welding Manual as invoked and implemented through site procedures.

2.4.3 The ANI shall have the opportunity to review procedures, including those for welding and QC, which will be utilized for Code related construction activities during the review of work packages prior to field issuance. Likewise, any revisions to these procedures which is intended to be utilized in the work package subsequent to the initial ANI review shall also be identified to the ANI for his review prior to its use.

2.5 Document Control

2.5.1 Document Control will be as currently defined in the corporate Appendix B QA program for quality related activities and implemented through site procedures.

2.6 Identification of ASME code Documents

2.6.1 Purchase requisitions, purchase orders, procedures and other documents generated and / or used at the site for fabrication and installation of Code items shall be identified as "ASME Section III".

3.0 PROCUREMENT

3.1 General

3.1.1 The A/E may provide input into the procurement process, however, all procurement will be performed by CP&L under its existing Appendix B Quality Assurance Program and implemented by corporate and site procedures.

3.1.2 Procurement of all code stamped items will be accomplished using approved design specifications certified by a Registered Professional Engineer competent in nuclear power plant design.

3.2 Service Contracts

3.2.1 Service Contracts intended to obtain services associated with the engineering or construction of piping and equipment affected by this supplement shall be subject to all the rules and requirements of this supplement.

3.3 Code Stamped Items

3.3.1 It is intended to complete construction to the version of the Code to which the system was originally designed and specified, which governed construction of the existing portion of piping and equipment installed during initial plant construction. The applicable version of the code associated with a particular aspect of procurement or construction and the boundaries of that applicability shall be clearly defined in the modification package. Code stamped items shall be clearly identified as such in the modification BOM or the Equipment Commissioning List. Code stamped items shall be specified and procured so as to fully comply with Code requirements, including the use of qualified suppliers with appropriate Code certification, and shall be stamped in accordance with code requirements.

The BOM or the Equipment Commissioning List shall, as a minimum, contain the following information regarding Code stamped items:

Commercial information which sets forth items, quantities, terms, conditions, etc. as appropriate, as well as the approved Design Specification(s) which defines the engineering and quality requirements.

3.3.2 Any exceptions to the Design Specifications taken by the supplier with regard to a Code stamped item shall be reconciled by revision to the affected Design

Specification prior to proceeding with procurement. Any such revision to the Design Specifications would be prepared, reviewed and approved as set forth for the original specification.

3.4 Qualification of Suppliers

3.4.1 Qualification of Suppliers of materials and services shall be accomplished in accordance with the existing CP&L Appendix B Program in accordance with approved plant procedures. All suppliers must be verified as being on the approved supplier's list for the scope of supply and holding active certification from the ASME for any Code items being procured.

4.0 RECEIVING INSPECTION

4.1 Code stamped items

Inspection, examination and acceptance of Code items shall be accomplished in accordance with corporate and site procedures. Receipt activities shall be documented in the form of a Receipt Inspection Report (RIR). Items accepted shall be appropriately tagged / labeled.

Nonconformances noted during receipt inspection shall be reported via Condition Report (nonconformance) initiation, and the affected items placed on hold or rejected. When the vendor's data package is missing or deficient, the item will be placed on hold pending the delivery of the missing information or resolution of the deficiency.

When conditions warrant, Conditional Release requests may be granted to permit progression of work involving a nonconforming item awaiting resolution. When this occurs, it will be processed and approved in accordance with existing site procedures. The ANI will be provided with the closure documentation for any conditional releases affecting Code stamped items or Code related construction.

5.0 STORAGE AND PROCESS CONTROL

5.1 Storage

Storage requirements for Code stamped items will be clearly identified in the Design Specification. Storage control through manufacture and shipment will be governed by the procurement process.

5.2 Equipment Commissioning Plan

5.2.1. General

This section prescribes the methodology which will be followed in commissioning previously installed equipment in support of completing and activating the C & D Spent Fuel Pools. The subject equipment was installed during the original site construction effort for Unit 2 & 3 fuel storage and handling activities, and was spared in place when these units were cancelled. This equipment was never incorporated into the operating unit nor has it been formally maintained under controlled storage conditions since that time. Note that the equipment in question (including Code related equipment) was procured to applicable design and quality assurance requirements, and this plan does not take exception to any of these requirements. Rather this plan prescribes a set of criteria which will ensure that the equipment in question will meet the applicable requirements of Appendix B and is capable of performing its intended function in the completed design.

5.2.2 Field Walkdown / Scope Development

Scope development is accomplished by performing a detailed field walkdown and comparing the modification design to the field condition. The entire list of previously installed equipment (both Code and non-Code related) which is anticipated to be used in the completed design will be compiled to comprise the scope of the Equipment Commissioning Plan. Note that this plan is not limited to mechanical equipment, and will include civil (pipe supports, penetrations), I&C (instrument racks, instrumentation, tubing) and electrical (cables, conduit, cable trays, equipment ground connections) as well. Each item in scope will be identified and individually dispositioned in the modification package.

5.2.3 Document Review / Retrieval

A document retrieval and review process will be included in the matrix of commissioning requirements to ensure that required quality assurance information is on hand. Generally, equipment commissioning matrix documentation requirements will be consistent with that of the original procurement effort. In particular, all Code documentation requirements (including Code data reports) must be satisfied for Code items. Records required for commissioning fall into one of two categories, which are discussed as follows:

(a) Procurement Documentation
This documentation pertains to the information which was originally used to procure the equipment in question and the vendor quality packages which were supplied with the item in response. These records are required to establish traceability and verify that required vendor quality assurance documentation and

quality releases are on file. Generally, this information is available in the Receipt Inspection Report (RIR) generated at the time the item was received. It is not acceptable to assume that the necessary information must have been received and is in order by virtue of its being installed in the field under control of the construction program, as it would have been possible to have issued the item to the field with a conditional release with outstanding quality related issues pending. All Code equipment must have traceability to the Code Data Report(s) for its construction.

(b) Field generated records
Construction records must be reviewed to ascertain to what extent the existing field condition was documented as being complete and satisfactory. Generally, this information exists in the equipment installation packages and has been maintained in document control for the major pieces of equipment in question. Once the equipment installation records have been retrieved, these must be compared against the field condition to verify that the installation as accepted has not been subsequently altered. Previous construction activities can be accepted for use in the modification implementation effort to the extent that required installation documentation exists and is verified to conform to the field condition.

In the event that records are found to be missing or deficient, an assessment is performed to determine what installation can be accepted by virtue of retest or re-inspection, or by use of alternate methods of verification. Alternately, the implications of the documentation deficiency can be evaluated to determine the potential impact to quality. Any such evaluation used to accept field conditions in the absence of required information must be formally documented and subject to design review as appropriate. Except as specifically provided in the 10CFR50.55a Alternative Plan for records of field installation of piping, this equipment commissioning plan is not intended to take exception to Code requirements pertaining to equipment installation or documentation requirements. Given this single exception, an evaluation of a deficiency is not allowed to stand in lieu of installation records which are deemed to be specifically required by Section III of the ASME B&PV Code.

5.2.4 Development of examinations, tests and acceptance criteria

The Equipment Commissioning Matrix shall specify any additional activities necessary to ensure the requisite level of quality assurance in light of the lack of formal controls on storage and handling since this equipment was initially installed. Development of these activities will include the following:

- Field verification of equipment identification against procurement documentation. In the case of Code related equipment, traceability will be established to the Code Data Report(s) and National Board Registration.
- Physical inspections, testing, etc., as required to verify that lack of controlled storage conditions and regular maintenance has not caused any condition affecting

quality. Commissioning criteria shall include consideration of corrosion, fouling, aging, radiation exposure, etc. For Code requirements, any degradation identified would be assessed in terms of Code requirements, with acceptability based on demonstrated compliance with those requirements.

- Physical inspections and considerations necessary to ensure that plant activities since construction have not resulted in any condition potentially adverse to quality (scavenging of parts, introduction of foreign material, damage from personnel and equipment traffic, etc). For Code equipment and piping, these criteria will specifically consider Code required attributes, with acceptability based on full Code compliance.

5.2.5 Repair of Deficiencies

Repair of any deficiencies shall be done in accordance with approved procedures. Since Code items in the scope of this equipment commissioning plan are supplied as completed Section III components from the vendor under that vendor's NPT Stamp Program, repairs to these items meet the definition of "Repairs" in ASME Section XI and shall be accomplished under the site's Section XI Repair and Replacement Program.

5.2.6 ANI Involvement

Code stamped equipment and related commissioning requirements will be specifically identified as such in the modification package in order to facilitate the system certification process. Provisions shall be made to ensure that any work packages generated to commission Code equipment are made available for ANI review subsequent to work completion.

5.2.7 Revising or Altering the Equipment Commissioning Plan

Generally, this equipment commissioning plan does not take exception to Code or quality requirements, but rather prescribes a dedication process which will ensure that all such requirements are met in light of the lack of storage control for the equipment it addresses. The sole exception is with regard to field installation records for Code related piping, which are no longer available and are the subject of a 10CFR50.55a Alternative Plan currently under review by the NRC. Acceptance of the field installation of this piping is contingent upon approval of this Alternative Plan by the NRC, and revising the Equipment Commissioning Plan with regard to piping acceptability may require prior notification of the NRC. Otherwise, this plan does not take exception from design or quality requirements (including ASME Code requirements), and authorization for its use and any revisions to it are provided under 10CFR50.59.

5.3 Process Control

Process control sheets are utilized to establish measures to ensure that processes, including welding and heat treating, are controlled in accordance with the Code and are accomplished by qualified personnel using qualified procedures. Generally, process control sheets for Code related construction activities will be as provided for under the site's procedures. Additional process control sheets are found in the Corporate Welding Manual and Corporate NDE Manual, as invoked and implemented by site and corporate procedures.

The ANI will review process control sheets for code related construction activities before they are issued to the field for construction. The ANI will have the opportunity to add any inspection hold points deemed necessary at this time. All process control sheets for Code related construction activities will be reviewed and accepted by the ANI subsequent to completion of field activities.

The hydrostatic test pressure used for pressure testing shall be required to meet Section III requirements, as opposed to those specified in Section XI. The process control sheets for hydrostatic testing shall reflect the more stringent test criteria.

Nonconforming field conditions will be controlled by site work process control and condition reporting procedures. The ANI will be notified of any condition reports initiated against code related construction activities, and will verify any such items are resolved prior to signing off the process control sheets for final acceptance.

Identification tags or markings shall be retained on each code item. When it is necessary to cut or transfer an item during code related construction, material identification shall be transferred to the affected piece prior to cutting. This activity shall be witnessed by QC and appropriately documented in the work package.

5.4 Modification Implementation Procedures

5.4.1 Modification procedures are being utilized for code construction (in the context of this ESR) will be those presently existing for use with the site's Section XI Repair and Replacement Program, subject to the supplemental requirements prescribed herein.

5.5 Start-up Procedures

5.5.1 Detailed start-up procedures will be developed and included in the affected modification package. Review of start-up procedures, including QC review, will be documented by review and signature approval as part of the modification approval process.

6.0 WELDING CONTROL

6.1 General

Welding activities associated with Code construction, including welding procedure qualification, weld materials procurement and control, welding equipment control, qualification of welders, weld process control and post weld heat treatment activities shall be controlled in accordance with the Corporate Welding Manual by the Plant Welding Engineer and the Plant Operating Manual. Welding may be performed by Contractors provided that the contractor is fully qualified to CP&L's welding program for the specific welding or welding related activity being performed.

Contractor's not qualified to and working under CP&L's Corporate Welding Program may only be used for Code welding activities for which they maintain their own program having the appropriate ASME certification. In this case, a service contract must be provided which authorizes the Contractor to invoke his program for the subject scope of work.

Work packages involving welding activities associated with Code construction will be reviewed by QC and the ANI prior to field issuance to ensure that appropriate hold points are included. Weld Data Reports shall be generated for any such welds per the Corporate Welding Program, and hold point inspections shall be accepted by QC and the ANI by signature and date on the WDR.

7.0 CONTROL OF EQUIPMENT, TOOLS, GAUGES AND INSTRUMENTS

7.1 General

Equipment, tools, gauges and instruments specified for calibration control shall be identified, stored, calibrated, and maintained in accordance with site procedures. Calibrations and adjustments shall be accomplished at prescribed intervals and against certified standards having known valid relationships to national standards. If no national standard exists, the equipment manufacturer's recommended standard shall be used. Recalibration shall be performed any time the accuracy of an instrument is suspect.

Traceability shall be maintained between the instrument and equipment or item being tested. The instrument identification number shall be recorded on the appropriate process control documentation. In the event an instrument is found to be out of calibration, a Condition Report must be initiated and an evaluation shall be performed to identify and disposition any suspect inspections, examinations, and test results.

8.0 INSPECTION, TESTS and NONDESTRUCTIVE EXAMINATION (NDE)

8.1 General

NDE activities associated with Code construction, including NDE procedures, qualification of personnel and control of inspection and test equipment shall be accomplished as provided in the Corporate NDE Manual. NDE procedures and acceptance criteria are provided in the Corporate NDE Manual for both original construction code and Section XI requirements. NDE shall be performed on all Code related construction activities in these modifications consistent with Section III requirements, and all such NDE shall utilize Section III acceptance criteria.

8.1.1 Process Control

Inspection, test and examination requirements shall be defined in the work packages and documented on appropriate process control sheets. These packages will be reviewed by the QC and ANI prior to field issuance. Work will not progress past established QC and ANI hold points until the hold point is accepted by signature and date by the QC inspector or ANI.

8.1.2 ANI Review and Approval of NDE Documentation

Records of inspections, tests and examinations containing QC and ANI hold points will not be considered completed until all such hold points are satisfied and the ANI has completed his inspection and signed and dated the process control sheets.

9.0 CODE DATA REPORT AND CERTIFICATION

9.1 General

The piping systems completed under these modifications will not be eligible for N stamping due to issues pertaining to the discontinuance of the original construction program and missing documentation. However, these systems will undergo a certification process similar to N stamping. Installation of Code piping, equipment and components will be documented on an ASME Section III data report "equivalent form". This form will be comparable to an NIS-2 form associated with Section XI repair / replacement activities, and PLP-605 can be used as a guideline for its completion. All work packages for installation of Code equipment shall be clearly identified as such, and provided to the ANI for review prior to field issuance and again upon completion of work activities. Completed and approved documentation pertaining to Code related construction, including field generated records and vendor data packages, shall be compiled in packages pending the review of the ANI for system turnover.

The ANI will review the documentation and certify completeness and conformance with the requirements of the corporate Appendix B Manual and these supplemental requirements prior to system turnover. Since these supplemental requirements will be implemented either by procedure revision or modification instruction, this certification will be accomplished by verifying that all Code related activities were conducted and documented in accordance with site procedures and the requirements of the modification package. The specific list of items reviewed to determine completeness and conformance will be provided as an attachment to this certification. Similar to the N-5, this listing will constitute the boundaries of the completed construction which would have normally been N-stamped.

The completed certification of the affected piping, equipment and components will be included in the modification documentation package as a permanent QA record.

10.0 NONCONFORMANCE AND CORRECTIVE ACTION

10.1 Nonconformance and corrective actions will be addressed within corporate and site procedures, including those associated with procurement, work control and condition reporting. Satisfactory resolution of any non-conformances or adverse conditions associated with code stamped items or code related construction activities will be verifiable by the ANI and all other responsible parties prior to turnover.

11.0 RECORDS CONTROL AND RETENTION

11.1 Records control and retention will be as directed by site work control and document control procedures, except as related to the ANI's role in certification as described herein.

12.0 AUTHORIZED NUCLEAR INSPECTOR

12.1 The services of an AIA shall be used as described herein. It is noted that a qualified ANI would be necessary for Section III construction activities, while an ANII is involved when performing repair and replacement activities under Section XI. Since elements of both are associated with this modification, dual qualification will be required for the AIA's site representative involved with this modification. Signoffs for this individual will reflect this dual qualification (ANI / ANII).

13.0 REVIEW, CONTROL AND REVISION OF SUPPLEMENTAL QA REQUIREMENTS

13.1 These supplemental requirements as incorporated into the modification design and approved therein will become part of a 10CFR50.55a Alternative Plan and therein subject to NRC review and acceptance. Since NRC acceptance for the alternative plan represents the authorization for these supplemental QA requirements, revision to these requirements can only be accomplished by submittal and review of the NRC as a revision to the Alternative Plan. Exceptions would be allowed only for revision to items which comply with all Code and Regulatory requirements and are provided for completeness and clarity (see Equipment Commissioning Plan), or administrative or clerical changes which do not affect technical requirements.

Comparison of CP&L ASME Section III QA Manual
vs.
Present QA Program Requirements.

Introduction

The basis for the overall quality assurance program used by Carolina Power & Light Company for the design and construction of the Shearon Harris Nuclear Power Plant is described in the PSAR. PSAR Section 1.8 states that "The Carolina Power & Light Company Quality Assurance Program for the engineering and construction of the Shearon Harris Nuclear Power Plant, which includes the quality assurance programs for both Ebasco and Westinghouse by reference, is structured with regard to safety-related equipment in accordance with the eighteen criteria of Appendix B to 10CFR50. In addition, the subject Program is structured in accordance with ANSI N45.2 and thereby Regulatory Guide 1.28 ...". The PSAR further states that the "Shearon Harris Nuclear Power Plant Quality Assurance Plan" was replaced by the "CP&L Corporate Quality Assurance Program" on April1, 1974, and provides a cross reference on how the subject plan met the criteria of 10 CFR50 Appendix B.

Certain aspects of Shearon Harris Nuclear Power Plant construction were subject to QA requirements beyond those outlined in the CP&L Corporate QA Manual. Since CP&L was not only the Owner, but also the constructor, installer and a fabricator of Code items for the Shearon Harris Nuclear Power Plant, an additional set of QA requirements were required to be developed, reviewed, approved and implemented specifically in order to obtain the required ASME Certificates of Authorization. ASME Code Section III, Subsection NA requires that an applicant for a Certificate of Authorization develop a QA program and implementing procedure specific to the proposed scope of work, and that the "the applicant shall request the Society to evaluate this procedure and Program prior to the issuance of a Certificate of Authorization. " For construction of the Shearon Harris Nuclear Power Plant, CP&L met this requirement by the formalization of its "ASME Quality Assurance Manual". Section 1.1 of this manual (Scope) states that

> "This manual provides measures to assure compliance with the requirements and rules of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components. This Manual shall be applied to activities associated with plant items and services for which compliance with the rules of the ASME Code, Section III, is applicable".

