



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I**  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

May 9, 2013

Mr. Christopher Costanzo, Vice President  
Nine Mile Point Nuclear Station, LLC  
Constellation Energy Nuclear Group, LLC  
P.O. Box 63  
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, LLC - NRC INTEGRATED  
INSPECTION REPORT 05000220/2013002 AND 05000410/2013002

Dear Mr. Costanzo:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Nine Mile Point Nuclear Station, LLC (NMPNS), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on April 25, 2013, with you 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 non cited violation (NCV), and two self-revealing findings of very low safety significance (Green). In addition, one traditional enforcement Severity Level IV NCV and one traditional enforcement Severity Level IV NCV with an associated Green finding were identified. Three of these findings were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because they are entered into your corrective action program, the NRC is treating the three findings as NCVs consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCVs in this report, you should provide a response within 30 days of the date of this inspection report with the basis of your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at NMPNS. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at NMPNS.

In accordance with Title 10 of the *Code of Federal Regulations* 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 component of the NRC's Agencywide Documents Access Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Daniel L. Schroeder, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 50-220, 50-410  
License Nos.: DPR-63, NPF-69

Enclosure: Inspection Report 05000220/2013002 and 05000410/2013002  
w/Attachment: Supplementary Information

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION I**

Docket No.: 50-220, 50-410

License No.: DPR-63, NPF-69

Report No.: 05000220/2013002 and 05000410/2013002

Licensee: Constellation Energy Nuclear Group, LLC

Facility: Nine Mile Point Nuclear Station, LLC  
Units 1 and 2

Location: Oswego, New York

Dates: January 1 through March 31, 2013

Inspectors: K. Kolaczyk, Senior Resident Inspector  
E. Miller, Resident Inspector  
B. Haagensen, Resident Inspector  
B. Dionne, Health Physicist  
J. Laughlin, Emergency Preparedness Inspector  
T. Ziev, Project Engineer

Approved by: Daniel L. Schroeder, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

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## SUMMARY

IR 05000220/2013002, 05000410/2013002; 01/01/2013 - 03/31/2013; Nine Mile Point Nuclear Station, LLC, Units 1 and 2; Maintenance Effectiveness, Surveillance Testing, Follow-Up of Events and Notices of Enforcement Discretion.

This report covered a 3-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one NRC-identified non-cited violation (NCV) and two self-revealing findings of very low safety significance (Green). In addition, one traditional enforcement Severity Level IV NCV and one traditional enforcement Severity Level IV NCV with an associated Green finding were identified. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 19, 2012. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

### Cornerstone: Initiating Events

- Green. A self-revealing finding (FIN) was identified for the failure of Constellation Energy Nuclear Group, LLC (Constellation), maintenance personnel to ensure appropriate conditions were established during a surveillance test to confirm the lockup valves for flow control valve (FCV)-29-137 were properly functioning at Unit 1. As a result, a failure associated with the lockup valves was not detected during surveillance testing activities conducted in March 2011. This undetected failure led to an unexpected injection of water into the reactor pressure vessel (RPV) on November 6, 2012, during an unplanned outage, resulting in an increase in RPV water level, turbine trip signal, and initiation of the high-pressure coolant injection (HPCI) logic. Constellation entered this issue into their corrective action program (CAP) as condition report (CR)-2012-010141.

This finding is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, because maintenance personnel did not properly implement procedure N1-IPM-029-010, "Calibration of Feedwater FCV-29-134, FCV-29-137, and FCV-29-14," Revision 00603, the lockup valves for FCV-29-137 were not adequately tested, and as a result, degraded valve performance was not detected during a March 2011 surveillance test. Consequently, on November 6, 2012, FCV-29-137 unexpectedly failed partially open when instrument air was removed from the valve which caused a subsequent increase in RPV level, creation of a turbine trip signal, and initiation of the HPCI injection logic. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause a reactor trip, and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable, shutdown condition.

