UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
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January 27, 2008

James A. Spina, Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Constellation Generation Group, LLC
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION REPORT 05000317/2008005 AND 05000318/2008005

Dear Mr. Spina:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant (CCNPP) Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on January 16, 2009, with Mr. Bauder and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. However, because the findings are of very low safety significance and the findings are entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at CCNPP.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS).

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Sincerely,

/RA/ Original Signed By:

Glenn T. Dentel, Chief
Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-317, 50-318
License Nos.: DPR-53, DPR-69

Enclosure: Inspection Report 05000317/2008005 and 05000318/2008005
w/Attachments: Supplemental Information

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S. Gray, Program Manager, Power Plant Assessment Program, Maryland Department of Natural Resources
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P. Birnie, Esquire, Co-Director, Maryland Safe Coalition
M. Griffen, Maryland Department of the Environment
W. Parren, President, Calvert County Board of Commissioners
R. Hickok, NRC Technical Training Center
S. Pattison, SLO (2)

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REGION I

Docket Nos.:	50-317, 50-318
License Nos.:	DPR-53, DPR-69
Report No.:	05000317/2008005 and 05000318/2008005
Licensee:	Constellation Generation Group, LLC (Constellation)
Facility:	Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Location:	Lusby, MD
Dates:	October 1, 2008 through December 31, 2008
Inspectors:	Silas Kennedy, Senior Resident Inspector Marlone Davis, Resident Inspector Justin Hawkins, Project Engineer Ronald Rolph, Health Physicist Thomas Burns, Reactor Inspector Brian Haagenson, Operations Engineer Neil Perry, Senior Project Engineer Cherie Crisden, Emergency Preparedness Specialist Doug Tifft, Reactor Inspector
Approved by:	Glenn Dentel, Chief Projects Branch 1 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000317/2008005, 05000318/2008005; 10/1/08 – 12/31/08; Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2: Equipment Alignment and Surveillance Testing.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Two Green findings were identified, both of which were determined to be non-cited violations (NCVs). The significance for most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance associated with an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because Constellation did not provide design control measures for verifying the adequacy of a design calculation used to determine the maximum initial temperature for the auxiliary feedwater (AFW) pump room before operators would start emergency ventilation. The AFW pump room emergency ventilation system must be established prior to exceeding a specified maximum initial room temperature to ensure that the AFW pump room temperature would not exceed the 130°F Design Basis Accident (DBA) limit. Specifically, Constellation used non-conservative inputs and assumptions in the design calculation that resulted in Constellation not recognizing that the DBA temperature limit could have been exceeded. Constellation entered this issue into their corrective action program (CAP) for resolution. The immediate corrective actions included establishing compensatory requirements for initiating emergency ventilation and conducting a re-analysis of the design calculation. The planned corrective actions includes a modification to install a new automatic starting emergency ventilation system.

  This finding is more than minor because it is similar to example 3.j. in Appendix E to IMC 0612 in that the non-conservative inputs and assumptions resulted in a condition where it created reasonable doubt on the operability of the turbine-driven AFW (TDAFW) pumps. The finding is associated with the design control attribute of the Mitigating Systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the finding is of very low safety significance (Green) because the finding is a design and qualification deficiency confirmed not to result in the loss of operability. There is no crosscutting aspect associated with this finding. (Section 1R04.2)

- Green. A self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Constellation did not take timely corrective actions following the identification of degraded 480 volt power supply

handswitch disconnects. This led to the failure of the Unit 1 No. 13 component cooling (CC) pump to start during performance of a surveillance test. The inspectors noted that Constellation had previously identified handswitch disconnects failures in 2006 and 2007. Immediate corrective actions included replacing the handswitch disconnect for the 13 CC pump, conducting an extent of condition review, and entering this condition into their CAP.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance because the finding does not represent the loss of system safety function, does not represent actual loss of safety function of a single train for greater than its technical specification allowed outage time, and does not screen as potentially risk significant due to external events. The finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not take appropriate corrective actions to address safety issues associated with handswitch disconnects in a timely manner commensurate with their safety significance and complexity (P.1.d per IMC 0305). (Section 1R22)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Calvert Cliffs Unit 1 began the inspection period at 100 percent power. On October 8, 2008, operators reduced power to 96 percent due to the loss of the plant computer and the data acquisition system. Operators returned the unit to 100 percent power the same day. On October 17, operators reduced power to 94 percent to perform waterbox cleaning. Operators returned the unit to 100 percent power on October 20. On December 5, operators reduced power to 85 percent to perform main turbine valve testing. Operators returned the unit to 100 percent power on December 6. The unit remained at 100 percent power for the remainder of the inspection period.

Calvert Cliffs Unit 2 began the inspection period at 100 percent power. On October 30, 2008, operators reduced power to 94 percent to perform waterbox cleaning. Operators returned the unit to 100 percent power on November 1. On December 19, operators reduced power to 85 percent to perform main turbine valve testing. Operators returned the unit to 100 percent power on December 20. The unit remained at 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

Adverse Weather Seasonal Preparations – Cold Weather (71111.01 – One Sample)

a. Inspection Scope

The inspectors performed a review of cold weather preparations before the onset of the cold weather season to evaluate the site's readiness for seasonal susceptibilities. This review included an assessment of Nuclear Operations Program Procedure NO-1-119, "Seasonal Readiness." The inspectors assessed the effectiveness of the site's cold weather readiness program to ensure that the selected systems would remain functional and available for a plant shutdown during cold weather conditions as required by Technical Specifications (TS). The inspectors selected the 125 volt direct current battery system and the diesel fire pump for this review. The inspectors discussed the protective measures applicable to the systems with control room operators, the seasonal readiness coordinator, and the system engineer. Additionally, the inspectors performed partial field walkdowns to evaluate the material condition and functionality of the freeze protection equipment (e.g., heat tracing, instrumentation, and ventilation) associated with the risk significant systems. The inspectors verified that the operator actions specified in the associated procedures maintain readiness of essential equipment and systems to preclude weather induced initiating events. Documents reviewed for each inspection are listed in the Attachment.

In addition, the inspectors noted that two adverse weather protection samples were completed in the second quarter: offsite power systems (grid) and adverse weather seasonal preparation for hot weather. However, the second quarter inspection report (IR

05000317/2008003 and 05000318/2008003) incorrectly documented the completion of one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown (71111.04Q – Two Samples)

a. Inspection Scope

The inspectors conducted partial walkdowns to verify equipment alignment of selected risk significant systems. The inspectors reviewed plant documents to determine the correct system and power alignments, as well as the required positions of critical valves and breakers. The inspectors verified that Constellation had properly identified and resolved equipment alignment problems that could cause initiating events or potentially affect the availability of associated mitigating systems. The inspectors performed a partial walkdown for the following systems:

- Unit 2 “B” train emergency core cooling system (ECCS) due to maintenance on the “A” train of ECCS; and
- 2B emergency diesel generator (EDG) due to unplanned maintenance of the 2A EDG.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S – One Sample)

a. Inspection Scope

The inspectors performed a complete system walkdown of the Unit 1 AFW system to identify any discrepancies between the existing equipment lineup and the specified lineup. During the walkdown, the inspectors used system drawings and operating instructions (OI) to verify proper equipment alignment and the operational status. The inspectors reviewed open maintenance orders (MO) on the system for any deficiencies that could affect the ability of the system to perform its safety function. Inspectors also reviewed unresolved design issues such as temporary modifications, operator workarounds, and items tracked by plant engineering to assess their collective impact on system operation. Additionally, the inspectors reviewed the condition report (CR) database to verify that equipment alignment problems were being identified and appropriately resolved.

b. Findings

Introduction. The inspectors identified a finding of very low safety significance (Green) associated with an NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,”

because Constellation did not provide design control measures for verifying the adequacy of a design calculation used to determine the maximum initial temperature for the AFW pump room before operators would start emergency ventilation. The AFW pump room emergency ventilation system must be established prior to exceeding a specified maximum initial room temperature to ensure that the AFW pump room temperature would not exceed the 130°F DBA limit. Specifically, Constellation used non-conservative inputs and assumptions in the design calculation that resulted in Constellation not recognizing that the DBA temperature limit could have been exceeded.