It is important to note that, while the CP&L ASME Quality Assurance Manual may have shared certain common facilities, procedures, personnel, etc. with the overall site QA program, it did not rely on the larger program to demonstrate compliance with Code requirements. The CP&L ASME Quality Assurance Manual was specifically the QA Program reviewed and approved by the ASME for the purpose of granting N, NA and NPT Certificates of Authorization to CP&L for the Shearon Harris Nuclear Power Plant, and the program regularly subjected to ASME audit in order to maintain those authorizations. Therefore, in formalizing a QA Program for the completion of Construction of the Unit 2 Spent Fuel Pool Cooling Systems, it is appropriate that the requirements of this CP&L ASME QA Manual be compared against those of the current Corporate Appendix B QA Program. The results from this comparison would provide the basis for a set of "Supplemental QA Requirements", which would be used to facilitate completion of construction in accordance with Section III to the extent feasible, given the issues of missing documentation and no partial turnover for previously installed equipment.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
1.0 Scope			
1.1.1	The Construction QA manual was intended to provide measure to assure compliance with the requirements and rules of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, and was structured in accordance with the requirements of Section NA, Subsection NA-4000. This manual was applicable to activities associated with plant items and services for which compliance with Section III was mandatory.	The Corporate (Appendix B) QA Manual (QAM) establishes measures for assuring that organizations performing safety-related activities perform their responsibilities in a manner which results in safe nuclear power production. This manual also establishes QA programs for certain non-safety related areas of the plant, such as Rad-Q, FP-Q and Quality Class B. The Corporate QA Manual is not inclusive, but is intended to be used in conjunction with Section 1.8 and 17.3 of the FSAR to define the overall program and effect the development of procedures that implement that program.	The CP&L Corporate QA Program meets the eighteen QA criteria in Appendix B and is also the umbrella QA program for the site ASME Section XI Repair and Replacement Program. Much as would have been done at original construction, it is CP&L's intention to use the Corporate QA Program as the umbrella program to complete and activate the Unit 2 Spent Fuel Pools, augmenting this program with supplemental requirements extracted from the ASME QA Manual with the intent to achieve compliance with Code requirements to the extent feasible. NA-4133.2 defines the requirement for the AIA to review any significant changes to the ASME QA program. The design change package(s) for this activity will be subject to ANI review / approval. This will include review of the supplemental QA requirements and the turnover / certification process.
1.1.2	Identifies CP&L as the Owner, as well as the constructor, Installer and Fabricator	Written with CP&L as Owner / Operator (Ref. REG-CPL-000; CP&L Quality Assurance Program Policy)	No ongoing construction program in place. CP&L proposes to complete construction under Appendix B program much as would be done if repaired / replaced under Section XI, but using more stringent Section III criteria
1.1.3	Specifies that supporting companies shall operate in accordance with QA programs which are in compliance with this manual	Supporting company's activities will be directed either by contractural agreement or the supplier's QA program reviewed / approved by CP&L before issuance of PO or contract. (QAM 4.4).	QAM requires that an ASL be maintained, this is accomplished under MCP-NGGC-0406. MCP-NGGC-0406 also requires that contracts either utilize a CP&L approved program or that the CP&L program be invoked Existing program ensures that supporting companies operate either in accordance with the CP&L QA manual or their CP&L approved program. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
1.1.4	Specifies that the Constructor shall operate in accordance with this manual (no separate QA program)	See 1.1.3, above	All construction activities in the scope of the Alternative Plan shall be accomplished in accordance with the CP&L QA program or a CP&L approved QA program.
1.2 Responsibility for the QA Program	Responsibility for the Quality Assurance Program with Senior Vice President - Power Supply and Engineering & Construction.	QA Program approved by the Senior Vice President, Nuclear Generation Group (Ref. NGGM-PM-0007; QAM 2.2)	Comparable level of management responsibility. No supplement requirements needed.
1.3 Organization and Responsibilities	As shown in organization chart of the era. Predictably, this chart reflects the departments and personnel typical of a construction oriented organization, such as the Harris Plant Construction Section, and numerous management positions specific to the construction effort.	As described in FSAR 17.3, an organization fairly typical of operating plants. One noteworthy change from the construction organization is the transition to relying on the principle that the line organization has the primary responsibility for quality and safety. As such, the functions of the QA / QC Section which existed during the construction era are now largely satisfied by continual self-assessment, with evaluation / oversight of this program being provided by the Nuclear Assessment Section. (Ref. FSAR Section 17.3.1.1)	No changes to the site organization to be implemented as a result of this activity.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
1.4 Training and Qualification	Each Dept Manager for the Construction Site and General Office responsible for developing procedures for training and indoctrination. As a minimum, personnel will be trained in this QA Manual, supporting procedures and subsequent changes.	Each Dept head responsible - personnel performing activities affecting quality shall be indoctrinated and trained such that they are knowledgeable in the applicable quality related procedures and requirements. (QAM 7.4.2)	During the construction era, procedure TP-25, "Training of Supervisory and Technical Personnel in Implementation of ASME N Stamp Program" was developed to indoctrinate personnel in the CP&L N Certificate Program. The scope of the SFP Activation Project is not such that a large scale training effort is warranted, rather, training classes shall be held for supervisory and technical personnel which are directly responsible for the design, installation, startup and turnover of the Unit 2 Spent Fuel Pools. The purpose of this training will be to indoctrinate these key personnel on the Alternative Plan and its impact on the construction effort.
1.5 Delegation of Responsibility	Allows delegation of responsibility for any activity delineated in the manual	Requires that the authorities and duties of persons and organizations performing activities affecting quality be clearly established and delineated in writing. (QAM 2.4)	No specific delegation of responsibility proposed for this activity. Any special roles or duties of key personnel responsible for implementing the Alternative Plan shall be defined in the "Supplemental QA Requirements" and incorporated into the modification package for that activity.
2.0 Design and Document Control			
2.1 Design Control by Engineering Organization	Specifies CP&L participation in design, including maintaining control over engineering activities, reviewing, approving A/E and selected NSSS designs, directing document distribution, generating / updating design documents in accordance with authorizing procedures	Defines requirements for design control, including interface with design organizations (QAM 3.10)	CP&L responsible for design control for out-sourced design work, and performance of reviews as necessary to accept design products from outside organizations and assume responsibility for the design. (Ref. EGR-NGGC-0005) For this activity, design performed by A/E (Bechtel) through approved interface agreements. Implementation of the Alternative Plan integrated into the design change packages through Bechtel and subject to CP&L owner's review.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.2 Design Specifications, Calculations, Stress and / or Design Reports Section 2.2.1	Lists specific requirements for Design Specifications, calculations, design reports	Requires that measures be established to assure that applicable requirements are translated into design documents. (QAM 3.3, 3.4)	Overall design requirements for the design change package provided in EGR-NGGC-0005. Procedural requirements for content of design specifications found in ENP-013, and for calculations in ENP-011. ENP-013 requirements pertaining to content of specifications of similar rigor to that found in the ASME QA Manual. Also, note that per ENP-013, procurement specifications for Q-List equipment shall comply with the applicable sections of ANSI N45.2.13, Section 3.2.
2.2.2	Requires certification of the Design Specification by one or more Registered Professional Engineers competent in the applicable field of design of components and related nuclear power plant requirements.	Requires that measures be established to assure that applicable requirements are translated into design documents. (QAM 3.3, 3.4) Has no comparable requirement regarding certification of design specifications by Professional Engineers	Requires review/ approval of design specifications and design change packages; PE certification of specifications, calcs or design change packages not required under ENP-013, ENP-011 or EGR-NGGC-0005. Supplemental QA requirements for implementing Alternative Plan to require that design and procurement specifications associated with Code portions of design change be subject to PE certification. Note that this is generally not a significant issue, as most of these specifications have not been revised since the construction era.
2..2.3	CP&L has responsibility for assuring that copies of the certified Design Specifications are maintained and made available for the ANI and the NC enforcement authority having jurisdiction before Code items are placed into service	Requires that Design Specifications, as QA records , be maintained and retrievable in facilities that prevent deterioration, damage or loss. No ongoing requirements for reviews by the ANI or state enforcement authorities.(QAM 14.3)	Design specifications, design change packages, calculations, etc. are available in Document Control for review by ANI and other authorities and agencies. NC State Dept of Labor Boiler and Pressure Division has been briefed on the Alternative Plan and will conduct an independent review for the purpose of granting variance, relief from State requirements as deemed appropriate.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.2.4	The approved design organization responsible for Code items shall provide Design Specifications that are in accordance with Code.	Requires that measures be established to assure that applicable requirements are translated into design documents. (QAM 3.3, 3.4)	ENP-013 requires that codes and standards to be utilized in the design, fabrication, testing, delivery, and inspection of specified equipment, components and materials be appropriately identified, and that codes or standards and their effective dates are consistent with regulatory and plant modification requirements. Supplemental QA requirements developed for this project specifically require that the modification design fully conforms to Section III design requirements.
2.2.5	CP&L as the N Certificate Holder, is responsible for the design of piping systems, etc., and the adequacy and completeness of design documents. CP&L shall be responsible for assuring that Stress and or Design reports are prepared as set forth in the Code.	No N Certificate requirements associated with current program; however, CP&L as the licensee does maintain ultimate responsibility for configuration / design control issues.	Code portions of scope are Class 3. No formal stress reports required per ASME Section III requirements. Design inputs and parameters are delineated in the design change per EGR-NGGC-0005. Piping stress calculations are provided for the design as appropriate.
2.2.6	Requires review of the Certified Stress Report	N/A	No formal stress reports required. Design, including piping stress calculations, subject to plant review and approval per site procedures.
2.2.7	Lists requirements associated with modifications of any design document from the revision used in preparing a Stress Report	N/A	No stress report is required. Nonetheless, modification, review and approval of any design document at HNP is accomplished in accordance with applicable plant procedures which ensure the appropriate level of scrutiny is applied. Also, note that an electronic records management system (NRCS) serves to track document revisions and impacts to affected documents (Ref. NGGD-0300, PLP-202).

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.2.8	Addresses requirements for Code Class 1 and 2 steam and feedwater systems.	N/A	N/A, since scope is limited to Section III, Class 3 only.
2.3 Design Changes 2.3.1	Design changes shall be controlled in accordance with design control measures applied to the original design and require review / approval by the organization performing the original review. Design change approval required prior to final acceptance by QA/QC and the ANI. The design organizations and CP&L are responsible for design changes	Design changes controlled in accordance with design control measures which require consideration of design requirements. (QAM 3.3, 3.4).	Appropriate level of design change control exists in current program. Design change packages from outside suppliers subject to CP&L reviews. (Ref. EGR-NGGC-0003, 0005) Relative to the "Supplemental QA Requirements" associated with the Alternative Plan and subject to NRC approval, these will not be changed without notification / submittal to the NRC as appropriate. Also, note that the turnover process integrated into the modification package in the form of "Supplemental QA Requirements" requires that the ANI certify that all Code related activities were conducted and documented in accordance with applicable procedures and the modification package. These measures will ensure that design changes are fully approved prior to final turnover and declaration of operability.
2.3.2, 2.3.3, 2.3.4	Defines process for generating design changes (Field Change Request / Permanent Waiver)	Defines process for generating design changes (QAM 3.5)	Changes to design package controlled per EGR-NGGC-0005, will be processed as a revision and subject to appropriate level of reviews. Appropriate level of design change control exists. No supplement necessary.
2.4. Site Generated Specifications, Drawings and Procedures 2.4.1	This section deals with requirements for generation of documents associated with assembly, fabrication and installation of Code items at the construction site.	Generation and approval of site documents per applicable site procedures (QAM 6.0)	Generation of documents accomplished per modification requirements and plant procedures consistent with Appendix B requirements. No supplement necessary.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.4.1.1	Measures shall assure that documents and changes are reviewed for adequacy by authorized personnel and are available for use at the location where the activity is performed.	Requires that measures be established to assure that activities affecting quality are reviewed prior to issue and to control the issuance of documents. (QAM 6.1, 6.4.4, 14.4)	Generation, review, approval and retention of design documents controlled per corporate and site procedures. NRCS provides tracking for revision level and outstanding impacts. Appropriate level of design review and control of design documents exists. No supplement necessary.
2.4.1.2	Documents shall be reviewed by appropriate personnel.	Requires that measures be established to assure that designs and procedures are reviewed to ensure appropriate criteria and design inputs have been specified. (QAM 3.4.2, 6.4.4)	Review requirements for documents defined in site and corporate procedures. (Ref. EGR-NGGC-0003) Appropriate level of design review exists. No supplement necessary.
2.4.1.3	Copies of documents applicable to Code items shall be made available to the ANI and enforcement authority.	Requires that Design Specifications, as QA records , be maintained and retrievable in facilities that prevent deterioration, damage or loss. No ongoing requirements for reviews by the ANI or state enforcement authorities.(QAM 14.3). All documents associated with Code activities will be available in Document Control..	The design change packages, including revisions associated Code activities, will be subject to ANI review and approval per the requirements of EGR-NGGC-0005. Records will be provided to the NC DOL Boiler and Pressure Division as needed to support their review of this activity.
2.4.2	The Discipline Managers have overall responsibility for control and development of site-generated specifications used for field procurement or fabrication of Code activities.	Defines responsibilities and requirements for the development and control of design documents. (QAM 3.3, 3.4, 3.5)	Responsibility for specifications in accordance with ENP-013. Adequate level of responsibility exists. No supplement necessary.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.4.2.1, 2.4.2.2, 2.4.2.3	Delineates specific requirements associated with content, review and approval of site generated specifications. Requires that design specifications for Code items be certified by PE	Requires that measures be established for selection and review for suitability of application of materials, equipment and processes that are essential to safety related functions of structures, systems and components. (QAM 3.4, 3.5)	Site generated specifications per ENP-013; requires that codes and standards to be utilized in the design, fabrication, testing, delivery, and inspection of specified equipment, components and materials be appropriately identified, and that codes or standards and their effective dates are consistent with regulatory and plant modification requirements. ENP-013 requirements pertaining to content of specifications are of similar rigor to that found in the ASME QA Manual. Also, note that per ENP-013, procurement specifications for Q-List equipment shall comply with the applicable sections of ANSI N45.2.13, Section 3.2. Supplemental QA requirements states that all design specifications for Code items will be PE certified.
2.4.3	The Manager -QA Services has overall responsibility for development and control of Corporate Quality Assurance Dept. procedures.	Quality assurance integrated into line organization procedures and processes. NAS provides oversight; evaluates performance / effectiveness. (FSAR 17.3.1.1)	No supplement necessary.
2.4.4, 2.4.4.1, 2.4.5	Defines responsibility for development and approval of Construction administrative, technical, work and startup procedures related to Code items.	Requires procedure development and adherence for items affecting quality (QAM 6.4). Also, CP&L complies with Reg. Guide 1.33 as described in FSAR Section 1.8.	Specific administrative requirements are included in the "Supplemental QA Requirements" including the role of the ANI in Code related activities and defining the turnover process. Startup procedures shall be provided as appropriate in the design change packages for the work involved.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
2.4.6	Defines responsibilities and process for preparation, review, approval and revision of instrument isometric sketches. Defines process for red ink changes to these drawings, as well as criteria for rerouting without "red-lining".	Defines requirements for design control (QAM 3.3, 3.4)	Preparation and control of design drawings / sketches accomplished by ENP-012. Changes to approved design sketches accomplished through ESR revision process. Latitude for rerouting without drawing change limited to tolerances; defined in MMP-003. Appropriate level of design control exists. No supplement necessary
2.5 Site Document Control Section 2.5.1	Defines records management methods for distribution and control of specifications, drawings and work packages. Requires that documents issued "for info only" be appropriately stamped to preclude using for construction.	Requires that measures be established to control the issuance of documents which prescribe activities affecting quality (QAM 6.1, 6.34, 14.4)	Records management processes for distribution and control defined in RMP-002, 006. Verification of working document requirements provided in PLP-202. No supplement necessary
2.5.2, 2.5.3	Requires that document revisions be controlled in accordance with measures, including review and approval authorities, applied to the original document. Requires that provisions be made to assure that current revisions of documents are available for use. Defines distribution transmittal requirements.	Requires that measures be established to control the issuance of documents which prescribe activities affecting quality (QAM 6.1, 6.34, 14.4)	Procedural requirements for verification of working documents found in PLP-202, use of NRCS allows real time verification of revision level and affected documents. Control and distribution of documents / revisions accomplished through RMP-002 and related procedures. Current program provides adequate assurance that revisions are properly controlled, and that design and construction activities are accomplished using the latest effective document revision. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
Section 2.6 Identification of ASME Code Documents 2.6.1, 2.6.2	Requires that Purchase Requisitions, purchase orders and procedures used for fabrication and installation of Code items be identified as ASME Section III.	Requires that procurement control measures be established such that applicable regulatory requirements, design bases, etc are suitably included or referenced in the procurement of material, equipment and services (QAM 4.5).	Material to be procured specified in design change package through BOM per EGR-NGGC-0005. Materials acquisition controlled through MCP-NGGC-0002, 0401.Procedural controls are in place to ensure that appropriate considerations are made in materials procurements. However, to ensure that all Code material is procured as such, the "Supplemental QA Requirements" states that all Code items to be procured for this project shall be clearly denoted as such on the procurement documents and the design change package BOM.
3.0 Procurement			
3.1 Service Contracts	Defines requirements for services contracts, including those for engineering consultants & A/Es and Constructor and / or Construction Manager	Requires that procurement control measures be established such that applicable regulatory requirements, design bases, etc are suitably included or referenced in the procurement of material, equipment and services QAM 4.5).	Development of contract and contract administration governed by MCP-NGGC-0001; qualification of suppliers and audits accomplished per MCP-NGGC-0406 Suppliers of Code items must be appropriately qualified and on the ASL for Section III materials. No supplement required.
3.2 Procurement by the A/E 3.2.1 - 3.2.12	States that the A/E is responsible for procurement of Code stamped items on behalf of CP&L, outlines bid and evaluation process for suppliers.	Per approved interface agreements for this project, the A/E is responsible for providing complete specification to facilitate procurement, but procurement process will be accomplished by CP&L under their program and procedures.	Suppliers of Code items must be appropriately qualified and on the ASL for Section III materials and services. The bid and evaluation process outlined in the ASME QA Manual has been supplanted by the process for identifying, qualifying and auditing of suppliers per MCP-NGGC-0406. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
3.3 Site Procurement 3.3.1 - 3.3.14	Defines requirements / responsibilities for controlling field purchase requisitions for Code items and services	Procurement will be accomplished by CP&L under their program and procedures.	All Code items procured for this project will be specified as such in the design change package BOM and procured to applicable Code requirements from appropriately qualified vendors. Ref. MCP-NGGC-0001, 0002, 0401, 0402, 0406. Appendix B procurement is well defined and adequate. No supplement required.
3.4 Reclassified Material	Lists requirements for upgrading materials	N/A - no upgrade of Code items will be utilized in support of this activity.	No supplement required
4.0 Receiving Inspection			
4.1 - 4.13	Outlines requirements for receipt inspection of Code items. Lists responsibilities for QA/QC to accomplish receipt inspection in such a manner as to ensure that Code items are in compliance with requirements, and to prevent damage, deterioration or loss. Includes requirements for inspection and examination, identification and resolution of nonconformances, conditional release requests, and item acceptability.	The Corporate materials control program includes procedures for receipt inspection, storage, issuance and control of items	The Corporate materials control program meets the requirements of Appendix B and is deemed suitable for control of safety related items, including Code items. It is noted that this program is currently utilized for materials procured for use in the site Section XI Repair and Replacement Program.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
5.0 Storage and Process Control			
5.1 - 5.1.1 Storage	Outlines requirements and responsibilities for storage of Code items.	Requires that measure be established to control handling, storage, cleaning and preservation of material and equipment (QAM 5.3, 5.5, 5.6)	The Corporate materials control program meets the requirements of Appendix B and is deemed suitable for control of safety related items, including Code items. It is noted that this program is currently utilized for materials procured for use in the site Section XI Repair and Replacement Program. For those items which were installed during original construction and which will now be utilized in the modified design, the Supplemental QA Requirements defines an Equipment Commissioning Plan which outlines dedication requirements. Notably, this plan does not provide any exception to Code requirements except as pertains to documentation of field installation of piping (Addressed in the Alternative Plan).

