

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**Before the Atomic Safety and Licensing Board**

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

**AFFIDAVIT OF CHARLES H. GRIFFIN**

CITY OF RALEIGH	)	
	)	ss:
STATE OF NORTH CAROLINA	)	

I, Charles H. Griffin, being sworn, do on oath depose and say:

1. I am a resident of the State of North Carolina. I am employed by Carolina Power & Light Company ("CP&L") and work out of CP&L's corporate offices in the Corporate Nuclear Engineering Group. My business address is 410 South Wilmington Street, Raleigh, North Carolina, 27601.
2. I worked at the Harris Nuclear Plant as a Welding Engineer from 1978 through 1986. During the majority of this time, working as an employee under the plant's CP&L Welding Manager, I was responsible for welding activities on piping during Harris Plant construction. From 1986 to June 1990, I worked at the Harris Energy and

Environmental Center, Metallurgy Laboratories, performing failure analyses for CP&L's fossil and nuclear plants. Since 1990, I have worked in Corporate Nuclear Engineering, as a materials engineer, providing support to all three CP&L nuclear units. I hold a B.S. degree in Materials Engineering from North Carolina State University.

3. The purpose of this affidavit is to attest to the quality of the welding program during the construction of the Harris Plant, specifically during the welding of the Spent Fuel Pool Cooling and Cleanup System ("SFPCCS") piping now embedded in concrete. In addition, I was recently requested to review the videotapes pertaining to the visual inspection of the interior of the SFPCCS piping and welds, and will report on my evaluation of the condition and suitability for service of the welds that I reviewed in those tapes.
  
4. CP&L applied for and received an American Society of Mechanical Engineers ("ASME") Code N-Stamp for the construction and installation of ASME Code components. By doing so, CP&L maintained complete oversight and control of the construction activities. An N-Stamp is awarded by the ASME, only after the requesting party demonstrates the capability to effectively fabricate/install ASME Code Class 1, 2, and 3 components and piping systems to the stringent requirements of ASME Boiler & Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components. To maintain the ASME N-Stamp throughout plant construction, CP&L had to successfully undergo a follow-up audit/review by ASME

representatives once every three years. Prior to receiving the N-Stamp, CP&L was required to issue an ASME Quality Assurance Manual, develop plant procedures to support the program, and subsequently undergo an audit by a team of ASME representatives. Once awarded, implementation of CP&L's N-Stamp program ensured that the ASME Code Class 1, 2, and 3 components, such as the Class 3 SFPPCCS piping, were appropriately fabricated, installed, and stamped to the requirements of ASME Code Section III. The ASME Quality Assurance Manual, and the sub-tier procedures supporting this Manual, provided controls over activities such as Quality Assurance; document/records control; control of procured materials, parts, and services; and special processes control (e.g., welding, heat treatment, nondestructive examination). Actual application or stamping of the ASME Code N-Stamp onto the piping, will only occur after a pipe line has been demonstrated to be satisfactorily installed, with all required Quality Assurance/Quality Control ("QA/QC") inspections, nondestructive examinations ("NDE"), Authorized Nuclear Inspector ("ANI") inspections/reviews, and pressure testing having been satisfactorily completed and documented. The CP&L QA/QC organization was independent of the CP&L Welding Engineering Unit and the welding craft/contractor's management. The ANI was an independent oversight inspector of the Kemper Insurance Company. This independent ANI oversight of fabrication activities on ASME Code Class 1, 2, and 3 components was a requirement of the ASME N-Stamp program.

5. In addition to the ASME QA Manual, the Harris Plant welding program and supporting procedures were reviewed and considered by ASME representatives, in conjunction with conducting their ASME N-Stamp audit. These procedures provided for the day-to-day control of the welding activities:

- Welding Procedure Specifications (“WPSs”), used for fabrication/installation of ASME piping components, were qualified in accordance with ASME Code requirements, as outlined within the welding program’s procedure, MP-01.
- Welders and welding operators (hereafter referred to as “welders/operators”) for piping construction were subsequently qualified to those WPSs in accordance with the applicable ASME Code requirements, as outlined within the welding program’s procedure, MP-02.
- Other Harris procedures (in accordance with applicable Codes) addressed welding filler material control, heat treatment of welds, weld process control, welding equipment control, repair of base materials and weldments, and permanent marking of weld joints and other site material and components.
- Weld Data Reports (“WDRs”) for each field weld joint were prepared, pursuant to QCI-19.1 "Preparation and Submittal of Weld Data Report, Repair Weld Data Report, Tank Fabrication Weld Record & Seismic I Weld Data Report" Revision 1 (Attachment A to this affidavit), by CP&L’s Welding Engineering personnel, for use by the welders, to identify the welding procedures, filler materials, and required

inspections applicable to the fabrication of a particular weld joint. WDRs also provided required ASME Code NDE holdpoints and any additional inspection holdpoints deemed necessary by the QA/QC organization or the ANI. Typical inspection holdpoints for the SFPCCS piping would have included (as a minimum): verify spools (i.e., prefabricated piping subassemblies) being joined, prefit-up examination of the piping components, fit-up inspection (after tack welding), possibly a gas purge check, final visual examination of the pipe weld outside diameter (after welding), inspection for weld joint identification, final cleanliness check, and final NDE (e.g., liquid penetrant testing). Prior to release of a WDR to the craft welders/operators, the ANI would review the WDR and had the option to assign ANI holdpoints for his/her independent inspections. When ANI holdpoints were assigned, these holdpoints were in addition to those performed by the CP&L QA/QC personnel. During the fabrication of a weld joint, a welder/operator was required to stop work and not proceed past a required holdpoint activity, until the appropriate organization (QA/QC or ANI) had performed the necessary inspections or tests and signed off approval of these steps. Attached to this affidavit is a WDR for one of the 15 field welds in the SFPCCS piping embedded in concrete (Attachment B). My signature is found on the WDR as the Welding Engineer. (This is a copy of the original WDR, which I understand was destroyed with the other WDRs for the SFPCCS piping.)

