

Vogle

Issue 1

SNC failed to ensure that CB&I had established adequate procedures to implement the receipt inspection and storage requirements of Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," of ASME NQA-1-1994. CB&I had not established procedures that adequately prescribed the applicable receipt inspection and storage requirements of ASME NQA-1-1994. Consequently, the VEGP Unit 3 CV bottom head plate material, CB&I had not performed the required receipt inspections prior to the material's release for fabrication, and failed to store the plate in a manner that would prevent its damage or deterioration.

Issue 2

SNC failed to ensure that CB&I had established measures to assure that all conditions adverse to quality were promptly identified and corrected. Specifically, CB&I procedure, CMS-720-03-PR-11051, "Handling of Corrective Action," Revision 0, failed to meet 10 CFR Part 50, Appendix B requirements since it only prescribed a system to document and correct significant conditions adverse to quality.

Issue 3

SNC ND ND-ARL-017, "10 CFR Part 21 and 10 CFR 50.55(e) provides instructions for ND personnel to ensure that potential defects and failures to comply pursuant to 10 CFR Part 21. ND-ARL-017 does not include the correct definition of "defect" and "discovery," nor does it differentiate the applicability of the definitions of "dedication", it does not include the records retention requirements of 10 CFR 50.55(e) and is inconsistent with the requirements of 10 CFR 50.55(e)(3)(iii)(c) with regards to a significant breakdown of the quality assurance program, and it uses the terms "deviation" and "defect" interchangeably throughout the procedure.

Watts Bar

Issue 1

TVA and Bechtel failed to implement existing procedural guidance for the protection of safety-related components. Specifically, measures were not being implemented to protect the reactor vessel from physical damage during ongoing scaffolding work above and around the vicinity of the vessel.

Issue 2

Established measures were not sufficient to assure that purchased equipment conformed to the procurement requirements. Specifically, engineering specifications for commercial grade

dedications of purchased equipment did not sufficiently identify the specific criteria that were necessary for verifying the equipment conformed to the critical characteristics for nuclear service.

Issue 3

QC rejected the installed configuration for a pipe support due to a 4-inch spacing between a 3/4-inch wedge bolt and a 1/4-inch SSD/SDI anchor, when 5 1/2-inch spacing was required per specifications. The corrective action plan specified was misleading and included rework of pipe support to obtain the proper gap; however, the anchor bolt spacing was never addressed or corrected.

Issue 4

The applicant discovered the improper hinge pin material for a check valve and later installed an appropriate hinge pin but failed to enter the issue into their corrective action program. This failure contributed to the applicant improperly approving submittal drawing for the valve which identified the correct hinge pin material. During subsequent reviews, the applicant identified the improper hinge pin material for this valve and contacted the manufacturer to modify the hinge pin material. The inspectors learned that the applicant did not enter either hinge pin deficiency into their corrective action program and were not planning to do so at the time. The inspectors questioned if the design specifications properly specified the material requirements for their swing check valves. As a result of the inspectors' questions, the applicant determined that at least three design specifications failed to provide all material requirements for swing check valves.

Issue 5

The inspectors examined specifications for B train shutdown boards and transformers. The inspectors determined that molded case circuit breakers, specification – 14kA at 480VAC, which are used in Motor Control Centers, have a potential short circuit current in excess of their interrupting rating. Calculations provided stated that the circuit breakers have an effective interrupting rating of 22kA if used with a motor starter assembly. The inspectors asked for a technical basis for the 22kA interrupting rating. They were given a 1990 letter from an equipment vendor referencing a phone conversation. The letter stated that some circuit breaker type combination starters had been tested at 480V for 22kA short circuit interruption in August 1979, however, the attached data sheet did not refer to ITE model EF3 breakers.

Browns Ferry

Issue 1

Instructions, procedures, or drawings were inadequate or were not implemented for weld repairs to ECN P-0093 torus modifications as described below:

1. TVA procedure NEDP-5, Design Documents Review, Section 3.1.1 requires the preparer of design documents to provide an adequate and accurate solution for the problem, provide a quality product, and ensure that the design documents are complete. Section 3.1.2 requires the Checker (design verifier) to ensure that the design documents are adequate, complete and accurate. Deficiency Fix Request Sketches for the Long Term Torus Integrity Program were inadequate, in that approximately 50 examples of deficiencies requiring repairs were not identified on the sketches. In this regard, the preparer and design verifier failed to ensure that discrepancies identified during the torus walkdowns were adequately and accurately evaluated, failed to ensure that the discrepancies requiring repair were included in engineering output documents (Deficiency Fix Request Sketches), and failed to ensure the sketches were accurate and that required repairs were shown at the correct locations.

2. The drawings titled Deficiency Fix Requests, Sketches 4 through 38, detailing corrective actions for Problem Evaluation Report (PER) 03-017339, Unit 1 Torus, Differences Between As-Built and As-Designed Configurations, show locations for repairs to welds. Welds designated as weld numbers MS-1-WO 03017394016-008 in work order 03-017394-016, weld numbers PCI-1-WO 03017394002-029 and -30 in work order 03-017394-002, and weld numbers MS-1-WO 03017394006-047, -048, PCI-1-002-004, -005, and -006 in work order 03-017394-006, were repaired (welded) at the incorrect location. However, review of the work order documentation, specifically weld maps and data sheets, indicated the welds had been repaired. The deficient welds at these locations shown on Deficiency Fix Requests, Sketches 31 and 36 were not repaired. Approximately 20 additional welds were identified by the licensee which were repaired in the incorrect location.

3. TVA Procedure VT-6, Visual Examination of Structural Welds Using the Criteria of NCIG-01, requires quality control inspectors to perform an independent inspection of completed work activities important to safety. A requirement of the inspection procedure is independent verification that the work was performed at the correct location. Quality Control (QC) inspection personnel failed to independently verify that welds designated as weld numbers MS-1-WO 03017394016-008 in work order 03-017394-016, weld numbers PCI-1-WO 03017394002-029 and -30 in work order 03-017394-002, and weld numbers MS-1-WO 03017394006-047, -048, PCI-1-002-004, -005, and -006 in work order 03-017394-006 were repaired at the correct location. However, review of the QC inspection documentation in the work orders indicated the welds had been repaired, inspected, and accepted by quality control inspectors. The deficient welds at these locations shown on Deficiency Fix Requests, Sketches 31 and 36 were not repaired.

4. TVA Procedure MMDP-1, Maintenance Management System, Paragraph 3.2, requires work orders to be developed to a level of detail appropriate for the circumstances which address the aspects of the work, including the scope of the work and work instructions. MMDP-1 requires that the work order specify that work is to be performed in accordance with approved procedures, when approved procedures are available. Paragraph 3.8.1 of TVA procedure MMDP-1 requires independent/technical review of the work order to insure the work order contains detailed work steps to perform the required work prior to approval and implementation

of the work order. TVA procedure MMDP-10, Controlling Welding, Brazing, and Soldering Processes, Section 3.3, requires work implementing documents and weld data sheets be prepared and included in the work order for all welding activities. Work implementing documents and weld data sheets for six welds, which required restoration to the sizes shown on Deficiency Fix Request, Sketch Number 30, referenced in PER 03-017394, were omitted from Work Order 030017394-006. The independent/technical review of the work order did not identify the omission when performing the independent technical quality review. As followup, the licensee identified approximately 30 additional welds which were shown on the drawings as requiring repair but were not included in the work order instructions.

MOX

Issue 1

MOX Services failed to ensure that procurement of Quality Level 1 material, equipment and services was controlled to assure conformance with specified technical and QA requirements. Specifically, source inspections, surveillances or evaluations of received items failed to ensure that requirements specified in procurement documents were met as evidenced by the following five examples:

1. MOX Services failed to identify that the gap spacing between the annular tank and colemanite shield panels for KPA TK9500 exceeded the item relied on for safety (IROFS) criticality dimension identified on DCS01-KPA-CG-PLG-L-06705;
2. MOX Services failed to ensure that the supplier/subcontractor performed design verification for Quality Level 1 systems, structures, and components (SSCs) as required by Basic Requirement 3 of American Society of Mechanical Engineers (ASME) NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications (NQA-1).
3. MOX Services failed to identify that dimensions for nozzles P17, P7, and P1 for KCD TK1000 did not meet the required tolerances listed on design drawing 006314-M-1121-3;
4. MOX Services failed to identify that the internal diameter for a colemanite shield panel for KPA TK9500 did not meet the required tolerance listed on design drawing 006314-M-930-2, Rev. 4;
5. MOX Services failed to adequately perform commercial grade dedication of Barsplice connectors including verification of critical characteristics.

Issue 2

MOX Services failed to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants, resulting in the following:

1. MOX Services Project Procedure (PP) 11-36, Rigging & Lifting – Equipment Inspections, failed to meet Subpart 2.15, Section 2.2, Classification of Items Handled, which requires classification of MOX items requiring lifting into one of three categories (Categories A, B, and C) according to their important physical characteristics. Specifically, the definitions for ordinary and critical lifts as defined in PP 11-36 were not consistent with the definitions and requirements for Category A, B, and C items as defined in Subpart 2.15. PP 11-36 placed an additional weight requirement of 25 tons in addition to the susceptibility for damage criteria contained in Section 2.2.2 of Subpart 2.15 before an item could be classified as Category B. PP 11-36 also failed to define or provide criteria for Category A items and did not provide examples of MOX items that would be classified as either Category A or Category B.

a. As a result of an inadequate procedure (see Item 1 above), MOX Services improperly categorized the lifting and installation of colemanite shield panels for KCB TK1500 and KCB TK3000 as Category C instead of Category B. Specifically, the weight of the shield panels did not meet the minimum weight threshold of 25 tons for classification as Category B (critical lift) as defined in PP 11-36.

b. As a result of improper classification (see Item a above), MOX Services failed to provide written work instructions to cover sequenced tasks associated with the rigging, handling, and lifting of colemanite shield panels for KCB TK1500 and KCB TK3000 as required by Section 2.2.2, Category B.

c. As a result of improper classification (see Item a above), MOX Services failed to follow the manufacturer's instructions and conditions of operation for the rigging and handling of the colemanite shield panel for KCB TK1500. Specifically, MOX Services failed to (1) use a spreader beam and (2) ensure the rigging configuration resulted in a vertical lift of the colemanite panel. Section 7.1.2 (c) of Subpart 2.15, Procedures, states, in part, for Category B lifts, Manufacturer's instructions and conditions of operation shall be followed for the handling equipment and items to be handled.

d. As a result of improper classification (see Item a above), MOX Services failed to obtain and document a variation from the manufacturer's procedure and instructions for rigging and installation of the colemanite shield panel for KCB TK1500 and KCB TK3000. Section 7.1.3, Variations, requires that variations from the procedures be approved and documented.

Issue 3.

MOX Services failed to ensure that design changes were governed by control measures commensurate with those applied to the original design. Specifically, MOX Services authorized a "use as is" disposition to increase the allowable fissile thickness for KCD-TK1000 (annular tank) without changing the specifying input documents or posting the nonconformance report against the specifying input documents to reflect the "as-built" condition of the tank as required by Sections 3.1 and 15.2.4 of the MPQAP.

Issue 4.

A nonconforming embed plate was not segregated by placing it in a designated holding area until properly dispositioned and other precautions were not employed to preclude inadvertent use. Specifically, following identification of a nonconforming condition on August 26, 2010, the embed plate was not properly segregated and on October 20, 2010, it was found installed on a wall form prior to the issue being properly dispositioned.

Issue 5.

MOX Services failed to ensure that applicable AWS code requirements were correctly translated into design documents. Specifically, the AWS D1.6-1999, Structural Welding Code for Stainless Steel, Section 7.3, requires a minimum yield strength of 35 thousand pounds per square inch (ksi) for stainless steel studs. Contrary to the AWS D1.6-1999 code, MOX Services' Design Specification DCS01-XGA-DS-TRD-B-09053-C, December 6, 2007, Technical Requirements Document for the Design of Concrete Embedments, specified a yield strength of 30 ksi to be used as the design basis for embed plates containing Nelson H4L stainless steel studs. In addition, Table 2-1 of DCS01-XGA-DS-TRD-B-09053-C also required the stainless steel Nelson H4L anchors to receive post-annealing, further reducing the yield strength to nearly 25 ksi. The post-annealed yield strength is lower than that specified in the specification and was used in design calculations.

Issue 6.

MOX Services failed to change Purchase Order/Subcontract Number 10888-S1381 on February 19, 2007, after agreeing with the supplier's/contractor's request to deviate from material requirements. Specifically, on November 16, 2006, Specialty Maintenance and Construction, Inc. (SMCI) submitted SRFI 1381-0025 Rev. 0, to MOX Services requesting a material deviation from Purchase Order/Subcontract Number 10888-S1381. SMCI requested to use 316L Nelson Studs (H4L) as supplied by Nelson instead of post annealing the studs as required by Specification DCS01-BAA-DS-SPE-B-09352-0, Section 2.2.5.E, which was referenced in the procurement contract. On February 19, 2007, MOX Services concurred with SMCI's request to deviate from material requirements through SRFI 1381-0025., Rev. 1. Although MOX Services concurred with the material deviation, MOX Services failed to change the procurement contract as required by PP 10-15, Rev. 1.

Issue 7.

MOX Services failed to verify that the stud welding of carbon steel studs to stainless steel embed plates performed by SMCI was in accordance with the applicable AWS code requirements as specified by Subcontract 10888-S13181. Specifically, AWS D1.1-1998, Structural Welding Code for Steel, Section 7.6.1(3), requires welding procedure qualification for carbon steel studs welded to other than Group I or II steels listed in Table 3.1. Contrary to this,

SMCI welded carbon steel studs to stainless steel embed plates, where the stainless steel is not a Group I or II material listed in Table 3.1, without a qualified stud welding procedure.

Issue 8.

MOX Services failed to adequately perform final inspection as required to verify the quality and conformance of the item to specified requirements as evidenced by the following examples:

1. MOX Services failed to perform the necessary inspections to ensure that the formwork for concrete pour BMP F-214/216.2 was free of trash, debris, or other construction material prior to the placement of concrete as required by American Concrete Institute (ACI) 349-97, Section 5.7; ACI-301-99, Section 2.2.3.3; and Section J, Concrete Placement, of MOX Services Specification, DCS01-BKA-DS-SPE-B-09330-5.
2. MOX Services failed to perform the necessary inspections to ensure that slab tank KPA-8500 was installed in accordance with design drawing 006315-M-1800-4 and the requirements of Section 3.2.B.4 of DCS01-BKA-DS-SPE-B09329, Structural Anchors in Concrete Spacing Requirements for Attaching to Embedded Plates for Quality Levels 1, 2, 3, and 4. Specifically MOX Services failed to meet the minimum edge distance requirement of 1.5 inches between the edge of the embedded plate and tank connector plate.

Issue 9.

MOX Services failed to perform quality-affecting activities prescribed by and performed in accordance with documented, approved QA Procedures as required by the MPQAP, Section 5. Specifically, MOX Services failed to implement the time out process as defined in MOX Services PP 3-10 during a rainstorm that occurred during placement of concrete for BMP W217.8. Failure to implement the time out process resulted in a failure to meet Section 3.9.8 of PP11-12, Placement of Concrete, Embedded Items, and Accessories, by allowing rainwater to increase the mixing water of the concrete.

Issue 10.

The applicant failed to translate applicable ASME/NQA-1-1994 requirements into construction specification DCS01-WRT-DS-SPE-B-09307, Section 02316-Excavation, Backfilling, and Compaction for Utilities, Quality Level 1a (IROFS), Rev. 2. Specifically, Engineering Change Request (ECR) 005683, Rev. 0 introduced and approved the option to eliminate the field density test requirement per ASTM D1556, which was required by NQA-1-1994, Subpart 2.5, Section 5, from construction specification DCS01-WRT-DS-SPE-B-09307, Rev. 2.

Issue 11.

MOX Services failed to ensure that measures were established to assure that welding performed by its supplier was controlled and accomplished by qualified procedures. MOX

Services failed to conform with specified technical and quality assurance (QA) requirements, as evidenced by the following examples:

1. The applicant failed to ensure that special processes such as welding used by its vendor performing quality-affecting activities were controlled and accomplished by qualified procedures in accordance with the applicable codes, standards, and specifications. Specifically, MOX Services' vendor performed tack welding on the base-plate of glovebox NBX1000 without using a procedure qualified to the requirements of American Welding Society D1.6: Structural Welding Code- Stainless Steel.

2. The applicant failed to ensure that its vendor provided traceability of metals during all phases of fabrication of glovebox NBY1000 as noted in the following examples:

a) The weld map (which contains heat numbers and welder identification numbers) of Glovebox NBY1000 was found to be incorrectly filled out, in that a weld was completed and not signed off on the weld map, instead another weld number was signed off on the weld map but the weld had not yet been completed.

b) The base plates of Gloveboxes NBX1000 and NBY1000 were symmetrical and without a marking on the base plate to identify a reference location, thus, an individual cannot correlate specific welds on the base plate accurately to those specified on the corresponding weld map.

3. The applicant failed to assure that its vendor used documented inspection planning during work activities on Quality Level 1 (QL-1) components, in that, work process documents did not contain sequential descriptions of the work to be performed, including the controls for altering the sequence of required inspections.

Issue 12

The applicant failed to perform or verify that the required inspection and/or testing were accomplished to assure conformance with critical characteristics. In addition, the applicant failed to perform evaluations of received items and services, as necessary upon delivery or completion, to ensure that requirements specified in procurement documents were met. The applicant also failed to determine that inspection and/or testing was accomplished as required, to assure conformance with critical characteristics and that documentation, as applicable to the item, was received and acceptable as evidenced by the following example:

1. MOX Services failed to specify and perform the necessary inspection and/or testing to verify that the S30403 (304L) material used to fabricate the KCB 3000/4000/7000, gloveboxes met the requirements of ASTM A240/240M, Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications. Specifically, MOX Services failed to adequately verify that the carbon content of the 304L material does not exceed 0.03% as specified in Table 1, Chemical Composition Requirements, of ASTM A240/240M. MOX Services specified the glovebox material (type/alloy/grade/class) as a critical characteristic for

acceptance in Attachment B of DCS01-ZMJ-DS-CGD-M-65858-2, Commercial Grade Item Evaluation (CGIE) for Ferrous Steel Material for Gloveboxes and Subassemblies. MOX Services has implemented a positive material identification (PMI) program to measure the metallic content of materials (e.g., chromium, nickel, and manganese); however, PMI is not capable of measuring non-metallic compounds within materials such as carbon, sulfur and silicon. Due to this limitation, the use of PMI is not considered adequate to differentiate between S30400 (304) and S30403 (304L) stainless steel materials. Low carbon stainless steel (304L) is considered important to prevent the sensitization (corrosion) of the material that may arise as a result of welding during fabrication.

Issue 13

The applicant failed to provide adequate design review for design changes as noted in the following examples:

1. Non-destructive testing (NDT) data from work performed by Concrete Engineering Specialists, LLC (CES) was used as design input in Engineering Change Request (ECR) 5971, Rev. 1. The purpose of ECR 5971 was to justify the as-built condition of members M10A and N10. CES did not have quality assurance (QA) approved procedures for this activity, such that the data could be directly used as input for a quality level (QL)-1 quality-affecting design calculation. This resulted in a re-evaluation to determine if the structural members were adequate to support the loading based on data obtained by MOX Services personnel and QA program controls.
2. The design change approved by ECR 1833 for change in reinforcement installation of several columns and piers did not include a documented justification or an analysis to justify the design change. This resulted in the lack of assurance that the approved design change was adequate.

Issue 14

Quality affecting activities were not prescribed and/or performed in accordance with documented, approved QA procedures and/or other approved implementing documents appropriate to the MOX Project work scope as noted in the following examples:

1. The applicant used non-applicable implementing guidance provided in ECR 00-3281 to improperly exclude non conformances in BAP W-110, which exceeded maximum clear cover requirements. During March 2010, non-conformances with maximum clear cover in BAP W-110 were not documented in the corrective action program because the MOX field engineers and quality control (QC) personnel believed that the evaluation contained in ECR 00-3281 bounded the non conforming condition. However, ECR 00-3281 only bounded conditions below elevation 0'-0" and the non conformances with BAP W-110 were above elevations 0'-0".
2. The applicant failed to implement the requirements of design specification DCS01-BKA-DS-SSPE-B-09330-4, Section 3.3.C.8. During January 2010, the certificate holder bent and re-bent

numerous embedded hook bars in the Aqueous Polishing Building (BAP) precast slabs BAP F-123, F-141 and F-150 with temperatures constantly below 60 degrees and did not perform visual inspections following the bending process.

3. The applicant failed to provide adequate guidance to ensure that ACI-117, Section 4.1, Deviation from Plumb, was being met. During the week of March 22, 2010, it was noted that MOX Process Building (BMP) wall BMP W-214 was out of plumb by approximately 1.75 inches. Guidance was not provided in the work package to verify vertical alignment during and following the placement.

4. The applicant failed to implement procedures for the storage and control of QL-1 backfill material for PSSC-053, Waste Transfer Line. Documentation did not provide adequate guidance and procedures for the storage, control, and protection of QL-1 backfill material. Specifically, the applicant failed to adequately identify and segregate nonconforming soils in that nonconforming soils received from the on-site borrow pit, and stored in the two designated stockpiling areas were not adequately segregated, nor were adequate precautions established to preclude inadvertent use. As a result, QL-1 backfill material was neither controlled nor stored consistent with the MPQAP and project procedures.

Issue 15

The applicant failed to adequately identify test requirements and evaluate test results for QL-1 backfilling activities pertaining to PSSC-053, Waste Transfer Line. Prior to March 8, 2010, documentation required to verify conformance of QL-1 fill material did not adequately identify all items to be tested as required by ASME NQA-1-1994 Part II, Subpart 2.5, Section 5. Additionally, test results were not adequately evaluated by responsible personnel to ensure conformance with established acceptance criteria. The inadequate review of test documentation resulted in the inadvertent use of non-conforming material in a QL-1 application.

Issue 16

The applicant failed to ensure that the design considerations of PP 9-3 Attachment C, line item 5) loading conditions such as seismic, and line item 10) structural requirements, were considered for the relocation of penetrations B-126-W-M00 and B-126-W05-M00 in manufacturing building (BMP) wall BMP W-123, when the design change for drawing DCS01-BMF-DS-PLF-B-01396, Revision 3 was implemented on December 18, 2007. Specifically, the design change did not consider the seismic or loading impact of placing the two penetrations directly above a wall pier.

Issue 17

MOX Services design control procedures did not require that the method of design verification, or the results, be adequately documented when design verifications were performed. Specifically, MOX Services PP 9-3, Design Control, Revision 16 and PP 9-21, Engineering

Change Procedure, Revision 6, did not require documentation of the required design verifications performed for design changes to calculations, drawings, and engineering change requests.