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
5.2 Process Control 5.2.1, 5.2.2	Requires that process control sheets be utilized to establish measures assuring that processes, including welding and heat treating, are controlled in accordance with the Code and accomplished by qualified personnel. Process control sheets have appropriate spaces for QA/QC signature and for the ANI.	Requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (QAM 7.4, 11.3)	Generally, process control sheets in existing site procedures have appropriate verification of quality, including ANI review and involvement. It is noted that those procedures commonly associated with Section XI activities may specify ANII, vs. ANI. For the purposes of this project, the authorized inspector will be qualified as both. In addition, "Supplemental QA Requirements will include a requirement that the ANI review all process control sheets for Code related construction activities before they are issued to the field for construction, giving the ANI the opportunity to not only review the work planning, but also to specify any additional reviews / hold points as deemed necessary. Process control sheets documenting Code required attributes will be reviewed and accepted by the ANI prior to turnover.
5.2.3	For fabrication and installation of Code items by welding, the Weld Data Report, tank fabrication report and the safety-related instrumentation report are the process control sheets utilized. For pipe spool modifications, the Pipe Spool Fabrication / Modification Record is used to supplement the WDR as a process control sheet.	Requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (QAM 7.4, 11.3)	Site and corporate procedures associated with welding of Code items provide reference to the Corporate Welding Manual (NGGM-PM-0003) which utilize the Weld Data Report as a process control sheet. WDR in Corporate Welding Manual is consistent with Code requirements. No tank fabrication associated with this project.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
5.2.3.1- 5.2.3.3	Defines requirements / usage of the Pipe Spool Fabrication / Modification Sheet.	Requires that measures be established to assure that special processes are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements (11.3).	The "Pipe Spool Fabrication / Modification Sheet utilized during the construction era is not applicable to this project. Piping will be installed using modification WR/JOs for planning and implementation, and process control sheets from applicable plant procedures for material traceability, identification and qualification of personnel, quality verification, etc. Piping fabrication and installation process control sheets are provided in MMP-002, the Corporate Welding Manual and other applicable procedures.
5.2.4 - 5.2.11	Specifies process control sheets for repair or rework of non-welding activities, flanged or threaded connections, pressure tests, instrumentation, tube bending, etc.	Requires that necessary process control sheets for these activities are provided in corporate and site procedures. (QAM 7.4, 11.3)	Existing process control sheets are the same utilized for site Section XI Repair / Replacement Program. These sheets are are adequate to direct and document this work.
5.2.12	Requires QA / QC notification of the ANI when a mandatory hold point is reached, and that hold point inspections be accepted by signature (or initials) and date on the process control sheet prior to work proceeding past that point.	Requires that work not proceed beyond hold points without the consent of the designated representative. (QAM 2.2, 3.4, 3.7)	Work planning procedures and process control sheets incorporate hold points as appropriate for independent craft verification, QC, and for Code activities, for the ANI as well. Procedures require that hold points be established and utilized as appropriate. (Ref. WCM-002, MMM-001, ADM-NGGC-0104) Existing procedures are adequate with respect to incorporating independent verification and QC hold points into work planning and process control sheets. Additional controls regarding ANI involvement will be accomplished by requiring that all work packages associated with Code items be clearly identified as "ASME Section III", and be reviewed by the ANI prior to field issuance to allow hold points to be added if he desires.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
5.2.13	See Section 10.0 for discussion on nonconformances	-	-
5.2.14	Requires that identification tags or markings be retained, and transferred when necessary to cut an item. This transfer of identification was verified and documented by QA/QC.	Requires that measures be established to assure that identification of items are maintained by heat number, part number or other appropriate means, on the item or records traceable to the item throughout the fabrication, erection, installation and use of the item. (QAM 3.5, 3.7, 5.3, 5.4, 5.5, 10.5)	NGGC-MCP-0402 requires that traceability be accomplished at issuance either by markings or on issue documentation, as appropriate. For piping, verification of material identification is documented on process control sheets found in MMP-002. Additional controls regarding maintaining identification and traceability of materials is provided in ADM-NGGC-0104 and MMM-001. Corporate Welding Manual NW-04 also requires that material identification numbers be transferred when material is cut and that permanent markings be established in accordance with Code requirements. Adequate control of materials is provided with existing procedures and processes. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
5.2.15	Lists detailed requirements for labeling, identification requirements associated with maintaining traceability, particularly with regard to welding materials . Requires that hold or reject items be withheld from use, and that material protection procedures be implemented to prevent damage or deterioration.	Requires that measures be established to assure that identification of items are maintained by heat number, part number or other appropriate means, on the item or records traceable to the item throughout the fabrication, erection, installation and use of the item. (QAM 3.5, 3.7, 5.3, 5.4, 5.5, 10.5)	NGGC-MCP-0402 requires that traceability be accomplished at issuance either by markings or on issue documentation, as appropriate. The Corporate Welding Manual, NGGM-PM-0003, provides for issuance and control of welding materials in accordance with Code requirements. NGGC-MCP-0401 defines the receipt inspection / material disposition process, and precludes inadvertent issuance and installation of items not accepted except for conditional release, and in that case ensures that this material will be accepted prior to turnover. MMM-001 provides requirements regarding handling and storage of materials once they are issued for installation. Sufficient controls exist relative to materials identification and traceability, including welding materials. Items not accepted are precluded from issuance except for conditional release, and this process ensures that the material will be accepted prior to turnover. Work control procedures assure that Q material is properly handled, stored and segregated. No supplement required.
5.3 Construction Procedures Development	Defines responsibilities and requirements regarding development of construction procedures.	Defines requirements for preparation, review, approval and control of procedures (QAM 6.0)	Existing corporate and site procedures will be used to direct construction, with additional instructions / controls provided by the modification package as described herein.
5.4 Start-Up Procedures Development	Defines responsibilities and requirements regarding development of Start-Up procedures	Requires test control as required to demonstrate that structures, systems and components will perform satisfactorily in service. (QAM 3.4, 3.7, 4.5, 11.3)	As opposed to plant start-up, which covered a wide range of systems and equipment, start-up scope for this project is very limited, will be accomplished by including necessary instructions in the modification package for the affected scope of work. Start-Up procedures will be provided in the modification packages. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.0 Welding Control			
6.1 Procurement of Welding Material 6.1.1	Requires that welding material used in the construction Code items conform to Code requirements as detailed in the Site Specification SS-021, "Purchasing Welding Materials for Permanent Plant Construction" Provides requirements regarding material tests to be conducted by the manufacturer.	Requires that procurement control measures be established such that applicable regulatory requirements, design bases, etc are suitably included or referenced in the procurement of material, equipment and services (QAM 4.5).	Procurement and control of welding materials accomplished by Corporate Welding Manual, which invokes specification CPL-XXX-W-01, "Welding Filler Metals and Materials Procurement for Nuclear Power Plants, ASME Section III Applications". Program outlined in the Corporate Welding Manual provides a well-defined and specific process for specification and procurement of welding materials.
6.1.2	Requires that POs for weld materials include weld material classification and that testing and certification be performed to the requirements of ASME Code NB2400 for each heat and / or lot of material in accordance with the latest mandatory addenda of the ASME Code, Section II, Part C; and the 1974 Ed., 1976 Winter Addenda of Section III.	Requires that procurement control measures be established such that applicable regulatory requirements, design bases, etc are suitably included or referenced in the procurement of material, equipment and services (QAM 4.5).	Specification CPL-XXX-W-01 ensures that welding materials procured for Code applications conform to ASME Code Section II, Part C and Section III requirements; Use of this spec, invoked by the Corporate Welding Manual provides equivalent assurance of Code conformance. No supplement required

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.1.3	Specifically requires that welding materials received from a supplier without proper certification and complete documentation, as required by the Code, shall be tagged and placed on "Hold" status in a segregated area until the documentation has been received or corrected.	Procedures require that materials, parts, and components be identified and controlled to prevent the use of incorrect or defective items. Requires that items accepted or released are identified as to their inspection status prior to forwarding them to a controlled storage area or releasing them for installation of further work, and that items not meeting applicable requirements are identified and controlled until proper disposition is made. (FSAR 17.3.2.6)	Welding materials are received and inspected in accordance with NGGC-MCP-0401, which defines the receipt inspection / material disposition process, and precludes inadvertent issuance. Only when these materials are accepted, they are transferred to bin locations in the Weld Material Issue Station. Once there, the issuance and control of welding materials is strictly controlled by the Plant Welding Engineer in accordance with the Corporate Welding Manual. The Welding Material Control Procedure (NW-03) in the Corporate Welding Manual conforms to stringent requirements for welding in accordance with ASME Code requirements. No supplement is required.
6.2. Welding Procedure Qualification 6.2.1	Defines responsibilities for preparation, qualification and approval of CP&L welding procedures. Requires that welding procedures be qualified in accordance with ASME Code Section IX and meet the requirements of Section III. Requires that QA/QC be notified of procedure test schedules to allow QA/QC monitoring and documentation of the activity.	Requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (FSAR 17.3.2.11) Requires that if mandatory inspection hold points are required, work shall not proceed beyond these hold points without the consent of the designated representative. (QAM 3.4, 3.7)	Procedure NW-01 in the Corporate Welding Manual places responsibility for development, revision and qualification of welding procedures with the Welding Engineer. NW-01 also requires that WPS be in accordance with ASME Code Section IX and other referenced codes as applicable (includes Section III). Procedures in the Corporate Welding Manual provide compliance with requirements; no supplement required

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.2.2	Provides forms to record actual welding parameters, test results and Code required data, to be certified by the Welding Manager or his representative. Included QA/QC signature of these records after review against Code requirements and submittal to the ANI.	Requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (FSAR 17.3.2.11) Requires that if mandatory inspection hold points are required, work shall not proceed beyond these hold points without the consent of the designated representative. (QAM 3.4, 3.7)	QA/QC review is not required, but the monitoring and documentation of variables as the test proceeds is required. The test weld is subject to NDE and testing as required by codes and specifications, performed by certified personnel. The completed WPS is independently reviewed by a WE for approval. Current process does not require ANI involvement in the qualification process. Section III, Subsection NA-5252 requires that the Inspector assure himself that welding procedures have been qualified under the provisions of Section IX and Section III, and may request re-qualification as a requirement. The Code does not specifically require the ANI to review the WPS as it is developed.
6.3 Qualification of Welders and Welding Operators 6.3.1, 6.3.2	Defines responsibilities and requirements for testing, qualification and approval of welders and welding operators. Qualification is required in accordance with Section IX and the approved WPS. Tests will be performed in the weld shop under the Welding Manager. Welders are qualified on test coupons, with test results submitted to Document Control. Welder qualification status is maintained in a Welder Qualification Status List. Copies of the test records and Welder Qualification Status Report are made available to the ANI.	Not specific to qualification of welders and weld procedures, but requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (FSAR 17.3.2.11)	Qualification of welders and weld operators provided for in procedure NW-02 of the Corporate Welding Manual. Qualification specific to the requirements of the WPS; Welders qualifying to make Code weldments would be qualified per Code requirements. Testing is performed in a training / qualification area under the supervision of Weld Test Shop personnel. Test results are recorded on the Performance Qualification Test Record (PQTR) and reviewed and approved by the PWE. Testing is subject to monitoring by other organizations, including the ANI, "as applicable". The PWE maintains welder qualification records and the Welder Qualification Status Report. Qualification program meets Code requirements for applicable WPS, is the basis for the welding program used for the site Section XI Repair and Replacement Program.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.3.3	Welders shall be assigned a welder symbol, and a log shall be maintained for welding symbols. Upon termination or loss of the symbol stamp, that symbol stamp shall not be reassigned to another welder for a period of one year.	Not specific to qualification of welders, but requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel (FSAR 17.3.2.11)	Corporate Welding Manual procedures NW-02 and NW-10 provide requirements and instructions for the assignment of welder symbols. Existing program satisfactory; no supplement required
6.3.4, 6.3.5	Defines requirements for renewal and extension of welder qualification, requires re-qualification when the welder has not used the process for 3 months or more, except when the welder has been employed on some other welding process, the period may be extended up to 6 months by the Welding Manager. Re-qualification may also be required based on reason to question the ability of the welder.	Not specific to qualification of welders, but requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel (FSAR 17.3.2.11)	Corporate Welding Manual procedure NW-02 requires re-qualification when the process has not been used for 4 months, with no extension available based on use of other processes. Re-qualification may also be required based on reason to question the ability of the welder. Existing program satisfactory; no supplement required

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.4 Construction Welding 6.4.1	Defines responsibilities and requirements for preparation of Weld Data Report (WDR) based on design drawings, specifications and site procedures. WDRs are prepared by the weld manager, forwarded to QA/QC for review of essential requirements and hold points, then to the ANI who establishes his hold points and signs.	Requires that measures be established to assure that special processes, including welding, heat treating and NDE are appropriately controlled and are accomplished by qualified personnel using qualified procedures in accordance with applicable requirements. (FSAR 17.3.2.11)	Corporate Welding Manual Procedure NW-07 provides instruction on preparation of WDRs. WDRs are initiated by the PWE or his designees. WDRs are approved by the PWE, and Code WDRs forwarded to the ANII for review and to designate, at his option, additional hold points. QC hold points are designated by the preparer and the ANII. The existing program is satisfactory. However, since this work is not associated with Repair / Replacement activities, the Inspector must be qualified as ANI. Note that the Supplemental QA Requirements requires dual qualification (ANI, ANII) for this individual. The Supplemental QA Requirements also requires that all process control sheets associated with Code activities receives a review by the ANI prior to field issuance.
6.4.2	Requires all welding to be done using welders qualified by CP&L to CP&L WPS. All welding is to be accomplished using qualified procedures. Defines responsibilities for control of welding operation (including authority to assign or remove welders).	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11)	Corporate Welding Manual procedure NW-06 provides general welding instructions and technical requirements for carbon and low alloy steels, stainless steels and nonferrous welding at CP&L plants. This procedure requires that all such welding be performed by qualified welders (per NW-02) using qualified WPS (per NW-01) and with qualified materials (per NW-03). Under the Corporate Welding Manual, the PWE is responsible for welding program at site, including training, qualification and technical supervision of welders. Existing program satisfactory; no supplement required
6.4.3	Defines process for reviewing welder qualifications and assigning welders.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11)	The PWE maintains and distributes the "Welder Qualification Status Report" (NW-02) The PWE is also responsible for reviewing and approving WDRs (NW-07) Existing program satisfactory; no supplement required

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.4.5, 6.4.6	Defines requires for control of welding materials, including returning unused welding materials and use / surveillance of heated ovens for coated electrodes.	Is not specific to weld materials, but requires that materials, parts and components be identified and controlled to prevent the use of incorrect or defective items (FSAR 17.3.2.6).	Corporate Welding Manual procedure NW-03 provides requirements for issuance and control of welding materials, usage of heated ovens and rod caddies for temperature controls of coated electrodes, returning unused and undamaged materials at the end of each shift, and for dispositioning / discarding welding materials. Existing program satisfactory; no supplement required
6.4.7	Defines responsibilities for notification of ANI; requires that hold point inspections be accepted by QA/QC and the ANI prior to any work proceeding past that point.	Requires that if mandatory inspection hold points are required, work shall not proceed beyond these hold points without the consent of the designated representative. (QAM 2.2, 3.4, 3.7)	Work planning procedures and process control sheets incorporate hold points as appropriate for independent craft verification, QC, and for Code activities, for the ANII as well. Procedures require that mandatory QC hold points be accepted prior to work proceeding. (Ref. WCM-102, MMM-001, ADM-NGGC-0104). Existing procedures are adequate with respect to incorporating independent verification and QC hold points into work planning and process control sheets. Additional controls regarding ANI involvement be accomplished by requiring that all work packages associated with installation of Code items be clearly identified as "ASME Section III", and be reviewed by the ANI prior to field issuance. Note that, to avoid procedural conflicts, the Supplemental QA Requirements requires dual qualification (ANI / ANII) for this individual. The Supplemental QA Requirements also requires that <u>all</u> process control sheets associated with Code activities receives a review by the ANI prior to field issuance.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.4.8	Provides QA/QC visual inspection requirements for weld preps, fit-up, tack welds, root pass, etc; notification requirements in the event that an unacceptable condition is observed.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11). Requires that work shall not proceed past mandatory inspection hold points without the consent of the designated representative. (QAM 2.2, 3.4, 3.7)	Corporate Welding Procedure NW-07 provides instruction on preparation of WDRs. WDRs are prepared by the PWE or his designees based on WPS and weld joint requirements. WDRs are approved by the PWE, and when applicable, forwarded to the ANII to designate, at his option, additional hold points. QC hold points are designated by the preparer and the ANII. Existing program is satisfactory, no supplement required.
6.4.9	Requires the welder identification symbol be applied next to the weld	Requires that measures be established to assure that identification of items are maintained by heat number, part number or other appropriate means, on the item or records traceable to the item throughout the fabrication, erection, installation and use of the item. (QAM 3.5, 3.7, 5.3, 5.4, 5.5, 10.5)	NGGC-MCP-0402 requires that traceability be accomplished at issuance either by markings or on issue documentation, as appropriate. For piping, verification of material identification is documented on process control sheets found in MMP-002. Additional controls regarding maintaining identification and traceability of materials is provided in ADM-NGGC-0104 and MMM-001. Corporate Welding Manual NW-04 also requires that material identification numbers be transferred when material is cut and that permanent markings be established in accordance with Code requirements. Adequate control of materials is provided with existing procedures and processes. No supplement required.
6.5 Repairs to Welds and Base Material 6.5.1 - 6..5.4	Provides requirements for repairs to welds and base materials in the event that unacceptable defects are identified. Requires notification of the ANI and discipline Welding Engineer and preparation of a Repair Weld Data Report (RWDR), subject to essentially the same process as for the WDR for the original weldment.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11).	Corporate Welding Manual procedure NW-09 directs activities associated with repairs to welds and base metals (including grinding and machining); incorporates the development of a RWDR in a process which parallels that associated with the WDR. The Corporate Welding Manual provides a comparable process for repairs to welds and base metals; no supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
6.6 Control of Welding Equipment 6.6.1, 6.6.2	Provides requirements for operational checks at least every 3 months, notification / disposition of machines out of tolerance (including investigation of the use of the machine since the last sat operational check), initiation of corrective measures.	Defines requirements for measuring and test equipment (M&TE) control program, including calibration to a standard, establishment of calibration frequency, , M&TE control, etc. (QAM 8.0)	Corporate Welding Manual procedure NW-14 directs control of welding equipment, requires operational checks and maintenance at least every 12 months. Welding equipment is not used as extensively as during construction, and is generally subject to better handling by a smaller group of permanent plant personnel (vs. a large contract construction force). Existing program is in accordance with Section IX. Therefore, current controls on inspections & operational checks of welding equipment is acceptable; no supplement required.
6.7 Additional Process Control Forms	Allows for continuation form for process control sheets as necessary	N/A	Similar continuation form exists in NW-07 for WDRs / RWDRs. Not a critical item, but no supplement required at any rate.
7.0 Heat Treating Heat 7.1 - 7.7	Provides requirements and responsibilities for performing heat treatment in accordance with the Code.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11).	Comparable requirements for post-weld heat treatment are found in Corporate Welding Manual procedure NW-08. Although the existing program is sufficient, this item is not an issue for Code welding associated with this project, as the subject welds are exempt from mandatory PWHT.
7.8 Bending and forming 7.8.1	Prohibits bending and forming of Class 1 materials at the construction site	N/A	N/A - no Code Class 1 items associated with this project.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
7.8.2	Requires that bending of Code Class 2 & 3 instrument tubing be accomplished in accordance with the Code, refers to Sections 2.0 and 5.0 (in the ASME QA Manual) for procedure development / approval and process control requirements, including QC / ANI interface.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures. (FSAR 17.3.2.11).	Process control sheets and bending requirements provided (either directly or by reference) in MMP-003. For Quality Class A material (such as Code related items), this includes independent craft and QC verification of critical attributes. No direct ANI involvement required per this procedure. Supplemental QA Requirements requires that Code related process control sheets are forwarded to the ANI / ANII prior to field issuance for his review and assignment of additional hold points.
8.0 Control of Equipment, Tools, Gauges and Instruments			
8.1 Calibration 8.1.1 - 8.2.6	Provides responsibilities and requirements for equipment, tools, gauges and instruments specified for calibration control, including calibration at prescribed intervals against certified standards. Requires traceability between the calibrated item and calibration equipment be recorded on process control sheets. Provides for issuance of "Out of Calibration Notification" forms to evaluate corrective action and review activities for which the tool was last used since a sat calibration. Requires shorter calibration intervals or replacement of instruments frequently found out of calibration, and that calibration status and calibration due date be shown on or with the instrument, except for pressure gauges which are calibrated before use and after being returned to the shop. Prescribes requirements for storage, maintenance and record keeping of calibrated equipment, includes use of a certification record form and calibration stickers. Requires that pressure gauges used for hydrostatic testing be calibrated before and after each test or series of tests.	Defines requirements for measuring and test equipment (M&TE) control program, including calibration to a standard, establishment of calibration frequency, M&TE control, etc. (QAM 8.0)	Existing program satisfies Appendix B requirements and is the basis for support of the operating unit; is judged to be acceptable for this activity. No supplement required The M&TE calibration and control program at Harris is prescribed in MMM-006. This program includes identification of M&TE equipment, specification of calibration interval, calibration against certified standards, use process control sheets, and traceability between calibration tool and calibrated instrument. This program also requires an evaluation of all equipment calibrated by an item found to be out of tolerance since its last satisfactory calibration. Relative to pressure gauges used for hydrostatic testing, MMP-012 requires that these gauges be calibrated before and after usage. Storage, maintenance and record keeping of M&TE equipment addressed in MMM-006, including the use and control of certification records and calibration stickers. Relative to pressure gauges used for hydrostatic testing, MMP-012 requires that these gauges be calibrated before and after usage.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
9.0 Inspection, tests and Nondestructive Examination			
9.1 Training, Qualification and Certification 9.1.1 - 9.1.3	Provides responsibilities and requirements for QA/QC personnel. QA/QC inspection personnel shall be trained and qualified in accordance with Section 1.0 (of the ASME QA Manual) and the relevant Corporate Quality Assurance procedure.	Requires that personnel performing inspection review, examination and testing, evaluations of testing data and reporting of inspection and test results be qualified and certified based on CP&L commitment to Reg. Guide 1.58 (QAM 7.6)	Training and qualification is prescribed in the Corporate Quality Assurance Manual and accomplished as directed in Nuclear NDE Manual procedure NDEP-A. Program meets the requirements of Section XI, is acceptable for this scope given that all piping is Class 3, and that NDE consists of surface exams only.
9.2 Inspections and Tests 9.2.1 - 9.2.7	Provides requirements and general requirements for performance of inspections and tests. Requires that personnel be appropriately trained in preparation and control of inspection and test records, that inspections and tests are performed in accordance with approved procedures, that process control sheets be utilized, that the status of the inspected item be identifiable and traceable, that the ANI be notified when ANI hold points are reached, that work will not proceed past hold points until accepted, and that nonconforming work shall be stopped and corrective action initiated.	Requires that personnel performing inspection review, examination and testing, evaluations of testing data and reporting of inspection and test results be qualified and certified based on CP&L commitment to Reg. Guide 1.58 (QAM 7.6). Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11).Requires that work shall not proceed past mandatory inspection hold points without the consent of the designated representative. (QAM 2.2, 3.4, 3.7)	Training and qualification addressed in NDEP-A (see item 9.1). This procedure also requires that for NDE procedures be based on ASME Section III and V as applicable, and requires that the ANI / ANII review and concur with any NDE procedures used for acceptance of Code work. Process control sheets for NDE activities are provided in the Nuclear NDE Manual procedure for that specific test or inspection, including hold points as appropriate. Corporate and site procedures ensure that hold points are accepted prior to work proceeding. NDEP procedures are provided to conform with ASME Code requirements as applicable. NDE procedures for LP and MT examinations are provided with acceptance criteria to ASME Section III requirements. No supplement required.
9.3 Nondestructive Examination 9.3.1	Requires personnel performing NDE to be trained, qualified and certified in accordance with SNT-TC-1A (1975), the Code and QA/QC procedures. Requires that only qualified personnel are assigned to perform NDE, and that procedures for NDE training, qualification and certification be prepared by a Level III. This section also provides an outline of the inspection procedure.	Requires that personnel performing inspection review, examination and testing, evaluations of testing data and reporting of inspection and test results be qualified and certified based on CP&L commitment to Reg. Guide 1.58 (QAM 7.6)	Nuclear NDE Manual procedure NDEP-A states that this NDE manual meets the requirements of SNT-TC-1A (1980, 1984 Ed) and Section XI. NDE Procedures require that personnel be appropriately trained. NDEP-A also includes a listing of minimum content for NDE procedures based on the type of activity being performed. Existing program is of comparable rigor. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
9.3.2, 9.3.3	Requires Level I and II personnel to be qualified and certified by an examination administered by a Level III; Level III to be qualified by an exam administered by a Level III and certified by the QA/QC manager. Allows the services of an outside agency to be used in the event that no Level III personnel exist within the organization.	States that prior to certification, NDE personnel shall have satisfactorily passed an examination administered under the jurisdiction of a certified Level III, and that CP&L Level III NDE personnel will be specified in CP&L's NDE Procedures (QAM 7.6).	NDEP-A requires certification of Level I and II to be performed by Level III, Level III certification to be performed by the Chief Mechanical / Materials Engineer. Use of an outside organization is not prohibited. Existing program is of comparable rigor. No supplement required
9.3.4 - 9.3.9	Requires training, qualification and certification of Levels I, II & III personnel to be in accordance with the applicable NDEPs and documented on appropriate certification forms. Requires records be maintained, that NDE personnel be re-certified at least once every 3 years, and that interpretation of results is accomplished by a Level II or III. Provides guidance for the preparation of NDE requests and reports.	States that prior to certification, NDE personnel shall have satisfactorily passed an examination administered under the jurisdiction of a certified Level III, and that CP&L Level III NDE personnel will be specified in CP&L's NDE Procedures. (QAM 7.6)	NDEP-A provides comparable requirements relative to training, qualification re-qualification and certification of personnel. Requires that records be maintained, and lists performance review requirements for maintenance of certification. Existing program is of comparable rigor. No supplement required
9.4 Inspection and Test Equipment	Requires that QA/QC inspection personnel be responsible for ensuring that inspection and test equipment is calibrated and has current calibration stickers.	Defines requirements for measuring and test equipment (M&TE) control program, including calibration to a standard, establishment of calibration frequency, M&TE control, etc. (QAM 8.0)	Inspection and test equipment is subject to the site M&TE control procedure, MMM-006. Existing program is sufficient regarding control of calibrated equipment.
9.5 Inspection and Test Records 9.5.1, 9.5.2	Requires that inspection and test records are prepared and maintained.	Defines requirements for maintain records of activities affecting quality, including inspection, test, audit and qualification records (QAM 14.3, 14.4)	NDEP-A requires that NDE records associated with Code activities be considered permanent QA records and be processed accordingly. Process control sheets and other required records are provided in the Nuclear NDE Manual as applicable. Existing program is of comparable rigor. No supplement required