- If a weld joint or base metal required repair by welding, a Repair Weld Data Report ("RWDR") would be initiated by CP&L Welding Engineering Unit personnel who would provide the repair instructions. Typical repair instructions would include: removal of the imperfection/ flaw by grinding; verify removal of the imperfection by visual examination and any required NDE (e.g., liquid penetrant testing); perform repair of the weld by use of the specified WPS and filler materials; final visual examination after welding; and final NDE. As required by ASME Code, the final NDE must include the same NDE technique originally used to detect the imperfection/ flaw. Similar to the WDR, on RWDRs the QA/QC personnel signed off on the inspection holdpoints, only upon satisfactory completion of the inspections. Again, the ANI always had the option to be present and perform his/her own independent holdpoint inspections for welding activities on ASME Code Class 1, 2, and 3 components. During the repair of a weld joint or base metal, a welder/operator was required to stop work and not proceed past a required holdpoint activity, until the appropriate organization (QA/QC or ANI) had signed-off approval of these steps. Attached to this affidavit is a RWDR for one of the 15 field welds in the SFPCCS piping (Attachment C). This RWDR reflects that a repair was necessary to 2-SF-149-FW-408 due to one area of the weld being below the base metal line where the cap was ground off. The repair entailed rewelding the area and blending it with the surrounding base metal and weld, and was verified with the performance of a final visual examination and a final NDE. This RWDR was attached to a

Deficiency and Disposition Report (“DDR”). This DDR was prepared because an ANI holdpoint had been by-passed on the original WDR. Since the area was still accessible, the ANI performed the final visual examination and documented the inspection on the RWDR. This demonstrates that the QA and ASME N-Stamp programs found discrepancies and deficiencies and required appropriate correction and disposition to ensure compliance with the programs.

6. As further evidence of CP&L’s commitment to maintaining direct oversight and technical control of the welding program during Harris Plant construction, there was an entire CP&L Welding Engineering work unit focused on this program. The plant welders/operators were employees under the supervision (i.e., for assignment of work and scheduling) of the constructor/contractor (Daniel International Construction Corporation). However, to maintain independence from the contractor’s construction schedule and budgetary pressures/constraints, the CP&L Welding Engineering Unit was under the direct supervision of CP&L’s (Harris Plant) Welding Manager. The Welding Manager reported to the CP&L Plant Resident Engineer and maintained direct contractual and technical control over the welding program. This control included (but was not limited to) qualification of WPSs; performance qualification of welders/operators; welding filler materials procurement, control, and issuance; special technical training of welders/operators; assignment of welding procedure specifications for specific welding applications; and technical oversight of field

welding activities. Reporting under the CP&L Welding Manager, within the Welding Engineering Unit, were (depending on specific time frame):

- CP&L degreed Metallurgists/Welding Engineers and CP&L Construction Specialists each with specific focus areas in the plant's welding program (e.g., welding procedure specification qualification, welder/operator qualification, structural/hanger welding, pipe welding, and filler materials control). If a specific welder/operator's work performance came into question during field welding observations by these individuals, each had the authority to revoke the welder/operator's qualifications, under the authority of the CP&L Welding Manager, until re-qualification/re-evaluation of the welder/operator's capabilities could be completed.
- Daniel Welding Superintendents and Daniel Welding Supervisors acted as technical "overseers" of field welding activities, including conducting visual inspections of non-safety related weld joints. (While Welding Supervisors could also perform in-process inspections of safety-related component welds, the final inspection and sign-offs on the safety-related components had to be completed by CP&L's independent QA/QC organization.) These Welding Superintendents and Welding Supervisors were selected by the CP&L Welding Manager based on their demonstrated extensive "hands-on" superior welding capabilities and knowledge. One of the primary functions for these individuals was acting as mentors to the welders/operators working in the contractor's work force. Like the CP&L



Welding Engineers and CP&L Construction Specialists, these Welding Superintendents and Welding Supervisors had the authority to revoke a welder/operator's qualifications if field-welding observations so warranted. (The revoked qualification required special additional training for the welder/operator and satisfactory completion of a new qualification test before he/she could return to field welding activities.)

- Weld Rod Issue Station Supervisor and Weld Rod Issue Station attendants responsible for the control and issuance of all welding filler materials on the plant site.
- Welding Engineering Aides, working under the supervision of the CP&L Welding Engineers. Prior to welding work packages being sent to the field, these Welding Engineering Aides assisted with filling out the WDRs and RWDRs for field welding activities.

7. For the majority of my time working in the CP&L Welding Engineering Unit as a Welding Engineer during Harris Plant construction, I was responsible for oversight of pipe welding within the plant, including the stainless steel piping used to construct the SFPCCS for spent fuel pools C and D, which are the subject of this proceeding. Within this capacity, I assisted with plant procedures development, such as those used for qualification of WPSs, qualification of welders/operators, filler materials control, and welding process control. I was also responsible for the development of pipe

WDRs that were used for controlling welding activities in the field and, if necessary, RWDRs for the repair of any welds or piping base metals.