Issue 18

The applicant failed to provide a technical justification for the problem solution for engineering change request (ECR) 2730. Specifically, the preparer failed to provide a technical justification for the original ECR 2730 issued on June 22, 2009, Revision 1 issued on August 5, 2009 or Revision 2 issued on August 20, 2009, for a design change that added 9-inch by 40-inch floor penetrations in BMP floor placement BMP F-204. In addition, the explanation for the revision was not documented on a Revision Description Sheet. Specifically, the revision for drawing DCS01-BMF-DS-PLF-B-01367, Sheet 1 Revision 2, dated May 18, 2009, did not have a Revision Description Sheet necessary to provide a justification for the problem solution or provide information so that a qualified individual could validate the adequacy of the change that added 40 inch floor penetrations to BMP floor placement BMP F-204.

Issue 19

Implementing documents did not include a sequential description of the work to be performed in accordance with work package 09-1088-C-1935-BMP-W-116/118B-C. Specifically, in mid August 2009, a Lenton coupler and associated number 11 rebar were disconnected from BMP W-116/118 column N-10. The original Lenton coupler installation was a quality control hold point in the work package. The applicant had not revised the original work package to show that the Lenton coupler was removed and that the quality assurance hold point inspection was no longer valid.

Issue 20

MOX Services failed to ensure that services were controlled to assure conformance with specified technical and QA requirements, as evidenced by the following examples where the individual suppliers failed to meet a basic requirement of NQA-1.

BF Shaw Activities:

1. Inadequate disposition of "Use-As-Is" for nonconformance Reports V2382 and V2389. These reports were submitted to MOX Services for their review and approval. In both cases, MOX Services approved the nonconformance with the disposition of "Use-As-Is" without the required technical justification provided. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 15, Nonconforming Materials, Parts or Components.
2. BF Shaw procedure BFS-8754-VT-1, Visual Inspection Procedure, Revision 0, did not meet the requirements of ASME Boiler and Pressure Vessel Code (BPVC), Section V, Article 9, Visual Examination. This procedure was to be used for inspections during the fabrication of

Quality Level (QL)-1 piping and was reviewed and accepted by MOX NOV 2 Services. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 9, Control of Processes.

3. One BF Shaw Level II examiner did not meet the minimum passing score for a certified Level II examiner in visual examination and in magnetic particle examination. This represented a noncompliance with Supplement 2S-2 of NQA-1, Basic Requirement 2, Quality Assurance Program. This NDE examiner was to be used for inspections during the fabrication of QL-1 piping and the examiners was authorized for the MFFF project.

4. MOX Services failed to review the BF Shaw implementation and use of weld repair/rework memos and quality control (QC) memos. These documents were described in the BF Shaw Quality Manual. And, while they were adequate for documenting weld defects that require repair, MOX Services failed to identify that the BF Shaw program was not in compliance with Section 3.7 of the specification DCS01-KKJDS-SPE-M-15120-1, Shop Fabrication of Piping, Revision 1. Audit BFS-08-VE37 did not sample the vendor's use of either the QC memo or the weld repair/rework memo. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 9, Control of Processes.

5. BF Shaw failed to enter and track the disposition of the Supplier Deficiency Reports (SDRs) resulting from the MOX Services audit findings of June 8, 2008 into their corrective action program. These SDRs contained several findings that were conditions adverse to quality. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 16, Corrective Action.

Joseph Oat Corporation (JOC) Activities:

1. JOC was not in compliance with the requirements of MOX Services Specification DCS01-KKJ-DS-SPE-L-16265-3, Section 4.6, and MOX RFI-1415-057, dated August 13, 2009, which specified requirements for reporting of weld defects and repairs to MOX services. JOC fabricated tanks without a formal weld repair/rework procedure in place. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 5, Instructions, Procedures and Drawings. MOX Services accepted QL-1 and QL-2 tanks with this deficiency.

2. MOX Services reviewed the applicable welder qualifications and failed to identify that a welder, who had welded on Mixed Oxide Fuel Fabrication Facility (MFFF) small diameter piping, was not qualified in accordance with ASME Section IX QW-302.2 requirements. Specifically, the welder qualification was performed on 5 ¼ inch (") length of test coupons for a Nominal Pipe Size (NPS) that required a minimum of 6". This represented a noncompliance to the requirements of NQA-1, Basic Requirement 9, Control of Processes.

3. While observing an in-process liquid penetrant examination and visual examination of QL-1 Tank 31, weld No.100, a level II examiner failed to perform the examination in accordance with

the approved procedures. This represented a noncompliance to the requirements of NQA-1, Basic Requirement 9, Control of Processes.

4. JOC had not performed liquid penetrant testing of repair welds following radiography as dictated by the MFFF procurement specification, DCS01-KKJ-DS-SPE-L-16265-3. Section 4.6, of this specification, Repairs While in Fabrication, stated in part, "All weld repairs to process boundary materials and completed welding shall be fully radiographed and PT tested." This represented a noncompliance to the requirements of NQA-1, Basic Requirement 5, Instruction, Procedures, and Drawings.

Issue 21

On November 4, 2008, test records/documents did not identify the person performing the test, as required by the MPQAP, Section 11, Test Control, Paragraph 11.2.5.A, and MOX Services' specification DCS01-BMF-DS-SPE-B-09210-0, Section 1.12, Laboratory Reports, in that a Qore technician failed to document his name or initials on the concrete test data sheet. In addition, tester/data recorder identification had not been included on concrete cylinder compressive strength test records, performed and documented by Qore, for tests completed between August and November 2008.

2. On November 3, 2008, testing was not performed in accordance with a QA procedure that described how the testing was performed, as required by the MPQAP, Section 11, Test Control, Paragraph 11.2.2.A, Performing Test, in that the procedure used for ground rod testing (BPP-103, Ground Grid System Installation, Revision 4, did not clearly detail the procedural steps necessary to set up the ground rod test equipment. Also, the procedure did not provide appropriate acceptance criteria based on specified requirements contained in the applicable design, as required by the MPQAP, Section 11, Test Control, Paragraph 11.2.2.D.

Issue 22

On November 10, 2008, the applicant failed to appropriately incorporate a field change into the affected design documents for concrete placement BSR F-104, as required by MPQAP, Section 3, Design Control, Paragraph 3.2.5.E, Design Change Control. The top steel reinforcement bars were not placed within the 135 degree stirrup hooks for beams B170, B173, B141, B142, B143, and B144 which serves to close the ties. This resulted in a steel reinforcement installation that deviated from the design drawings without including provisions to ensure that the original design was still valid.

On September 16, 2008, the applicant failed to perform an adequate design verification for field drawing BSR RF-05 prior to release for construction (placement on November 11, 2008), as required by MPQAP, Section 3, Design Control, paragraph 3.2.4.E, Design Verification. The applicant failed to identify that the field drawing (BSR RF-05) did not implement the design requirements from the design drawing (DCS01-BMF-DS-B-01359, Revision 4). Specifically, the

beam stirrup parameters from the field drawing did not match the beam stirrup parameters specified on the design drawings.

Issue 23

The design reviews performed for base mats BMP 103 and BMP 107 were inadequate in that the reviews did not ensure that design inputs were correctly incorporated into the field drawings. Specifically, the design input for base mats BMP 103 and BMP 107 required the base mat reinforcing steel to be placed on 9-inch centers. This design input was incorrectly incorporated into the field drawings, which improperly specified that the base mat reinforcing steel be placed on 11-inch centers. Field drawings BMP RF-103 and BMP RF-103B had been inadequately reviewed and approved for construction activities on December 1, 2006 (Revision 0) and on February 7, 2007 (Revision 1). Placement of base mat BMP 103 was completed during October 2007, and the placement of base mat BMP107 was completed during March 2008, prior to discovery of the error.

Issue 24

The applicant failed to implement certain MPQAP and requirements, as enumerated in the following examples:

1. MPQAP, Revision 5, Section 5.1, requires quality-affecting activities to be prescribed by and performed in accordance with documented, approved QA procedures and other approved implementing documents (drawings, specifications, etc.) appropriate to the MOX Project work scope. Requirement 5.2.2 under this section requires implementing documents to provide a sequential description of work to be performed, and quantitative or qualitative acceptance criteria sufficient for determining activities were satisfactorily accomplished. The applicant failed to provide an approved QA procedure or other approved implementing document which prescribed a sequential description of work to be performed, and quantitative or qualitative acceptance criteria sufficient for determining activities were satisfactorily accomplished during the installation and inspection of exothermic weld splices of ground cables.

2. MPQAP, Revision 5, Section 2.2.6, requires indoctrination, training, and qualification of personnel performing activities affecting quality. Requirement H. 2 requires training procedures to identify technical objectives and requirements of the applicable codes and standards. MOX Services Project Procedure PP3-27, "Quality Control Personnel Certification," Section 3.2.4, states inspection personnel shall perform inspection activities only in their areas of certification. Sections 3.4 and 3.6 state areas of certification, including certifications for special applications, will be documented on the qualification summary form, or Certificate of Qualification. Appendix D designates "Cadwelding" as a certification area for Special Processes. Section 3.1 defines Inspector Training Records as documents containing training objectives, course outlines, reading assignments, tests, and examinations and/or capability demonstrations. The applicant failed to document evaluations of inspector training for "Cadweld" ground cable splices on the respective Certificates of Qualification, and did not provide a written inspector training record

that identified the technical objectives, course outline, or requirements of the applicable codes and standards.

3. MPQAP, Revision 5, Section 17.2.4.C, Record Repositories, requires in part that records shall be stored in either temporary or permanent containers or facilities. According to the MPQAP, temporary storage is defined as a facility or container with a fire rating of at least one (1) hour. The temporary storage container or facility shall bear an underwriters' laboratories label (UL) or equivalent, certifying one (1) hour fire protection, or be certified by a person competent in the technical field of fire protection. The applicant failed to store QA records in temporary storage container or facility bearing an underwriters' laboratories label (UL) or equivalent, certifying one (1) hour fire protection, or be certified by a person competent in the technical field of fire protection in the Management Administrative Complex, Construction Administrative Complex and Equipment Engineering Complex buildings. Specifically, QA records, including receipt inspection reports, surveillances of Quality Level -1 items relied on for safety (IROFS), and design drawings, were not stored in fire rated containers prior to transmittal to the permanent record repository.

4. MPQAP, Revision 5, Section 16, Corrective Action, requires in part, that conditions adverse to quality be promptly identified.

a. On June 3, 2008, the applicant failed to identify a condition adverse to quality in that during the BMP-F111 basemat concrete placement, the previously placed concrete had lost its plasticity prior to making the next concrete placement, thus creating a cold joint.

b. On June 19, 2008, the applicant failed to identify during BMP-F112 basemat construction joint inspection activities that foreign material had been left in the construction joint and that there was voiding behind the stay forms.

Issue 25

The certificate holder failed to ensure that numerous pieces of reinforcing steel bars met the minimum bend diameter specified in ACI 349-97. Between February 4 and 7, 2008, the NRC inspectors identified numerous reinforcing bars (both released for construction and installed) with minimum bend diameters less than 11.28 inches in staging areas northwest and southwest of the MOX Aqueous-Polishing Building (BAP) and in installed Concrete Placement BAP-F5B-C.

Issue 26

The certificate holder failed to take appropriate corrective actions for conditions adverse to quality. The certificate holder failed to provide adequate resolution to justify the use of non conforming number 11 reinforcing steel splices that did not meet design or ACI code requirements, in that Non-Conformance Report (NCR) EN-07-0110 was closed on October 23, 2007, accepting the non-conforming condition of the splices and to use as is, without providing adequate justification for the closure.

Issue 27

The certificate holder failed to accomplish activities affecting quality in accordance with instructions or procedures and activities were not prescribed by documented instructions or procedures as documented in the following examples:

- a. On August 8, 2007, the certificate holder's concrete contractor failed to perform verification activities and improperly signed off on procedure steps as specified in work packages BMP-F-104 PE-C and BMP-F-102 BET-C.
- b. On September 9, 2007, a contractor employee failed to document on the delivery ticket the addition of 120 ounces of Glenium 3030 NS super plasticizer and 10 gallons of water to the concrete delivery truck.
- c. On September 9, 2007, the certificate holder's concrete contractor failed to provide clear and precise language in FM 6-1, Batch Plant Operations, for (1) operation of the batch plant which was subsequently not used by the batch plant operator resulting in three batches being mixed with the quantity of super plasticizer exceeding the design quantity and manufacturer's limits, and (2) addition of plasticizer to the truck in addition to adding plasticizer in the normal batching process.

LES

Issue 1

NRC inspectors identified that the licensee failed to adequately define its design control process. Specifically, the licensee failed to establish a procedure or process for handling concessions, changes to the original design issued by Enrichment Technology Corporation (ETC). ETC used concessions as a process for documenting and approving design changes associated with the cascades. These concessions were issued by ETC to LES NEF for Cascade 1, 2, and 3 turnover and for design changes of other cascades in construction. However, LES NEF had not developed a procedure or process for assuring the concessions were adequately applied to all affected design documents for maintaining the design configuration.

Issue 2

NRC inspectors identified that the licensee failed to transfer the Material Identification Number (MID) to each part of a component after subdividing. Specifically, the stool assemblies for the Mini Hall 1C cascade lower steel works in the Separations Building Module (SBM) 1001 Extension were issued by the warehouse to the contractor as one component. Each stool assembly was comprised of three pieces; an embed plate, a shim plate, and an adjustment plate. Upon receipt of the Quality Level -1 stool assemblies from the warehouse, the contractor

subdivided the assemblies without transferring the Material Identification Number, used for traceability, to the shim plates.

Issue 3

LES failed to adequately implement the commercial grade dedication (CGD) process on Items Relied on for Safety (IROFS) to verify conformance of an item or activity to specified requirements. The licensee's QA organization failed to provide adequate oversight of the CGD functions and activities associated with the acceptability of CCs verified for pipe works, flomels, and upper steelworks associated with Cascade 4 components designated as IROFS 41, as evidenced by these examples:

1. LES NEF incorrectly completed CGD Form 3 documents on the flomels CCs. Critical characteristics were not recorded on the forms and instead "n/a" (not applicable) was placed in the boxes where data and information was to be recorded. Despite this, the LES inspector signed off the steps as satisfactory (SAT) on the forms. The inspector did not record data in the blocks provided thus not verifying the adequacy of the CCs.
2. LES NEF referenced a surveillance in a Form 3 document where verification of the CCs could be found, yet the referenced surveillance was in draft and not approved for use.
3. LES NEF inspected welds associated with the upper steelworks and documented them as SAT even though they were shorter than the specified acceptance criteria. No nonconformance report (NCR) or other method was used to evaluate this condition.
4. LES NEF improperly implemented QA inspection when drilling welds to collect weld material for sampling and material verification. The activity was performed and signed off by the same QC inspector.
5. LES NEF inspected welds located on the upper steelworks of Cascades 3 & 4 and documented them as SAT even though the welds were smaller than the acceptance criteria specified on CGD documents. No NCR or other evaluation method was used to evaluate this condition.
6. LES NEF inspected flomel anchor bolts length and documented them as SAT even though the bolts exceeded the acceptance tolerance specified on CGD documents. No NCR or other evaluation method was used to evaluate this condition.
7. LES NEF inspected flomel bolt internal threads by the use of a 'Go/No-Go' gauge and documented this CC as SAT by reference to a work plan that only had acceptance values for bolt internal threads associated with Cascades 1, 2 & 3. The referenced work plan did not have acceptance values for bolt internal threads associated with the flomels used for Cascade 4.

Issue 4

The licensee failed to provide adequate technical justification for the acceptability of a nonconforming item in which an NCR was generated. The licensee's QA organization failed to ensure that once a failure to meet a CGD CC was identified that additional actions would be taken for other components like the failed item to ensure they were inspected and/or evaluated. The acceptability of several CCs specified for pipeworks, flomels, and upper steelworks associated with the CGD of Cascade 4 components designated as IROFS 41 were not adequately verified, as evidenced by these examples:

1. LES NEF failed to document the technical justification for use 'as-is' disposition. Specifically, NCR 2011-0930 was created to address inspection methods that were inadequate to verify the acceptability of structural steel materials and was closed to "use-as-is" without addressing the attributes that weren't measured or were out of tolerance.
2. During dedication of Cascade 4, numerous failures were found and documented in NCRs 2011-0745 and 2011-0930, however, no lots were rejected, and 100% inspection was not done, nor was it specified by the CGD Engineer in the Form 3.
3. LES NEF failed to adequately implement procedures associated with Criterion 15. Specifically, EG-3-2100-05, Rev. 10 required that deviations from the plan be handled under an NCR and give additional or modified instructions to verify CCs. However, during verification of CC # of CGDP-041-0003, Rev. 0 a lot (sample set) was found to be inaccessible. An NCR was generated but closed to a CR that removed the lot from the plan without justification, or additional or modified instructions to verify the CC.
4. LES NEF failed to document the technical justification for "use-as-is" disposition. Specifically, NCR 2011-0745 initiated work to drill holes into 9 completed welds, but only three of the welds were repaired. The NCR was closed to use 'as-is' without documenting the justification for leaving the other 6 welds with holes in them.
5. LES NEF closed NCR 2011-0597 without providing written technical justification as to why a weld on Cascade 3 was acceptable to "use-as-is".

Issue 5

The licensee's QA organization failed to conduct the required selected reviews and oversight of the commercial grade dedication (CGD) of IROFS. The licensee's QA organization failed to ensure that the acceptability of several critical characteristics specified for pipeworks and upper steelworks associated with the CGD of Cascade 3 components designated as IROFS 41 were adequately verified, as evidenced by the following examples:

1. LES NEF incorrectly performed hardness testing on the fixed pipe clamps (critical characteristic 1c). The fixed pipe clamps were made of rolled aluminum but the hardness testing equipment was used with the stainless steel setting.

2. LES NEF performed the Leeb hardness testing method without verifying the method's reliability on the rolled aluminum (critical Characteristic Ic). The equipment manufacturer's specification did not include rolled aluminum as a material that the hardness tester could be used reliably on.

3. LES NEF used alternate acceptance criteria without adequate technical justification. The CGD Plan for upper steelworks required that nondestructive examinations and welds meet the requirements of American Welding Society (AWS) D1. 1, which required a bare metal visual inspection of welds prior to acceptance. However, LES NEF performed visual inspections without removing paint and invoked paragraph 6.8 of D1. 1 to use acceptance criteria alternative to Table 6.1 of D1. without adequate technical justification (critical characteristic 10c and 10e).

Issue 6

LES NEF used a system of design or construction within the scope of AISI/ANSI N690, the adequacy of which was shown by analysis, but which did not conform to the code, without presenting the data to the NRC for review and approval. Specifically, LES NEF invoked paragraph 6.8 of AWS D1. 1 to develop alternate acceptance criteria for visual inspection of welds through paint. AWS D1. 1 required the welds to be visually accepted prior to painting. Since AISI/ANSI N690 was the governing code for design, fabrication, and erection of structures that invoked AWS D1. 1, LES NEF was required to use the visual inspection requirements of AWS D1. 1 or submit the alternate acceptance criteria for welds to the NRC for review and approval prior to the use of those criteria.

Issue 7

LES NEF issued nonconforming reports 2010-3965 and 2010-3976 which documented five missing welds on the cascade 3 upper-steel works and dispositioned them for use-as-is without including the required technical justification.

Issue 8

Section 16, Corrective Action, of the LES NEF QAPD states, in part, that, "Conditions adverse to quality including activities and services shall be identified promptly and corrected as soon as practical."

NRC inspectors identified that the licensee failed to adequately correct conditions adverse to quality involving work plan documentation issues identified in 2009, in that there were continuing repetitive work plan document issues identified on November 17, 2010, as evidenced by the following three examples:

(1) Work Package (WP) 1003-CIVIL-822-025: Steps 7 and 8 were not signed as completed although the concrete placement was completed on November 2, 2010, and the concrete

formwork was removed on November 11, 2010. Step 7 was a verification point by the Construction Engineer (CE) and Quality Control (QC) inspector to indicate concrete placement. Step 8 was a hold point to be completed by the CE prior to concrete formwork removal to document verification of testing results indicated that the concrete in the placement met or exceeded the required concrete compressive strength for formwork removal.

(2) WP 1003-CIVIL-822-029: The EG-3-6000-01-F-10, Actual Work Performed Log, which is required by LES Procedure, EG-3-6000-01, Construction Work Plans, Revision 10, to record work performed during the shift, was not properly maintained documenting work activities commensurate with the completion of work.

(3) WP 1001X-CIVIL-853-007: Steps 3 and 4 were not properly signed as completed commensurate with the status of the work activities. Step 3 was missing constructor's initials indicating the datum points were installed. Step 4 was missing the surveyor's initials indicating the datum locations where surveys were completed, and missing the CE signature indicating the verification inspection was performed.

Issue 9

The licensee had awarded a procurement contract with a QL- 1 supplier for a scope of work that was not included on the ASL. Purchase Order 303199 to Broadway Electric Service Corporation, authorized the supplier to define design requirements for commercial grade dedication (CGD) of IROFS 1, 2, 4, and 5 equipment items; whereas, the authorized scope of work specified on the ASL limited work activities to installation, fabrication, and procurement of electrical components. As a result of the procurement contract, the supplier proceeded to develop and implement a CGD plan which failed to specify a critical characteristic necessary to accomplish the safety function of IROFS 1, 2, 4, and 5.

Issue 10

The licensee's QA organization failed to conduct the required selected reviews and oversight of the commercial grade dedication (CGD) of IROFS. The licensee's QA organization failed to ensure that the acceptability of several critical characteristics specified for pipeworks and upper steelworks associated with the CGD of cascade components designated as IROFS 41 were adequately verified, as evidenced by the following examples:

1. The material strengths of bolts and nuts in the pipeworks and upper steelworks listed as critical characteristic 7a for Cascade 3 were not adequately verified. This finding was identified by the licensee. However, this finding was directly related to their response to Notice of Violation (NOV) 070-3103/2010-013, dated September 20, 2010. Subsequent to the issuance of the letter by the licensee and prior to this inspection, the licensee identified that contrary to their formal response, not all of the required destructive testing of the bolt and nut material had been performed.

2. Material requirements of fixed clamps using PMI (positive material testing) process listed as critical characteristic 1c for Cascade 3 were not adequately verified.

3. The required volumetric examination of complete joint penetration welds on turnbuckle components in the upper steelworks for Cascades 2 and 3, listed as part of critical characteristic 9, were not performed. This was identified by the licensee, but only as a result of conducting the extent of condition evaluation in response to NOV 070-3103/2010-013, dated September 20, 2010.

Issue 11

The licensee had awarded a procurement contract with a QL- 1 supplier for a scope of work that was not included on the Approved Suppliers List (ASL). Purchase Order 303199 to Broadway Electric Service Corporation, authorized the supplier to define design requirements for commercial grade dedication (CGD) of IROFS 1, 2, 4, and 5 equipment items; whereas, the authorized scope of work specified on the ASL limited work activities to installation, fabrication, and procurement of electrical components. As a result of the procurement contract, the supplier proceeded to develop and implement a CGD plan which failed to specify a critical characteristic necessary to accomplish the safety function of IROFS 1, 2, 4, and 5.

Issue 12

The licensee modified the process piping associated with Cascade 1 without conducting the required design activities commensurate with those applied to the original design of the subject piping. The modification included cutting and subsequently re-welding a section of the Cascade 1 process piping.

Issue 13

NRC inspectors identified that the licensee failed to initiate NCR's for non-conforming on two occasions as evidenced by the following example:

Apparent Cause Evaluation for CR 2009-2036, issued on July 2, 2009, did not evaluate 44 potential non-conforming reinforcing steel releases listed in Consolidated Power Supplies (CPS) letter dated July 1, 2009, and the licensee did not provide documentation to show an evaluation was performed. Specifically, the CPS letter notified LES NEF of 44 rebar releases that contained units with potentially nonconforming minimum bend diameters. The corrective actions for the Apparent Cause Evaluation were completed on March 2, 2010, without evaluating all potential non-conforming items.

Issue 14

The licensee's QA organization failed to adequately review the Cascade 3 CGD Plan, D-2010-012, Revision 0, conduct the required inspections of several critical characteristics included in

the Cascade 3 CGD Plan, D-2010-012, Revision 0, and review the verification results for completeness and acceptability as evidenced by the following examples:

1. The tightening torque for header piping fixed clamps listed as critical characteristic Ia were not adequately verified.
2. The tightening torque for bolts in the upper steelwork bolted connections listed as critical characteristic 7b were not adequately verified.
3. The tightening torque for bolts in the upper steelwork bolted connections listed as critical characteristic 8a were not adequately verified.
4. The material strengths of bolts and nuts in the pipeworks/upper steelworks listed as critical characteristic 7a were not adequately verified.
5. The size of fillet welds in the upper steelworks listed as critical characteristic IOb were not adequately verified.
6. The dimensions of subunit steel frames in the upper steelworks listed as critical characteristic 11 were not adequately verified.

Issue 15

LES NEF did not control procurement of items and services to assure conformance with specified requirements on several occasions in accordance with ASME NQA-1 Basic Requirement 7 and the QAPD Section 7. LES NEF conducted less than adequate control of purchased items and services in that the data recorded on multiple test results received and accepted by LES NEF from their suppliers did not meet the requirements set forth in their Commercial Grade Dedication Plans (CGDP), as demonstrated by the following examples:

1. Tests results received and accepted by LES NEF for BETEC 140 grouting material show that tests were not conducted within the acceptable temperature range as specified in the American Society of Testing and Materials (ASTM) C109 standard test method that was required by the CGDP.
2. The compressive strength documented in several test reports received and accepted by LES NEF for BETEC 140 grouting material was less than the required compressive strength specified in the CGDP.
3. Tests results received and accepted by LES NEF for Chockfast Grey epoxy grout show that the tests were conducted under a different ASTM standard test method than the one specified in the CGDP.

4. Test results received and accepted by LES NEF for Chockfast Grey epoxy grout show that tests were not conducted within the acceptable temperature range as specified in the ASTM D695 standard test method that was required by the CGDP.

Issue 16

The licensee failed to establish measures in procedures to ensure that applicable requirements were correctly translated into design documents. The licensee failed to establish controls to ensure the selection and suitability of application of materials, parts, equipment and processes associated with the cascade components and supports designated as Items Relied on for Safety (IROFS) 41 as evidenced by the examples below. The controls established by LES NEF for the selection and suitability of applications of materials, parts, equipment and processes that are essential to the functions of IROFS 41 include Commercial Grade Dedication (CGD) Plans D-2009-006 and D-2008-044, as well as other implementing procedures.

1. As the entity performing the commercial grade dedication of cascade components and supports employing Method 2 (Commercial Grade Surveys), LES NEF was directly responsible for verifying the capability of all suppliers and sub-suppliers to adequately control the critical characteristics associated with their specific scope of supply. However, instead of conducting the actual verification, in some cases LES NEF credited the audits and surveillances of various sub-suppliers performed by its primary supplier, Enrichment Technology Corporation (ETC). ETC is a commercial grade supplier that does not have a 10 CFR Part 50 Appendix B quality assurance program. Therefore, ETC was not qualified to perform the dedication activity of Method 2 verification of a sub-supplier's capability to control critical characteristics, in that those dedication activities were not conducted in accordance with the applicable provisions of 10 CFR Part 50, Appendix B. The failure of LES NEF to directly verify the capability of all suppliers and sub-suppliers to adequately control applicable critical characteristics was not in compliance with the commercial grade dedication process as defined in SNM-2010.

2. As the entity performing the commercial grade dedication of cascade components and supports employing Method 2 (Commercial Grade Surveys), LES NEF was directly responsible for verifying the validity of vendor-supplied material certifications or certificates of conformance/compliance used as the bases for verification of critical characteristics. These vendor-supplied material certifications or certificates of conformance/compliance were submitted to ETC and forwarded to LES NEF. LES NEF failed to perform these verifications and was therefore not in compliance with the commercial grade dedication process.

3. LES NEF failed to provide technical documentation verifying compliance to the applicable requirements of United States (US) industry codes and standards American Welding Society (AWS) D1.1, American Society of Mechanical Engineers (ASME) B31.3, American Society of Nondestructive Testing (ASNT) SNT-TC-1a and American Concrete Institute (ACI)-349, in compliance with the IROFS 41 CGD Plans D-2008-044 and D-2009-006 and the associated License Amendment Request (LAR) 08-07.

4. LES NEF failed to provide technical documentation verifying compliance to the design acceptance criteria in the conduct of the required leakage test for IROFS 41 cascade header piping welds identified as a critical characteristic in CGD Plan D-2009-006.

5. LES NEF failed to provide key inspection records associated with the verification of critical characteristics for IROFS 41 cascade supports as required by the LES NEF CGD Plan D-2008-044.

6. LES NEF failed to meet critical characteristic requirements for IROFS 41 cascade component welds as described in CGD Plan D-2009-006 as evidenced by ASME B31.3 code violations identified by the NRC in April 2009.

Issue 17

Internal audits of LES QA Level 1 activities were not performed once every 12 months as required by the LES NEF QAPD and QA-3-2000-01. Specifically, audits were not scheduled or performed in the areas of Startup Test Program and Records Management.

Issue 18

Changes to final designs and field changes did not have documented justification for use and were not subjected to the same design control measures and reviews as those applied to the original design as evidenced by the following examples:

(1.) Design control measures for changes made did not include provisions to determine that the design analyses for the item were still valid. Specifically, from May 2 through June 19, 2009, the licensee failed to implement design control measures commensurate with those applied to the original design in evaluating discrepancies between several engineering change requests referenced in the formal stop work order issued on April 28, 2009, and the parent design documents associated with Separations Building Module (SBM) 1001.

(2.) Changes to final designs and field changes were not subjected to the same design control measures and reviews as those applied to the original design. Prior to July 12, 2008, the licensee had failed to maintain adequate design and document control for activities that impacted the quality of completed QL-1 construction. Discrepancies between the critical document sets at controlled distribution points, the engineering change request (ECR) database, and the Electronic Data Management System (EDMS) resulted in the construction of QL-1 structures not in accordance with approved design.

(3.) Changes to final designs and field changes did not have documented justification for use and were not subjected to the same design control measures and reviews as those applied to the original design. As of April 6, 2009, the licensee had begun the procurement, fabrication, installation and testing of structures, systems and components associated with Items Relied on

For Safety (IROFS) 41 via the commercial grade dedication process without the applicable commercial grade dedication (CGD) procedure and associated CGD plan in place.

Issue 19

NRC inspectors identified that the licensee failed to adequately evaluate and correct conditions adverse to quality on four occasions as evidenced by the following four examples:

(1) Condition Report (CR) CR-2008-2451, issued on September 10, 2008, identified that Quality Assurance Level-i (QL-1) welding activities were not in accordance with Section 6, Document Control, of the licensee's QAPD, in that work was performed when a Stop Work Order was in effect for all QL-1 construction activities. Construction activities were performed to engineering change order requests (ECRs) instead of the approved Nuclear Technology Solutions, LLC (NTS) design drawings. The CR was closed on October 7, 2008, with no actions taken to correct the identified issues, nor did the licensee adequately investigate these issues.

(2) CR-2008-1968, issued on July 17, 2008, identified that QL-1 document control activities were not in accordance with Section 17 of the licensee's QAPD, in that quality records were not authenticated and validated prior to permanent record storage. The CR was closed on October 10, 2008, with inadequate actions taken to correct the issues, nor did the licensee adequately investigate these issues.

(3) CR-2008-2484, issued on August 21, 2008, identified that QL-1 concrete sampling activities were not performed in accordance with NTS Specification 114489-S-D-01410-1 in that LES NEF performed concrete sampling activities without the required laboratory testing accreditation. The CR was closed on October 31, 2008, with inadequate actions taken to correct the issue, nor did the licensee adequately investigate the issue.

(4) CR-2008-2860, issued on September 22, 2008, identified that QL-1 concrete testing activities were not in accordance with Section 16, Corrective Action, of the licensee's QAPD, in that the licensee failed to correct conditions adverse to quality regarding QL-1 concrete test cylinder for curing box temperature issues and not addressing the effects of the varied temperatures on the test samples. The CR was closed on October 16, 2008, with inadequate actions taken to correct the issues, nor did the licensee adequately investigate the issues.

Issue 20

LES NEF failed to perform activities affecting quality in accordance with documented instruction, procedures, or drawings appropriate to the circumstances in that, during construction activities, LES NEF positioned steel reinforcements that were not in accordance with Nuclear Technology Solutions, LLC (NTS) drawing 114489-1001-C-CON-005-02-3 and American Concrete Institute (ACI) Code 349-06. This resulted in the 'steel reinforcements being improperly positioned.

Miscellaneous

Issue 1

The Brown & Root Quality Assurance Program did not provide Quality Control Inspectors sufficient organizational freedom to identify quality problems in that a Brown & Root Quality Control Inspector was transferred and discharged on April 12, 1982 for filing nonconformance reports identifying quality problems.

Issue 2

The Texas Utilities Generating Company Quality Asst Program did not provide quality control inspectors sufficient organizational freedom to identify problems in that a TUGCo civil quality control supervisor, intimidated QC personnel working for him inspecting paint coatings. The QC supervisor threatened the QC personnel with withdrawal of QC certifications if they continued to write "nitpicking" Nonconformance Reports which had been the subject of complaints from craft management personnel.

Issue 3 – Corrective action “problem”

Measures were inadequate to assure that conditions adverse to quality were promptly identified and corrected in that quality control inspections between September 14, 1978 and October 17, 1978 documented that five of six seismic Category I structure gaps contained foreign material. These unsatisfactory conditions were not officially resolved until April 18, 1983 in response to Nonconformance Report C-83-01067. However, during the TRT inspection, foreign material was again identified between the Unit I safeguards building and the auxiliary building. The continued existence of foreign material in the air gaps indicates that measures were ineffective in assuring that nonconformances were promptly identified and corrected.

The dispositions of NCRs M-4015S, Revisions 0-5 and NCR M-4942S were inadequate. Their dispositions did not address fit-up or ASME code requirements nor the stress effects resulting from the out-of-roundness which occurred during installation. These NCRs are related to the installation of a 10-inch Spool Piece CT-1-SB-C14, piece number 38, installed in the Unit I Containment Spray System CT-1-012-30IR-2 in September 1982. At the time of installation, the item was on hold per NCR M-4015S because the pipe was 1/2 inch out-of-round and in excess of the 1/8 inch allowed by the ASME Code for 10-inch pipe. After the installation, NCR M-4942S and NCR M-40155 Revision 5 dispositioned the pipe “use-as-is” based on acceptable fit-up inspection results.

TUEC failed to provide adequate corrective action in their reinspection program for ASME Class 1, 2, and 3 component support skewed welds. Certain types of skewed welds, those existing at the intersection of curved members used as structural members, were not included in the skewed weld reinspection program for component supports.

Issue 4 – Criterion III “problem”

1. At the time of the NRC Technical Review Team (TRT) inspection, the applicant had failed to satisfy the minimum separation requirements of IEEE Standard 384-1974. The TRT inspection identified several instances where these requirements were not translated into instructions for separation in the Unit I control room. Both safety and nonsafety-related cables were in direct contact with other safety-related cables within flexible conduits and no analysis was provided that demonstrated the acceptability of the design and installation.

2. The applicant reported to the NRC that during hot functional testing excessive air temperatures were documented near the vessel flange and in the ex-core detector wells. A subsequent review by the TRT indicated that prior to the installation of the reactor pressure vessel reflective insulation, the vendor requested and incorporated a design change to permit the installation of the reflective insulation support channel outside the insulation. This design change effectively reduced the gap between the vessel insulation assemblies and the shield wall thus restricting the cooling air flow. This design change was not justified and subjected to design control measures commensurate with those applied to the original design in that had this condition not been detected during start-up testing, the integrity of the reactor vessel shield wall could not be assured after long-term exposure to elevated temperatures. In addition, the sensitivity of the source range detectors in the neutron detector well area could not be assured.

3. The TRT inspection identified non-seismic components in the Unit I control room ceiling and other Category I areas that were not analyzed in accordance with FSAR Section 3.7B.2.8 that ensures earthquakes do not adversely affect the integrity or operability. (or both) of any Seismic Category structures, equipments, or components in these areas. In addition, the analyses performed for the Category II light fixtures, the non-seismic drywall ceiling, and the lack of analysis for the non-safety-related conduits two inches (or less) in diameter, did not ensure that the structural integrity is maintained under the prescribed earthquake loadings.

4. The NRC Region II Special Review Team (SRT) and the TRT identified a Category I and non-Category I interaction for which an analysis could not be produced that showed compliance with the CPSES FSAR requirements for the piping at the Electrical Control Building/Turbine Building interface.

5. The TRT found that the design analysis for non-Category I equipment effects on seismic Category I structures, equipments, or components was incomplete. The support installation for nonsafety-related conduits less than or equal to 2 inches was inconsistent with seismic requirements and no evidence could be found that substantiated the adequacy of the installation for nonsafety-related conduit of any size.

6. Measures were not established to ensure that the standards for locking devices were specified and included in design documents. On May 24, 1984 Texas Utilities Electric Company (TUEC) engineering issued a memorandum (CPPA 38997) that approved paint, when applied to Unit I component supports, including fasteners, and when set or hardened, would act on bolt and nut threads to prevent the nut from loosening. In addition, suitability testing did not justify

the use of paint as a substitute locking device per the ASME code. The use of paint in this manner is contrary to the ASME and site procedural requirements.

7. At the time of the TRT inspection, engineering criteria defined in Bechtel Corporation Specification 10466-M-204, Appendix D governing the cold springing of piping systems during installation was used at CPSES as the basis for the final design of the piping systems. However, this criteria was never formally identified, documented, or authorized in CPSES TUEC engineering documents.

8. At the time of the TRT inspection, the applicant failed to adequately identify design bases and inputs including specific Design Basis Accident (OBA) test reports, and failed to properly perform and document review and analysis of design and design inputs, especially design changes. For example, allowable coating thicknesses applied to the inside of the Containment Liner were repeatedly changed without engineering evaluation and review to demonstrate that the coatings of different thickness would survive testing under DBA conditions.

9. At the time of the TRT inspection, the applicant could not provide evidence to demonstrate that coating systems used at CPSES had been tested and qualified by Oak Ridge National Laboratories and the coating manufacturer, in accordance with ANSI NIO.2 and N512. This deficiency applies to the originally specified coating systems and to subsequent design changes.