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
9.5.3 - 9.5.7	Provides requirements for involvement of ANI, states that records are not considered complete until signed and dated by the ANI on the process control sheets, that the NDE Level III shall assure that NDE capability is proven by demonstration to the satisfaction of the ANI prior to the use of the procedure, and that the ANI may require re-qualification of NDE procedures or personnel as he deems necessary.	Requires that special processes be performed by qualified personnel using proper equipment and in accordance with written qualified procedures (FSAR 17.3.2.11 Requires that work shall not proceed past mandatory inspection hold points without the consent of the designated representative. (QAM 2.2, 3.4, 3.7)	NDEP-A requires that ANI review / concurrence be obtained for NDE procedures used for Code work. Requires that the Level III provides procedure qualification demonstration to the ANI when necessary. Also, provides that work may continue prior to ANI review of procedures, but that any such work would be at risk to ANI review. Existing program is of comparable rigor. No supplement required
9.5.8, 9.5.9	Provides responsibilities and requirements for pressure testing, including QA/QC and ANI involvement, establishment of hold points, and review / approval of the process control sheets.	Requires that a test program be established to assure that structures, systems and components perform satisfactorily in service, and that this program include pre-operational tests and proof test prior to installation. (QAM 3.4, 3.7, 11.3)	Pressure testing requirements provided in MMP-012. Generally, these pressure test procedures are intended to meet Section XI pressure test requirements. Existing pressure test procedures are adequate, except that the test pressure specified for Section XI may be less conservative. Therefore, the Supplemental QA Requirements specify that more stringent Section III criteria be employed for pressure testing.
9.6 Code Data Report and Nameplate Stamping 9.6.1 - 9.6.4	Provides the process and requirements for the development and review of Code Data Reports and N Stamping.	No partial N stamping of existing equipment and the original N certificate program has been discontinued, so that originally installed equipment cannot be subject to the stamping process. No provision for N stamping is provided.	Supplemental QA Requirements defines a certification process wherein data reports are used to document field activities towards an overall system turnover. Whenever possible (i.e., for completed Code items supplied by an NPT supplier), these data reports will be the actual Code Data Reports for the items in question. For new construction and documentation of installation of preexisting piping for which records are no longer available, a form comparable to an NIS-2 will be employed. The ANI will ensure that the required data reports are completed and certified.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
10.0 Nonconformance and Corrective Action			
10.1 Scope 10.2 Reporting Non-conformances	Provides responsibilities and requirements for identification, reporting, segregation, investigation and resolution of non-conformances relating to Code conditions. Requires deficiencies in documentation and construction control, including Start-Up procedures, be reported as non-conformances. Utilized hold tags and labeling as required to indicate limits of hold. Defined review requirements for NCRs	Requires that measures be established to assure identification and control of incorrect or defective material, parts and components (QAM 5.3, 5.4, 5.5, 10.3, 11.4, 11.6). Requires that measures be established to conditions adverse to quality are promptly identified and corrected. (QAM 12.4, 12.5)	Procedures and processes provide measures (i.e., process control sheets, independent verification, STAR) to ensure that construction deficiencies are precluded from occurring. For conditions that are identified, CAP-NGGC-0001 provides direction on the initiation and processing of condition reports, such as would be generated in the event of non-conformances. Relative to receipt and control of materials, MCP-NGGC-0401 & 0402 ensure that defective items are not accepted and issued. These condition reporting and materials control processes provide effective programmatic means to ensure that discrepancies and non-conformances are captured and resolved.
10.3 Corrective Action 10.3.1 - 10.3.7	Provides instructions and guidance relative to the process for dispositioning NCRs. Requires verification and disposition of corrective action be performed by QA/QC prior to signing and closing the NCR.	Requires that measures be established to conditions adverse to quality are promptly identified and corrected. (QAM 12.4, 12.5)	CAP-NGGC-0001 provides instructions and requirements for dispositioning CRs. Incorporates requirements for event categorization, causal evaluation, disposition and corrective action Existing program provides an effective means to capture and resolve non-conformances.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
10.4 Review of Nonconformance Report 10.4.1 - 10.4.4	Requires corrected items or documents to be re-inspected by a QA/QC inspector, and acceptance documented. Requires that closed out NCRs become QA records and transferred to the QA records vault. Requires that the ANI be apprised of any NCRs pertaining to the Code, and requires ANI signature prior to closing any such NCRs	Requires that measures be established to conditions adverse to quality are promptly identified and corrected. (QAM 12.4, 12.5). Does not require ANI involvement in review of construction related conditions adverse to quality.	The stated purpose of CAP-NGGC-0001 is to implement the NGG Corrective Action Management Policy and the requirements of 10 CFR 50, Appendix B, Criterion XVI. Disposition of any CRs related to construction requires that the item be corrected or formally evaluated as being acceptable. Review and approval of CRs goes up to and includes PNSC review, as appropriate. The CR process does not specifically require notification of the ANI for Code related items, although the formal evaluation process would tend to ensure his cognizance of any such issue. To further ensure the ANI's involvement on CRs related to Code items, the Supplemental QA Requirements requires that any such items be available to the ANI for verification of satisfactory resolution prior to turnover.
10.5 Receiving Inspection Software Deficiencies	Provides requirements for identification by QA/QC at receipt of documentation deficiencies, requires that an NCR be initiated for any such discrepancies that cannot be resolved by routine measures.	Requires that measures be established to assure identification and control of incorrect or defective material, parts and components (QAM 5.3, 5.4, 5.5, 10.3, 11.4, 11.6).	A similar receipt inspection process, including requirements for documentation review, are provided in MCP-NGGC-0401. Existing process provides sufficient assurance regarding resolution of documentation discrepancies. No supplement required.
11.0 Record Retention			
11.1	Defines responsibilities and requirements for records retention, requires that records generated by suppliers and contractors be transferred to CP&L for retention. Requires restriction of access to records storage areas and the use of a records sign-out log.	Defines requirements for maintaining records of activities affecting quality, including inspection, test, audit and qualification records (QAM 14.3, 14.4)	RMP-006 provides requirements for classification of QA records. Design change package, work records and other quality related documentation generated as a result of this project would be classified therein as a QA record and subject to permanent retention. Existing process is equivalent to the construction program. No supplement required.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
11.2 Records Index	Requires preparation of a record index to facilitate timely retrieval of records	Defines requirements for maintaining records of activities affecting quality, including inspection, test, audit and qualification records (QAM 14.3, 14.4)	CP&L maintains a computer-based index of records (NRCS) for indexing and retrieval of records Existing process is equivalent of the construction program. No supplement required.
11.3 Accumulation and Maintenance of Records	Provides requirements and responsibilities for accumulation and maintenance of records, including identification of retention period, prevention of loss, damage, etc. Requires access to records by the ANI	Defines requirements for maintain records of activities affecting quality, retention period and prevention of loss, damage, etc. (QAM 14.3, 14.4)	RMP-006 provides requirements for classification, submittal, control and maintenance of records. No supplement required.
12.0 ANI			
12.1.1 - 12.1.7	Summarizes the interface and requirements associated with the ANI for compliance with the Code. Requires that the ANI be given free access to all work locations under his jurisdiction, that he be provided adequate facilities and assistance, that he witness or otherwise verify required examinations and inspections, and that inspection services be subject agreement between CP&L and the AIA as required.	Requires that a program of inspection of activities be established. Does not address the ANI role in construction process (QAM 2.2, 5.3, 5.6).	Individual procedures address the role of the ANI in work activities and reviewing / approving process control sheets. Generally, these procedures are associated with Section XI activities and requirements for the ANII. Contractural agreement for the Inspector's services is provided as required for Section XI. Supplemental QA Requirements require that ANI be provided process control sheets for Code activities and items associated with this project prior to field issuance of the associated work package. Supplemental QA Requirements requires that the Inspector for the SFP project be dual qualified, as ANI / ANII.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
12.2 Document Accessibility 12.2.1 - 12.4.3	Requires that the ANI be provided free access to all information and records related to Code items, that the ANI review procedures utilized to implement Code requirements, that the ANI monitor the QA Program. Requires that the ANI be provided an opportunity to select holdpoints, and that he is provided sufficient notification of Code related work and testing. Requires that the ANI has authority to require re-qualification of procedures and personnel, that the ANI may witness or verify records of NDE, and that the ANI shall witness final hydrostatic testing required by the Code.	Requires that a program of inspection of activities be established. Does not address the ANI role in construction process.(QAM 2.2, 5.3, 5.6).	Role of ANI is provided in procedures and contractural agreements in accordance with Section XI requirements. Supplemental QA Requirements require that ANI be provided process control sheets for installation of Code items prior to field issuance of the associated work package.
13.0 Audits			
13.1 - 13.3	Provides responsibilities and requirements for Corporate QA audit activities. Defines the approach for auditing of the engineering, construction and start-up as being a comprehensive system of planned audits. Requires regularly scheduled audits on the basis of status and importance to ensure Code compliance. Requires written audit reports, that corrective action be taken as appropriate and verified as complete, and that follow-up audits and monitoring be conducted as necessary	Requires that a comprehensive system of audits be carried out. (QAM 4.11, 13.1, 13.4) .	For internal assessment, the Corporate approach towards auditing and quality assurance is founded on the principle that the line organization has the primary responsibility for quality and safety. Nuclear Assessment Section evaluates the performance and effectiveness of this process through independent assessment, and the Performance Evaluation Support Unit (PES) provides oversight of each plant's NAS by reviewing NAS assessment reports and perform a NAS effectiveness assessment at least once every 24 months. External audits of suppliers are performed in accordance with MCP-NGGC-0406. Existing program meets Appendix B requirements and is sufficient rigor for completion of construction.

ASME QA Manual Section No.	ASME QA Manual	Corporate Appendix B QA Program	Reconciliation
13.1.4	Requires that audit reports be maintained, and be made available to the ANI at his request.	Requires that audit results be documented and reviewed by management (QAM 4.11, 13.6)	Supplemental QA requirements require that all CRs associated with Code activities within this project be available to the ANI for verification of satisfactory resolution prior to turnover
13.2 Supplier Audits 13.2.1 - 13.3	Provides responsibilities and requirements for the auditing of activities by suppliers. For Code items, requires audits at least every 3 years. Requires audit results be made available to the ANI upon his request.	Requires that a comprehensive system of audits be carried out, and that audit results be documented and reviewed by management (QAM 4.11, 13.1, 13.4, 13.6)	MCP-NGGC-0406 provides requirements for audits of outside suppliers, includes specific requirements for suppliers of Code items, and requires auditing of suppliers at least every 3 years. Existing program provides equivalent assurance and rigor, no supplement required.
14.0 Review and Control of Manual			
14.1 - 14.6	Provides responsibilities and requirements for issuance, review and control of the ASME QA Manual. Requires that controlled copies be kept and maintained, and that revisions be reviewed and approved by the ANI.	Requires that activities affecting quality be prescribed by documented instructions, procedures etc. (QAM 6.0) and that measure be established to control the issuance of those documents (QAM 6.1, 6.34, 14.4)	Control, distribution and accountability of QA documents accomplished in accordance with RMP-002. Relative to the Alternative Plan, the AIA has formally reviewed and endorsed this plan as submitted to the NRC. The implementation of the Alternative Plan will be subject to ANI review as part of the modification review / approval process, including the Supplemental QA Requirements and the turnover / certification process it defines. However, since the authorization for the Alternative Plan comes from NRC approval, any revisions outside of typographical or minor administrative changes will require the review and approval of the NRC.

Heck Exhibit 3

CP&L

Carolina Power & Light Company
Harris Nuclear Plant
PO Box 165
New Hill NC 27562
OCT 2 9 1999

SERIAL: HNP-99-172

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOLS C & D COOLING AND CLEANUP SYSTEM PIPING

Dear Sir or Madam:

By letter HNP-98-188, dated December 23, 1998, Carolina Power & Light Company (CP&L) submitted a license amendment request to increase fuel storage capacity at the Harris Nuclear Plant (HNP) by placing spent fuel pools C & D in service. The U. S. Nuclear Regulatory Commission (NRC) issued letters dated March 24, 1999, April 29, 1999, June 16, 1999, and August 5, 1999 requesting additional information regarding our license amendment application. HNP letters HNP-99-069, dated April 30, 1999, HNP-99-094, dated June 14, 1999, HNP-99-112, dated July 23, 1999, and HNP-99-129, dated September 3, 1999 provided our respective responses.

By letter dated September 20, 1999, the NRC issued a fifth request for additional information (RAI) regarding our license amendment application to place spent fuel pools C & D in service. The September 20, 1999 NRC RAI specifically requests additional information on the proposed alternative plan to demonstrate compliance with ASME Code requirements for the cooling and cleanup system piping in accordance with 10 CFR 50.55a(a)(3)(i). The Enclosures to this letter provide the HNP response to the NRC staff's September 20, 1999 RAI.

The enclosed information is provided as supplement to our December 23, 1998 amendment request and does not change our initial determination that the proposed license amendment represents a no significant hazards consideration.

Please refer any questions regarding the enclosed information to Mr. Steven Edwards at (919) 362-2498.

Sincerely,

Donna B. Alexander

Donna B. Alexander
Manager, Regulatory Affairs
Harris Nuclear Plant

KWS/kws

Enclosures:

1. HNP Responses to NRC Request For Additional Information (RAI)
2. Technical Report: HNP - Material Identification of Chips from Carbon Steel Welds Associated with the Spent Fuel Pool Activation Project (1 page total)
3. Chemistry Sample Data Sheets (2 sheets total)
4. QCI-19.1, Revision 1, entitled "Preparation & Submittal of Weld Data Report, Repair Weld Data Report, Tank Fabrication Weld Record & Seismic I Weld Data Report" (25 pages total)

c: Mr. J. B. Brady, NRC Senior Resident Inspector (w/ Enclosure 1)
Mr. Mel Fry, N.C. DEHNR (w/ Enclosure 1)
Mr. R. J. Laufer, NRC Project Manager (w/ all Enclosures)
Mr. L. A. Reyes, NRC Regional Administrator - Region II (w/ Enclosure 1)

bc: (all w/ Enclosure 1)

Mr. K. B. Altman
Mr. G. E. Attarian
Mr. R. H. Bazemore
Mr. C. L. Burton
Mr. S. R. Carr
Mr. J. R. Caves
Mr. H. K. Chernoff (RNP)
Mr. B. H. Clark
Mr. W. F. Conway
Mr. G. W. Davis
Mr. W. J. Dorman (BNP)
Mr. R. S. Edwards
Mr. R. J. Field
Mr. K. N. Harris
Ms. L. N. Hartz
Mr. W J. Hindman
Mr. C. S. Hinnant
Mr. W. D. Johnson
Mr. G. J. Kline
Mr. B. A. Kruse
Ms. T. A. Head (PE&RAS File)
Mr. R. D. Martin
Mr. T. C. Morton
Mr. J. H. O'Neill, Jr.
Mr. J. S. Scarola
Mr. J. M. Taylor
Nuclear Records
Harris Licensing File
Files: H-X-0511
H-X-0642

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOL
COOLING AND CLEANUP SYSTEM PIPING

Requested Information Item 1:

Explain how the Metorex X-Met 880 Alloy Analyzer discriminates between the different standards that you used in your analysis described in Enclosure 3, "Metallurgy Unit Report for Spent Fuel Pool Weld Metal Composition analysis," of your April 30, 1999, RAI response. What are the chemical element ranges associated with the different standards that you used? What determines a match on a particular standard? What chemical elements are not included in the "Match" determination and how are these elements reconciled?

Response 1:

Background:

The primary objective of the field alloy analysis was to confirm with reasonable assurance that the as-deposited weld material for the spent fuel pool piping field welds is an austenitic stainless steel material compatible with Type 304 stainless steel piping material. The chemical composition of the stainless steel filler materials are specified in ASME Section II, Part C, SFA-5.4 / 5.9. The elements controlled under this specification for stainless steel filler materials are: carbon, chromium, nickel, molybdenum, columbium plus tantalum, manganese, silicon, phosphorus, sulfur, nitrogen, and copper.