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This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because Constellation maintenance personnel did not effectively use human error prevention techniques such as peer and self checking to ensure plant conditions and system status were adequate to perform an air drop test on the lockup valves for FCV-29-137. Specifically, Constellation personnel failed to ensure the actuating cylinder for FCV-29-137 was pressurized prior to commencing the test. As a result, the air drop test was not properly conducted, and the degraded condition of the lockup valves was not identified [H.4(a)]. (Section 1R22)

- Green. A self-revealing finding (FIN) was identified for Constellation's failure to perform a cross-disciplinary engineering review in 2003, as required by station procedures, of the amplidyne excitation system operation setting. On September 20, 2012, Unit 1 experienced electrical oscillations at the main generator that required operators to take the automatic voltage regulator (AVR) from automatic to manual. As a result of the incorrect amplidyne operation setting at 10 to 20 volts boost, operators were unsuccessful at mitigating the electrical oscillations at the main generator, ultimately leading to a reactor scram. Constellation entered this issue into their CAP as CR-2012-008673.

This finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, contrary to procedures NIP-PRO-04, "Procedure Change Evaluations and Future Procedure Enhancements," Revision 14, and NIP-PRO-03, "Preparation and Review of Technical Procedures," Revision 14, Constellation failed to perform a cross-disciplinary engineering review to identify the inadequate amplidyne operation setting. As a result, the default set point of the AVR was not correct, and when electrical oscillations occurred at the Unit 1 main generator on September 20, the main generator became under excited when the AVR was placed in manual, resulting in a reactor scram. This finding was evaluated in accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012. The inspectors determined that this finding is of very low safety significance (Green) because while the performance deficiency caused a reactor scram, it did not result in the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency is not indicative of present performance because it did not occur within the last 3 years. (Section 4OA3)

- Severity Level IV/Green. The inspectors identified a Severity Level IV NCV and associated Green finding (FIN) of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, Tests and Experiments," because Unit 1 failed to perform a written 50.59 evaluation for changes to the operating procedure for the shutdown cooling system (SDCS) isolation valves. Specifically, Constellation added steps to the procedure to defeat the design basis safety function of the SDCS isolation valves to automatically isolate on a RPV low-low water level signal without performing a written 50.59 evaluation. Constellation entered this issue into their CAP as CR-2012-009540.

The inspectors determined that Constellation's failure to perform a written 50.59 evaluation for changes to N1-OP-4, "Shutdown Cooling System," Revision 03701, as required by 10 CFR 50.59 was a performance deficiency that was reasonably within Constellation's ability to foresee and correct and should have been prevented. Because this issue had the potential to affect the NRC's ability to perform its regulatory function, the inspectors evaluated the performance deficiency in accordance with the traditional enforcement process. The violation was determined to be more than minor because the inspectors could not reasonably determine that the changes would not have ultimately required NRC prior approval, because the change resulted in a more than minimal change in the frequency of occurrence of a previously evaluated accident (LOCA).

However, both the NRC Enforcement Policy and NRC IMC 0612 Appendix B, "Issue Screening," direct the inspector to evaluate the finding under the SDP as well. Under the SDP, this finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, by failing to maintain the safety function of the SDCS isolation valves to automatically isolate on low-low RPV water level, Unit 1 increased the likelihood of a loss-of-coolant accident (LOCA). In accordance with IMC 0609.04, "Initial Characterization of Findings," IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process," and Checklist 6 of IMC 0609 Appendix G, Attachment 1, "BWR Cold Shutdown or Refueling Operation, Time to Boil <2 hours: RCS Level <23 feet Above Top of Flange," the inspectors determined this finding to be of very low safety significance (Green) because this finding was not a loss of control and did not impact checklist attributes requiring a Phase 2 or Phase 3 analysis.