8. Based on the aforementioned items, I considered the Harris Plant construction welding program to have been very sound, and it ensured that the quality of field welding was completed in conformance with the standards required by the ASME Code. It is also worthy to note that the general welding procedures, WPSs, welder/operator training, and "pool" of welders/operators used to construct the now licensed and operating SFPCCS for spent fuel pools A and B, were the same used to construct the SFPCCS for spent fuel pools C and D to which this affidavit applies. The SFPCCS piping for the four spent fuel pools was constructed and inspected pursuant to the same CP&L quality program and ASME Code N-Stamp program prior to the time concrete was poured which embedded the SFPCCS piping.
9. To support the current effort of licensing the SFPCCS for spent fuel pools C and D, I was specifically requested to review videotapes which included recent observation of several SFPCCS piping weld joints that are embedded in concrete. At least two weld joints have evidence of a small amount of incompletely melted consumable inserts in the weld root region. The purpose of a welding consumable insert is to serve as a consumable retainer and filler metal during completion of a weld joint root pass (first welding pass). Unconsumed inserts are typically the result of welder technique with this particular condition being localized/limited to the weld root pass. Unlike some welding flaws, such as hot cracking and piping porosity, which could possibly extend

into subsequent weld layers, once the root pass is completed, subsequent weld passes are unaffected by an unconsumed insert condition. Unconsumed insert materials could typically be detected by visual observation of the pipe inside diameter ("ID") surface (if accessible) or by conducting volumetric NDE examinations like radiography. However, consistent with ASME Code requirements, the final inspection requirements for these ASME Code Class 3 SFPCCS weld joints were a final visual exam and a liquid/dye penetrant examination of the weld joint outside diameter ("OD") surface. Therefore the final inspections and NDE for these weld joints would not have detected indications such as these regions of unconsumed insert in the root pass, unless the weld ID surface had been accessible for local visual observation during plant construction.

10. The primary concerns with having an unconsumed insert include:

- Possible presence of an ID stress riser which could contribute to metal fatigue issues when located in pipe sections subject to vibration cyclic loading conditions. Since this specific section of piping is embedded in concrete, vibration cyclic loading is not a plausible scenario.
- Sections of unconsumed insert, if protruding significantly into the pipe system flow path, could potentially lead to fluid flow anomalies contributing to localized erosion corrosion of susceptible pipe materials (e.g., carbon steel pipe materials in high flow systems). The sections of unconsumed insert that I viewed in the

videotapes of the Code Class 3 SFPCSS weld joints, do not protrude into the system flow path sufficiently to create a detrimental flow anomaly in this piping. Additionally, for the stainless steel pipe materials included in the SFPCSS piping, erosion corrosion would not be a plausible scenario for the system design conditions.

- Unconsumed inserts could also contribute to radiological crud traps (“hot spots”). Since this system piping is embedded in concrete, which provides for excellent shielding characteristics, the presence of crud traps and “hot spots” would not be an issue of concern.
- If a segment or portion of the consumable insert is not fused to the adjoining pipe weld joint ends, the regions of incomplete fusion could possibly be sites where local crevice corrosion could initiate. I defer to experts in corrosion regarding any potential concern with local crevice corrosion. (Based on my discussions with Dr. Ahmad Moccari and his opinions as reflected in his affidavit, I do not believe corrosion will be an issue in the stainless steel piping operating at low temperatures with high quality water.)

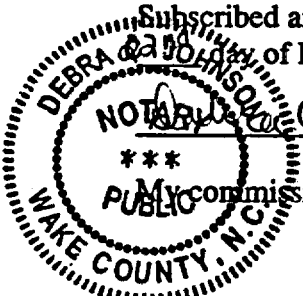
11. In summary, based on the welding controls and CP&L’s oversight in place at the time of Harris Plant construction, I am confident that final weld inspections, NDE, and pressure testing for these sections of pipe were satisfactorily completed prior to their release for embedding in concrete. Accordingly, I consider that these weld joints

have satisfactorily met the ASME Code required inspections, NDE, and pressure testing requirements for ASME Code Class 3 components; and from a welding quality perspective are suitable for the intended design service. Additionally, based on my experience as a Metallurgist and Welding Engineer and recent review of the above noted videotapes, I have no concerns with the noted regions of unconsumed insert I observed in the embedded weld joints.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 22, 1999.

  
Charles H. Griffin

Subscribed and sworn to before me this  
22<sup>nd</sup> day of December, 1999  
  
NOTARY PUBLIC  
My commission expires 8/8/2004  
Debra A. Johnson

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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

RECOMMENDED FOR APPROVAL  
BY: *R. G. White*

SPECIALIST

INITIAL ISSUE DATE:

March 16, 1981

APPROVED BY:

*A. L. Richardson*  
DIRECTOR - QA/QC

Q A RECORDS  
**RECEIVED**  
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SHNPP CONSTR. Q A UNIT

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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.

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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".

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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.

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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)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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.

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5.1 (cont.)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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 Pro- cedure & Rev. No.	Appropriate Post-Weld Heat Treat- ment Procedure & Revision No.	Weld Eng.

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5.1 (cont.)

	<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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 designated 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

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5.1 (cont.)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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

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5.1 (cont.)

	<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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-VI - 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-VI - If required, NDE is performed in accordance with the applicable procedure. (NDEP-402,



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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.

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5.2.4 Data shall be entered on the Repair WDR as follows:  
 (Numbers correspond with Exhibit 2)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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

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5.2.4 (cont.)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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. Size	ASME Filler Metal Spec. (If not applicable, mark N/A)	Weld Eng.

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5.2.4 (cont.)

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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

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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.

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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.

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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.

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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).



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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.

<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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.

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5.4.2 (cont.)

	<u>Title</u>	<u>Data</u>	<u>Responsibility</u>
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** \_\_\_\_\_

Exhibit 1, QCI-19.1  
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**WELD DATA REPORT**  
(PROCESS CONTROL CHECKLIST)  
(PROCEDURE CQC-19)

UNIT NO.	TURNOVER NO. (1)
(2)	WELD JOINT RECORD NO.