The Alloy Analyzer was used in a comparison / identification mode. In the comparison / identification mode, the unknown is compared to reference materials which are input by a specific measurement technique and stored in a memory location of the instrument. This method of analysis was selected to provide reasonable assurance that the chemical compositions of analyzed field welds are consistent with an austenitic stainless steel having a chromium content in the range of 18 to 24 weight percent and a nickel content in the range of 8 to 14 weight percent.

Explain how the Metorex X-Met 880 Alloy Analyzer discriminates between the different standards that you used in your analysis described in Enclosure 4, "Metallurgy Unit Report for Spent Fuel Pool Weld Metal Composition Analysis," of your April 30, 1999, RAI response.

The Metorex X-Met 880 Alloy Analyzer utilizes a Cadmium-109 isotopic source to excite the analyzed material and measure the secondary radiation produced by the source excitation. This instrument can detect elements that range between and include chromium and molybdenum on the periodic chart of the elements. (The elements between and including terbium and uranium are also detected by this instrument with a cadmium source.)

The instrument was configured to detect six specific elements using the following pure element standards: (1) chromium, (2) manganese, (3) iron, (4) nickel, (5) copper, and (6) molybdenum. Iron was selected because austenitic stainless steels are considered to be iron-based alloys; chromium, nickel, and molybdenum were selected because they are primary alloying elements; manganese was selected because it is a secondary alloying element; and copper was selected because it is a potential "tramp" (i.e., unwanted) element in this material that is detectable by this instrument. A backscatter standard was used to determine the background spectrum. The pure element standards and the backscatter standard were supplied with the instrument by the manufacturer. A series of comparison standards were loaded into the instrument for this analysis. These standards included: (1) Type 304 stainless steel, (2) Type 309 stainless steel, (3) Type 310 stainless steel, (4) Type 316 stainless steel, and (5) NIST SRM 1154a. These four secondary standards and one National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) were used because: (1) the instrument was used in a comparison mode, and (2) none of the SRMs available from NIST have compositions consistent with either Type 304, Type 308, or Type 309 stainless steels. NIST SRM 1155 (Type 316 stainless steel) and NIST SRM C1287 (Type 310 stainless steel - modified) were used also, as independent reference checks of the instrument during the field analysis.

In the comparison / identification mode, the unknown is compared to reference materials which are input by a specific measurement technique and stored in a memory location of the instrument. The alloy analyzer has a multi-channel analyzer (MCA) having 256 micro channels. These micro channels represent a specific X-ray energy range (e.g., Channel 1 - 1 to 2 eV, Channel 2 - 2 to 3 eV, etc.). Each element has an average value for its excitation X-ray energy and, in practice, the actual response has a Gaussian distribution. Each pure element has a range, or window, consisting of several micro channels based on the full width at half maximum value of the Gaussian distribution. Therefore, counts detected in an element window are due to a detectable and measurable concentration of this element. The pure element standards and the austenitic stainless steel standards have different compositions. The response of the instrument varies with the concentration of a given element in a standard. The counts obtained for a standard by this instrument are proportional to the elemental concentration(s). Each standard will have a unique pattern (or "fingerprint") of counts in the selected element windows based on its chemical composition. The instrument discriminates between standards and unknowns based on the similarity of the instrument response (or counts detected) to the element windows for the stored standards.

What are the chemical element ranges associated with the different standards that you used?

The chemical element ranges for the standards used are shown below in Table 1. The NIST SRM (1154a) that was used to set-up the Alloy Analyzer has a chemical composition that is not within the chemical composition range for any standard UNS stainless steel alloy. However, the nickel and chromium contents of the NIST 1154a standard are similar to the nickel content of the Type 309 comparison standard and the chromium content of the Type 304 comparison standard, respectively. The remaining detectable elements in these three comparison standards are comparable and cannot be used to accurately differentiate between the various unknowns.

TABLE 1

Chemical Element Ranges for Standards Used to Set-up the Metorex Alloy Analyzer

Standard	Composition, Weight Percent					
	Chromium	Manganese	Iron	Nickel	Copper	Molybdenum
Type 304	**18.28**	1.48	bal.	8.13	0.19	0.17
Type 309	22.60	1.63	bal.	**13.81**	--	--
Type 310	24.87	1.94	bal.	19.72	0.11	0.16
Type 316	16.74	1.44	bal.	10.07	0.11	2.06
NIST 1154a	**19.31**	1.44	bal.	**13.08**	0.44	0.068
Chemical Element Ranges for Standards Used to Check the Alloy Analyzer						
NIST C1287	23.98	1.66	bal.	21.16	0.58	0.46
NIST 1155	18.45	1.63	bal.	12.18	0.169	2.38

The tolerances for the chemical element ranges for the secondary standards (nominal Type 304, Type 309, Type 310, and Type 316 stainless steels) are not known. These secondary standards were provided with mill test reports for their chemical compositions, but the precise accuracy of these standards is not known because they are not certified as traceable to primary reference standards. However, the applicable ASTM standards for these alloys permit a major alloying element range of between 1 and 2.5 weight percent (e.g., carbon content - 0.08 weight percent maximum; silicon content - 1.00 weight percent maximum; nickel content - 8.00 to 10.50 weight percent maximum; etc.) without the applicable product analysis tolerances that depend upon the specific element and its relative concentration.

What determines a match on a particular standard?

During a test, the Alloy Analyzer detects, measures, and compares the counts obtained for the specified elements in the unknown to those for the standards that have been loaded into the instrument (the specified elements are those that were loaded as pure element standards during the instrument set-up). The X-ray energy detection range for each of the specified elements is pre-set in the instrument and is based on physical constants related to the energy difference between electron shells in atomic structures. The number of counts in each pure element range is measured and compared to the counts for these elements in the known comparison standards. The difference in counts between the unknown and the comparison standards is measured. The instrument is configured with three thresholds (or limits) for the difference in counts between the

closest standard and the unknown. The least amount of difference between a comparison standard and the unknown is indicated by "GOOD MATCH." If there are differences between the unknown and standard that do not meet the "GOOD MATCH" criteria, but the unknown is similar to one or more standards, the alloy analyzer will indicate "POSSIBLE MATCH." If the difference in counts is too large, the instrument will indicate "NO GOOD MATCH."

What chemical elements are not included in the "Match" determination and how are these elements reconciled?

The primary objective of the field alloy analysis was to confirm with reasonable assurance that the as-deposited weld material was an austenitic stainless steel material compatible with the Type 304 stainless steel piping material. The chemical compositions of stainless steel filler materials are specified in ASME Section II, Part C, SFA-5.4 / 5.9. The elements controlled under this specification for stainless steel filler materials are: carbon, chromium, nickel, molybdenum, columbium plus tantalum, manganese, silicon, phosphorous, sulfur, nitrogen, and copper.

The alloy analyzer was set up to detect the primary alloying elements: chromium, nickel, and molybdenum. In addition, the alloy analyzer was also set up to detect the secondary alloying element manganese, the tramp element copper, and the alloy base iron. The remaining elements addressed in the specification, but not detected by the alloy analyzer, are: carbon, columbium plus tantalum, silicon, phosphorous, sulfur, and nitrogen. None of these elements are capable of being detected with the Metorex Alloy Analyzer using a Cadmium-109 source either due to their relative concentration or their X-ray excitation energy. These secondary alloying elements, while important to the weldability characteristics of the filler material, are not as important to the performance of the weld in service with regard to strength and corrosion resistance.

Samples of three spent fuel pool cooling piping field welds were obtained by plant personnel and submitted to an external commercial laboratory for chemical analysis. The elements that were not determined by field analysis and those that were used in the identification mode of the field welds were measured by this laboratory and are shown in Table 2. Laboratory analysis of this representative sample substantiates the results of the field analysis and provides additional assurance that the chemical compositions of spent fuel pool field welds are satisfactory.

TABLE 2

NSL Chemical Analysis Results			
Identification	**2-SF-36-FW-450**	**2-SF-38-FW-451**	**2-SF-71-FW-329**
Alloy Analyzer Results	304 SS Possible	NIST 1154a Possible	NIST 1154a Possible
NSL Chemical Analysis Results			
Carbon	0.13	0.10	0.064
Niobium	< 0.05	< 0.05	< 0.05
Chromium	20.08	20.11	19.06
Copper	0.054	0.10	0.093
Manganese	1.46	1.39	0.79
Molybdenum	0.12	0.10	0.085
Nickel	9.30	9.24	9.63
Phosphorus	0.021	0.021	0.026
Sulfur	0.007	0.005	0.013
Silicon	0.37	0.39	0.25
Titanium	< 0.01	0.011	< 0.01

In summary, the alloy analyzer was set up to confirm with reasonable assurance that the as-deposited weld material for the spent fuel pool piping field welds is an austenitic stainless steel material compatible with the reported Type 304 stainless steel piping material and the chemical composition requirements specified in ASME Section II, Part C, SFA-5.4 / 5.9. The programmatic and procedural controls which existed at the time of construction, augmented by the testing and analysis effort described above, provide reasonable assurance that the weld material for the spent fuel pool piping field welds is the proper weld material and will perform satisfactorily in service.

Requested Information Item 2:

Provide assurance that the ferrite numbers are acceptable for A-No. 8 weld wire (ND-2433) used in welds with missing weld wire documentation.

Response 2:

Ferrite numbers have been measured for 18 of the 19 accessible field welds remaining in the scope of the Alternative Plan (one field weld is located underneath a grating which could not be removed at the time the measurements were taken). The results of this work show mean ferrite numbers ranging from approximately 4 to 9 FN. SFA 5.9, Section A4.12 states that the ferrite potential for 308, 308L, and 347 is approximately 10 FN, but notes that the ferrite content may vary by +/- 7 FN or more around these midpoints and still be within the limits of the chemical

specification. Furthermore, Section A4.13 also states that the ferrite potential of a filler metal is usually modified downward in the deposit due to changes in the chemical composition caused by the welding process and technique used.

Ferrite is know to be beneficial in reducing the tendency for cracking or fissuring in weld metals; however, it is not critical, particularly under the mild service conditions associated with the spent fuel pool cooling system. Assurance that the ferrite numbers are acceptable is demonstrated by the following: (1) the measured ferrite numbers are reasonably consistent with those expected for the type of filler material used, (2) all of the exposed field welds in the scope of the Alternative Plan have successfully completed a liquid penetrant examination which noted no evidence of cracks or fissures, (3) a strict materials control program governed issuance and control of weld materials, and (4) there is no evidence that incorrect or uncontrolled filler material might have been used.

Requested Information Item 3:

Explain the chemical analysis in the Table associated with PQR 6(c), dated 11/15/84, page 2 of 2, laboratory test No. 9-2-149 described in Enclosure 6, "Lab Test Reports," of your April 30, 1999, RAI response. What row(s) are associated with the base material, weld, and standard(s)? What criteria was used to determine acceptability?

Response 3:

Welding Procedure Specification (WPS) 8B2, Revision 16 is supported by four Procedure Qualification Records (PQRs). The original procedure qualification test, as documented on PQR 6, was performed in 1976. The procedure qualification test coupon for this test was prepared from 10 inch schedule 40 pipe, which has a wall thickness of 0.365 inches. This test coupon thickness supports a qualified base metal thickness range of 3/16 (0.1875) inches to 0.730 inches. In 1981, an additional procedure qualification test, as documented in PQR 6(A), was performed to support the extended thickness range of 3/16 inches to 8 inches. This new qualified range was achieved by welding a 1.5 inch thick weld test coupon. In 1982, another procedure qualification test was performed, as documented in PQR 6(B), to expand the thickness range qualified to include a base material thickness as thin as 0.049 inches. This extended range was achieved by welding a 0.049 inch wall thickness test coupon. In 1984, the final procedure qualification test, as documented in PQR 6(C), was performed to extend the qualified thickness range to include materials as thin as 0.031 inches. This new thickness range was achieved by welding a weld test coupon with a thickness of 0.031 inches.

The portion of WPS 8B2, Revision 16 that was used to fabricate the fuel pool piping, based on base metal thickness range, is supported by PQR 6 and PQR 6(A). The fuel pool piping has a nominal wall thickness of 3/8 (0.375) inches, which is within the qualified base metal thickness range of 3/16 (0.1875) inches to 0.730 inches for PQR 6 and 3/16 (0.1875) inches to 8 inches for PQR 6(A).

Relative to the chemical analysis in the Table associated with PQR 6(c), dated 11/15/84, page 2 of 2, laboratory test No. 9-2-149, referenced WPS 8B2 addresses welding of a SA240 TP 304 test coupon with a thickness of 0.031 inch. The documented mechanical test results reference two test specimens having a thickness of 0.031 inch (E&E Laboratory Test Number 9-2-149, specimen numbers 699 and 700). PQR 6(c) references an Arcos welding filler material, which according to the Certified Material Test Reports (CMTRs) attached to PQR 6(c) is Type 316 stainless steel filler material.

A definitive explanation for all of the entries on the data sheet in question, page 2 of 2 of the chemical analysis results, can not be provided due to insufficient documentation. However, based on the documentation supporting the procedure qualification test for PQR 6 (C), Metallurgy Unit test records and anecdotal information, it appears that Harris Welding Engineering personnel requested the E&E Laboratories to perform mechanical testing and chemical analyses for a completed welding procedure qualification coupon performed using 0.031 inch thick Type 316 stainless steel base material. It is believed that the chemical analysis requested was to be performed on a sample of the material taken from the item that was to be welded in production and which provided the impetus to perform the additional weld procedure qualification. This is supported by the fact that chips of the supplied material were provided to the Analytical Chemistry Laboratory on November 12, 1984 (sampled on November 9, 1984) while the PQR is dated November 15, 1984. This indicates that the chemical analysis was performed prior to the welding of the procedure qualification test coupon and should not be considered a part of the procedure qualification test.

Requested Information Item 4:

For the piping and welds examined internally, provide a discussion of the examination results. What inspection criteria is used for evaluating the piping and welds for corrosion and fouling? Describe the corrosion and fouling inspection procedure and inspection personnel qualification process. For the embedded welds not examined internally, describe what is preventing their examination. Discuss why the decision not to inspect all of the embedded welds will result in an acceptable level of quality and safety.

Response 4:

An initial visual inspection of the embedded piping and welds was completed using a pneumatically-powered crawler carrying a high resolution camera. This crawler employed two sets of pneumatic cylinders which expanded and contracted in coordination with a single cylinder between them to produce an "inch worm" effect. Inspections of four of the eight embedded spent fuel pool cooling lines were performed using this crawler, including six embedded field welds. Camera resolution was excellent and the visual inspection of the lines was thorough. This arrangement proved unsuitable, however, for longer lines having multiple elbows, and a decision was made to investigate other possible methods of inspecting the balance of embedded piping. An arrangement was eventually selected which used flexible fiberglass rods to manually drive a camera on rollers through the pipe. A second inspection effort, only recently completed, used

this crawler to successfully inspect all 9 of the remaining embedded field welds and associated piping.

The remainder of this response will focus on the initial inspection of four SFP cooling lines and six embedded welds. The results of the inspection of the remaining lines and nine embedded welds is still in the review process. Our preliminary evaluation is that the results of the second visual inspection are consistent with those of the first inspection and demonstrate that the piping and welds have not measurably degraded and are acceptable for their intended purpose.

The pneumatically-powered crawler provided a stable base from which to successfully complete a visual examination of the piping and welds which could be reached using this equipment. Each inspection was preceded by a resolution check wherein the camera was required to discern a 1.0 mil wire at the appropriate focal length, and the level of detail provided of the internal pipe surfaces was excellent. These inspections were conducted in accordance with Special Plant Procedure SPP-0312T, which provided specific acceptance criteria, as well as qualification requirements for the equipment and inspectors. The inspection included welds on four of the eight embedded cooling lines connected to Spent Fuel Pools C & D. All of the lines inspected were 12 inch, schedule 40 stainless steel (304) piping.

The initial inspection included the following field welds:

Field Weld Number	Piping Function
2-SF-8-FW-65	C SFP Cooling Supply
2-SF-8-FW-66	C SFP Cooling Supply
2-SF-143-FW-512	D SFP Cooling Supply
2-SF-144-FW-515	D SFP Cooling Supply
2-SF-144-FW-516	D SFP Cooling Supply
2-SF-159-FW-408	D SFP Cooling Supply

In accordance with the acceptance criteria in Special Plant Procedure SPP-0312T, welds which can be accepted without further evaluation must be completely free of the following defects:

- no Cracks
- no Lack of Fusion
- no Lack of Penetration
- no Oxidation
- no Undercut greater than 1/32"
- no Reinforcement ("Push Through") greater than 1/16"
- no Concavity (Suck Back") greater than 1/32"
- no Porosity greater than 1/16"
- no Inclusions

In addition, any indications not included in the above list of weld attributes but potentially pertinent to the condition of the piping and welds were required by the inspection procedure to be reviewed and formally evaluated by Harris Nuclear Plant Engineering staff. Such indications would include arc strikes, foreign material, evidence of mishandling, pipe mismatch, pitting, and evidence of corrosion.

The inspection procedure requires that personnel performing visual examinations be CP&L Visual Weld Examiners, certified in accordance with the Corporate NDE Manual. In addition, they are required to have successfully completed the CP&L training course on remote camera equipment and/or have demonstrated their capability to utilize the equipment to the satisfaction of the NDE VT Level III. Vendor personnel operating the closed circuit television system were not required to be certified visual weld examiners, but were required to be familiar with their equipment and proficient in its use.

Generally, the inspection results were good. It is noted that the welds in question were not subject to volumetric examination, and were sufficiently far from the open end of the pipe at the time of welding that an internal visual examination would not have been performed at the time of welding. Relative to the inspection criteria pertaining to weld attributes provided above, five of the six field welds were accepted based on the qualified examiner's review of the camera inspection video. A single weld, 2-SF-144-FW-516, was identified as having areas where portions of a consumable insert could be discerned. This weld, which exists in the horizontal piping on the supply line to SFP D, had several locations where a consumable insert had been utilized but was not fully consumed. Generally, these locations were limited to several very small areas where a small portion of the insert could be discerned, but included one area about 1.5 inches long where a continuous portion of the insert could be seen.

The presence of a small amount of unconsumed insert is not considered to be an indication of an unqualified welder, inadequate procedures, or inappropriate materials. The small amount of unconsumed insert is a relatively insignificant imperfection which is not unusual on field welds such as 2-SF-144-FW-516, which was only subject to surface examination and does not lend itself to internal visual examination. ASME Section III, Subsection ND design rules recognize the potential for imperfections of this nature in welds not subject to volumetric examination, and require that a reduction in joint efficiency be assumed for butt welds which are subject to surface examination only (ref. ND-3552.2).

The root pass associated with the indication of unconsumed insert is backed up by multiple weld passes, any one of which would be adequate to establish a leak tight pressure boundary under these conditions. Hydrostatic test records show that field weld 2-SF-FW-144-516 successfully completed hydrostatic testing at 32 psi during construction prior to the line being embedded, and that this test was witnessed by both QC and the ANI. Procedures and processes at the time required that both these field welds were subject to multiple inspections and documentation reviews during construction. Given this, and considering that this weld was subject to multiple inspections at the time of construction, it is highly unlikely that the indications noted on field weld 2-SF-144-FW-516 extend into the root pass, let alone the multiple passes that followed it.

Since field weld 2-SF-144-FW-516 is on a line which connects directly to atmospheric spent fuel pools, hydraulic pressure at the welds is limited to static head and a small amount of friction losses. (The effect of velocity head would be sufficiently small as to be negligible, but would actually tend to reduce the effective pressure.) At the location of field weld 2-SF-144-FW-516, static head due to the elevation difference is approximately 286 - 277.5 = 8.5 feet. Piping friction losses per 100 ft for 12 inch steel piping is only about 3 feet at 4000 gpm, so even considering the effect of elbows in the line, the 55 foot length of piping between this field weld and SFP C would only contribute another few feet for a total head of about 10 feet (i.e., less than 5 psi).

Operation of the SFP cooling and cleanup system for the C & D pools will be at a relatively low temperature and very low pressure. Accordingly, the minimum wall thickness needed to retain this pressure over a localized area of reduced wall is only a very small percentage of the 0.375 inch wall thickness in this piping. The piping in the vicinity of field weld 2-SF-FW-516 is completely embedded in concrete, located approximately at the center of a six foot thick, seismically-designed wall. As such, this piping is not subject to externally induced movement or stresses. Since the SFP cooling and cleanup system operates at a relatively low temperature with little variation, thermally induced stresses and thermal cycling are not of appreciable concern. Given the lack of externally induced stresses or thermal cycling, the small pieces of unconsumed insert will not initiate a crack or otherwise propagate a piping failure.