Therefore, in accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is also categorized as a Severity Level IV (more than minor concern that resulted in no or relatively inappreciable potential safety or security consequence) violation because the resulting conditions were evaluated as having very low safety significance (Green) by the SDP. The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency is not indicative of present performance because it did not occur within the last 3 years. (Section 4OA3)

### **Cornerstone: Mitigating Systems**

- Green. The inspectors identified a NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," under section (a)(1) of the rule for failing to properly monitor the leak detection system (LDS) to assure that the Riley temperature modules at Unit 2 were capable of fulfilling their intended functions. Specifically, Constellation did not correctly account for maintenance-related functional failures and plant level events during a 2-year assessment period resulting in a failure to transition the LDS into an (a)(1) status at Unit 2. Constellation entered this issue into their CAP as CR-2013-002015 and assessed the LDS for transition into (a)(1) status.



This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failures of the Riley temperature modules caused safety system isolations to occur which impacted the availability of these systems. This finding was evaluated in accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012. The inspectors determined this finding was of very low safety significance (Green) because this finding did not represent an actual loss of system safety function, did not represent an actual loss of function of at least a single train for greater than its technical specification (TS) allowed outage time, and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety significant in accordance with Constellation's maintenance rule program for greater than 24 hours. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Constellation failed to thoroughly evaluate the failures of the Riley temperature modules to identify concerns with reliability in accordance with the maintenance rule (a)(1) [P.1(c)]. (Section 1R12)

#### **Cornerstone: Miscellaneous**

- Severity Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.73(a)(2)(iv)(A) in that Unit 1 inappropriately retracted an event notification report (ENR) and subsequently failed to make the required licensee event report (LER) for a valid actuation of the HPCI system. Specifically, Constellation inappropriately retracted ENR number 48477, an 8-hour notification for a valid HPCI actuation and failed to submit an LER within 60 days of discovery of the actuation. Constellation entered this issue into their CAP as CR-2013-001859.

The inspectors determined that the inappropriate retraction of a notification required by 10 CFR 50.72(b)(3)(iv)(A) and failure to make a required event report in accordance with 10 CFR 50.73(a)(2)(iv)(B)(4) were performance deficiencies that were reasonably within Constellation's ability to foresee and correct and should have been prevented. Because this issue had the potential to affect the NRC's ability to perform its regulatory function, the inspectors evaluated these performance deficiencies in accordance with the traditional enforcement process. Using example 6.9.d.9 from the NRC Enforcement Policy, the inspectors determined that the violation was a Severity Level IV (more than minor concern that resulted in no or relatively inappreciable potential safety or security consequence) violation. Because this violation involves the traditional enforcement process and does not have an underlying technical violation that would be considered more than minor, the inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B, "Issue Screening," issued September 7, 2012. (Section 4OA3)

## REPORT DETAILS

### Summary of Plant Status

Constellation Energy Nuclear Group, LLC (Constellation), Nine Mile Point Nuclear Station (NMPNS), LLC, Unit 1 began the inspection period at 100 percent power. On February 2, 2013, Unit 1 reduced power to 80 percent to perform a control rod pattern adjustment. Operators returned the unit to 100 percent the following day. On February 16, Unit 1 reduced power to 80 percent to perform a control rod pattern adjustment and control rod friction testing. Operators returned the unit to 100 percent the following day. On March 16, Unit 1 reduced power to 80 percent to perform a rod pattern adjustment. Operators returned the unit to 100 percent later that day. The unit remained at or near 100 percent power for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. On February 9, Unit 2 reduced power to 65 percent to conduct turbine stop testing, turbine control valve testing, main steam isolation valve testing, control rod friction testing, control rod scram time testing, and a control rod pattern adjustment. Operators returned the unit to 100 percent the following day and remained at or near 100 percent power for the remainder of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

1R01 Adverse Weather Protection (71111.01 – 3 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Constellation's readiness for the onset of seasonal low temperatures. During the week of January 1, 2013, Constellation experienced cold temperatures accompanied by winds and snow. The review focused on Unit 2, Divisions I, II, and III safety-related batteries; Units 1 and 2 screenwell buildings; and Unit 2 standby gas treatment system (GTS). The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TSs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure Constellation personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Constellation's seasonal weather readiness procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