Description. The AFW pump room is cooled with a non-safety related (NSR) air conditioning unit and a standby safety related emergency ventilation system. The AFW pump room emergency ventilation must be established prior to exceeding a specified maximum initial room temperature to ensure that the AFW pump room would not exceed the 130°F DBA limit. The 130°F limit is provided to prevent the failure of the air-cooled bearings on the TDAFW pumps. On August 28, 2008, the Unit 1 AFW pump room NSR air conditioning unit failed due to a degraded compressor. Following the failure, the AFW pump room temperature increased to 106°F prior to operators establishing emergency ventilation. The inspectors reviewed the OI, the design calculation (CA04467) and Updated Final Safety Analysis Report (UFSAR) and noted a number of discrepancies in the documention. The discrepancies were as follows:

- The initial conditions for the design calculation assumed that the initial room temperature would be 70°F to 74°F during normal operations with the NSR air conditioning unit operating. However, the inspectors observed temperatures in the AFW pump room between 85°F - 90°F over a two week period in August and September with the NSR air conditioning unit in operation.
- Section 9.8.2.3 of the CCNPP UFSAR, AFW Pump Room, stated that the NSR air conditioning unit is capable of maintaining the temperature in the room at 90°F or below. Based on that statement, the inspectors concluded that the inital temperature for the worst case condition could have reached as high 90°F with an operable NSR. This worst case condition is contrary to the initial conditions used in the calculation.
- Table 9-18 of the CCNPP UFSAR stated that the design temperature for normal operations for the AFW pump room is 90°F. However, the inspectors determined, through a reveiw of operator logs, the AFW pump room temperature exceeded 90°F several times in the past 15 months without operator action to start the emergency ventilation system.

Constellation initiated CR-2008-000676, CR-2008-001434, and CR-2008-1929 to evaluate these discrepancies and review the design calculation. Following a re-analysis of the design calculation, Constellation determined that the AFW pump room temperatures would have exceeded the DBA limit of 130°F if the initial temperature exceeded 90°F. The inspectors concluded that the AFW pump room temperature should be maintained below 90°F and that Constellation used non-conservative inputs and assumptions in the design calculation CA04467.

The immediate corrective actions included an operability determination and the establishment of compensatory measures to start emergency ventilation if AFW pump room temperature exceeds 90°F. An additional immediate corrective action included the installation of a continuous monitoring device to alert operators of the AFW pump room

temperatures. The planned corrective actions include a modification to install a new automatic start AFW emergency ventilation system. Constellation also conducted a review for past operability and determined that the AFW pump would have remained operable. In consultation with the TDAFW pump vendor, Constellation determined that the TDAFW pumps would remain operable with a maximum room temperature of up to 150°F during a DBA.

The performance deficiency is that Constellation did not provide adequate design control measures for verifying the AFW pump room temperature design calculation. This resulted in Constellation not recognizing that the AFW pump room could have exceeded a design limit of 130°F during a DBA.

Analysis. The finding is more than minor because it is similar to example 3.j. in Appendix E of IMC 0612 in that the calculation error resulted in a condition where there was reasonable doubt on the operability of the TDAFW pumps. The finding is associated with the design control attribute of the Mitigating Systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using IMC 0609 Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance (Green) because the finding is a design or qualification deficiency confirmed not to result in loss of operability per "Part 9900, Technical Guidance, Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions adverse to Quality or Safety."

Enforcement: 10 CFR 50, Appendix B, Criterion III, "Design Control," states, in part, that 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. Contrary to the above, on August 28, 2008, the inspectors identified that Constellation did not provide adequate design control measures for verifying the design calculation used to establish the maximum initial room temperature for the AFW pump room. As a result, Constellation did not recognize that the temperature for the AFW pump room could have exceeded the design temperature limit of 130°F. Because this violation is of very low safety significance (Green) and Constellation entered the issue into their CAP (CR-2008-001434), this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000317 & 318/2008005-01: Inadequate Design Control Associated with the Auxiliary Feedwater Pump Room Temperature)**

1R05 Fire Protection (71111.05Q – Five Samples)

a. Inspection Scope

The inspectors conducted a tour of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with Constellation's administrative procedures; the fire detection and suppression equipment was available for use; passive fire barriers were maintained in good material condition; and compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with Constellation's fire plan.

- Unit 2 service water pump room, fire area 40, room 205.
- Unit 1 No. 11 ECCS pump room, fire area 4, room 119
- Unit 1 No. 12 ECCS pump room, fire area 3, room 118.
- Unit 2 No. 21 ECCS pump room, fire area 1, room 101.
- Unit 2 No. 22 ECCS pump room, fire area 2, room 102.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope (IP 71111.07T - Three Samples)

Based on a plant specific risk assessment, previous inspection results, and resident inspectors' input, the inspectors selected the following heat exchangers (HXs) for review:

- No. 11 shutdown cooling heat exchanger (SDCHX);
- No. 21 CCHX; and
- No. 22 CCHX.

The inspectors verified that common cause heat sink performance problems that had the potential to increase risk were identified and corrected by Constellation. The inspectors also verified that potential macro fouling (silt, debris, etc.) issues and biotic fouling issues were closely examined by Constellation. The inspectors reviewed Constellation's methods and frequency of inspection, cleaning, chemical control, and performance monitoring for the selected components to ensure alignment with Constellation's responses to Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The inspectors compared surveillance and inspection results, including as found conditions, photographs, and eddy current summary sheets, to the established acceptance criteria to verify that the HX operation was acceptable and consistent with design. The inspectors reviewed HX design basis values and assumptions, plugging limit calculations, and vendor information, to verify that they were incorporated into the HX inspection and maintenance procedures.

The inspectors reviewed two of the heat sink attributes listed in the inspection procedure. This portion of the inspection consisted of walking down the selected HXs, CC head tank, portions of the intake structure, salt water (SW) system and the CC system examining for leaks and degradation of component mounts and supports, as well as a review of the buried piping program, and visual inspection results of intake piping. The inspectors interviewed system engineers, the GL 89-13 program manager, and operators.

The inspectors reviewed a sample of condition reports (CRs) related to the selected HX and the SW system to ensure that Constellation was appropriately identifying, characterizing, and correcting problems related to these systems and components.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

Resident Inspector Quarterly Review (71111.11Q - One Sample)

a. Inspection Scope

On November 18, 2008, the inspectors observed a licensed operator requalification scenario to assess operator performance and the adequacy of the licensed operator training program. The scenario involved equipment failures and operator challenges that required operators to implement the alarm response manual, OIs, abnormal operating procedures (AOPs), and emergency operating procedures (EOPs). The scenario involved a failed atmosphere dump valve, a loss of a feed pump, and a steam generator tube rupture event. The inspectors focused on high-risk operator actions performed during the implementation of AOPs and EOPs. The inspectors verified the clarity and formality of communications, the completion of appropriate operator actions in response to alarms, the performance of timely control board operations and manipulations, and the oversight and direction provided by the shift manager were in accordance with Constellation's administrative and technical procedures.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

Quarterly Review (71111.12Q – Two Samples)

a. Inspection Scope

The inspectors reviewed the maintenance effectiveness of the samples listed below for the following: 1) appropriate work practices; 2) identifying and addressing common cause failures; 3) scoping in accordance with 10 CFR Part 50.65(b) of the maintenance rule; 4) characterizing reliability issues for performance; 5) trending key parameters for condition monitoring; 6) recording unavailability for performance; 7) classification and reclassification in accordance with 10 CFR Part 50.65(a)(1) or (a)(2); and 8) appropriateness of performance criteria for structures, systems, and components (SSCs) classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs classified as (a)(1).