Based on all of the above considerations, the indications of an unconsumed insert identified on field weld 2-SF-144-FW-516 are acceptable, and no rework or repair to the weld is required.

Videotapes of the first six embedded field welds and associated piping to be visually inspected have been reviewed by CP&L engineering and metallurgical personnel. Aside from localized occurrences of loosely adhering surface film (principally boron deposits from boric acid added to the water), the videotape provides clear evidence that the piping was free from fouling or foreign materials. Where necessary, deposits were removed with pressurized water before the visual inspection. It is the consensus of the reviewers that the condition of the piping and welds is very good. Several inconsequential stains and small pits were noted, indicating that a small amount of minor corrosion may have occurred at some time in the past. Videotapes of all 15 embedded field welds and associated piping have been forwarded to corrosion experts both within CP&L and in the industry.

Requested Information Item 5:

What are the chemical analyses for steel welds 2-CC-3-FW-207, 2-CC-3-FW-208, and 2-CC-3-FW-209?

Response 5:

Chemical analyses for the carbon steel chips have been completed and are provided as Enclosure 2 to this RAI response. The results of these analyses substantiate that the filler material used for these welds is generally consistent with chemical composition requirements found in SFA 5.1 for ER70S-6 and SFA 5.18 for E7018.

Requested Information Item 6:

Describe the paper trail that identifies a specific weld material to a specific weld on the isometric drawings, i.e., show that the weld material being verified with the Metorex X-Met 880 was specified for that location. Identify missing documentation that breaks the paper trial, if any.

Response 6:

The weld metal to be used on a given weld was prescribed by the Weld Procedure Specification. The Weld Data Report (WDR) documented the Weld Procedure Specification to be used, as well as the AWS Classification of filler material. For the field welds for which WDRs are no longer available, it is not possible to directly document the Weld Procedure Specification and filler metal that was used. However, since the vendor data sheets are available on the pipe spools, a review has been done of the Weld Procedure Specifications available at that time and which would have been applicable for this type piping, material, and end prep. These Weld Procedure Specifications were provided to the NRC as Enclosure 6 to HNP-99-069, dated April 30, 1999, the HNP response to the March 24, 1999 NRC RAI on the Alternative Plan.

The pipe spools utilized in the HNP spent fuel pool cooling system are Type 304 stainless steel, a P-8 material. The Weld Procedure Specifications for P-8 to P-8 piping welds such as these in the spent fuel pool cooling system would have used filler metals conforming to SFA No. 5.4 / 5.9, including ER308, ER308L, ER316, ER316L and ER347. For Type 304 to Type 304 piping, ER308 would have typically been specified on the WDR. Given that some chemical changes in composition will be caused by the welding process and that blending of the base metal and filler metal would occur, the Metorex X-Met 880 testing is not intended to confirm the that chemical composition conforms to chemical composition requirements for each element, but rather to assure that weldments are sound by substantiating that the filler metal used was compatible with the piping material and generally consistent with composition requirements of the Weld Procedure Specification. Additional details on the use of the Alloy Analyzer to evaluate filler metal is provided in the HNP response to Requested Information Item 1 above.

Requested Information Item 7:

Discuss the chemical analysis and any other analysis performed on the water in the fuel pool cooling and cleanup system (FPCCS) and component cooling water system (CCWS) for spent fuel pools (SFPs) C and D. Where did the water come from? Discuss any differences between the chemical analysis and the original water source. Provide the staff with a representative analysis of the water.

Response 7:

A review of plant documentation substantiates that the embedded lines connected to SFPs C & D had water in them on two separate occasions during the construction process. Water samples were collected from seven of the eight lines associated with the embedded piping. * Analysis results of those water samples substantiate that the water in these lines originated from the spent

fuel pools. Specifically, chloride and fluoride concentrations were very low, and generally consistent with specifications for spent fuel pool chemistry. Sulfate levels and conductivity, while not typically analyzed for spent fuel pool chemistry, were also very low and consistent with high purity water. The water samples also showed low levels of tritium, at a concentration similar to that of the spent fuel pools. Enclosure 3 to this RAI response provides a representative analysis of water samples taken from both the C and D SFP piping.

Initially, these lines were filled with water for hydrostatic testing prior to pouring concrete. Potential sources of hydrotest water included potable water and lake water, although procedures did require that the piping be drained and vented subsequent to test completion. Since these lines could not be isolated from their respective fuel pool liners, they would have been filled again in support of pool liner leak testing. The procedure for liner leak testing required test water to have a chloride content of no more than 100 ppm, which effectively precluded the use of either potable water or lake water for this evolution. Furthermore, procedures required the pools to be drained after testing, then rinsed with distilled or demineralized water. Subsequent to liner leak testing, there was no reason to introduce water into the pools again until they were filled and put into service (1989 - 1990 time frame). Several of these lines were drained one additional time in 1995 - 1996, when drain valves were added to the exposed portions of several of the embedded lines. Since that time, these lines refilled with water from the spent fuel pools. The water samples that were collected and analyzed, as discussed above, were samples of water that leaked past "plumbers plugs" in the pool nozzles since this last evolution.

* One of the eight lines has no drain line with an isolation valve for taking water samples, and was not represented in the initial set of water samples.

Requested Information Item 8:

In Enclosure 8, "Hydrotest Records for Embedded Spent Fuel Pool Cooling Piping and Field Welds," of your April 30, 1999, RAI response, you provided signed hydrostatic test reports for 13 embedded welds. Starting with the signed hydrostatic test report, back track through procedures and program requirements to the point where the missing document(s) were verified as being complete. In other words, identify the specific procedural and program controls requiring verification of completion of the missing documentation (manufacturing/fabrication records, weld data records, updated isometric drawings, and inspections) starting backward from the hydrostatic test report.

Response 8:

Construction procedure WP-115, "Pressure Testing of Pressure Piping (Nuclear Safety Related)," governed the hydrostatic testing of the embedded lines connected to HNP SFPs C and D. This procedure specifically required, prior to hydrotesting, the Mechanical QA Specialist verify that:

1) all required piping documentation is complete, and
2) all required weld documentation is complete.

Reference to piping and weld documentation is found in WP-102, "Installation of Piping." Specific requirements found in this document include:

1) that each weld joint for Code piping receive a WDR, and that these WDRs receive a QA and ANI inspection.
2) that weld procedures utilized be qualified in accordance with MP-01, "Qualification of Weld Procedures."
3) that welders and welding operators be qualified in accordance with MP-02, "Procedure for Qualifying Welders and Weld Operators."
4) that welds be stamped in accordance with MP-05, "Stamping of Weldments."
5) that weld material be controlled in accordance with MP-03, "Welding Material Control."

Generally, items 2 - 5 above ensure that Code welds were performed to appropriate procedures in the plant's Section IX weld program. Relative to item 1, WP-102 provided reference to CQC-19, "Weld Control" which again required that all Code welds received a WDR, and referenced procedure CQI-19.1, "Preparation & Submittal of Weld Data Report & Repair Weld Data Report," for detailed instructions on the use of WDRs. As prescribed by this procedure, the WDR included essentially all of the required attributes and documentation for welds within Code boundaries. Enclosure 4 provides a copy of CQI 19.1 at a revision level existing at or about the time most of the welds in question were made. Similarly, WP-102 contained requirements for layout and dimensional tolerances, as well as references to appropriate procedures for other piping installation processes, such as performance of cold pulls and torqueing of flanged connections. Therefore, in order to satisfy the prerequisites of procedure WP-115, the Mechanical QA Specialist would be required to verify that all the WDRs and RWDRs were complete and approved, dimensional and tolerance inspections had been completed, and all other piping installation processes had been completed and appropriately documented.

Requested Information Item 9:

Identify the concrete pouring procedure that requires checking for the welder symbol and a successful hydrostatic test before pouring.

Response 9:

Since embedding a line in concrete represented a point at which piping was no longer accessible for inspections, rework, etc., procedural controls were established to ensure that all required work activities had been completed and that documentation was in order prior to authorizing concrete placement. Procedure WP-05, "Concrete Placement", included a pre-placement requirement for a craft superintendent sign-off on the concrete placement report to signify completion of the craft's installation and superintendent inspection thereof. This procedure required that this sign-off be made by all craft superintendents, as a safeguard against omissions, whether or not they had material in a particular placement. Subsequently, procedure WP-05 required that the Construction Inspection Unit (QC) be notified when the installation was complete and ready for pre-placement inspection.

Procedure TP-24, "Mechanical Pipe Installation Inspection" provided requirements for the Construction Inspection Unit relative to inspection of piping, and included separate sections on embedded piping inspection. This procedure specifically required the CI inspector to inspect the installation and documentation prior to concrete placement. The CI inspector was required to verify the specific installation attributes:

1) that piping installation was performed in accordance with design drawings and documents, notably including verification of pipe spool identification
2) that piping was free from physical damage, and had no missing parts, and
3) that all piping leak tests were complete and documented.

It can be seen that procedures associated with concrete placement did provide assurance that piping embedded in concrete was the correct piping and was correctly installed. Furthermore, since the hydro-test was generally the final milestone for completion of a pipe segment, verification that all piping leak tests were complete and documented provided assurance that all test and inspection requirements were met. Procedures WP-05 and TP-24 do not specifically require a verification of the welder symbol. Rather, this assurance is provided by the review of weld documentation prior to hydro-testing, as well as the programmatic controls in CQC-19 and related procedures discussed above.

Requested Information Item 10:

Describe how the liner leak tests support weld integrity for welds 2-SF-8-FW-65 and 2-SF-8-FW-66 (Enclosure 3 of your response to NRCs RAI). For these two welds, back track through procedures and program requirements to the point where the missing documents were verified as being completed.

Response 10:

Leak testing of the liner was accomplished under procedure TP-057, "Hydrostatic Testing of Fuel Pool Liners." This procedure provided specific steps to be completed prior to performance of the liner leak test. The procedure required that Engineering prepare the test package, including identification of all boundaries and all isolation points to be utilized. For the north spent fuel pool liner hydrostatic test, the documented test boundaries included the piping runs containing 2-SF-8-FW-65 and 2-SF-8-FW-66.

Subsequent to preparation of the test package, QC was required to complete the "Prerequisites" section of the test form. Similar to the discussion of piping hydro-test procedures provided in the response to Requested Information Item 8 above, these prerequisites included a line item for the QC Inspector to verify "all weld documentation complete." Although the test procedure was specifically concerned with inspection of the liners, this verification would have necessarily extended to the entire pressurized boundary to ensure that no external leakage occurred, that partially completed welds were not overstressed, etc.

Although hydrostatic test packages have not been located at this time for welds 2-SF-8-FW-65 and 2-SF-8-FW-66, plant documentation does support that this hydrostatic test was done. For example, QA Deficiency and Disposition Report (DDR) 794 was initiated to assess hydrostatic test requirements for the plate rings reinforcing the piping to pool nozzle connections. The resolution to this DDR acknowledged that the pipe spools adjacent to these welds had been subject to hydrostatic testing, even going so far as to include the dates of test performance. Four of the ten spools listed are included in the scope of the SFP C and D embedded piping, and two of these spools are in the line in which welds 2-SF-8-FW-65 and 2-SF-8-FW-66 are located. The other two spools referenced are on isometric drawing 2-SF-159, and are specifically included in a hydrostatic test package for which records have been located (provided previously to the NRC as Enclosure 7 to HNP-99-069, dated April 30, 1999). Comparison of the dates listed on DDR 794 against those associated with piping on isometric drawing 2-SF-159 verify that the test dates on these documents are in agreement.

Therefore, even though hydrostatic test records specifically listing welds 2-SF-8-FW-65 and 2-SF-8-FW-66 as inspection items have not been located, it can be established with a high level of confidence that these welds were hydro-statically tested, and that documentation associated with these welds was reviewed and verified as being complete.

Requested Information Item 11:

Describe precautions that were taken to protect system components (e.g., pumps, valves, heat exchangers, piping) from deleterious environmental effects during layup. Describe the layed up condition of the partially completed piping system and how this was determined. How would these layup conditions be different if it was known that SFPs C and D would be put in service later?

Response 11:

The location of system components (e.g., pumps, valves, heat exchangers, piping), the 236' elevation area of the Fuel Handling Building, is fully enclosed and serviced by a safety related HVAC system. This area is also the location of the operating Unit 1 spent fuel pool cooling pumps and heat exchangers, and is completely suitable for the long term storage of piping and equipment. It was anticipated that at some time it would be necessary to place C and D pools into service, and consideration was given to specific requirements for equipment protection. The spent fuel pool cooling pump motors were removed and placed in controlled storage conditions with heaters energized and shafts periodically rotated. The spent fuel pool heat exchangers were capped to preclude introduction of foreign material, and provided with a nitrogen blanket on the shell (CCW) side to prevent moisture and other contaminants from inducing corrosion. Spent Fuel Pool Cooling piping not connected to the spent fuel pools, which had never been wetted and was not connected to any active water systems, also received Foreign Material Exclusion (FME) type covers. Notably, the spent fuel pool cooling pumps and strainers were protected by FME covers on adjacent piping.

Through conversations with cognizant personnel, it is known that when it became necessary to fill the C and D spent fuel pools, the exposed ends of the connected spent fuel pool piping were fitted with leak tight covers and flooded as well. At some point, "plumber's plugs" were fitted in the C and D spent fuel pool cooling nozzles, although it is not clear whether these plugs were installed before or after the lines were flooded by the spent fuel pools. The primary purpose of these plugs was not for equipment protection but instead for ALARA considerations, i.e., to preclude collection of radioactive material in the piping.

Requested Information Item 12:

Why was visual inspection rather than ultrasonic inspection chosen to examine the integrity of the embedded welds?

Response 12:

Examination requirements for the embedded spent fuel pool cooling piping at the time of construction consisted of a surface visual and liquid penetrant examination of the piping OD, consistent with design rules and NDE requirements in ASME Section III, Subsection ND. Numerous programmatic and documentation assurances exist to confirm that these required inspections were indeed completed. In reviewing options for inspection of embedded piping and associated welds under the Alternative Plan, the objective was to implement an inspection program which: (1) provided yet another measure of assurance of construction quality, (2) provided a means to inspect as much of the overall scope as possible, (3) allowed for inspection of not only discrete areas of interest (ie., field welds), but also for qualitative assessment of overall piping condition, including corrosion and fouling, and (4) had a high level of probability to produce meaningful results with existing, proven technology. These criteria are individually discussed as follows:

1) Provides additional measure of assurance of construction quality

A detailed inspection of the interior of the piping with a high resolution camera provides a means to discern and assess numerous attributes pertaining to construction quality, including fit-up and alignment, adequacy of purge, and fusion of the root pass. These attributes, while readily examined with the use of a remote camera, do not lend themselves to detection and evaluation through ultrasonic examination.

2) Provides a means to inspect as much of the overall scope as possible

Camera inspection provides a means to see as much of the overall inspection scope (piping interior surfaces) as possible, as well as focus on specific areas of interest. A number of vendors offer inspection services of piping using remote cameras and a variety of propulsion methods, providing the best probability of inspecting as much of the piping as possible. Using real time feedback, direct camera operators can move relatively quickly over long runs of piping which can be readily observed as clean and in good condition; however, considerable time is spent in adjusting focus, lighting and other parameters to provide a detailed examination of specific areas

of interest. Although ultrasonic techniques are commonly used to detect wall thinning in steam piping, this process requires that the entire surface to be examined be mapped, with each grid location receiving an ultrasonic examination. Clearly, the lack of access in the embedded piping precludes the use of a similar technique to assess the overall condition of the embedded piping.

3) Allows for inspection of overall piping condition, but also macroscopic examination for fouling, corrosion, etc.

Camera inspection is the only viable means to identify and assess numerous attributes which pertain to the suitability of piping for service, including surface corrosion, fouling, foreign objects in the line, etc. Visual inspection with a high resolution camera can also detect visual evidence of corrosion (stains, discoloration) even when no loss of material or other degradation is obvious.

(4) Provide a high level of probability of producing meaningful results with existing, proven technology

While not deemed appropriate to evaluate macroscopic examination of piping quality for the reasons discussed above, CP&L has investigated the feasibility of using ultrasonic examination to disposition discrete, localized indications. The obstacles associated with remotely performing ultrasonic examinations of these 12 inch embedded lines are considerable, and include:

- Piping runs approaching 100 feet long
- Piping runs including 4 or more elbows
- Both horizontal and vertical runs
- Since pools are full, inspections must be done from the exposed piping end, meaning that all vertical runs are upward
- The weld joints themselves are irregular to the extent a direct beam method could not be used. In addition, these butt welds utilized consumable inserts with an end prep having a counterbore approximately ¾ inch from the weld joint. This configuration complicates the use of angle beam ultrasonic methods
- The piping surface must be clean and smooth, such that boron crystals or any other film or material which are in the area to be inspected must be removed.
- A means must be devised to inject couplant in the area to be inspected
- The technique must provide a means to precisely locate and control the detector transducers, which would invariably require the use of a remote camera

The device would need to be capable of propelling a camera, UT transducers, and all attendant cabling through long pipe sections with numerous elbows and risers to the location of interest, identify and focus on the indication to be examined, clean it as necessary, inject couplant on the area where the transducer will be placed, then precisely locate the transducer at that point, adjusting it as necessary to provide a good signal. Even then, since the back (outside) surface of the weld joints is irregular, it is not certain that the results will allow an accurate interpretation of the condition of the piping. In summary, while several vendors have expressed an interest in working on a cost and materials basis to provide the propulsion, robotics, and equipment

necessary to perform ultrasonic examination of the embedded piping, none have been identified with the proven experience necessary to provide repeatable, reliable results under similar conditions.

Requested Information Item 13:

Describe the post modification testing to be performed to ensure that the system(s) will satisfy all design requirements. Include description of hydro-tests to verify the integrity of the system pressure boundaries, flushing to ensure unobstructed flow through the system components, and pre-operational functional testing under design flow/heat loads.

Response 13:

Post modification testing will include the following:

1) System Hydrostatic testing conforming to Section III requirements will be performed on the completed system. With the exception of embedded piping, components inside Code boundaries will be included in this test effort, including pumps, heat exchangers and strainers. In a previous HNP response to the NRC RAI on the Alternative Plan (ref. HNP-99-069, dated April 30, 1999), CP&L stated that Code Case N-240 would be used to exempt formal requirements for hydro-testing of the embedded piping connected to the atmospheric spent fuel pools. CP&L is continuing to investigate methods to provide additional assurance of the quality of embedded piping and field welds, including consideration of pressure testing. The final disposition of hydrostatic testing of embedded spent fuel pool piping will be provided to the NRC as part of the follow-up report on embedded piping and welds as discussed in the response to Requested Information Item 4 above.

2) A flush procedure will be developed which ensures that piping and components inside Code boundaries are free from fouling and debris which might affect system performance, reliability or spent fuel integrity.

3) Pre-operational testing will include a flow balance and verification which ensures that design flow requirements are met for the Spent Fuel Pool Cooling and Component Cooling Water systems, as well as those heat loads which rely on CCW (such as RHR) and heat sinks downstream of CCW (ESW, UHS). Given the lack of a heat load which would facilitate the performance of a meaningful heat duty test of the Spent Fuel Pool Cooling System, no such test will be performed. Moreover, at the 1.0 Mbtu / hr maximum heat load associated with this license amendment request, performance of such a test would not be viable even at the proposed licensed limit. Although the C and D spent fuel pool cooling heat exchangers were installed in the Fuel Handling Building nearly 20 years ago, they have never been placed into service and, from a design perspective, are still new. Moreover, these heat exchangers were layed up with a nitrogen blanket on the shell side, protecting it from moisture and corrosion. A pre-service inspection of the tubesheets and tubes has been performed on these heat exchangers to ensure that no foreign material or corrosion exists which might obstruct flow or otherwise reduce performance.