Attachment

## .2 Readiness for Impending Adverse Weather Conditions

### a. Inspection Scope

The inspectors performed a review of Constellation's readiness for the onset of impending adverse weather conditions at Unit 1 that involved unseasonably cold temperatures and snow during the week of January 21, 2013. The review focused on the Unit 1 operation department's preparations and response to the adverse weather conditions. As part of the review, the inspectors performed a walkdown of the Unit 1 101 and 102 emergency diesel generators (EDGs) and the number 11 and 12 battery rooms. The inspectors reviewed Constellation's procedure EPIP-EPP-26, "Natural Hazard Preparation and Recovery," Revision 00301, control room logs, and interviewed operations department personnel to determine if Constellation personnel had adequately prepared for the onset of adverse weather.

### b. Findings

No findings were identified.

## .3 External Flooding

### a. Inspection Scope

During the week of March 4, 2013, the inspectors performed an inspection of the external flood protection measures for the NMPNS. The inspectors reviewed TSs, procedures, design documents, and Unit 2 UFSAR, Section 2.4, which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of external areas of Unit 1 including the EDG fuel oil storage tank locations to ensure that Constellation erected flood protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to determine if Constellation planned or established adequate measures to protect against external flooding events.

### b. Findings

No findings were identified.

## 1R04 Equipment Alignment

### .1 Partial System Walkdowns (71111.04 – 6 samples)

#### a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2 control room envelope air conditioning system on January 7, 2013
- Unit 1 HPCI response to the December 13, 2012, rapid shutdown per N1-OP-43C on January 8, 2013
- Unit 2 'B' residual heat removal (RHR) system following the failure of the 'B' RHR keep fill pump on January 17, 2013.
- Unit 2, Division I, keep fill system following 2CSL\*P2 motor replacement on February 13, 2013
- Unit 1 11 and 12 liquid poison system trains following restoration from '11' liquid poison system surveillance testing on March 5, 2013.
- Unit 1 112 core spray run for pressurizer safety valve PSV-81-241 vibration on March 26, 2013

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Constellation staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On February 13, 2013, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 reactor core isolation cooling (RCIC) system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, drawings, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors performed field walkdowns of accessible portions of the system to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure Constellation appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

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Resident Inspector Quarterly Walkdowns (71111.05Q – 7 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Constellation controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 1 screen house (Fire Area (FA)-13) on January 2, 2013
- Unit 1 diesel fire pump room (FA-14) on January 2, 2013
- Unit 2 2FPW-P1 diesel fire pump room (FA-62) on January 2, 2013
- Unit 2 control building elevation 214 feet (FA-16, FA-17, FA-18, FA-38, FA-39, FA-40) on January 3, 2013
- Unit 1 auxiliary control room (FA-11) on January 3, 2013
- Unit 2 Division II switchgear room (FA-19) on January 11, 2013
- Unit 1 control room (FA-11) on March 28, 2013

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11Q – 4 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope (2 samples)

The inspectors observed:

- Unit 1 and Unit 2 licensed operator classroom training for Nuclear Energy Institute (NEI) Document 99-01, "Methodology for Development of Emergency Action Levels (EALs)," Revision 5, on January 15, 2013, which included instructor-led presentations of new EAL charts and scenarios to illustrate changes from previous EALs.
- Unit 2 licensed operator performance during an evaluated simulator scenario on March 5, 2013, that included the failure of an emergency electrical bus, loss of a reactor feedwater pump, loss of the main turbine, and the failure of the reactor to successfully scram.

The inspectors verified completion of risk-significant operator actions including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity

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and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope (2 samples)

The inspectors observed:

- On January 8, 2013, control room operations at Unit 1 during containment spray 122 surveillance testing and EDG 103 relay replacement.
- On January 15, 2013, control room operations at Unit 2 during a period of increased plant risk because of planned maintenance activities on the 'A' RHR system and the Division I EDG.