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SYSTEM (3)	CAT. (4)	ENG. DWG. NO. (5)	FILL METAL TYPE (6)	DESIGN LINE NO. (7)
BASE METAL SPEC. & GRADE (8)		JOINT TYPE - G, BR, F, OB, SKT, OTHER (9)		PIPE/COMP. (10)
PC NO. (11)		WELDING PROCEDURE & REV. NO. (12)		MATERIAL NOM. THICKNESS (13)
HT NO. (14)		PWHT PROCEDURE & REV. NO. (15)		INSERVICE REQ'D INSPECTION NA (16)
WELDING ENG. VERIFICATION (17)	DATE	ANI REVIEW FOR HOLDPOINTS (18)	DATE	RELEASED FOR WELDING QA/QC DATE (19)

**PART II - ERECTION TRAVELER PROCESS CHECK POINTS**

A-ACCEPTED  
R-REJECTED  
H-  $\sqrt{\text{IN}}$  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

TACK	TACK	TACK
ROOT	ROOT	ROOT
INTERMEDIATE	INTERMEDIATE	INTERMEDIATE
FINAL	FINAL	FINAL

ITEMS (21)	QA/QC INSPECTOR				ANI					
	H	A	R	DATE	INSP.	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										
9 ID & OD NDEP REV.										
10 PURGE DAM REMOVAL										
11 INSPECT FOR JOINT IDENTIFICATION										
12 CHECK FINAL CLEANLINESS										
13 FINAL NDE RT-MT-PT-UT-VT NDEP REV.										
14 INSPECT PWHT										
15 INSPECTION OF THERMOCOUPLE REMOVAL NDEP REV.										
16 PWHT NDE RT-MT-PT-UT-VT NDEP REV.										

BACKING TYPE CI BR METAL SPEC. (22)	BARE FILL METAL SPEC. SIZE (23) HT NO.	COATED FILLER METAL SPEC. SIZE (24) HT/LOT NO.
HEAT/CODE		

NO. OF REPAIRS - COMMENTS (REPAIR WDR NUMBERS) (25)	PWHT CHART NO. (26)	DATE
REMARKS :	QA/QC INSPECTOR (27)	DATE
	QA/QC FINAL ACCEPTANCE (28)	
	VERIFIED BY ANI (29)	DATE
	SIGNATURE	

30  
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7.2

REPAIR WELD DATA REPORT  
(PROCEDURE CQC-19)

REPAIR WOR NO.  
(1)  
FIELD WELD I.D.  
(6)

UNIT (2)	SYSTEM (3)	CAT. (4)	DRAWING / ISOMETRIC (5)
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 (24)	HOLD PT.		ANI ACCEPTED	DATE	QA/QC ACCEPTED	DATE
	QA/QC	ANI				

REMARKS:	ACCEPTED BY	_____	_____
	QA/QC SPECIALIST	(25)	DATE
	VERIFIED BY	_____	_____
	ANI (CODE WELD ONLY)	(26)	DATE

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1. U.		2. BUILDING	3. ELEV.	4. LOCA.	5. COMPONENT/HANGER	6. DRAWINGS, REV. & SHT. #	7. WELD PROC.	9. WELD INSTR.	IS
DISCIPLINE ENG.		DATE		WELDING ENG./FOREMAN		DATE		8. WELD ML. TY.	

- I. NOTIFY DISCIPLINE ENGINEER FOR ADDITIONAL INSTRUCTIONS FOR FULL PENETRATION
- II. 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:
----------	-------

1. WELD TYPE & CONFIGURATION CHECKED WITH DWG(S) & COMPONENT/HANGER CONFIGURATION CHECKED WITH DWG(S) A <input type="checkbox"/> R <input type="checkbox"/>	DATE			
2. WELDER(S) QUALIFICATION A <input type="checkbox"/> R <input type="checkbox"/>	3. MAT'L STATUS A <input type="checkbox"/> R <input type="checkbox"/>	NCR/DDR*	QA/QC INSPECTION	DATE:

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.			
		H	TEMP.	H	A	H	A	H	A	R	H	A	R	H	A					R	UT	VAC BOX

SAMPLE

LEGEND: H = HOLDPOINT  
A = ACCEPT  
R = REJECT  
T = TEMP. GREATER THAN LISTED

QA/QC INSPECTION & NDE HOLDPOINT ASSIGNED	REMARKS:
AND/OR VERIFIED BY	
INITIALS	DATE
QA/QC SPECIALIST / DESIGNEE	
DATE	

\* USE QA-34A TO LIST ADDITIONAL WELDS

CAROLINA POWER & LIGHT COMPANY  
 CORPORATE QUALITY ASSURANCE DEPARTMENT  
 TANK FABRICATION WELD RECORD

WELD NUMBER (6)	MATERIAL THICKNESS (7)	JOINT TYPE (8)	WELD PROCEDURE CODE(S)	REVISIONS					DATE	REVISIONS					DATE	REVISIONS		
				REV.	CODE	PROCEDURE NUMBER	REV.	CODE		PROCEDURE NUMBER	REV.	CODE	PROCEDURE NUMBER	REV.			CODE	PROCEDURE NUMBER
10																		

PLEASE  
 REFER TO  
 THE  
 DRAWING

DATE	INITIALS	INSPECTOR'S	Q A HOLDPOINT	Q A HOLDPOINT	PROCEDURE CODE	REQUIRED	DATE	INITIALS	INSPECTOR'S	Q A HOLDPOINT	Q A HOLDPOINT	PROCEDURE CODE	REQUIRED	ADDRESS

DATE	DATE	DATE	DATE

APPROVED NUCLEAR INSPECTOR  
 WELDING ENGINEER  
 DRAWING & REVISION NUMBERS  
 UNIT NO. TANK IDENTIFICATION No. / NAME  
 ASME CODE CLASS EDITION