- No. 21 containment air cooler (CAC).
- No. 11 SW pump.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope (71111.13 – Three Samples)

The inspectors reviewed the following activities to verify that station personnel performed the appropriate risk assessments prior to taking equipment out of service. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors compared the risk assessments and risk management actions performed by station procedure NO-1-117, "Integrated Risk Management," to the requirements of 10 CFR Part 50.65(a)(4), the recommendations of the Nuclear Management and Resources Council 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and approved station procedures. In addition, the inspectors assessed the adequacy of Constellation's identification and resolution of problems associated with maintenance risk assessments and emergent work activities.

- Planned maintenance on the No. 13 CAC outlet control valve (1-SV-1590) on October 17, 2008.
- Planned maintenance on the No. 11 CCHX SW outlet control valve (1-CV-5206) on October 28, 2008.
- Planned maintenance on the 2B EDG on November 10, 2008.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope (71111.15 – Five Samples)

The inspectors reviewed operability evaluations and/or CRs to verify that the identified conditions did not adversely affect safety system operability or plant safety. The evaluations were reviewed using criteria specified in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance formerly contained in NRC Generic Letter 91-18, Information to Licensees Regarding two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability" and Inspection Manual Part 9900, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety." In addition, where a component was inoperable, the inspectors verified the TS limiting condition for operation implications were properly addressed. The inspectors performed field walkdowns, interviewed personnel, and reviewed the following items:

- Fire door gap greater than fire code requirement (CR-2008-00235);
- Unit 2 ECCS pump room degraded piping supports (CR-2008-001465);
- Dry shielded canisters weld defects (CR-2008-001831);
- High pressure safety injection flow indicator supplied from single power source (CR-2008-002496); and
- No. 12 CCHX SW outlet valve slow stroke time (CR-2008-002648).

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope (71111.18 – Two Samples)

The inspectors reviewed the plant modifications listed below to verify that the modifications did not affect the safety functions of systems that are important to safety. The inspectors verified that the system design and licensing bases did not degrade due to the temporary modification to ensure that the system maintained its availability, reliability, and functional capability. The inspectors conducted walkdowns of accessible portions of the modifications to verify that the proper configuration control was maintained to ensure that the plant was not placed in an unsafe condition and that the modification was implemented in accordance with Constellation procedures.

- A temporary modification installed over the No. 12 condensate storage tank suction pipe (EC20080118-000).
- A temporary modification installed to remove the alarm function from the No. 11 main steam isolation valve pressure switch (EC20080267-000).

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope (71111.19 – Five Samples)

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data, to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Replaced air regulator 1PCV45112C on 1-CV-4512 (MO #1200703658 and MO #1200604125).
- Maintenance on the 1B EDG (MO #1200801551).
- Maintenance on the No. 12 diesel fire pump (MO #200801006).
- Replaced the No. 12 CCHX SW outlet control valve 1-CV-5208 actuator because the valve did not stroke full open (MO #1200805520).
- Maintenance on the 2A EDG (TSCF 2008-002236).

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope (71111.22 – Four Samples)

The inspectors observed and/or reviewed the surveillance tests listed below associated with selected risk-significant SSCs to determine whether the testing adequately demonstrated the ability to perform its intended safety function. The inspectors also verified that proper test conditions were established as specified in the procedures, no equipment preconditioning activities occurred, and that acceptance criteria had been satisfied.

- STP-O-007A-1, "A" Train Engineered Safety Features Logic Test.
- STP-O-073C-2, Component Cooling Pump Quarterly Test.
- STP-O-029-1, Control Element Assembly Free Movement Test.
- STP-O-065H-2, Pressurizer Power-Operated Relief Valve Block Valve Quarterly Test.

b. Findings

Introduction. A very low safety significance self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Constellation did not take timely corrective actions following the identification of degraded 480 volt power supply handswitch disconnects. This led to the failure of the 13 CC pump to start during performance of a surveillance test.

Description. On August 30, 2008, during performance of STP O-7A-1, "'A' Train Engineered Safety Features Logic Test," the 13 CC pump did not start as expected on a safety injection actuation signal. Constellation determined that the cause was due to a failed 480 volt power supply handswitch disconnect. The CC system consists of two cross-connected trains and three CC pumps with the third CC pump capable of being powered from either 480 volt engineered safety feature bus. The handswitch disconnect is a device used to swap power between the two busses to provide power to the third CC pump. The switch is normally in the pull-to-lock position. This position maintains spring pressure on one side of the spring retainer. Pressure for prolonged periods caused the deformation of the spring retainer and reduced spring tension. This affected the ability of the switch to spring return when placed in the "normal" position. With the switch in the "normal" position, the close permissive relay for the breaker remained open which prevented the 13 CC pump from starting during the surveillance test.

The inspectors determined that Constellation had previously identified handswitch disconnects failures in 2006 and 2007. In October 2006, during a breaker operation test for the 13 charging pump, the charging pump failed to start. Constellation determined that the cause was due to a faulty handswitch disconnect. The CR was dispositioned as a hardware only issue and the extent of condition was not evaluated. In September 2007, the 23 charging pump did not start while shifting charging pumps. Again,

Constellation determined that the cause was due to failure of the handswitch disconnect. Following the September 2007 event, Constellation initiated work orders to replace all third train disconnects for the charging pumps and the CC pumps on Unit 1 and Unit 2. However, the handswitch disconnect for the 13 CC pump was not replaced prior to its failure in September 2008. The inspectors noted that the work for the 13 CC pump was originally scheduled for May 2008, but was rescheduled for November 2008.

The immediate corrective actions included replacing the handswitch disconnect for the 13 CC pump, conducting an extent of condition review, and entering this condition into their CAP. In addition, Constellation established compensatory measures to perform a breaker operation test following the swap of power supplies for third train charging pumps and CC pumps.

The performance deficiency is that Constellation did not take timely corrective actions following the identification of degraded 480 volt power supply handswitch disconnects which led to the failure of the 13 CC pump.

Analysis. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using IMC 0609 Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance because the finding does not represent the loss of system safety function, does not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and does not screen as potentially risk significant due to external events. The finding has a crosscutting aspect in the area of problem identification and resolution because Constellation did not take appropriate corrective actions to address safety issues associated with handswitch disconnects in a timely manner commensurate with their safety significance and complexity. (P.1.d of IMC 0305)

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," states, in part, "conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected." Contrary to the above, from October 4, 2006, to August 30, 2008, Constellation did not take timely corrective actions to address degraded conditions associated with 480 volt power supply handswitch disconnects which led to the failure of the 13 CC pump. Because this violation is of very low safety significance (Green) and was entered into Constellation's CAP as (CR-2008-000269), this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000317 & 05000318/2008005-02: Untimely Corrective Actions Associated with 480 Volt Power Supply Handswitch Disconnects)**

Cornerstone: Emergency Preparedness (EP)

1EP2 Alert and Notification System (ANS) Evaluation

a. Inspection Scope (71114.02 - One Sample)

The inspectors conducted an onsite review of the CCNPP ANS to assess the maintenance and testing program. The inspectors interviewed the ANS System Engineer regarding the performance of the ANS siren system. The inspectors reviewed the ANS testing and maintenance procedures along with the ANS design report to ensure compliance with the commitments for system maintenance and testing. The inspectors reviewed the testing and maintenance records beginning December 2006 through October 2008. In addition, the annual preventive maintenance, and the quarterly and annual testing were reviewed in detail. The inspectors conducted the inspection in accordance with the NRC Inspection Procedure (IP) 71114, Attachment 2. Planning standard 10 CFR 50.47(b)(5) and related requirements of 10 CFR 50, Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Staffing and Augmentation System

a. Inspection Scope (71114.03 - One Sample)

A review of CCNPP's ERO augmentation staffing requirements and the process for notifying the ERO was conducted. This was performed to ensure the readiness of key staff for responding to an event and to ensure timely facility activation. The inspectors reviewed the Emergency Plan requirements and procedures for ERO administration and training. The inspectors interviewed personnel responsible for testing the ERO augmentation process. The inspectors reviewed how training records were used and maintained to ensure training and qualifications were up-to-date, and verified a sampling of ERO members were current with qualifications. The Emergency Plan drill reports beginning December 2006 through October 2008 were reviewed. The inspectors also reviewed records of offsite agency training. The inspectors conducted the inspection in accordance with IP 71114, Attachment 3. Planning standard 10 CFR 50.47(b)(2) and related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope (71114.04 - One Sample)

The inspectors conducted a review of CCNPP's 10 CFR 50.54(q) screenings for all the changes made to the EALs and a sampling of the changes made to the Emergency Plan from December 2006 through October 2008 that could potentially result in a decrease in effectiveness. This review of the EAL and Emergency Plan changes did not constitute NRC approval of the changes and, as such, the changes remain subject to future NRC

inspection. The inspectors conducted the inspection in accordance with IP 71114, Attachment 4. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

One finding was identified and is addressed in NRC Inspection Report No. 05000317/2008502 and 05000318/2008502.