The inspectors reviewed CNG-OP-1.01-1000, "Conduct of Operations," Revision 00800, and verified that procedure use, crew communications, and coordination of plant activities among work groups similarly met established expectations and standards. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 1 sample)

a. Inspection Scope

The inspectors reviewed Unit 2 LDS on March 14, 2013, to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule basis documents to ensure that Constellation was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Constellation staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors

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ensured that Constellation staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," under section (a)(1) of the rule for failing to properly monitor the LDS to assure that the Riley temperature modules at Unit 2 were capable of fulfilling their intended functions. Specifically, Constellation did not correctly account for maintenance-related functional failures and plant level events during a 2-year assessment period resulting in a failure to transition the LDS into an (a)(1) status at Unit 2.

Description. The LDS uses Riley temperature modules to monitor the temperature of approximately 30 safety-related areas. Historically, module failures have resulted in numerous spurious system isolations. To address these failures, Constellation replaced electrolytic capacitors in these modules during the 1990's as part of preventive maintenance (PM). This PM action was successful in substantially reducing the failure rate. Approximately 10 years ago, Constellation decided to replace these temperature modules with a new digital temperature monitoring system and suspended the PM. However, the digital system did not meet acceptance criteria, and the replacement plan was suspended. Although the digital system upgrade was suspended, Constellation did not resume the PM activity to replace the aging capacitors in the installed temperature modules. As a result, starting in 2011 after approximately 10 years in service, the failure rate on the temperature modules again began to increase as the electrolytic capacitors reached the end of their service life.

When reviewing the maintenance history of the Riley temperature modules, the inspectors determined Constellation did not appropriately establish the reliability performance criteria for the LDS. Specifically, the safety function for the LDS was "monitors reactor coolant leakage (temperature) from systems external to containment and initiates alarms and/or isolations when predetermined limits are exceeded." The performance monitoring criteria established was "a functional failure would be declared if channel-level failures or malfunctions occur such that required isolations would not occur or alarms would not be received." The inspectors determined this restrictive criteria limited maintenance-related functional failures only to events that would prevent a safety actuation from occurring, not events that triggered a spurious actuation. As a result, the inspectors determined actual system performance of the Riley modules was not being monitored by Constellation.

Specifically since 2011, there have been three failures of the Riley temperature monitoring channels in the LDS system that have triggered safety system isolations that have not counted as maintenance-related functional failures because the failure caused

a spurious isolation rather than preventing an isolation. When combined with two maintenance-related functional failures for annunciators that failed to alarm, there were a total of five maintenance-related functional failures.

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The most common failure mode for the Riley temperature detectors is to fail high which generally causes the alarm to annunciate and the safety system actuation to occur. By not counting spurious actuation events, the most common failure mode was not counted for reliability assessment, yet the failure mode is such that the failed LDS system component is no longer capable of performing its safety function.

The inspectors noted maintenance-related functional failures are not dependent on the plant mode or requirement for the safety function to be needed. Indeed CNG-AM-1.01-1023, "Maintenance Rule Program," Revision 00200, states that maintenance-related functional failures are an indicator of reliability and, therefore, should be tracked against established performance criteria even if the failure occurred while in an operational mode in which the SSC/function is not technically required to be available.

The inspectors determined accounting for reliability performance by splitting the number of maintenance-related functional failures for temperature channel failures between plant level performance criteria (i.e., 2PLANT) and LDS reliability performance criteria (i.e., LDS-F01) masked the true performance of the LDS and resulted in the LDS super-system not being assessed for (a)(1) status for a period of time from November 2011 to March 2013. As a result, there should have been five maintenance-related functional failures accounted for during this 2-year period for the Riley temperature monitoring instrument channels. For example:

- On March 18, 2011, the annunciator for temperature module E31-N615A failed to alarm during a surveillance test. Corrective action was taken and the module was returned to service. This failure was documented not to be a maintenance-related functional failure (CR-2011-002157). The inspectors determined the failure should have been assessed as the first maintenance-related functional failure for indicator LDS-F01. Constellation did not count the failure since the alarm that failed was not in scope.
- On June 17, 2011, the annunciator again failed to alarm for temperature module E31-N615A. This time, the failure was documented as the first maintenance-related functional failure under LDS-F01 (CR-2011-005787). It should have been assessed as the second under LDS-F01.
- On November 7, 2011, temperature module E31-N619B failed high causing RCIC to spuriously isolate. This event was documented not to be a maintenance-related functional failure (CR-2011-010062). It should have been scored as the first maintenance-related functional failure under indicator 2PLANT and the third under LDS-F01. This action should have triggered an (a)(1) assessment of the temperature monitoring system in the LDS super-system. This condition was not recognized at the time and an (a)(1) evaluation was not performed.
- On October 12, 2012, temperature module E31-N620A failed causing RCIC to isolate. Constellation documented this failure as the first maintenance-related functional failure under 2PLANT (CR-2012-009380). It was documented as not being a maintenance-related functional failure under LDS-F01. It should have been assessed as the second under 2PLANT and the fourth under LDS-F01, which should have triggered another (a)(1) evaluation.

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- On January 23, 2013, temperature module E31-N637A failed high causing another RCIC spurious isolation. Constellation documented this event as the second maintenance-related functional failure under 2PLANT and not a maintenance-related functional failure under LDS-F01 (CR-2013-000634). Neither criteria triggered an (a)(1) evaluation. The event should have been assessed as the third maintenance-related functional failure under 2PLANT (which should have also triggered another (a)(1) evaluation under 2PLANT) and the fifth maintenance-related functional failure which should have triggered another (a)(1) evaluation under LDS-F01.

By splitting the reliability performance monitoring criteria between plant level and system level maintenance-related functional failures, Constellation did not detect the degrading performance of the LDS. As a result, Constellation did not evaluate the LDS system for transition to (a)(1) status in November 2011, October 2012, and January 2013. Constellation entered this condition into their CAP as CR-2013-002015, conducted the required evaluation, and transitioned the LDS into (a)(1) status.

Analysis. The inspectors determined that Constellation's failure to establish goals that would provide reasonable assurance that the LDS would perform its intended safety function and to properly assess LDS performance against the plant level criteria in accordance with 10 CFR 50.65(a)(1) was a performance deficiency that was reasonably within Constellation's ability to foresee and prevent. This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failures of the Riley temperature modules caused safety system isolations to occur which impacted the availability of these systems.

In accordance with IMC 0609.04, "Initial Characterization of Findings" and IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined this finding was of very low safety significance (Green) because this finding did not represent an actual loss of system safety function, did not represent an actual loss of function of at least a single train for greater than its TS allowed outage time, and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in accordance with Constellation's maintenance rule program for greater than 24 hours.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Constellation failed to thoroughly evaluate the failures of the Riley temperature modules to identify concerns with reliability in accordance with the maintenance rule (a)(1) [P.1(c)].

Enforcement. 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," requires, in part, that the licensee shall monitor the performance or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. These goals shall be established commensurate with safety and, where practical, take into account industry-wide operating experience. When the

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performance or condition of a SSC does not meet established goals, appropriate corrective action shall be taken. Contrary to the above, Constellation did not adequately monitor the performance of the LDS against the 10 CFR 50.65(a)(2) reliability criteria in a manner that would provide reasonable assurance that the LDS would perform its safety function. Constellation entered this condition into their CAP (CR-2013-002015) and assessed the LDS for transition into (a)(1) status. **(NCV 05000410/2013002-01, Inadequate Maintenance Rule Monitoring of the Leak Detection System Performance)**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 7 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Constellation performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Constellation personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Constellation performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 2 2RHS\*P1B, 2RHS\*P1C, high-pressure core spray walkdown during low-pressure core spray and 2RSH\*P1A unavailability on January 9, 2013
- Unit 2 planned maintenance on the 'A' RHR system and the Division I EDG during the week of January 14, 2013
- Unit 2, Division I, GTS planned maintenance and emergent work on the control room ventilation system during the week of January 21, 2013
- Unit 2, Division I, walkdowns of Division I EDG and Division I GTS during Division III EDG and Division II GTS maintenance on February 20, 2013
- Unit 2 RCIC, walkdowns of low-pressure core spray, Divisions I and II EDGs, and service water (SW) pumps 'B', 'C', 'D', and 'E' during Division III breaker maintenance on February 27, 2013
- Unit 1 EDG 102 and power board 102 walkdowns during EDG 103 raw water heat exchanger (HX) maintenance on March 13, 2013
- Unit 2 planned maintenance on Division III switchgear on March 26, 2013