ENCLOSURE 2 to SERIAL: HNP-99-172

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOLS C & D COOLING AND CLEANUP SYSTEM PIPING

Carolina Power & Light Company
Material Services Section
Metallurgy Services
Technical Report

Subject: HNP - Material Identification of Chips from Carbon Steel Welds Associated with the Spent Fuel Pool Activation Project

(1 page total)

CAROLINA POWER & LIGHT COMPANY
MATERIAL SERVICES SECTION
METALLURGY SERVICES

TECHNICAL REPORT

To: Mr. Jeff Lane

Project Number: 99-134
Date: August 25, 1999

Investigators:
Robert Jordan
Danny Brinkley

Reviewed by: J. W. Wood

Distribution:
File/Metallurgy Services

Approved by: F. J. Block
Supervisor, Metallurgy Services

SUBJECT: HNP- Material Identification of Chips from Carbon Steel Welds Associated with the Spent Fuel Pool Activation Project.

On July 8, 1999 three samples of chips were received from HNP personnel for chemical analysis. The chips were removed from Welds 2CC-FW-207, 208, and 209 on ASME Section III, Class 3 Piping used on the Component Cooling Water (CCW) System. Metallurgy Services personnel were asked to perform chemical analysis on the three samples.

On July 27, 1999 the three samples of chips were sent to NSL Analytical Services, Inc., in Cleveland, Ohio for analysis. A report of the analyses was received from NSL on August 16, 1999. The results of the analysis for each sample are listed in the table below and a copy of the results from NSL is attached.

ELEMENT	SAMPLE 2CC-FW-207 (WEIGHT PERCENT)	SAMPLE 2CC-FW-208 (WEIGHT PERCENT)	SAMPLE 2CC-FW-209 (WEIGHT PERCENT)
Carbon	0.13	0.11	0.11
Chromium	0.028	0.031	0.027
Copper	0.035	0.018	0.018
Manganese	1.29	1.20	1.15
Molybdenum	0.014	0.004	0.003
Nickel	0.028	0.016	0.014
Phosphorus	0.021	0.014	0.013
Sulfur	0.011	0.012	0.013
Silicon	0.29	0.29	0.41
Vanadium	0.018	0.026	0.026

ENCLOSURE 3 to SERIAL: HNP-99-172

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOLS C & D COOLING AND CLEANUP SYSTEM PIPING

Chemistry Sample Data Sheets from HNP Procedure CRC-001

(2 sheets total)

CHEMISTRY SAMPLE DATA SHEET

SAMPLE PT SPENT FUEL POOL 'C' -2SF-213		
SAMPLE COLLECTOR JERRY BOLEY	OP MODE I	DATE 4-27-99

SAMPLE TIME	PARAMETER	LIMITS	RESULTS	ANALYST
0930	F		13.1 ppb	LLB/MSJ
↓	Cl		28.2 ppb	↓
	SO4		424 ppb	
	pH		5.33	
↓	KTOT		25.4	↓

Comments

Reviewed By: Jerry Thompson Date 4-29-99

CHEMISTRY SAMPLE DATA SHEET

SAMPLE PT SPENT FUEL POOL D 2SF-212		
SAMPLE COLLECTOR JERRY BOLEY	OP MODE I	DATE 4-27-99

SAMPLE TIME	PARAMETER	LIMITS	RESULTS	ANALYST
0900	F		120 ppb	MSJ/LCB
↓	Cl		70.5 ppb	↓
	SO4		676 ppb	
	pH		6.74	
	KTOT		92.3	

Comments

Reviewed By: Jerry Thompson Date 4-29-99

ENCLOSURE 4 to SERIAL: HNP-99-172

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ALTERNATIVE PLAN FOR SPENT FUEL POOLS C & D COOLING AND CLEANUP SYSTEM PIPING

Carolina Power & Light Company
Corporate Quality Assurance Department
Engineering and Construction Quality Assurance/Quality Control Section

QCI-19.1, Revision 1

Title: Preparation & Submittal of Weld Data Report, Repair Weld Data Report, Tank Fabrication Weld Record & Seismic I Weld Data Report

Initial Issue Date: March 16, 1981

(25 pages total)

CONTROLLED DOCUMENT

CAROLINA POWER & LIGHT COMPANY

CORPORATE QUALITY ASSURANCE DEPARTMENT

ENGINEERING AND CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL SECTION

PREPARATION & SUBMITTAL OF WELD DATA REPORT, REPAIR WELD DATA REPORT, TANK FABRICATION WELD RECORD & SEISMIC I WELD DATA REPORT

FOR INFORMATION ONLY

NUMBER: QCI-19.1	Q A RECORDS RECEIVED NOV 6 1981 SHNPP CONSTR. Q A UNIT	INITIAL ISSUE DATE: March 16, 1981
RECOMMENDED FOR APPROVAL BY: [signature] SPECIALIST		APPROVED BY: [signature] DIRECTOR - QA/QC

2.4

QAI-1
Exhibit 1-C
Rev. 1

CONTROLLED DOCUMENT

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
ENGINEERING & CONSTRUCTION QUALITY ASSURANCE/
QUALITY CONTROL SECTION

NUMBER	REVISION
QCI-19.1	1

TITLE: PREPARATION & SUBMITTAL OF WELD DATA REPORT, REPAIR WELD DATA REPORT, TANK FABRICATION WELD RECORD & SEISMIC I WELD DATA REPORT

REVISION RECORD

Changes and additions are indicated by a vertical bar in the right-hand margin of the revised page(s). Manual holder is to replace affected pages only. This record is to be retained behind the title page of the instruction.

Rev.	Description	Signatures	Date
1	Major rewrite of complete procedure including title change. (See list of effective pages)	Prepared By: [signature]	11/2/81
		Approved By: [signature]	11/2/81
		Prepared By:	
		Approved By:	
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		Approved By:	

CONTROLLED DOCUMENT

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
ENGINEERING & CONSTRUCTION QUALITY ASSURANCE/
QUALITY CONTROL SECTION

NUMBER	REVISION
QCI-19.1	1

TITLE: PREPARATION & SUBMITTAL OF WELD DATA REPORT, REPAIR WELD DATA REPORT, TANK FABRICATION WELD RECORD & SEISMIC WELD DATA REPORT

LIST OF EFFECTIVE PAGES

Page	Rev. No.
1	1
2	1
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13	1
14	1
15	1
16	1
17	1
18	1
Exhibit 1	1
Exhibit 2	1
Exhibit 3	1
Exhibit 4	1

CONTROLLED DOCUMENT

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
ENGINEERING & CONSTRUCTION QUALITY ASSURANCE/
QUALITY CONTROL SECTION

NUMBER	REVISION
QCI-19.1	1

TITLE: PREPARATION & SUBMITTAL OF WELD DATA REPORT, REPAIR WELD DATA REPORT, TANK FABRICATION WELD RECORD & SEISMIC I WELD DATA REPORT

1.0 PURPOSE

The purpose of this instruction is to provide guidelines for preparing Weld Data Reports, Repair Weld Data Reports, Seismic I Weld Data Report and Tank Fabrication Weld Data Records required for documentation of weld joint control.

2.0 SCOPE

This instruction is applicable to weld data records required for ASME Code Class 1, 2, 3 and MC welds; Seismic Category I welds; and welds in the site fabrication of nuclear safety related and ASME Code Class storage tanks.

3.0 REFERENCES

1. CQC-19, Weld Control
2. MP-06, General Welding Procedure for Carbon Steel
3. MP-07, General Welding Procedure for Stainless Steel
4. MP-10, Repair of Base Material and Weldouts
5. NDEP-601, Visual Inspection
6. AWS D1.1, Structural Welding Code
7. MP-08, General Welding Procedure for Structural Steel and Hangers
8. WP-18, Miscellaneous Steel Fabrication
9. MP-19, Field Erected Stainless Steel Storage Tanks
10. AS-7, Seismic Class I & Non-Seismic Class I Structural Steel

4.0 GENERAL

4.1 Weld Data Report

ASME Code Class 1, 2, 3 and MC welding data shall be documented on a WDR (QA-28 form).

4.2 Repair Weld Data Report

4.2.1 A repair WDR (QA-30 form) is required for the following conditions:

a) Rejectable defect is found by NDE at a specified holdpoint or completed weld.

b) Damage to base material requiring deposition of filler metal.

4.2.1 (cont.)

4.2.2 A repair WDR is not required for the following conditions:

a) Weld defects which occur during the in-process welding and which can be removed and reworked within the Weld Procedure Specification (WPS) specified on the original WDR (this includes slag; porosity; burn-through in the root pass or backing ring; or root weld defect in the pipe I.D. or O.D.).

b) Rework required to correct in-process defects found by NDE performed "for information".

c) Where complete removal of the weld joint is the repair method used (a new WDR will be issued in this case).

4.3 Seismic I Weld Data Report (SWDR)

4.3.1 Seismic I structural welding with the exception of stud welding shall be documented on a SWDR (QA-34).

4.3.2 Repairs to Seismic I structural welds will be documented on the SWDR when the following conditions exist:

a) A rejectable defect is found by visual inspection or other NDE at a specified holdpoint or completed weld.

b) Damage to base material requiring deposition of filler metal.

4.3.3 Entries on the SWDR are not required for the following conditions:

a) Weld defects which occur during the in-process welding and which can be removed and reworked within the Weld Procedure Specification (WPS) specified on the SWDR (this includes slag, porosity, burn-through in the root pass or backing strip or root weld defect in the structural item).

b) Rework required to correct in-process defects found by NDE performed for "information only".

4.3.3 (cont.)

c) Where complete removal of the weld joint is the repair method used (a new SWDR will be issued in this case).

4.4 Tank Fabrication Weld Record (TFWR)

4.4.1 The TFWR (QA-32 form) will be used to document weld joint data for the field fabrication of nuclear safety related and ASME Code Class storage tanks.

4.4.2 Repairs to tank fabrication welds will be documented on the TFWR when the following conditions exist:

a) A rejectable indication is found by visual inspection or other NDE at a specified holdpoint or after completion of the weld.

b) Damage to base material requiring deposition of weld filler metal.

4.4.3 Documentation of repairs to tank fabrication welds is not required for the following conditions:

a) Weld defects which occur during the in-process welding and which can be removed and reworked within the Weld Procedure Specification (WPS) specified on the TFWR (this includes slag, porosity, burn through in the root pass or backing strip or root weld defect in the item).

b) Rework required to correct in-process defects found by NDE performed for "information only".

c) Where complete removal of the weld joint is the repair method used. A new entry for that joint number will be made on the TFWR in this case.

5.0 PROCEDURE

5.1 Weld Data Report (WDR)

The WDR (Exhibit 1) is initiated by Welding Engineering. The Welding Engineer, or his designee, fills out pertinent information and designates the required holdpoints.

5.1 (cont.)

The white and yellow copies of the WDR, along with the work package, are forwarded to the Welding QA/QC Specialist. The Welding QA/QC Specialist, or his designee, reviews the WDR for essential information and mandatory holdpoints and inserts additional holdpoints, if required. The ANI will assign additional holdpoints, if he desires, sign and date the WDR, if he concurs with the data given, and return it to the Welding QA/QC Specialist. QA shall keep the yellow copy of the WDR and send the white copy along with the work package to the Mechanical Engineering Group for transmittal to the field. The areas of responsibility in filling out the WDR are outlined below: (Numbers correspond with Exhibit 1)

	Title	Data	Responsibility
1.	Turnover No.	No. assigned by Startup Group	Weld Eng.
2.	Weld Joint Record No.	Zone, Isometric, Field Weld No., Obtained from Isometric	Weld Eng.
3.	System	System Name or designation Obtained from Isometric	Weld Eng.
4.	Category	System Category (ASME Class 1,2,3, Seismic I) Obtained from Isometric	Weld Eng.
5.	Eng. Dwg. No.	Drawing No. Obtained from Isometric	Weld Eng.
6.	Fill Metal Type	Type of Filler Metal (E 7018, 309, 308, 316, etc.)	Weld Eng.
7.	Design Line No.	Design Line No. Identification from Isometric/Drawing	Weld Eng.
8.	Base Metal Spec.	ASME Spec. and Grade of base material being joined. Obtained from Isometric or Line Lists	Weld Eng.

5.1 (cont.)

	Title	Data	Responsibility
9.	Joint Type - CI, BR, F, OB, SKT, and Other	Circle the appropriate joint type. CI = Consumable Insert BR = Backing Ring F = Fillet OB = Open Butt SKT = Socket Obtained from drawing while meeting requirements of WPS and Ebasco Spec. M-30	Weld Eng.
10.	Pipe-Component Size	Size, in inches, of pipe and/or component. Obtained from Isometric	Weld Eng.
11.	PC no. to PC no.	Piece No. to Piece No. of items being joined. Obtained from Isometric	Weld Eng.
12.	Welding Procedure	Appropriate Welding Procedure and Revision No.	Weld Eng.
13.	Material Thickness	Thickness of materials being joined. Obtained from drawing or Line List.	Weld Eng.
14.	Ht. No. to Ht. No.	Heat No. to Heat No. of items being joined. Obtained from Pipe Marking and/or from Pipe Spool Fabrication Drawing. Exception: When welded valves are joined to a piping system the valve serial number will be used in lieu of the Heat No. In the event the valve serial number cannot be determined, the valve National Board Registration number may be used.	QA/QC Inspector
15.	PWHT Procedure & Rev. No.	Appropriate Post-Weld Heat Treatment Procedure & Revision No.	Weld Eng.

5.1 (cont.)

	Title	Data	Responsibility
16.	Inservice Inspection	Inservice Insp. if required for the field weld is assigned by Welding Engineering.	Weld Eng.
17.	Welding Eng. Verification Date	Signature of Welding Engineer (or his designee) indicating concurrence with holdpoints.	Weld Eng.
18.	ANI Review	Signature of Authorized Nuclear Inspector (or his designee) indicating concurrence with holdpoints.	ANI
19.	Release for QA and Date	Signature of Welding QA/QC Specialist (or his designee) indicating concurrence with holdpoints and releasing WDR to construction. (Date Signed)	QA/QC Welding
20.	Welder(s) Symbol	Symbol(s) of Welder(s) assigned to perform welding. (QC Inspector verifies welder qualification at this point).	QA/QC Inspector
21.	Items	QC Inspection holdpoints checked (✓) that are required by Code, Specification, Procedures, Drawings, or Isometric	Weld Eng.
		QC Inspection holdpoints checked (✓) that are desgnated by QA in addition to holdpoints checked (✓) by Welding Engineer. (Holdpoints that do not apply shall be marked N/A.)	Welding QA/QC Specialist
		ANI Inspection holdpoints checked (✓) to be witnessed by ANI	ANI

5.1 (cont.)

	Title	Data	Responsibility
22.	Backing Type CI BR	Circle Type of Backing CI = Consumable Insert BR = Backing Ring	Weld Eng.
	Metal Spec. Heat No.	ASME Metal Specification Heat No. of the Backing Material. Obtained from Weld Material Requisition (WMR)	Weld Eng. QA/QC Inspector
	Note: Size and Type of CI shall be specified by Welding		
23.	Bare Filler Metal Spec.	ASME Filler Metal Spec.	Weld Eng.
	Size	Size of Filler Metal	QA/QC Inspector
	Ht No.	Heat No. of Bare Filler Metal. Obtained from WMR.	QA/QC Inspector
24.	Coated Filler Metal Spec.	ASME Filler Metal Spec.	Weld Eng.
	Size	Size of Filler Metal	QA/QC Inspector
	Ht/Lot No.	Heat No. of filler metal and/ or lot no. assigned to filler metal. Obtained from WMR.	QA/QC Inspector
25.	No. of Repairs Comments	Number of repairs made to the weld and pertinent comments. Enter Repair WDR numbers.	QA/QC Inspector
26.	PWHT Chart No/Date	Post-Weld Heat Treatment Chart No. and Date performed	QA/QC Inspector

5.1 (cont.)

	Title	Data	Responsibility
27.	QA/QC Inspector	QA/QC Inspector's signature indicating acceptance of weld and date.	QA/QC Inspector
28.	QA Final Acceptance	Signature of Welding QA/QC Specialist (or his designee) indicating final acceptance of weld. Date signed.	QA/QC Welding
29.	Verified by ANI/Date	Signature of ANI indicating WDR was reviewed and accepted. Date signed.	ANI

(Items listed individually)

Part II - Erection Traveler Process Check Points

1. Verify spools being joined - Verify that the numbers of the spool pieces being joined coincide with the WDR and the appropriate isometrics.

2. Pre fit-up inspection - Inspection performed in accordance with the requirements of NDEP-601

3. Fit-up inspection - Inspection performed in accordance with the requirements of NDEP-601.

4. Check purge gas - Check for compliance with the appropriate welding procedure.

5. Check preheat temperature - Check for compliance with the appropriate welding procedure.

6. Root Pass NDE UT-RT-MT-PT-VT - If required, NDE is performed in accordance with the applicable procedure. (NDEP-402, NDEP-101, NDEP-301, NDEP-201 and NDEP-601). (Insert procedure and revision number.)

7. Check interpass temperature - Check for compliance with the applicable welding procedure.

8. Intermediate NDE UT-RT-MT-PT-VT - If required, NDE is performed in accordance with the applicable procedure. (NDEP-402,

5.1 (cont.)

NDEP-101, NDEP-301, NDEP-201 and NDEP-601). (Insert procedure and revision number).

9. Visually inspect Final Weld ID & OD - Perform inspection in accordance with NDEP-601. (Insert procedure and revision number.)

10. Record Ferrite - Two (2) locations checked in accordance with applicable site procedure when required.

11. Inspect for joint identification - Verify that the field weld is marked in accordance with MP-05.

12. Check final cleanliness - Checked in accordance with NDEP-601.

13. Final NDE RT-MT-PT-UT - NDE is performed in accordance with the applicable procedure. (NDEP-101, NDEP-301, NDEP-201, NDEP-601). (Insert procedure and revision number.)

14. Release for PWHT - If required, verify that all required NDE has been completed.

15. PWHT NDE RT-MT-PT-UT-VT - If required, perform required NDE after PWHT according to the applicable procedure. (NDEP-101, NDEP-301, NDEP-201, NDEP-401, NDEP-601). (Insert procedure and revision number.)

5.1.1 Each item under Title No. 21 shall be initialed, dated and checked (✓) in the appropriate block, indicating acceptance or rejection in accordance with the applicable MP procedures and/or NDEP-601 (Visual Welding Inspection). If the item is initially rejected, later acceptance will be noted in the "Remarks" section when rework has been completed.

5.2 Repair Weld Data Report

5.2.1 The Repair Weld Data Report (Exhibit 2) is initiated by the Welding Engineering Unit.

5.2.2 The white and yellow copies of the Repair WDR are forwarded to QA and the ANI for approval and the insertion of additional holdpoints.

5.2.3 The yellow copy is maintained by Welding QA/QC and the white copy is forwarded to the field.

5.2.4 Data shall be entered on the Repair WDR as follows: (Numbers correspond with Exhibit 2)

	Title	Data	Responsibility
1.	Repair WDR No.	Number of repairs made to the weld.	Weld Eng.
2.	Unit	Unit No. obtained from "Line No. on WDR.	Weld Eng.
3.	System	System name or designation obtained from Isometric	Weld Eng.
4.	Category	System Category (ASME Class 1, 2, 3, Seismic I). Obtained from Isometric	Weld Eng.
5.	Drawing	Iso No./Engineering Drawing No. obtained from Isometric	Weld Eng.
6.	Field Weld ID	Assigned weld identification from Isometric/Drawing	Weld Eng.
7.	Base Metal and Grade	ASME Spec. and Grade of Base materials being joined. Obtained from Isometric or Line Lists.	Weld Eng.
8.	Pipe/ Component Size	Size in inches of Pipe and/or component and thickness of material. Obtained from Isometric or WDR.	Weld Eng.
9.	Welding Procedure and Revision No.	Appropriate Welding Procedure and Revision No..	Weld Eng.
10.	Pc No. to Pc No. Ht No. to Ht.No.	Piece No. to Piece No. Heat No. to Heat No. Obtained from Pipe Marking and/or from Pipe Spool Fabrication Dwg. Exception: When welded valves are joined to a piping system, the valve serial number will be used in lieu of Ht. No..	Weld Eng/ QA/QC Inspector

5.2.4 (cont.)