**WELD DATA REPORT**  
(PROCESS CONTROL CHECKLIST)  
(PROCEDURE CQC-19)

TURNOVER NO. 01221

REV. 2 5/24/78

SYSTEM <b>SF</b>	CAT. <b>3</b>	ISO. NO./ENG. DWG. NO. <b>2-SF-1/5E-A11 R2</b>	WELD I.D. <b>2-SF-1-10X</b>	DESIGN LINE NO. <b>5</b>	WELD JOINT RECORD I.D. <b>F3-236-2   SF-101   F4-51-1</b>
BASE METAL SPEC. & GRADE <b>SA 312 TP 304 TO SA 312</b>			JOINT TYPE - <b>(C)</b> , BR, F, OB, SKT, OTHER		PIPE SIZE <b>12</b>
PC NO. <b>2-SF-1-E</b> TO PC NO. <b>2-SF-1-G</b>			WELDING PROCEDURE & REV. NO. <b>P-8 E-B-4 (REV. 1)</b>		MATERIAL THICKNESS <b>1.31</b>
HT NO. <b>F80817</b> TO HT NO. <b>F80817</b>			PWHT PROCEDURE & REV. NO. <b>N/A</b>		ITEM CARD NO. <b>N/A</b>
FILL METAL TYPE <b>ER 308L</b>					

WELDING ENG. VERIFICATION DATE: **12/27/78** BY: **Charles Griffin**  
 ANI REVIEW FOR HOLDPOINTS DATE: **12/27/78** BY: **Jack M. Davis**  
 RELEASED FOR WELDING QA DATE: **12/27/78** BY: **Victor Jelic**

**PART VI - 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-115**

**ROOT**  
   **A-115**

**INTERMEDIATE**  
   **A-115**

**FINAL**  
   **A-115**

ITEMS	QA INSPECTOR				ANI				
	H	A	R	DATE	INSP.	H	A	R	DATE
1 VERIFY SPOOLS BEING JOINED	✓	✓		12/27	B.G.				
2 PRE FIT-UP INSPECTION	✓	✓		12/27	B.G.				
3 FIT-UP INSPECTION	✓	✓		12/29	B.G.	✓	✓		12/28
4 CHECK PURGE GAS	✓	✓		12/29	B.G.	✓	✓		12/28
5 CHECK PREHEAT TEMPERATURE	✓	✓		12/29	B.G.				
6 ROOT PASS NDE UT-RT-MT-PT	NA								
7 CHECK INTERPASS TEMPERATURE	NA								
8 INTERMEDIATE NDE UT-RT-MT-PT	NA								
9 VISUALLY INSPECT FINAL WELD	✓	✓		12/29	B.G.				
10 RECORD FERRITE - 2 LOCATIONS	NA								
11 INSPECT FOR JOINT IDENTIFICATION	✓	✓		12/29	B.G.				
12 CHECK FINAL CLEANLINESS	✓	✓		12/29	B.G.				
13 FINAL NDE RT (UT) (PT) (MT)	✓	✓		12/29	B.G.				
14 RELEASED FOR PWHT	NA								
15 PWHT NDE RT-MT-PT-UT-VT	NA								

FOR INFORMATION: **DMV**

BACKING TYPE **(C)** BR  
 METAL SPEC. **SA 5.9**  
 HEAT NO. **E2156T308**

BASE FILL METAL SPEC. **SA 5.9**  
 SIZE **3/32** HT NO. **760427**  
**1/8** **782784**

NO. OF REPAIRS - COMMENTS (INCLUDE WELD NUMBERS): **NONE**

REMARKS: **Checked Amps with Amp tongs**  
**CPL-E04357**  
**Calibration DATE 7/13/78**  
**DUE 11/13/78**

PWHT CHART NO. **N/A**  
 QA INSPECTOR: **[Signature]**  
 ANI ACCEPTANCE: **[Signature]**  
 VERIFIED BY: **[Signature]**

QA-1  
 5/8/81  
 Rev. 8  
**CLOSED**  
 CONSTR. QUALITY ASSURANCE

DEFICIENCY AND DISPOSITION REPORT  
 2SF-149  
 196 13  
 DDR No. 829  
 Page 1 of 1

Item/Activity Name or Description Spent Fuel Piping	Shop Order N/A	Code Class 3	Quantity 1	Unit 2	Quality Assurance Num (Purchase Order & Itc. No.) QA-N/A
Serial, Heat or Other Identification No. (Specify) 2SF149 FW 408	Supplier or Manufacturer N/A		Type of Procurement <input type="checkbox"/> CP&L PO <input type="checkbox"/> Transfer <input type="checkbox"/> A-E PO N/A <input type="checkbox"/> NSSS PO		Reporting Inspector Pete Tingen
Violation (Specification, Drawing, Procedure or Other) ASME QA Manual, Section 6, Para. 6.4.3			NCR No. W-207		

**Deficiency Details:**  
 The ANI Holdpoint was by-passed on the final visual inspection on 2-SF-149 FW408. This is a violation of the above referenced procedure. The field weld has also been accepted by NDE Inspector and the ANI for final NDE (PT).

DDR EVALUATION		
<input checked="" type="checkbox"/>	Construction Phase	
<input type="checkbox"/>	Engineering Phase	
<input checked="" type="checkbox"/>	QA Program Violation	
<input checked="" type="checkbox"/>	Specification Deviatio	
<input type="checkbox"/>	Procedural Deviation	
<input type="checkbox"/>	Unacceptable Workmansh	
<input type="checkbox"/>	Damage	
<input type="checkbox"/>	Other	
<input checked="" type="checkbox"/>	Not Reportable*	
	Site QA Engr.	HPi
	QA/QC	
Evaluated by	GLF	
Date	3/3/82	

Design Line #3SF12-176-SB-2&3  
 Pipe Size - 12.00"

**ASME**  
 SECTION III

\*Determined not to be reportable under 10CFR21 and 10CFR50.55(e).