1EP5 Correction of Emergency Preparedness Weaknesses

a. Inspection Scope (71114.05 - One Sample)

The inspectors reviewed a sampling of self-assessment procedures and reports to assess CCNPP's ability to evaluate their performance and programs. The inspectors reviewed a sampling of CRs from December 2006 through October 2008 initiated by Constellation from drills, self-assessments and audits. Additionally, the inspectors reviewed the audit for 2008 required by 50.54(t). One event report for the February 2008 Notification of Unusual Event was reviewed. The inspectors conducted the inspection in accordance with IP 71114 Attachment 5. Planning standard, 10 CFR 50.47(b)(14) and the related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope (71114.06 – Two Samples)

The inspectors observed scenarios on October 14, 2008, and November 18, 2008. These scenarios focused on equipment failures, operator challenges, and security issues that could typically exist during a complicated plant trip and emergencies. The inspectors observed the senior reactor operator (SRO) and shift manager performance of risk-significant activities. The inspectors verified that the classification, notification, and protective action recommendations, as applicable, were accurate and timely. Additionally, the inspectors assessed the ability of Constellation's evaluators to address operator performance deficiencies identified during the simulated scenarios.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope (71121.01 - Two Samples)

During the period of November 7 to 13, 2008, the inspectors verified that Constellation properly implemented physical, administrative, and engineering controls for access to locked high radiation areas, and other radiologically significant areas during online activities. The inspectors reviewed the implementation of these controls against the criteria contained in 10 CFR 20, relevant TSs, and Constellation's access control procedures. This inspection activity represents the completion of two samples relative to this inspection area.

The inspectors reviewed radiation work permits used to access high radiation areas in order to identify what work control instructions or control barriers had been specified. The inspectors also reviewed electronic personal dosimeter alarm setpoints (both integrated dose and dose rate) for conformity with survey indications and plant policy associated with diving activities in the spent fuel pool (SFP). The inspectors observed the pre-job brief, the diving activities, and the physical controls that were in place at the SFP area. In addition, this review included how Constellation monitored the divers' exposure time.

b. Findings

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope (71122.01 - One Sample)

The inspectors reviewed the potential for abnormal and unmonitored releases via the AFW Pump Rooms in CCNPP Unit 1 and Unit 2 when the emergency ventilation system is operated. The inspectors reviewed Constellation's procedural requirements, and Offsite Dose Calculation Manual sampling and calculation requirements for releases via this pathway.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems (71151 – Ten Samples)

a. Inspection Scope

The inspectors reviewed Constellation's PI program to evaluate, collect and report information on Mitigating Systems Performance Index (MSPI). The MSPI systems were reviewed for the period of January 1, 2008, through December 30, 2008. The inspectors used the guidance provided in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment PI Guideline" to assess the accuracy of Constellation's collection and reporting of PI data. The inspectors reviewed system unavailability data, monitored

component demands, demand failure data, and the consolidated data entry MSPI derivation reports for both unavailability index and unreliability index. Additionally, the inspectors reviewed out-of-service logs, operating logs, and the maintenance rule database to determine the accuracy and completeness of the reported unavailability data.

- Unit 1 high pressure safety injection system
- Unit 1 auxiliary feedwater system
- Unit 1 emergency AC power system
- Unit 1 residual heat removal system
- Unit 1 cooling water system
- Unit 2 high pressure safety injection system
- Unit 2 auxiliary feedwater system
- Unit 2 emergency AC power system
- Unit 2 residual heat removal system
- Unit 2 cooling water system

b. Findings

No findings of significance were identified.

.2 Emergency Planning (71151 – Three Samples)

a. Inspection Scope

The inspectors reviewed data for the EP PIs which are: (1) Drill and Exercise Performance; (2) ERO Drill Participation; and (3) ANS Reliability. The inspectors reviewed supporting documentation from drills and tests for October 2007 through September 2008 to verify the accuracy of the reported data. The acceptance criteria used for the review were 10 CFR 50.9 and NEI 99-02, Regulatory Assessment Performance Indicator Guidelines.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – Three Samples)

.1 Reviews of Items Entered Into the Correction Action Program (CAP)

a. Inspection Scope

The inspectors performed a daily screening of items entered into Constellation's CAP as required by IP 71152, "Identification and Resolution of Problems." The review facilitated the identification of potentially repetitive equipment failures or specific human performance issues for follow-up inspection. This was accomplished by reviewing the description of each new CR and attending screening meetings.

b. Findings

No findings of significance were identified.

.2 Review of Operator Work-Arounds (One Sample)

a. Inspection Scope

The inspectors performed an in-depth review of operator work-arounds for CCNPP Units 1 and 2. This included an evaluation of the cumulative effects of documented work-arounds, field walk-downs to determine potential undocumented work-arounds, review of CRs, and control room walk-downs. The evaluation followed the guidelines in IP 71152, paragraph 03.02 b, and assessed potential work-arounds not evaluated by station personnel, work-arounds that have been formalized as long-term corrective actions, and work-arounds that increase the potential for human performance errors.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that operator work-arounds were classified, tracked, and assessed in accordance with Constellation's procedures.

.3 Annual Sample: Operator License Initial Exam Review (One Sample)

a. Inspection Scope

The following inspection activities were performed using NUREG 1021, Revision 9, "Operator Licensing Examination Standards for Power Reactors," IP 71111.11B, "Licensed Operator Requalification Program," and IP 71152, "Identification and Resolution of Problems."

A review was conducted regarding the issues involved with the June 2008 initial operator licensing written exam high failure rates. In June of 2008, six of the 11 reactor operator (RO) and SRO applicants failed their written exams following the resolution of all post-exam comments. NRC Initial Exam Report 05000317/2008301 and 05000318/2008301 dated September 26, 2008, documented the specifics of this issue.

The scope of this inspection was to verify that the Constellation's root cause assessment properly addressed the causes for the high exam failure rate and to verify that the corrective actions that had been implemented to support the retake exam on December 10, 2008, were effective.

The inspection activities included: 1) reviewed the status of the implementation of the root cause corrective actions; 2) reviewed the remedial training program for the applicants; 3) reviewed the results of the validation for the retake written exam and audit written exam; 4) interviewed two of five applicants (1 Reactor Operator, 1 SRO) regarding the effectiveness of the remedial training program; 5) reviewed exam security provisions and exam room preparations; and 6) interviewed the Supervisor of Initial Licensing Training, the Superintendent of Operator Training, and the Director of Training to resolve outstanding issues on the high failure rate exam.

b. Findings and Observations

No findings of significance were identified. The licensee's corrective actions were demonstrated to be effective by the high quality of the written retake exam, which was developed by the licensee using improved validation processes, well-qualified exam writers and revised procedures. The retake written exam was administered on December 10, 2008, and all five applicants passed the retake exam. The results of the retake exam are documented in NRC Exam Report 05000317/2008302 and 05000318/2008302 issued on January 23, 2009.

.4 Semi-Annual Review (One Sample)

a. Inspection Scope

The inspectors performed a semi-annual review to identify trends that may indicate the existence of a significant safety issue. The inspectors reviewed the CCNPP Units 1 and 2 PI monthly reports, CRs, system health reports, quality assurance audits, self-assessment reports, maintenance reports, NRC inspection reports, and interviewed key personnel to evaluate if any adverse trends existed.

b. Findings and Observations

No findings of significance were identified. Although the inspectors identified several trends or potential trends during the semi-annual review, plant personnel were aware of these and had initiated corrective actions as necessary.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with Constellation's security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspectors' observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

.2 NRC Temporary Instruction (TI) 2515/172, Reactor Coolant System (RCS) Dissimilar Metal Butt Welds

a. Inspection Scope

Temporary Instruction (TI) 2515/172 provides for confirmation that owners of pressurized-water reactors have implemented the industry guidelines of the Materials Reliability Program (MRP) – 139, regarding nondestructive examination and evaluation of certain dissimilar metal welds in the RCS containing Alloy 600/82/182. The TI requires documentation of specific questions in this inspection report. The questions and responses are included in Attachment 2 to this report.

In summary, CCNPP Units 1 and 2 each have 27 welds with 54 total MRP-139 applicable Alloy 600/82/182 (RCS) welds. The following welds are applicable to each unit:

- One 12” pressurizer surge line nozzle.
- One 4” pressurizer spray nozzle.
- Two 4” safety/relief nozzles.
- One 12” shutdown cooling to RCS.
- One 12” pressurizer surge at RCS.
- One 2” RCS hot leg drain.
- Eight 30” RCS Loop (A & B).
- Four 12” safety injection to RCS – cold leg.
- Two 3” pressurizer spray from RCS – cold leg
- One 2” letdown from RCS - cold leg
- Two 2” charging to RCS – cold leg
- Three 2” RCS cold leg drain

Constellation submitted a Relief Request dated March 5, 2005, as supplemented on March 8, 2005, to use alternative repair and examination techniques for unacceptable indications in welded nozzles at CCNPP Unit 2. Specifically, Constellation requested relief from the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI for ASME Class 1 dissimilar metal welds, 2-DR-2007-1 and 2-LD-2004-1 (piping nozzle to safe-end welds for the drain on the No. 21 RCS hot leg and for the letdown line on the No. 22A RCS cold leg).

Constellation proposed to perform a full structural weld overlay modification of these two welds, which satisfies all the structural design requirements for those locations. A qualified ultrasonic examination to the performance demonstration initiative (PDI) of the completed structural overlays was performed in accordance with ASME Section XI, Appendix VIII, Supplement 11, modified to comply with the PDI Program.

The NRC staff granted verbal authorization for the subject alternatives on March 10, 2005 (followed by letter dated July 20, 2005). The proposed alternatives were authorized for CCNPP Unit 2 for the remainder of the third 10-year inservice inspection interval.

The above referenced Unit 2 welds were repaired by application of the full structural weld overlay during the February 2005 outage. No weld overlays were proposed and none has been performed on Unit 1.

Of the remaining welds listed above, seven welds in Unit 1 and six welds in Unit 2 were mitigated using the Mechanical Stress Improvement Process (MSIP) and were volumetrically examined before and after MSIP using a PDI-UT qualified procedure. All remaining applicable welds for Unit 1 and 2 are scheduled for completion.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 16, 2009, the resident inspectors presented the inspection results to Mr. Bauder and other members of your staff who acknowledged the findings. The inspectors asked Constellation whether any of the material examined during the inspection should be considered proprietary. There was no proprietary information identified.

ATTACHMENTS: SUPPLEMENTAL INFORMATION

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Constellation Personnel

J. Spina, Site Vice President
D. Bauder, Plant General Manager
P. Beavers, Supervisor of Balance of Plant
K. Burroughs, Supervisor, Chemistry Support
S. Dean, Manager, Operations
M. Flaherty, Manager, Engineering Services
J. Gaines, Director, Licensing
J. Gines, System Engineering
K. Gould, Supervisor, Radiation Protection
A. Henni, Senior Design Engineer
S. Henry, General Supervisor Systems Engineering
W. Holsten, Director of Training
P. Jones, Senior Health Physicist
R. Jones, Superintendent Operations Support
D. Lauver, Assistant Manager Engineering
D. Lavato, Senior Training Instructor
C. Neyman, Licensing engineer
R. Pace, Superintendant of Operator Training
A. Simpson, Principle Engineer, Licensing
S. Speer, Director, Emergency Preparedness
M. Wasem, Supervisor, Initial License Training
J. Wynn, Senior System Engineer
J. York, Supervisor Radiation Protection

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000317/318/2008005-01	NCV	Inadequate Design Control Associated with the Auxiliary Feedwater Pump Room Temperature (Section 1R04.2)
05000317/318/2008005-02	NCV	Untimely Corrective Actions Associated with 480 Volt Power Supply Handswitch Disconnects (Section 1R22)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

NO-1-119, Seasonal Readiness, Revision 0
OI-22-J, 125 VDC Battery Room Ventilation, Revision 4

Miscellaneous

0-102-04-0-M, Freeze Protected Equipment, Revision 8
Pre-Winter Assessment of Seasonal Readiness dated 08/11/2008

Section 1R04: Equipment Alignment

Procedures

OI-29, Saltwater System Instrumentation, Attachment 2, Revision 56
OI-32A, Auxiliary Feedwater System, Revision 17

Calculations

CA04467, AFW Pump Room Transient Temperature Analyses Using GOTHIC Code, Revision 1

Drawings

Drawing 62708SH0002, Circulating Water Cooling System, Revision 104
Drawing 60727SH0003, Diesel Generator Cooling Water, Starting Air, Fuel, Lube Oil Diesel Generator No. 2B, Revision 53

Condition Reports

IR4-002-760	CR-2008-001434
IR4-013-440	CR-2008-001929
CR-2008-000676	CR-2008-002038
CR-2008-000876	CR-2008-002093

Miscellaneous

ES-014, Summary of Ambient Environmental Service Conditions, Revision 4
DE10224, AFW Pump Room High Ambient Temperature and their Effect on the AFW Pump Operability from 8/2005 through 9/2008
DE10250, AFW Pump Room High Ambient Temperature and their Effect on the AFW Pump Operability from 8/2005 through 9/2008
OD-08-06, Turbine-Driven AFW Pumps Operability Determination, Revision 1
ES200100651-000, Evaluate AFW Pump Room Temperature Profiles Under Various Off-Normal Scenarios, Revision 0

Section 1R05: Fire Protection

Procedures

SA-1, Fire Protection Program, Revision 6
SA-1-100, Fire Prevention, Revision 13
FP-0002, Fire Hazards Analysis Summary Document, Revision 0

Section 1R07: Heat Sink

Calculations

95-0114, Evaluation of SDC and CCW HX Thermal Performance to Support Loss of Coolant Accident (LOCA) Analysis, Revision 0

CA06824, Evaluation of ETP 01-004(5)R: Single Tube Thermal Performance Testing of 11(21) and 12(22) CCHX (2002-2006), Revision 0

M-90-6, Shutdown Cooling HX, Revision 2

M-93-41, CCW HX, Revision 1

Test Results

ES200800138-000, Evaluate Thermal Performance Testing of the Service Water HX from 2002 – 2007, Revision 0

LSS J/N 06-0019, Eddy Current Examination and Condition Assessment of CCNPP #22 CCHX in January, 2006, July 20, 2006

LSS J/N 06-0019-B, Eddy Current Examination and Condition Assessment of CCNPP Number 21 CCHX in January 2006, July 20, 2006

Work Orders

MO#1200604020
MO#2200602323
MO#2200602481
MO#2200602593

Condition Reports

CR-2008-000029	CR-2008-002134	IRE-013-446	IRE-025-369
CR-2008-000520	CR-2008-002321	IRE-015-703	IRE-025-399
CR-2008-000654	CR-2008-002378	IRE-018-285	IRE-025-412
CR-2008-000684	CR-2008-002828*	IRE-019-436	IRE-025-754
CR-2008-000824	CR-2008-002881*	IRE-020-302	IRE-026-275
CR-2008-001463	IRE-011-292	IRE-024-980	IRE-026-275
CR-2008-001785	IRE-012-837	IRE-025-246	IRE-026-511
IRE-026-512	IRE-030-506	IRE-031-996	IRE-027-761
IRE-031-707	IRE-033-104		

*Identified as a result of this inspection

System Health Reports

Unit 1 Component Cooling Water Q1 2008 System Health Report
Unit 1 Component Cooling Water Q2 2008 System Health Report
Unit 1 Component Cooling Water System Q3 2008 System Health Report
Unit 1 Safety Injection System Q1 2008 System Health Report
Unit 1 Safety Injection System Q2 2008 System Health Report
Unit 1 Safety Injection System Q3 2008 System Health Report
Unit 1 Salt Water System Q1 2008 System Health Report
Unit 1 Salt Water System Q2 2008 System Health Report
Unit 1 Salt Water System Q3 2008 System Health Report
Unit 1 Service Water System Q1 2008 System Health Report
Unit 1 Service Water System Q2 2008 System Health Report
Unit 1 Service Water System Q3 2008 System Health Report
Unit 2 Component Cooling Water Q1 2008 System Health Report
Unit 2 Component Cooling Water Q2 2008 System Health Report
Unit 2 Component Cooling Water Q3 2008 System Health Report

Unit 2 Safety Injection System Q1 2008 System Health Report
Unit 2 Safety Injection System Q2 2008 System Health Report
Unit 2 Safety Injection System Q3 2008 System Health Report
Unit 2 Salt Water System Q1 2008 System Health Report
Unit 2 Salt Water System Q2 2008 System Health Report
Unit 2 Salt Water System Q3 2008 System Health Report
Unit 2 Service Water System Q1 2008 System Health Report
Unit 2 Service Water System Q2 2008 System Health Report
Unit 2 Service Water System Q3 2008 System Health Report

Drawings
60708SH0002, Unit 1 Circulating Salt Water Cooling System, Revision 106
60708SH0003, Unit 1 Circulating Salt Water Cooling System, Revision 17
60718SH0001, Units 1 & 2 Sodium Hypochlorite Salt Water Chemical Addition System, Revision 4
62708SH0002, Unit 2 Circulating Water Cooling System, Revision 105
62708SH0003, Unit 2 Circulating Saltwater System, Revision 7

Procedures
CP-206, Specifications and Surveillance: CC / Service Water System (SWS), Revision 10
CP-237, Specifications and Surveillance: Saltwater System, Reision 200
EN-1-125, Heat Exchanger Program, Revision 0
EN-1-327, Service Water Reliability Program (Generic Letter 89-13), Revision 4
ETP 01-005R, Single Tube Thermal Performance Testing for 21 & 22 CC HX, Revision 2
OI-15, Unit 1, Service Water System, Revision 45
OI-16, Unit 1, Component Cooling System, Revision 32
OI-16, Unit 2, Component Cooling System, Revision 29
OI-29, Salt Water System, Revision 56
OI-29A, Salt Water Chemical Addition System, Revision 201
OI-3B, Unit 1, Shutdown Cooling, Revision 26
OI-3B, Unit 2 Shutdown Cooling, Revision 22

Miscellaneous
12015-027-1002, Technical Manual for Shutdown Cooling HX, Rev. 3
12015-027-1003, Installation Procedure for Modification of Shutdown Cooling HX Using Helical Spacer System, Revision 0
12045-003, Operating and Maintenance Instructions for CCHX, Revision 4
21 CCHX Plugged Tube Layout as of January 30, 2007
21 Salt Water Header HX Trends for 12/10/2008
22 CCHX Plugged Tube Layout as of July 24, 2006
22 Salt Water Header HX Trends for 12/10/2008
CCNPP Unit Nos. 1 and 2 Final Response to Generic Letter 89-13, June 30, 1994&3

Section 1R11: Licensed Operator Requalification Program
Procedures
NO-1-200, Control of Shift Activities, Revision 32

Section 1R12: Maintenance Effectiveness

Procedures

ER-1-103, Maintenance Rule Program Implementation, Revision 3

Condition Reports

IRE-032-596
CR-2008-002706

Miscellaneous

CCNPP Maintenance Rule Scoping Document, Revision 28
CCNPP Preventive Maintenance Basis 88, System 11, Service Water System Control Valves

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Maintenance Rule Risk Assessment Guideline, Revision 7
NO-1-117, Integrated Risk Management, Revision 21

Condition Reports

CR-2008-002211

Section 1R15: Operability Evaluations

Procedures

CNG-OP-1-01-1002, Conduct of Operability Determinations/Functionality Assessments, Revision 0
STP F-591-1, Inspection of Fire Doors and Watertight Doors, Revision 10
STP F-591-2, Inspection of Fire Doors and Watertight Doors, Revision 10
NFPA 80, Standard for Fire Doors and Other Opening Protective, 2007 Edition

Condition Reports

CR-2008-001465	CR-2008-001831	CR-2008-002648
CR-2008-000235	CR-2008-002496	

Section 1R18: Plant Modifications

Procedures

MD-1, Modification Program, Revision 3
MD-1-100, Temporary Alterations, Revision 14
CNG-CM-1.01-1003, Design Engineering and Configuration Control, Revision 0
CNG-NL-1.01-1011, 10CFR 50.59/10CFR 72.48 Applicability Determinations, Screenings, and Evaluations, Revision 0

Miscellaneous

EC-20080118-000
EC-20080267-000

Section 1R19: Post-Maintenance Testing

Maintenance Orders

MO #1200703658
MO #1200604125
MO #1200801551
MO #0200801006
MO #1200805520

TSCF 2008-002236

Section 1R22: Surveillance Testing

Procedures

STP-O-29-1, CEA Free Movement Test, Revision 14
STP-O-007A-1, "A" Train Engineered Safety Features Logic Test, Revision 60
STP-O-073C-2, Component Cooling Pump Quarterly Test, Revision 10
STP-O-065H-2, Pressurizer Power-Operated Relief Valve Block Valve Quarterly Test, Revision 0500

Condition Reports

IRE-025-987
IRE-017-518
IRE-025-230
CR-2008-000706
CR-2008-000269

Maintenance Orders

MO #1200703666

Section 1EP2: Alert and Notification System Evaluation

Condition Reports

IRE-016-961
IRE-019-970
CR-2008-001943
CR-2008-002063
CR-2008-002067

Miscellaneous

Upgraded Public Alert and Notification System Calvert Cliffs Nuclear Power Plant

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Condition Reports

IRE-025-556	IRE-030-893
IRE-028-065	IRE-026-589
IRE-029-474	IRE-028-972
IRE-026-812	IRE-026-607

Miscellaneous

Calvert Cliffs Nuclear Power Plant Emergency Response Plan, Revision 37

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Condition Reports

IRE-028-435
IRE-027-551

Section 1EP5: Correction of Emergency Preparedness Weaknesses

Miscellaneous

EPP-08-01-C, Report of Audit Emergency Preparedness Program, 9/12/2008

Section 1EP6: Drill Evaluation
Procedures
NO-1-200, Control of Shift Activities, Revision 32
ERPIP-3.0, Immediate Actions, Attachment 1, Emergency Action Level Criteria, Revision 41

Section 2OS1: Access Control to Radiologically Significant Areas
Procedures
MN-1-116, Control of Diving Activities in Radiologically Controlled Areas, Revision 01100

RWP & ALARA Checklists
2008-0113

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems
Procedures
CP-604, Radioactive Gaseous Waste Permits, Revision 16

Condition Reports
CR-2008-002293

Section 4OA1: Performance Indicator Verification
CCNPP Mitigating System Performance Index (MSPI) Basis Document, Revision 1

Condition Reports
CR-2008-000558
CR-2008-000706
CR-2008-000934

Section 4OA2: Identification and Resolution of Problems
Procedures
Operations Administration Policy 04-01, Managing Operator Impacts

Miscellaneous
CNG-TR-1.01-1011, Initial License and Audit Exam Development, Revision 0
Root Cause Analysis Report: Initial Licensed Operator Program NRC Exam Failures Condition Report IRE200800140
2008 Calvert Cliffs Initial Licensed Operator Retake Written Exams, RO and SRO Versions

Section 4OA5: Other Activities
Procedures

WDI-STD-1005, Manual or Multi-Channel Automated Ultrasonic Instrument Linearity Procedure, Revision 1
NDE-5200-CC, Color Contrast Liquid Penetrant Examination, Revision 3
NDE-5422-CC, Ultrasonic Examination (UT) of Weld Overlaid Austenitic Pipe Welds, Revision 0
PDI-UT-8, PDI Generic UT Procedure for Weld Overlaid Austenitic Pipe Welds, Revision D
WDI-STD-119-A, Generic Procedure for UT of Dissimilar Metal Nozzle to Safe End Welds, Revision 1

Examination Data Packages
2-LD-2004-1, #22A Cold Leg Drain Overlay
2-DR-2007-1, #21 Hot Leg Drain Overlay

Condition Reports
IRE-012-023, UT Exam of Weld 4-CC10-1006-W1 Identified Indication
IRE-012-022, UT Indication of Hot Leg Drain Prior to MSIP, Weld 2DR-1007-W1
IRE-011-922, Indications Identified on 12-PSL-13 Requires Sample Expansion

Examination Reports
CC05-IU-051, UT Examination of 2-DR-2007-1, U2 HL RCS Drain, Weld Overlay
CC05-BP-039, Liquid Penetrant (PT) Examination of 2-DR-2007-1, Weld Overlay
CC05-BV-022, Visual Examination (VT) of 2-DR-2007-1, HL Drain Overlay
CC05-IU-059, UT Examination of 2-LD-2004-1, U2 #22A Letdown, Weld Overlay
CC05-BP-052, PT Examination of 2-LD-2004-1, U2 CL Drain Weld Overlay
CC05-BV-023, VT Examination of 2-LD-2004-1, U2 CL Drain Weld Overlay
PDI-10-007, Examination Summary for RCS Weld CC9-1007(W-1) Nozzle to Safe End
PDI-10-002, Examination Summary for Pressurizer Surge Line Weld, CC2-1001 9W13

Welding Procedures (WP) and Procedure Qualification Records (PQR)
WPS-01-08-T-801, Gas Tungsten Arc Welding (GTAW), Machine, P1 to P8, Revision 3
PQR-01-01-T-801, GTAW, Machine P1 to P1, Revision 0
WCP-3, Weld Material Control, Revision 5

Mechanical Stress Improvement Process (MSIP)
MRS-SSP-1896, Field Service Procedure MSIP for Tooling Loading, Revision 0
MRS-SSP-1897, Field Service Procedure MSIP for Pressurizer Surge, Safety Spray and Relief dissimilar metal butt welds for Unit 1 & 2, Revision 0
4-PS-2003-8, Performance and Verification Record (PVR) for Pressurizer Spray Nozzle to Safe End Weld
4-SR-2005-1, PVR for Pressurizer Safety/Relief Nozzle to Safe End Weld
12-PSL-1, PVR for Pressurizer Surge Nozzle to Safe End Weld

Drawings
CCNP-04Q-01, RCS Drain Nozzle to Safe End Weld Overlay Design
CCNP-04Q-02, Letdown Nozzle to Safe End Weld Overlay Design
DWG 183709, Pressurizer Surge Line Nozzle
DWG 183731, Pressurizer Surge at RCS, Revision 0
DWG 183728, Pressurizer Spray Nozzle, Revision 0
DWG 2019-0010, Nozzle Details-Pressurizer Surge Nozzle Assembly
E232-634, Weld End Configuration and Details of Surge Nozzle Assembly, Revision 12
E232-635, Weld End Configuration and Details of Spray Nozzle Assembly and Pressurizer Safety / Relief Nozzle Assembly, Revision 2
E233-585, Weld End Configuration and Details of HL Surge and Shutdown Cooling

Maintenance Orders
MO #2200400902

Miscellaneous

CAL NRR-07-014 Confirmatory Action Letter (03/12/2007) and Calvert Cliffs Response, Notification of Results from Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds (05/30/2007

PDI Qualification of Examiner 0007826 for PDI-UT-8, Revision D, Addenda 0

CCNP-04Q-301 RCS Drain Nozzle to Safe End Weld and Letdown Nozzle to Safe End Weld Overlay Design

Alloy 600 Program Plan, Calvert Cliffs Nuclear Power Plant, Revision 6

Constellation Energy, Calvert Cliffs, Unit 1, C1R18, Outage 2006, Inservice Inspection Summary

Constellation Energy, Calvert Cliffs, Unit 2, C2R17, Outage 2007, Dissimilar Metal Weld, Ultrasonic Examination Summary

Examination Program Plan for the Dissimilar Metal Weld Inspections at Calvert Cliffs Unit 2, Spring 2007 Outage

Certified Material Test Report, Inconel filler metal 52, Classification ER NiCrFe-7

ISI-04-04, Risk-Informed Safety-Based Inservice Inspection Program Plan (IPP)

Examination Program Plan for the Dissimilar Metal Weld Inspections at Calvert Cliffs Unit 2, Spring 2007 Outage

Certified Material Test Report, Inconel Filler Metal 52, Classification ER NiCrFe-7

ISI-04-04, Risk-Informed Safety-Based Inservice Inspection Program Plan

100720-001, Weld Data Sheet for Weld 507-09-BU, RCS Hot Leg

100720-001, Weld Data Sheet for Weld 507-09-OVL, RCS CL Letdown

100720-001, Weld Data Sheet for Weld 506-10-BU, RCS Hot Leg

LIST OF ACRONYMS

ADAMS	Agency-Wide Documents Access and Management System
AFW	Auxiliary Feedwater
AOP	Abnormal Operating Procedure
ASME	American Society of Mechanical Engineers
ANS	Alert and Notification System
CAC	Containment Air Cooler
CAP	Corrective Action Program
CC	Component Cooling
CCHX	Component Cooling Heat Exchanger
CCNPP	Calvert Cliffs Nuclear Power Plant
CFR	Code of Federal Regulations
CR	Condition Report
DBA	Design Basis Accident
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
ERO	Emergency Response Organization
GL	Generic Letter
HX	Heat Exchanger
IMC	Inspection Manual Chapter
IP	Inspection Procedure
MO	Maintenance Order
MRP	Materials Reliability Program
MSIP	Mechanical Stress Improvement Process
MSPI	Mitigating Systems Performance Index
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NSR	Non-Safety Related
OI	Operating Instruction
PARS	Publicly Available Records
PDI	Performance Demonstration Initiative
PI	Performance Indicator
RCS	Reactor Cooling System
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SI	Stress Improvement
SRO	Senior Reactor Operator
SSC	Structure, System and Component
SW	Salt Water
TDAFW	Turbine Driven Auxiliary Feedwater
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing

ATTACHMENT 2

SUPPLEMENTAL INFORMATION

TI 2515/172 Documentation Questions for Calvert Cliffs Units 1 & 2

Introduction:

Temporary Instruction (TI) 2515/172 provides for confirmation that owners of pressurized-water reactors (PWR) have implemented the industry guidelines of the Materials Reliability Program (MRP)-139 regarding nondestructive examination and evaluation of certain dissimilar metal welds in reactor coolant systems (RCS) containing Alloy 600/82/182. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in this Attachment.

In summary, Calvert Cliffs Units 1 & 2 have a total of 54 MRP-139 applicable dissimilar metal butt welds. Calvert Cliffs submitted by letter dated March 5, 2005, as supplemented on March 8, 2005, a relief request to use alternative repair and examination techniques for unacceptable indications in certain weld nozzles at Unit 2. Specifically, the licensee requested relief from the requirements of the ASME Code, Section XI, for dissimilar metal butt welds 2-DR-2007-1 and 2LD-2004-1 (piping nozzle to safe end welds for the drain on No. 21 RCS hot leg and for the letdown line on No. 22A RCS cold leg). Also, as the licensee had determined the requirements of ASME XI, Appendix VIII could not be used for the structural weld overlay required nondestructive examination (NDE), the request also proposed to use the PDI program implementation of Appendix VIII to complete the NDE. The Nuclear Regulatory Commission (NRC) staff completed its review of the relief request and granted verbal authorization for the subject alternatives on March 10, 2005 (followed by letter dated July 20, 2005). The proposed alternatives were authorized for Calvert Cliffs Unit 2 for the remainder of the third 10-year inservice inspection interval.

a. For MRP-139 baseline inspections:

Qa1. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

A. Yes. The baseline inspections required by MRP-139 have been performed or are scheduled to be performed on applicable dissimilar metal butt welds (DMBW) in accordance with MRP-139 guidance. Calvert Cliffs Unit 1 has completed the required PDI-UT qualified examination of 14 of the MRP-139 applicable welds with 13 scheduled to be examined during the Spring 2010 outage. Of the 27 MRP-139 applicable welds in Unit 2, 19 have been PDI-UT examined and 8 are scheduled to be PDI-UT examined during the Spring 2009 outage. No structural weld overlays were applied on MRP-139 applicable welds on Unit 1. Two MRP-139 applicable dissimilar metal butt welds in Unit 2 were mitigated in 2005 by application of a full structural weld overlay. A baseline manual PDI-qualified UT inspection was completed on both of these overlaid welds during the Spring 2005 outage. No indications were reported as a result of the examination.

Qa2. Is the licensee planning to take deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned and what is the general basis for the deviation? If inspectors determine that a licensee is planning to deviate from any MRP-139 baseline inspection requirements, NRR should be informed by email as soon as possible.

A. Yes. Calvert Cliffs is considering a deviation request applicable to Unit 2 to defer the MRP-139 required PDI-UT examination of eight (8) RCS thirty-inch diameter cold leg DMBW currently scheduled for February 2009 until the February 2011 outage. This deviation will extend the performance of these exams two months beyond the December 31, 2010, MRP-139 required completion date. If the deferral is approved, Calvert Cliffs would still perform the bare metal visual (BMV) examination and preparatory UT contour and coverage estimate mapping of these eight welds during the Spring 2009 outage. The Unit 1 cold leg exams would remain scheduled for PDI-UT examination in February 2010, which meets the requirements of MRP-139. The postponement of the Unit 2 PDI-UT examination is being considered on the bases of reduced radiation exposure to examination personnel (by allowing zinc addition to continue reducing dose rates another cycle), improvements planned in industry guidance and examination techniques, exam planning improvements based on contour and coverage plot information expected to be gained in 2009 and potential contingency implementation (2011 is a ten day longer planned outage).

b. <u>For each examination inspected, was the activity:</u>

Qb1. Performed in accordance with the examination guidelines in MRP-139, Section 5.1 for unmitigated welds or mechanical stress improved welds and consistent with NRC staff relief request authorization for weld overlaid welds?

A. Yes. The examinations applied to MSIP and weld overlays inspected were performed in accordance with the examination guidelines in MRP-139, Section 5.1 and were consistent with the NRC staff relief request authorization for weld overlay applied to DMBW.

Qb2. Performed by qualified personnel? Briefly describe the personnel training/qualification process used by the licensee for this activity.

A. Yes. The examinations were performed by personnel qualified to the requirements of ASME Section XI, Appendix VIII. Procedures and personnel were qualified in the PDI program for the manual ultrasonic examination of weld overlays and MSIP welds.

Qb3. Performed such that deficiencies were identified, dispositioned, and resolved.

A. Yes. Indications identified in the ultrasonic examination were evaluated for relevance, characterized and entered into the licensee's corrective action program for disposition and resolution.

c. <u>For each weld overlay inspected, was the activity:</u>

Qc1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief request authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays?

A. Yes. The application of the weld overlays were performed in accordance with the ASME Code requirements (Section IX and XI) using qualified welding procedures and qualified welders. The licensee had submitted, for Unit 2, a relief request (March 5, 2005) to apply weld overlay on two dissimilar metal welds. The relief request for the two weld overlays was authorized by NRR on March 10, 2005.

Qc2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity).

A. Welders applying the structural weld overlay were qualified in accordance with the requirements of ASME Section IX and personnel performing examination of the completed weld overlays were qualified in accordance with ASME Section XI, Appendix VIII and PDI qualified for manual ultrasonic examination.

Qc3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Yes. Indications identified as a result of the ultrasonic PDI-qualified UT examination were evaluated for relevance, characterized and entered into the licensee's corrective action program for disposition and resolution.

d. <u>For each mechanical stress improvement (SI) used by the licensee during the outage, was the activity performed in accordance with a documented qualification report for stress improvement processes and in accordance with demonstrated procedures? Specifically:</u>

Qd1. Are the nozzle, weld, safe end, and pipe configurations, as applicable, consistent with the configuration addressed in the SI qualification report?

A. Yes. The performance verification records (PVR) addressed the dissimilar metal weld configuration by reference to the applicable nozzle assembly drawing for specified dimensional weld detail and location of the area to be subjected to the MSIP.

Qd2. Does the SI qualification report address the location radial loading is applied, the applied load, and the effect that plastic deformation of the pipe configuration may have on the ability to conduct volumetric examinations?

A. Yes. The performance verification record indicated the location for the application of radial loading and the load to be applied. Guidance is provided regarding the effect that plastic deformation may have on the ability to conduct the volumetric examination.

Qd3. Do the licensee's inspection procedure records document that a volumetric examination per the ASME Code, Section XI, Appendix VIII was performed prior to and after the application of the SI?

A. Yes. The MRP-139 required volumetric examination prior to and after the application

of the SI was documented in the applicable weld work order and the inspection procedure records.

Qd4. Does the SI qualification report address limiting flaw sizes that may be found during pre-SI and post-SI inspections and that any flaws identified during the volumetric examination are to be within the limiting flaw sizes established by the SI qualification report?

A. Yes. The limiting flaw sizes are addressed in the maintenance work order and the quality assurance program as applies to all the DMBW locations where MSIP will be applied.

Qd5. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Yes. Indications identified during the ultrasonic examination were evaluated for relevance, characterized and entered into the licensee's corrective action program for disposition and resolution.

e. <u>For the inservice inspection program:</u>

Qe1. Has the licensee prepared an MRP-139 Inservice inspection (ISI) program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

A. Yes. The licensee has incorporated the requirements of MRP-139 into the Calvert Cliffs Alloy 600 Program Plan, which documents and defines the processes to be used to ensure safety and reliability of all Alloy 600 components and Alloy 82 and 182 welds in the RCS. The implementation and management of the MRP-139 requirements is effected through the Calvert Cliffs ASME Section XI ISI Program. Upon completion of the MRP-139 remediation plan, welds are included in the ISI program and will be inspected in accordance with the examination extent and schedule requirements of MRP-139.

Qe2. In the MRP-139 Inservice Inspection Program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

A. Yes. All 54 welds identified during this inspection are appropriately categorized in accordance with MRP-139.

Qe3. In the MRP-139 Inservice Inspection Program, are there inservice inspection frequencies, which may differ between the first and second 10-year intervals after the MRP-139 baseline inspection, consistent with the inservice inspection frequencies called for by MRP-139?

A. Yes. Inspection frequencies identified in the inservice inspection program are consistent with the requirements of MRP-139, Revision 1. All MRP-139 applicable welds are scheduled either for mitigation and/or inspection prior to the end of the current 10-year inspection interval.

Qe4. If any welds are categorized as H or I, briefly explain the licensee's basis for the categorization and the licensee's plans for addressing potential PWSCC.

A. There are no welds at Units 1 or 2 that are categorized as H or I.

Qe5. If the licensee is planning to take deviations from the inservice inspection requirements of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

A. Constellation is currently considering a deviation request for eight Unit 2, RCS 30 inch diameter welds which are scheduled to be inspected by December 31, 2010. The eight welds are currently scheduled for PDI-UT examination during the Spring 2009 outage. Constellation is considering a deferral of the examinations until the Spring 2011 outage. The bases for the request is currently under development and will focus on a reduction in personnel dosage, enhanced examination techniques(s) and exam planning improvements based on contour and coverage plot information. The licensee has not yet submitted this request to Nuclear Energy Institute (NEI).