	Title	Data	Responsibility
11.	Joint Type, CI, BR, OB, SKT, other	Circle the appropriate joint type. CI = Consumable Insert BR = Backing Ring F = Fillet OB = Open Butt SKT = Socket Obtained from Drawing while meeting requirements of WPS & Ebasco Spec. M-30	Weld Eng.
12.	Heat Treat Procedure & Rev. No.	Appropriate Post-Weld Heat Treatment Procedure & Rev. No.	Weld Eng.
13.	Welding Engineer & Date	Signature and date of Welding Engineer (or his designee) initiating Weld Data Report	Weld Eng.
14.	ANI Review & Date	Signature & date of ANI agreeing to holdpoints.	ANI
15.	QA Review & Date	Signature & date of QA/QC Welding agreeing to holdpoints and releasing WDR to construction.	QA/QC Welding
16.	Backing Type	Circle type of backing, if not applicable, mark N/A.	Weld Eng.
17.	Bare Metal Size	Size of Filler Metal	QA/QC Inspector
	Ht	Heat No. of Bare Filler Metal	QA/QC Inspector
18.	Coated Filler Metal Spec.	ASME Filler Metal Spec. (If not applicable, mark N/A)	Weld Eng.
	Size		

5.2.4 (cont.)

	Title	Data	Responsibility
19.	Ht/Lot No.	Heat No. of Filler Metal and/or Lot No. assigned to Filler Metal	QA/QC Inspector
20.	Welder's Symbol Root	Symbol assigned to Welder entered at time of welding.	QA/QC Inspector
21.	Welder' Symbol Intermediate	Symbol assigned to Welder entered at time of welding	QA/QC Inspector
22.	Welder's Symbol Final	Symbol assigned to Welder, entered at time of welding.	QA/QC Inspector
23.	Repair Instructions	The instructions for repairing the weld as assigned by Welding Engineer.	Weld Eng.
24.	Item	Holdpoints Engineer checked (✓) that are required by QA in addition to holdpoints checked (✓) by Welding Engineer. Holdpoints that do not apply shall be marked N/A.	QA/QC Welding
		ANI holdpoints checked (✓) to be witnessed by ANI. Holdpoints that do not apply shall be marked N/A.	ANI
25.	QA/QC Specialist	Signature of Welding QA/QC Specialist (or his designee) indicating final acceptance of weld repair. Date signed.	Welding QA/QC Specialist
26.	ANI (Code Weld)	Signature and date of ANI indicating RWDR was reviewed and accepted. Date signed.	ANI

5.2.5 QA accepted signature signifies that the item has been repaired and accepted in accordance with the applicable MP specification and NDEP specification.

5.3 Seismic I WDR (SWDR)

5.3.1 The SWDR (QA-34 form) is initiated by the discipline engineer in the case of pipe hangers and structural items. It is initiated by the craft foreman for cable tray, conduit and HVAC supports. The appropriate individual fills out pertinent information and forwards the SWDR to the welding engineer if holdpoints are required.

5.3.2 The white and yellow copies of the SWDR, along with the work package are forwarded to the Welding QA/QC Specialist or his designee.

5.3.3 The Welding QA/QC Specialist or his designee, reviews the SWDR for essential information and mandatory holdpoints and inserts additional holdpoints if required.

5.3.4 The Welding QA/QC Specialist, or his designee, will initial and date the SWDR and send the white copy to the applicable Engineering discipline or craft.

5.3.5 The areas of responsibility for filling out the SWDR are outlined below: (numbers correspond with numbered blocks on Exhibit 1)

5.3.5.1 Pipe Hangers & Structural

A. Discipline Engineer (or his designee)

1. Completes blocks 1 through 6
2. Identifies joints involving 1-1/2" and thicker base material and assigns pre-heat holdpoints (and fitup holdpoints, if applicable).
3. Signs and dates: Retains pink copy and forwards white copy and yellow copy to Welding Engineer.

B. Welding Engineer (or his designee)

1. Completes blocks 7, 8 and 9.
2. Identifies joint type and assigns mandatory holdpoints.

5.3.5.1 (cont.)

3. Identifies joints which require PWHT.
4. Sign and dates; forwards yellow and white copies to Welding QA/QC.

C. Welding QA/QC Specialist (or his designee)

1. Reviews entries made by Engineers against applicable drawings and specifications.
2. Designates additional holdpoints as needed.
3. Initials and dates; retains yellow copy and forwards white copy to discipline engineer.

D. Discipline Engineer

1. Forwards white copy with work package to the craft foreman.

E. Craft Foreman

1. Completes weldout of joints not requiring preheat or fitup inspection.
2. Notifies Welding QA/QC when ready for ~~preheat and/or fitup~~ inspection.
3. Notifies Welding QA/QC when ready for full penetration root pass holdpoints.
4. Signs and dates Section II of white copy when all welds are complete.

F. Welding QA/QC Inspector

1. Completes items 1 through 3 in Section III.
2. Performs preheat and fitup inspection as designated. (Releases for weldout/root pass when acceptable.)
3. Performs root pass visual inspection of full penetration joints.
   a. Performs specified NDE, or
   b. initiates NDE Request to the NDE subunit.
   c. Releases for weldout when acceptable.
4. Performs final visual inspection of all joints and records welder(s) symbol(s).
5. Performs specified Final NDE or:
   a. Initiates NDE Request to the NDE subunit.

5.3.5.1 (cont.)

b. Initiates request for vacuum box testing, if specified.

6. Monitors PWHT in accordance with CQC-20, if specified.
7. Acceptable welds having the same inspection and NDE requirements may be tested collectively. Quantities as shown on applicable drawings, will be indicated (i.e. (8) fillet welds or (4) flare bevel welds). Unacceptable joints will be listed and identified separately (i.e. 5/16" fillet Pc. 5 to Pc. 8 top). Reinspection and acceptance will be indicated by listing the joint again in the same section of the QA-34 form.

5.3.5.2 Cable Tray, Conduit and HVAC Supports

A. Craft Foreman

1. Completes blocks 1 through 6 (obtains help from Area Engineer as needed).
2. Enters data in blocks 7 and 8 for joints covered by WP-203 and WP-400 (electrical cable tray and conduit supports; and HVAC supports).
3. Completes weldout of joints not involving full penetration welds or attachments to engineered embedded plates. (Signs and dates Section I if no full penetration welds or attachments to engineered embedded plates are involved.)
4. Informs Discipline Engineer of full penetration welds or joints involving engineered embedded plates (forwards SWDR to the Discipline Engineer).

B. Discipline Engineer

1. Identifies full penetration welds and assigns fitup holdpoints.
2. Identifies joints involving 1-1/2" and thicker base material and assigns preheat holdpoints.
3. Identifies joints requiring PWHT and assigns PWHT holdpoints.

5.3.5.2 (cont.)

4. Signs and dates: Retains pink copy and forward white and yellow copies to the Welding Engineer.

C. Welding Engineer (or his designee)

1. Enter data in blocks 7 and 8 for full penetration welds and joints involving 1-1/2" thick base material. Other pertinent welding information will be entered in block 9.
2. Signs and dates; forwards white and yellow copies to Welding QA/QC.

D. Welding QA/QC Specialist (or his designee)

1. Review entries made by engineers against applicable drawings and documents.
2. Designates additional holdpoints as needed.
3. Initials and dates; retains yellow copy and forwards white copy to the craft foreman.

E. Craft Foreman

1. Notifies QA/QC when ready for preheat and/or fitup holdpoints.
2. Notifies QA/QC when ready for full penetration joint root pass holdpoints.
3. Signs and dates Section II of white copy and yellow copy when all welds are completed.

F. Welding QA/QC Inspector

1. Completes items 1 through 3 in Section III.
2. Performs preheat and fitup inspection as designated. (Releases for weldout/root pass when acceptable.)
3. Performs root pass visual inspection of full penetration joints.
   a. Performs specified NDE, or
   b. initiates NDE Request to the NDE subunit.
   c. Releases for weldout when acceptable.
4. Performs final visual inspection of all joints and records welder(s) symbol(s).

5.3.5.2 (cont.)

5. Performs specified Final NDE or:
   a. Initiates NDE Request to the NDE subunit.
   b. Initiates request for vacuum box testing, if specified.
6. Monitors PWHT in accordance with CQC-20, if specified.
7. Acceptable welds having the same inspection and NDE requirements may be tested collectively. Quantities as shown on applicable drawings, will be indicated (i.e. (8) fillet welds or (4) flare bevel welds). Unacceptable joints will be listed and identified separately (i.e. 5/16" fillet Pc. 5 to Pc. 8 top). Reinspection and acceptance will be indicated by listing the joint again in the same section of the QA-34 form.

5.4 Tank Fabrication Weld Record (TFWR)

5.4.1 The TFWR (QA-32 form) is initiated by the Welding Engineer (or his designee) who will fill in the tank design and identification data; joint identification, the material thickness, joint type, specified holdpoints and weld procedures for each weld joint. The TFWR is forwarded to Welding QA/QC.

5.4.2 The Welding QA/QC Specialist (or his designee) reviews the TFWR for essential requirements and mandatory holdpoints; designates additional holdpoints, as needed; and submits it to the ANI (Code Class tanks only) for review and designation of his holdpoints.

	Title	Data	Responsibility
1.	Unit No.	Assigned to Unit which tank belongs.	Weld Eng.
2.	Tank I.D. Number	Obtained from tank drawing.	Weld Eng.
3.	ASME Code Class	ASME Code Class 1, 2 or 3.	Weld Eng.
4.	Drawing Number	Obtained from drawing.	Weld Eng.

5.4.2 (cont.)

	Title	Data	Responsibility
5.	Weld Engr.	Signature of Weld Engr. (or his designee) initiating the Tank Fabrication Weld Record and date.	Weld Eng.
6.	Weld Number	I.D. No. of weld from drawing.	Weld Eng.
7.	Material Thickness	Obtained from drawing.	Weld Eng.
8.	Joint Type	Obtained from drawing.	Weld Eng.
9.	Weld Proc. and NDE Requirements	Assigned by Weld Engr.	Weld Eng.
10.	Required Holdpoints	Assigned by Weld Engr.	Weld Eng.
11.	Weld Symbol	From assigned welder(s).	Foreman
12.	Material Heat	From WMR.	Foreman
13.	QA/QC Inspector	Signature and date of QA/QC Inspector verifying holdpoints.	QA/QC Inspector
14.	ANI	Signature and date of ANI verifying and/or adding holdpoints.	ANI
15.	QA/QC Specialist	Signature and date of QA/QC Specialist or his designee after completion of TFWR.	QA/QC Spec.

6.0 EXHIBITS

Exhibit 1, Weld Data Report (WDR)
Exhibit 2, Repair Weld Data Report (Repair WDR)
Exhibit 3, Tank Fabrication Weld Record (TFWR)
Exhibit 4, Seismic I Weld Data Report (SWDR)

PROJECT _____

PSL
QA-28

WELD DATA REPORT
(PROCESS CONTROL CHECKLIST)
(PROCEDURE CQC-19)

REV. 4 2/81

UNIT NO. | TURNOVER NO. (1)

(2) WELD JOINT RECORD NO.

SYSTEM (3)	CAT. (4)	ENG. DWG. NO. (5)	FILL METAL TYPE (6)	DESIGN LINE NO. (7)
BASE METAL SPEC. & GRADE (8) TO (8)			JOINT TYPE - CI, BR, F, OB, SKT, OTHER (9)	PIPE/COMP SIZE NOM. (10)
PC NO. (11) TO PC NO. (11)			WELDING PROCEDURE & REV. NO. (12)	MATERIAL NOM. THICKNESS (13)
HT NO. (14) TO HT NO. (14)			PWHT PROCEDURE & REV. NO. (15)	INSERVICE REQ'D ☐ INSPECTION NA (16) ☐
WELDING ENG. VERIFICATION DATE (17)			ANI REVIEW FOR HOLDPOINTS DATE (18)	RELEASED FOR WELDING QA/QC DATE (19)

PART II - ERECTION TRAVELER PROCESS CHECK POINTS

A-ACCEPTED
R-REJECTED
H- X IN H COLUMN MEANS HOLD FOR QA/QC OR ANI AS APPLICABLE

INSERT N/A WHERE AN OPERATION DOES NOT APPLY

USE BLANK LINES FOR ADDITIONAL CHECKS OR REINSPECTIONS

WELDER(S) SYMBOL (20)

TACK

ROOT

INTERMEDIATE

FINAL

	ITEMS (21)	QA/QC INSPECTOR H	A	R	DATE	INSP.	ANI H	A	R	DATE	ANI
1	VERIFY SPOOLS BEING JOINED										
2	PRE FIT-UP INSPECTION										
3	FIT-UP INSPECTION										
4	CHECK PURGE GAS										
5	CHECK PREHEAT TEMPERATURE										
6	ROOT PASS NDE UT-RT-MT-PT										
	NDEP REV.										
7	CHECK INTERPASS TEMPERATURE										
8	VISUALLY INSPECT FINAL WELD										
	ID & OD - NDEP REV.										
9	PURGE DAM REMOVAL										
10	INSPECT FOR JOINT IDENTIFICATION										
11	CHECK FINAL CLEANLINESS										
12	FINAL NDE RT-MT-PT-UT-VT										
	NDEP. REV.										
13	INSPECT PWHT										
14	INSPECTION OF THERMOCOUPLE										
	REMOVAL NDEP REV.										
15	PWHT NDE RT-MT-PT-UT-VT										
	NDEP REV.										

BACKING TYPE CI BR
METAL SPEC. (22)
HEAT/CODE

BARE FILL METAL SPEC.
SIZE (23) HT NO.

COATED FILLER METAL SPEC.
SIZE (24) HT/LOT NO.

NO. OF REPAIRS - COMMENTS (REPAIR WDR NUMBERS) (25)

REMARKS :

PWHT CHART NO. (26) DATE

QA/QC INSPECTOR (27) DATE

QA/QC FINAL ACCEPTANCE (28)

VERIFIED BY ANI (29) DATE
SIGNATURE

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT

Exhibit 2, QCI-19.1
Rev. 1, Page 1 of 1

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3/81
v. 2

REPAIR WELD DATA REPORT

(PROCEDURE CQC-19)

REPAIR WDR NO. (1)				
UNIT (2)	SYSTEM (3)	CAT. (4)	DRAWING / ISOMETRIC (5)	FIELD WELD I.D. (6)
BASE METAL SPEC. & GRADE (7) TO			PIPE/COMPONENT SIZE MATERIAL (8) THICKNESS	WELDING PROCEDURE & REV. NO. (9)
PC NO. TO PC NO. HT NO. (10) TO HT NO.			JOINT TYPE - CI, BR, OB, SKT OTHER (11)	HEAT TREAT. PROC. & REV. NO. (12)
WELDING ENGINEER & DATE (13)			ANI REVIEW & DATE (14)	QA/QC REVIEW & DATE (15)
BACKING TYPE CI BR (15) METAL SPEC. HEAT NO.			BARE FILLER METAL SPEC. SIZE (17) HT NO.	COATED FILLER METAL SPEC. SIZE (18) HT/LOT NO. (19)
WELDER'S SYMBOL - ROOT (20)			WELDER'S SYMBOL - INTERMEDIATE (21)	WELDER'S SYMBOL - FINAL (22)

REPAIR INSTRUCTIONS: (23)

SAMPLE

ITEM	HOLD PT. QA/QC	HOLD PT. ANI	ANI ACCEPTED	DATE	QA/QC ACCEPTED	DATE
(24)						

REMARKS:

ACCEPTED BY

QA/QC SPECIALIST (25) DATE

VERIFIED BY

ANI (CODE WELD ONLY) (26) DATE

QA-32 Exhibit 3
QCI-19.1
Rev. 0

CAROLINA POWER & LIGHT COMPANY
CORPORATE QUALITY ASSURANCE DEPARTMENT
TANK FABRICATION WELD RECORD

SHNPP Page ___ of ___

WELD NUMBER (6)					
MATERIAL THICKNESS (7)					
JOINT TYPE (8)					
WELD PROCEDURE CODE(S)					
WELDER SYMBOL: TACK					
WELDER SYMBOL: ROOT (11)					
WELDER SYMBOL: INTERMEDIATE					
WELDER SYMBOL: FINAL					
MATERIAL HEAT / LOT: GTAW WIRE					
MATERIAL HEAT / LOT: SMAW ELECTRODE					
MATERIAL HEAT / LOT: INSERT (12)					
MATERIAL HEAT / LOT: BACKING RING					
MATERIAL HEAT / LOT: OTHER					

	REQUIRED	PROCEDURE CODE	Q A HOLDPOINT	A N I HOLDPOINT	INSPECTOR'S INITIALS	DATE	REQUIRED	PROCEDURE CODE	Q A HOLDPOINT	A N I HOLDPOINT	INSPECTOR'S INITIALS	DATE	REQUIRED	PROCEDURE CODE	Q A HOLDPOINT	A N I HOLDPOINT	INSPECTOR'S INITIALS	DATE	REQUIRED	PROCEDURE CODE	Q A HOLDPOINT	A N I HOLDPOINT	INSPECTOR'S INITIALS	DATE	REQUIRED	PROCEDURE CODE	Q A HOLDPOINT	A N I HOLDPOINT	INSPECTOR'S INITIALS	DATE
IN PROCESS & NDE INSPECTIONS																														
VERIFY PREHEAT																														
FIT-UP : QA																														
ANI																														
ROOT : VT																														
ANI																														
MT/PT																														
ANI																														
RT																														
ANI																														
VER. INT PASS TEMP.			(10)																											
FINAL : VT																														
ANI																														
MT/PT																														
ANI																														
RT/UT																														
ANI																														
POST FABRICATION OPERATIONS																														
PWHT : QA																														
ANI																														
VACUUM BOX : QA																														
ANI																														
CLEANING : QA																														
ANI																														
HYDRO : QA																														
ANI																														
OTHER :																														
POST HYDRO NDE																														

SAMPLE

PROCESS PROCEDURES / INSPECTION & NDE PROCEDURES

CODE	PROCEDURE NUMBER	REV.	CODE	PROCEDURE NUMBER	REV.
A			M		
B			N		
C			O		
D			P		
E			R		
F	(9)		S	(9)	
G			T		
H			V		
I			W		
J			X		
K			Y		
L			Z		

UNIT No. (1)	TANK IDENTIFICATION No. / NAME (2)	ASME CODE CLASS (3)	EDITION	ADDENDA

DRAWING & REVISION NUMBERS (4)

WELDING ENGINEER (5)	DATE	QA/QC INSPECTOR (13)	DATE
AUTHORIZED NUCLEAR INSPECTOR (14)	DATE	QA/QC SPECIALIST (15)	DATE

REMARKS

Rev. 0 (PROCEDURE CQC-19)

I

1. UN	2. BUILDING	3. ELEV.	4. LOCA.	5. COMPONENT/HANGER ID.	DRAWING(S), REV. & SHT. #	7. WELD PROC.	9. WELD INSTRUC	IS
						8. WELD ML. TY.		
DISCIPLINE ENG.		DATE	WELDING ENG./FOREMAN	DATE				

II

1. NOTIFY DISCIPLINE ENGINEER FOR ADDITIONAL INSTRUCTIONS FOR FULL PENETRATION
2. NOTIFY DISCIPLINE ENGINEER FOR ADDITIONAL INSTRUCTIONS ON JOINTS INVOLVING ENGINEERED PLATES
3. COMPLETE WELDOUT OF JOINTS NOT REQUIRING ADDITIONAL INSTRUCTIONS
4. INFORM QA/QC FOR HOLD POINTS (H) & FINAL WELD INSPECTION

FOREMAN: DATE:

III

1. WELD TYPE & CONFIGURATION CHECKED WITH DWG(S) & COMPONENT/HANGER CONFIGURATION CHECKED WITH DWG(S) A ☐ R ☐ DATE

2 WELDER(S) QUALIFICATION A ☐ R ☐ | 3. MAT'L STATUS A ☐ R ☐ | NCR/DDR # | QA/QC INSPECTION | DATE:

IV

V

JOINT I.D. OR DESCRIP. QTY. OF WELDS	WELDER SYMBOL(S)	PREHEAT		FITUP	ROOT NDE						FINAL NDE																PWHT			INSP. INITIALS	DATE	DESCRIPTION OF DEFICIENCY, REPAIR OR REWORK NCR/DDR, ETC.
					VT			MT/PT			VT			MT/PT			RT			UT			VAC BOX										
		H	TEMP.	H	A	R	H	A	R	H	A	R	H	A	R	H	A	R	H	A	R	H	A	R	H	A	R	H	A	R			

SAMPLE

LEGEND: H = HOLDPOINT
A = ACCEPT
R = REJECT
T = TEMP. GREATER THAN LISTED

QA/QC INSPECTION & NDE HOLDPOINT ASSIGNED AND/OR VERIFIED BY _____ INITIALS _____ DATE

_____ QA/QC SPECIALIST / DESIGNEE _____ DATE

* USE QA-34A TO LIST ADDITIONAL WELDS

REMARKS: