Issue 1

Corrective actions documented in PER 229082 failed to assure that a nonconformance identified by QC, specifically an anchor bolt spacing violation, was corrected. The PER was closed inappropriately after inadequate corrective actions had been completed without correcting the as-built nonconforming configuration. This finding was determined to be a SL IV violation using Section 6.5 of the Enforcement Policy. Because this SL IV violation was entered into the corrective action program as PER 364388, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000391/2011604-01: Failure to Correct a Nonconformance.

Issue 2

Description: During their BL 89-02 review for Unit 1, the applicant determined that the material requirements for internal bolting also applied to internal shafts and pins and that one of the prohibited materials for these parts was high-hardness American Society of Testing and Materials (ASTM) A276-410T. The applicant intended to use various specifications to provide material requirements for Unit 2 swing check valves but failed to incorporate the material requirements for internal bolting, shafts, and pins into all of the specifications. One of the specifications that failed to include these requirements was WBNP-DS-501433-0904.
As part of the refurbishment program, the applicant procured new swing check valves for 2-CKV-070-0679, Component Cooling System Thermal Barrier Supply Check Valve, and 2-CKV-003-0873, Auxiliary Feedwater Loop 1 Check Valve. The applicant used WBNPDS-501433-0904 to provide the procurement material requirements for both valves.

Because the specification did not provide the hinge pin material requirements, the manufacturers used their standard material, high-hardness ASTM A276-410T for both valves. The applicant discovered the improper hinge pin material for 2-CKV-070-0679 on or about December 21, 2010, 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 09-56866-02 for 2-CKV-003-0873 on February 15, 2011, which identified the hinge pin material as “A276-410T.” During subsequent BL 89-02 reviews, the applicant identified the improper hinge pin material for this valve on or about April 5, 2011. The applicant contacted the manufacturer to modify the hinge pin material.

On April 13, 2011, the applicant discussed the final results of their BL 89-02 review with the inspectors. 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, including WBNP-DS-501433-0904, failed to provide all material requirements for swing check valves.

The applicant entered these issues into their corrective action program as PER 356559 to review and correct the cause of the deficient design specifications, the extent of condition, and the failure to initiate a timely PER to document conditions adverse to quality.
This issue was NRC-identified because the applicant failed to identify the inadequate design specifications and failed to enter the issues into their corrective action program until after questioned by the inspectors. The finding was more than minor because it represented an

inadequate process that, if left uncorrected, could adversely affect the quality of the fabrication, construction, testing, analysis, or records of a safety-related structures, systems, and components. Specifically, design specifications failed to include all material requirements for swing check valves. The finding is of very low safety significance because the incorrect material was not included in permanently installed safety-related equipment.

The apparent cause of this finding has a cross-cutting aspect related to ineffective implementation of a corrective action program with a low threshold for identifying issues. (P.1(a)). Specifically, the failure to enter the hinge pin deficiency into the corrective action program in December 2010 contributed to the failure to take comprehensive corrective actions that could have prevented the improper vendor submittal drawing approval in February 2011. Enforcement: Appendix B, Criterion III, "Design Control" of 10 CFR Part 50, states, in part, that: “Measures shall be established to assure that applicable regulatory requirements and the design basis… are correctly translated into specifications, drawings, procedures, and instructions.”

Contrary to the above, prior to April 5, 2011, the applicant failed to correctly translate all design basis requirements into specification WBNP-DS-501433-0904. Because this was a SL IV violation and the violation and was entered into the applicant’s corrective action program, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy, 05000391/2011604-02, “Failure to Maintain Adequate Design Specifications.”

Issue 3

A SL IV NCV of 10 CFR 50, Appendix B, Criterion VII, “Control of Purchased Material, Equipment, and Services,” was identified where 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.

Description: The inspectors’ review of activities for dedication of commercial grade items identified the following:

• The PDS for Stock Code CDP309G, Leslie pressure regulators (1) identified seismic performance as a required characteristic but did not provide a method to verify seismic qualification, and did not provide a justification for omitting verifications; (2) identified volumetric response as a critical characteristic but did not provide criteria to evaluate the characteristic; and (3) identified physical dimensions as a critical characteristic but did not provide legible criteria in the PDS package for verifying the dimensions.

Issue 4

The inspectors identified a violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” for failure to establish design control measures to assure that the design basis for those structures, systems, and components covered by Appendix B are correctly translated into specifications, drawings, procedures and instructions.

Calculation EDQ00299920080004 “480V Class 1E Protection, Coordination and Thermal Overload heater Calculation – Unit 2, Rev. 12 and WBNEEBMSTI080008, 480V 1E Coordination/Protection, Rev. 141, and other engineering documents contain the statement that

“The EF3 and FJ3 breakers have an effective interrupting rating of 22kA if used with a motor starter assembly.” A sufficient technical basis was not provided for this statement and the resulting increase in the interrupting rating from the vendor specified value of 14 kA. These calculations reflect that this model of breaker is used in applications where short circuit currents could reach as high as 17.3 kA.

Issue 5

A SL IV NCV of 10CFR50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified for the failure to perform work on a safety-related system with an approved work instruction. Specifically, a loose support was adjusted in the field with no authorized or approved work instruction on that portion of the safety-related system.

The inspectors identified that a previously unattached safety-related ISL tubing clamp was found to be attached to its associated support (2-ISLS-998-3257). The applicant was unable to provide approved work instructions or a WO for the field work that had been performed.

Issue 6

A SL IV NCV of 10CFR50, Appendix B, Criterion X, "Inspection," was identified for failure to establish an adequate program and execute the program to assure quality inspections of cable installations conformed to the documented instructions, procedures, and drawings for accomplishing the activity. Specifically, the conduct and documentation of inspections of safety-related electrical cables did not provide adequate assurance that the cables were installed in accordance with defined requirements.

In one instance involving cable 2V704A, the applicant’s QC inspector signed verification in a final inspection that a vertical cable support was properly installed when, in fact, the required permanent support was not installed. Although the data sheet contained a note from the foreman and inspector describing the temporary condition, the document did not show that the condition had not been resolved prior to the final verification signature by the QC inspector. As a result, conflicting information was recorded regarding the status of the cable installation which, in turn, created uncertainty about how the condition would be rectified and re-inspected.

• In other instances involving cables 2V706A and 2V712A, the applicant’s QC inspectors did not document failures to install required vertical cable supports as nonconforming items in accordance with Construction Completion Project Nuclear Quality Assurance Manual (PNQAM), Section WBN-15.1, Requirement 3.2. The PNQAM states, in part, that “Nonconformances shall be controlled and documented.”

In these instances, the electrical craft workers and foremen had attested that the incremental placements of cable were completed in accordance with the construction procedure. In contrast, the final inspections by the applicant’s QC inspectors determined that the required vertical cable supports were not installed. The quality inspectors did not document the nonconforming installations, as required by the PNQAM, and withheld their final verification signatures until the installations had been corrected.

• An interview with a QC inspector identified that the individual possessed an inaccurate understanding of the requirements for inspecting “supports.” When questioned, the applicant’s inspector did not identify that the procedure-specified inspection attribute, “W27,” was related with correct installation of vertical cable supports. Further, MAI-3.2 did not contain any

information about what kind of supports to inspect or how to determine that installations were acceptable. The procedure only stated that the quality inspection was to verify installation of supports according to inspection attribute “W27.” No description of the attribute was provided. Also, no description of the attribute was provided in the applicable Bechtel project procedure (25402-000-GPP-0000-N3000). A TVA corporate procedure was subsequently found to contain a description of an electrical inspection attribute listed as “W27.” However, the applicability of the corporate procedure to the work activity was not identified in the work instructions or the project procedure.

Issue 7

A SL IV NCV of 10CFR50, Appendix B, Criterion X, "Inspection," was identified for the failure to adequately perform a pre-assembly hold point visual inspection of a pump impeller for a safety-related component. Specifically, the field engineer and QC inspector did not visually inspect all surfaces of the impeller for pitting, scoring, and cracks, prior to signing off the completion of this hold point activity in the associated work order.

Issue 8

A SL IV NCV of 10CFR50, Appendix B, Criterion XV, "Nonconforming Materials, Parts or Components," was identified for failure to properly resolve physical damage to a pressure retaining part following disassembly of an ASME III safety-related component. The applicant also failed to document subsequent unauthorized repair of the damaged pressure retaining part prior to valve reassembly.

The applicant failed to adequately document physical damage to a pressure retaining part (main steam system) following disassembly of an ASME III safety-related component (2-FCV-1-16-A)) as a nonconforming condition in accordance with applicant procedures. Neither the associated WO 09-952883-000 nor the corrective action program reflected that component damage occurred and was repaired, in accordance with procedures 25402-MGT-0003 and 25402-000-GPP-0000-TI216.

Issue 9

The inspectors identified a Severity Level (SL) IV, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion IX, “Control of Special Processes,” in that, the licensee failed to provide adequate procedures for the implementation of a stress improvement (SI) process. Specifically, the inspectors identified that the weld centerline markings, and subsequent tool location, for the pressurizer nozzles were marked incorrectly.

The licensee failed to provide adequate procedures to correctly locate and verify weld centerlines in the field, which would correspond with the weld centerlines in the associated stress analysis calculations for all six pressurizer nozzle DM welds. Inaccurate placement of the MSIP clamp based on incorrect marking of the weld centerline could result in inadequate compressive stresses at the DM weld inner diameter, which could increase susceptibility of the weld to PWSCC.

Issue 10

Measures used to review the suitability of application of materials, parts, and equipment essential to the safety-related functions of molded case circuit breakers and measures to

provide for the verification of checking the adequacy of design, such as, calculational methods, performing a suitable test program, including qualifications testing of a prototype unit under the most adverse design conditions, were not adequate in that:

1. On October 5, 2009, the applicant installed molded case circuit breakers into the 120VAC vital instrument power boards; however, the test program used to seismically qualify a prototype circuit breaker failed to use a suitable mounting method that reflected the most adverse mounting condition.

2. On September 3, 2009, the applicant failed to perform an adequate review for suitability of application parts and material used to modify dimensional critical characteristics in molded case circuit breakers; further, the applicant failed to verify the adequacy of design for the modification and the effects on essential safety related functions of the circuit breakers.

10 CFR 50, Appendix B, Criterion III, “Design Control,” states that measures shall be established for the review for suitability of application of materials, parts, and equipment that are essential to the safety-related functions of the structures, systems, and components (SSCs). The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. Where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking processes, it shall include suitable qualifications testing of a prototype unit under the most adverse design conditions.

Contrary to the above, measures used to review for the suitability of application of materials, parts, and equipment essential to the safety related functions of molded case circuit breakers and measures to provide for the verification of checking the adequacy of design, such as, calculational methods, performing a suitable test program, including qualifications testing of a prototype unit under the most adverse conditions were not adequate in that:

1. On October 5, 2009, the applicant installed molded case breakers into the 120VAC vital instrument power boards, however, the test program used to qualify a prototype breaker failed to use a suitable mounting method that reflected the most adverse mounting condition.

2. On September 3, 2009, the applicant failed to perform an adequate review for suitability of application parts and material used to modify dimensional critical characteristic in molded case breakers, and further, the applicant failed to verify the adequacy of design for the modification and the effects on essential safety related functions of the breakers.

Issue 11

A Severity Level (SL) IV non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XV, “Nonconforming Materials, Parts, or Components,” was identified by the inspectors for the failure to have procedures for identification, documentation and segregation of materials identified as nonconforming to Purchase Order (PO) requirements by the kick and count inspection. Specifically, effective measures did not exist to segregate or properly identify hydraulic snubbers procured under PO 63534 as nonconforming to the PO identification requirements.

The inspectors observed crates containing hydraulic snubbers being stored next to receipt inspected materials available for issue even though some of the snubbers did not conform to the

PO requirements, in that they did not have all the required identification. In addition, the affected snubbers were not properly identified as nonconforming. Although procedures SPP-4.3, Rev. 0006, section 3.5 and 25402-000-GPP-0000-N6104, Rev. 4, section 6.5.12, require the immediate segregation or identification of nonconforming material, these requirements apply to the QC portion of the receiving inspection and not the kick and count portion.

Issue 12

A SL IV NCV of 10 CFR 50, Appendix B, Criterion VI, “Document Control,” was identified by the inspectors for the failure to establish adequate measures to control the issuance of documents. Specifically, the applicant failed to establish proper storage and control of documents stored in the CONEX storage area that were used during performance of safety-related work activities.

Some files in the CONEX trailer have been used or copied to perform safety-related work activities effectively making it a satellite document control station, and the files in this trailer were not properly protected nor controlled. The area included a refrigerator containing food and drinks and the receiving records for PO 31774 were missing from the files in the CONEX trailer with no logout folder in place. In addition, there were no signs in the trailer, on the filing cabinets or on the folders themselves identifying these records as for information only (FIO).

Issue 13

A SL IV NCV of 10 CFR Part 21 was identified by the inspectors for the failure to invoke the provisions of 10 CFR Part 21 on a supplier for services of safety-related components. Specifically, lever arms for limit switches were purchased under PO 87607. The lever arms were sent to TVA Central Laboratories to perform commercial grade dedication activities without invoking the provisions of 10 CFR Part 21.

The inspectors reviewed the completed package for PO 87607 and concluded that it did not invoke the provisions of 10 CFR Part 21 on TVA Central Laboratories. The inspectors also reviewed intergroup agreement (IGA) -11, Central Laboratories, Rev. 001. This agreement, which is between TVA Nuclear Power Group (NPG) and TVA Central Laboratories, establishes the responsibilities and requirements in providing requested services. The inspectors noted that this agreement did not invoke the provisions of 10 CFR Part 21.

PO 87607 did not specify that the provisions of 10 CFR Part 21 applied to TVA Central Laboratories nor did IGA-11, between TVA (NPG) and TVA Central Laboratories.

Issue 14

A SL IV NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors for failure to identify improper weld size by the welder, field engineer, and quality control (QC) in accordance with applicable instructions, procedures, and drawings.

The inspectors performed a walk-down of newly installed pipe supports to determine whether their as-installed configurations matched those specified by the applicable drawing revision authorizations (DRAs). The inspectors identified an example where the weld throat did not meet the minimum size requirements, specified by DRA 52897-005, for a weld joining an embed plate to pipe support 2-47A450-26-304 for the safety-related ERCW system.

Specifically, the inspectors identified that Weld #1 joining embed plate 48N913-8B to pipe support 2-47A450-26-304 was (1) not welded in accordance with the drawings; (2) was verified and signed off by the field engineer (FE) despite the incorrect weld size; and (3) was accepted by QC despite the fact that the weld size did not meet the acceptance criteria specified in DRA 52897-005.

Issue 15

A SL IV NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action”, was identified by the inspectors for inadequate measures to assure that conditions adverse to quality, specifically non-conforming safety-related concrete, were promptly identified and corrected.

On May 17, 2010, the inspectors observed concrete placement activities associated with work order (WO) 09-954333-011. On May 21, 2010, PER 230811, “Concrete Mixing and Placement Violations,” was issued to document issues with concrete mixing and placement discrepancies identified during the placement of concrete into the floor for support No. 2-70-888 in accordance with WO 09-954333-011. Prior to placement, QC rejected the safety-related concrete batch; however, the concrete was placed with known concerns.

On June 30, 2010 the inspectors reviewed PER 230811 and discovered that the PER and associated actions had been closed and archived. The action to address the nonconforming condition did not fully address the discrepancies identified during placement as stated in PER 230811. On July 1, 2010, the applicant initiated PER 237820 to document the inappropriate closure of PER 230811.

Issue 16

The inspectors identified a SL IV, NCV of 10 CFR 50, Appendix B, Criterion XIII, “Handling, Storage, and Shipping,” in that, the applicant failed to control the storage and preservation of safety-related material (welds, piping, and components) to prevent damage from nearby construction activities. Specifically, the inspectors identified multiple locations of weld and paint spatter, arc strikes, and mechanical damage on safety-related welds, piping, and components.

While performing a walk-down of the pressurizer safe end to elbow weld (RCF-D144-11), the inspectors identified multiple examples of weld and paint spatter, arc strikes, and mechanical damage (e.g., dents, dings, gouges, etc.) on adjacent ASME Class 1, safety-related welds, piping, and components. On June 24, 2010, the inspectors performed another walk-down of piping systems in the reactor building and identified additional examples of weld and paint spatter, arc strikes, and mechanical damage on ASME Class 1, safety-related welds, piping, and components.

The inspectors identified approximately 70 locations of damage associated with welds, piping, and components within the following systems: (1) reactor coolant system, (2) safety injection system, and (3) residual heat removal system. The specific issues identified by the inspectors were documented by the applicant in PER 236720. The inspectors noted that affected welds, piping, and components were fabricated from stainless steel alloys, and were all ASME Class 1, pressure boundary items. The inspectors determined that these issues were reasonably within the applicant’s ability to foresee and correct, and should have been prevented.

These conditions could render the quality of the installed items unacceptable or indeterminate. Additionally, the repairs or rework required to correct the identified conditions may require

additional examinations to verify conformance with the construction code of record. Furthermore, the applicant had previously completed preservice inspections on some of the affected welds, and depending on the repair required to correct the condition, the pre-service examination results may be invalidated.

Issue 17

A SL IV NCV of 10 CFR 50 Appendix B, Criterion III, “Design Control,” was identified by the inspectors for a failure to correctly translate the design basis, as described in a System Description Document, into affected drawings and specifications. Specifically, a design basis requirement to provide diverse level measurement systems for the Safety Injection System Accumulators was not correctly translated into affected specifications and drawings issued for construction.

The drawings and specifications released for construction under EDCR 52424 did not provide diverse level measurement systems for the Cold Leg Accumulators. Instead, the design documents provided duplicate level measurement systems. This configuration also differed from the Unit 1 design which contained diverse level measurement systems. The inspectors identified that the level measurement systems were required to implement Technical Specification Surveillance 3.5.1.2, and were classified as Quality-Related and non-Safety Related.