*[Signature]* 9/21/82  
 QA/QC Specialist  
 3/5/82

Final Disposition: Verified  Hold/Reject tags removed

Remarks:

*[Signature]* 3/24/82  
 QA/QC Inspector Date  
 Accepted By: *[Signature]* 9/21/82  
*[Signature]* 3/8/82  
 QA/QC Specialist Date

**Distribution:**  
 Orig: Director - QA/QC - SHNP  
 cc: Site Mgr./Sr. Res. Engr.  
 Initiating QA/QC Specialist  
 Accounting  
 Mgr. - E&C QA/QC  
 Mgr. - HPES  
 A-E Site QA Representative  
 NSSS Site Representative  
 ANI X E. Willett

**ANI Concurrence (ASME Code Section III Items Only):**  
*[Signature]* ANI 3/24/82  
 Authorized Nuclear Inspector Date  
**Report Closed:**  
*[Signature]* 3/25/82  
 Director QA/QC - SHNP Date



DDR PACKAGE CHECKLIST

DDR No. B29

Corrective Action Report (QA-4) dated 3/24/82

dated \_\_\_\_\_

dated \_\_\_\_\_

Conditional Release Request (QA-5) dated \_\_\_\_\_

dated \_\_\_\_\_

dated \_\_\_\_\_

QA/QC Field Report (QA-3) No. \_\_\_\_\_

No. \_\_\_\_\_

No. \_\_\_\_\_

Quantity      Other Documents (Specify type and report no. or date.)

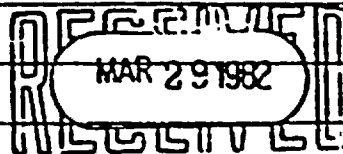
1      Speed Letter

2      Liquid Penetrant Test Report

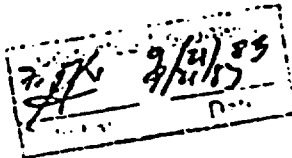
2      NDE Request

1      UT Report

Q A RECORDS



SHNPP CONSTR. Q A UNIT



[Signature]  
QA/QC Specialist

3/25/82  
Date

File: 5-1

0044  
00070

15/81

CAROLINA POWER & LIGHT COMPANY  
CORPORATE QUALITY ASSURANCE DEPARTMENT

CORRECTIVE ACTION REPORT  
(Procedure CQC-2)

DDR No. 829  
Issue Date 3/18/82  
Page 1 of 1

Proposed Disposition:

- Repair
- Rework
- Reject (Return to Vendor)
- Reject (Scrap)
- Permanent Waiver (Accept-as-is)
- Upgrade Code Certification
- Downgrade Item
- Other (describe below)

Details: Since ANI holdpoint is still accessible, ANI to perform final visual & document on WDR. Final NDE (AT) has been performed & documented on attached LP NDE report. QA & ANI approval to be transferred to WDR.

Recommended By:

Approved By:

St. L. Burt 3/9/82  
Discipline Engineer Date

E. E. Williams Sr. 3-9-82  
Site Mgr./Sr. Res. Engr./Mgr. HPES Date

Corrective Action and Final Disposition:

Documented Cause & Preventive Measures required:  Yes

No. W. J. Fairhead 3-8-82  
Signature Date

Details: As stated above; except, during NDE a defect was found, ground, and repair documented on a repair WDR. QA & ANI holdprints were documented on this repair WDR (see attached copy)

Cause: QI. Welding inspector bypassed hold point 2/8/82.

Preventive Measures:

See memo to all welding QC inspectors (attached) dated 2-18-82.

Approved By:

St. L. Burt 3/9/82  
Discipline Engineer Date

E. E. Williams Sr. 3-9-82  
Site Mgr./Sr. Res. Engr./Mgr. HPES Date

2013 DDK 829

WRIGHT COMPANY  
ENGINEERING DEPARTMENT

REPORT

REPAIR WDR NO

FIELD WELD ID

FW 408 \*

WELDING PROCEDURE & REV NO

884 6

HEAT TREAT PROC. & REV NO

N/A

QA/QC REVIEW & DATE

Final Review 3/11/12

COATED FILLER METAL SPEC

SIZE MT/LOT NO

N/A

WELDER'S SYMBOL - FINAL

B-61

253 SF

3

2165-G-411 / 2SF149

SABIZ T304 - 2SF149-3  
SABIZ T304 - 2SF149-9

WELD SIZE 12,000

WELD THICKNESS .375"

WELD TYPE (CL, BR, OB, SAT)

Final Review 39-82 JB Rhodes And 3/11/12

S.F.A. 5.30

1/8  
3/32

METAL SPEC SEBSY

WELD NO D5100

44502

APPROVAL SYMBOL - PREP

NA

APPROVAL SYMBOL - INTERMEDIATE

NA

1. Reweld AREA which is below flush with base metal AND blend with SURROUNDING base metal AND weld
2. Perform FINAL V.T. & P.T. of AREA

ACCEPTED

DATE

QA/QC ACCEPTED

DATE

1. FINAL V.T.
2. FINAL P.T.

✓

3/11/12  
3/11/12

3/11/12  
3/11/12

P. Tonger  
P. Tonger

3/11/12  
3/11/12

\* Final PT. exam of weld on original WDR accepted however one AREA was below base metal line where GAP WAS ground off. This is to document the repair of this AREA.

Final Review

3/11/12  
DATE

JB Rhodes And

3/11/12  
DATE

**CP&L**

PAGE 3 OF 3

**Carolina Power & Light Company**

P.O. Box 101, New Hill, N.C. 27562

Correspondence

February 18, 1982

TO: All Welding QC Inspectors

FM: T.J. Wait

SUBJECT: ANI Holdpoints

When an ANI Holdpoint is reached on a WDR, the inspector shall notify the  
by speed memo if he is not readily available. Work shall not proceed  
until the speed memo has been returned from the ANI.



T.J. Wait  
Welding QA/QC Specialist

J:dh

: Tim Rhodes  
G.L. Forehand

Signed

REPLY

Signed

Date

*[Handwritten signature]*

MESSAGE  
A repair order has been generated to repair the indication mentioned in your memo dated 2-19-82. This low area shall be reworked and retested

Date 3-10-82

25F 149 FW408

Speed Letter.

*John Freeman*  
C.A. Welding

From *Charlie Griffin*  
Engineer Met/Welding

# CP&L

Carolina Power & Light Company

## LIQUID PENETRANT NDE REPORT

PAGE 1 OF 1

OBJECT CHAPP JOB NO. N/A UNIT  1  2  3  4 DATE 2/12/82

WIRING 11.5-6 411 SYSTEM SF LINE 55F12-176.5023 WELD/ITEM NUMBER 2 SF-149 FW-408

SIGN CLASS/CATEGORY 3 ACCEPTANCE STANDARD AT 0  
 ASME III  VIII  BS 1.1  AWS D1.1  OTHER \_\_\_\_\_

PL. TYPE S MTL. THICKNESS .375" O.D./LENGTH 12.0" SURFACE FINISH:  AS-WELDED  GROUND  OTHER  
 NDE PROCEDURE NO. 101 REV 1

PAGE OF MFG.  INFO  REPAIR  JOINT DESIGN  N/A  BRN  BKS  
 ROOT  INTERMEDIATE  FINAL  RINS  OPN. BT  SOCKET  OTHER \_\_\_\_\_

ENETRANT K2-HF/SK2-5 DWELL TIME 10 MINS

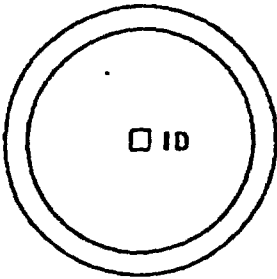
LENER K2-5

EVELOPER SK2-5 DEVELOPMENT TIME 10 MINS

KETCH & REMARKS

ANI-HOLD

OD



WELD/ITEM NUMBER	REMARKS	ACC.	REJ.	INFO ONLY
<u>FW-408</u>	<u>100% FT INSPECTED AS REC. REQUEST</u>	<u>X</u>		

INSPECTOR [Signature] CERTIFICATION LEVEL II DATE 2/12/82  
 (TO BE COMPLETED AS INDICATED)

IF APPLICABLE CONTRACTOR REVIEWER \_\_\_\_\_ TITLE \_\_\_\_\_  
 REVIEW DATE \_\_\_\_\_ COMMENTS \_\_\_\_\_

IF APPLICABLE CP&L QA REVIEW \_\_\_\_\_ DATE \_\_\_\_\_ IF APPLICABLE ANI/AL \_\_\_\_\_ DATE \_\_\_\_\_

# CP&L

Carolina Power & Light Company  
LIQUID PENETRANT NOE REPORT

PT

PAGE 1 OF 1

PROJECT: SHNPP JOB NO. NA UNIT 1  2  3  4  DATE: 3/18/82

DRAWING: 3SF149/2165-G-411 SYSTEM: S.F LINE: 3SF12-176-SA213 WELD/ITEM NUMBER: FW-408

DESIGN CLASS/CATEGORY: 3 ACCEPTANCE STANDARD: ASME III  VIII  B  AWS D1.1  OTHER: \_\_\_\_\_

MTL. TYPE: SA 312 MTL. THICKNESS: 1.375" O.D./LENGTH: 12" SURFACE FINISH:  GAS-WELDED  GROUND  OTHER

STAGE OF MFG.  ROOT  INTERMEDIATE  REPAIR  FINAL JOINT DESIGN:  INS  OPN. BT  N/A  BRN  SCK  OTHER

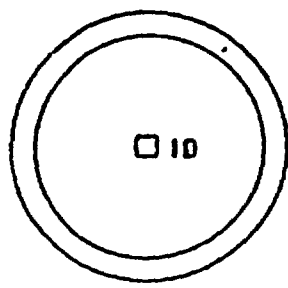
NOE PROCEDURE NO. 301 REV 2

PENETRANT: SKL-HF/SKL-S DWELL TIME: 15 min

CLEANER: SXC-S

DEVELOPER: SKD-S DEVELOPMENT TIME: 10 min

SKETCH & REMARKS



TEMP: BEGIN 91°F  
 FINISH 61.5°F  
YSE-CPL-4749B  
5/25/82  
 FINISH TEST AT 2:10 PM.

Dried concrete had to be well brushed from weld, stainless steel brush was used.

WELD/ITEM NUMBER	REMARKS	ACC.	REJ.	INFO ONLY
<u>FW-408</u>	<u>100% Pt as instructed</u> <u>(weld # could not be found on pipe)</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DATE: 3/18/82  
 UNIT: 363182

INSPECTOR: B. Brown / D. Smith CERTIFICATION LEVEL: II/II DATE: 3/18/82

(TO BE COMPLETED AS INDICATED)

IF APPLICABLE CONTRACTOR REVIEWER: \_\_\_\_\_ TITLE: \_\_\_\_\_

REVIEW DATE: \_\_\_\_\_ COMMENTS: \_\_\_\_\_

IF APPLICABLE CP&L QA REVIEW: James F. King DATE: 3/19/82 IF APPLICABLE ANAL. DATE: \_\_\_\_\_

**CAROLINA POWER & LIGHT COMPANY  
CORPORATE QUALITY ASSURANCE DEPARTMENT**

**NONDESTRUCTIVE EXAMINATION REQUEST  
(Procedure CQC-19)**

PP Job No. NA Unit  2  3  4 Date 3/11/82

System SF Line 35912-176-SB2+3 Weld/Item Number FW408

Category 3 Acceptance Standard:  ASME III, Div. 1  ASME III, Div. 2  
 ASME VIII, Div. 1  ASME VIII, Div. 2  B31.1  Other \_\_\_\_\_  
 AWS D1.1, Sec. 8  AWS D1.1, Sec. 9 Edition/Year \_\_\_\_\_

Mtl. Thickness .375" O.D./Length 12.00" Surface Finish: As-Welded NDE Procedure No. 201 Rev. 2

Procedure and Rev. 4 R5 Joint Design  N/A  BRN  BKS  INS  OPN BT  Socket  Other \_\_\_\_\_

Location 261 Electric Fuel Handling

by \_\_\_\_\_  
 Article  Root  Cavity  Intermediate  Prior to PWHT  Final  After PWHT  
 penetrant  Other \_\_\_\_\_  
 ent  Repair # 1  
 Area 20

PAVE Hold 3/18/82  
 signed George Dewdney

Requested by: Pete Tingen 3/11/82  
 Date  
Pete Tingen 3/11/82  
 QA/QC Specialist Date  
Billy B. Brown 3/15/82  
 NDE Inspector Date

Reject



QA-37  
2/81  
Rev. 0

CAROLINA POWER & LIGHT COMPANY  
CORPORATE QUALITY ASSURANCE DEPARTMENT

NONDESTRUCTIVE EXAMINATION REQUEST  
(Procedure CQC-19)

Project <u>SH/NPP</u>		Job No.	Unit <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4	Date <u>3-5-82</u>
Drawing <u>2165-G-411</u>	System <u>SF</u>	Line <u>3-SF-12-176523</u>	Weld/Item Number <u>25-149-FW408</u>	
Design Class/Category <u>3</u>	Acceptance Standard: <input checked="" type="checkbox"/> ASME III, Div. 1 <input type="checkbox"/> ASME III, Div. 2 <input type="checkbox"/> ASME VIII, Div. 1 <input type="checkbox"/> ASME VIII, Div. 2 <input type="checkbox"/> B31.1 <input type="checkbox"/> Other _____ <input type="checkbox"/> AWS D1.1, Sec. 8 <input type="checkbox"/> AWS D1.1, Sec. 9 Edition/Year _____			
Mtl. Type <u>P-8</u>	Mtl. Thickness <u>.375</u>	O.D./Length <u>12"</u>	Surface Finish: <u>Ground</u> As-Welded Other _____	NDE Procedure No. <u>473</u> Rev. 0
Welding Procedure and Rev. <u>834</u>		Joint Design <input type="checkbox"/> N/A <input type="checkbox"/> BRN <input type="checkbox"/> BKS <input checked="" type="checkbox"/> INS <input type="checkbox"/> OPN BT <input type="checkbox"/> Socket <input type="checkbox"/> Other _____		
Welders Symbol <u>N/A</u>	Location <u>Fuel Handling</u> <u>256' 261'</u> <u>George Devinney</u>			

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> Radiography                           | <input type="checkbox"/> Root                    | <input type="checkbox"/> Cavity        |
| <input type="checkbox"/> Magnetic Particle                                | <input type="checkbox"/> Intermediate            | <input type="checkbox"/> Prior to PWHT |
| <input checked="" type="checkbox"/> Ultrasonic ( <u>Thickness Check</u> ) | <input type="checkbox"/> Final                   | <input type="checkbox"/> After PWHT    |
| <input type="checkbox"/> Liquid Penetrant                                 | <input type="checkbox"/> Other <u>Info. only</u> |  |
| <input type="checkbox"/> Eddy Current                                     | <input type="checkbox"/> Repair # _____          |  |
| <input type="checkbox"/> Leak Test  | <input type="checkbox"/> Area _____              |  |
| <input type="checkbox"/> Other _____                                      |  |  |

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Requested by: [Signature] 3-5-82  
Date

[Signature] 3-5-82  
QA/QC Specialist Date

[Signature] 3/5/82  
NDE Inspector Date

Accept  Reject

•375"

IF APPLICABLE REVIEW DATE	DATE	IF APPLICABLE AMT./M.	DATE
IF APPLICABLE CONTRACT REVIEWER	TITLE	NO OF COMPLETED INSPECTIONS	

INSPECTOR CERTIFICATION LEVEL	INSPECTOR CERTIFICATION LEVEL	COMPANY	COMPANY
<i>Inspector - Van - [Signature]</i>		<i>I</i>	<i>CP/L</i>

SHEET/REMARKS	
<p><i>Welds</i></p> <p><i>* Lowest spot. 3.75"</i></p>	

INSPECTION SETTINGS	SCREEN DISTANCE (METAL DIST)	SMALLEST SCREEN DIA (METAL DIST)	REFLECT OR MAGNIFY
<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
EQUIPMENT TYPE	MANUFACTURE MAKE/MODEL/SERIAL NO.	DATE LAST CAL.	DATE CAL. DUE
<i>DIGITAL</i>	<i>KRAUT KRAWMER 4m1</i>	<i>3/5/82</i>	<i>N/A</i>
TRANSducer	TYPE	FREQUENCY	SCANNING TECHNIQUE
<i>DM</i>	<i>1697AS</i>	<i>0.5 MHz</i>	<i>SYNTH</i>
CALIBRATION/RECALIBRATION STD.	TEST ITEM	COURTAGE	
<i>1000000</i>	<i>0.100 INCH</i>	<i>0.100 INCH</i>	<i>0.100 INCH</i>

MTL THICKNESS	O.D. / ANGLE	SURFACE FINISH	NOE PROCEDURE
<i>0.375"</i>	<i>1.2"</i>	<i>ROUND</i>	<i>NO. 42</i>
DESIGN CLASS. CATEGORY	ACCEPTANCE STANDARD	CAMERAS	OTHER
<i>3</i>	<i>ASME B31.1</i>	<i>OTHER</i>	<i>OTHER</i>
PROJECT	JOB NO.	WELDING NUMBER	DATE
<i>SHNP</i>	<i>N/A</i>	<i>176823</i>	<i>3/18/82</i>

ULTRASONIC THICKNESS NOE REPORT

Carolina Power & Light Company

**CP&L**

FACE Lot 1

UT