b. Findings

No findings were identified.

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1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Unit 1 step changes in reactor recirculation total flow for channel 11 on January 23, 2013
- Unit 1 General Electric-Hitachi 10 CFR Part 21 for potential foreign material in control rod drive mechanism 46-25 on January 24, 2013
- Unit 1 impact of foreign material on EDG 103 fuel oil storage tank on February 6, 2013
- Unit 1 electromatic relief valve 111 momentary lift on February 11, 2013
- Unit 1 EDG 103 degraded raw water cooling flow on February 20, 2013
- Unit 2 HPCI return line valve leak on February 26, 2013

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Constellation's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Constellation. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modification

a. Inspection Scope

The inspectors reviewed the Unit 1 AVR monitoring equipment to determine where the modification affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results and conducted a field walkdown of the modification to verify that the temporary modification did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

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No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

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 the 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.

- Unit 2, RCIC pump and valve operability test following routine system maintenance on February 7, 2013
- Unit 2, Division II, GTS following GTS\*air-operated valve (AOV)3B maintenance on February 22, 2013
- Unit 2, Division III, EDG following planned maintenance on February 22, 2013
- Unit 1, EDG 103 following raw water HX maintenance on March 13, 2013
- Unit 1, 12 control room emergency ventilation system fan following fan belt replacement on March 15, 2013
- Unit 2, Division I, SW valve stroke testing of 2SWP\*FV47A following maintenance of the hydraulic actuator on March 19, 2013
- Unit 2, stroke testing RCIC AOV 2ICS-AOV13 following packing replacement on March 20, 2013

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

In preparation for the planned spring refueling outage (RFO) scheduled to commence on April 15, 2013, for Unit 1, the inspectors performed the following activities:

- Walked down several plant areas in the reactor and turbine building (TB) to ensure pre-outage activities such as scaffold erection did not adversely impact plant equipment
- Attended pre-outage human performance training and scheduling meetings
- Reviewed the outage schedule and confirmed that Constellation had appropriately considered risk, industry experience, and previous site-specific problems

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- Confirmed that Constellation had mitigation response strategies for losses of key safety functions

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 7 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and Constellation's procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- N1-ST-Q6D, Containment Spray System Loop 122 Quarterly Operability Test on January 8, 2013
- N2-OSP-GTS-M001, GTS Functional Test on January 15, 2012
- N1-ST-C25, Liquid Poison Pump Operability Test on January 30, 2013
- N1-ST-Q20, Reactor Building Heating, Cooling, and Ventilation System Test on January 31, 2013
- N2-OSP-SLS-Q001, Standby Liquid Control Pump Loop 'B' Operability Test on February 1, 2013
- N1-IPM-029-010, Calibration of Feedwater FCV-29-134, FCV-29-137, and FCV-29-141 on February 27, 2013
- N1-ST-Q1C, Core Spray 112 Pump and Valve Operability Test on March 12, 2013

b. Findings

Introduction. A self-revealing Green finding was identified for the failure of Constellation maintenance personnel to ensure appropriate conditions were established during a surveillance test to confirm the lockup valves for FCV-29-137 were properly functioning at Unit 1. As a result, a failure associated with the lockup valves was not detected

during surveillance testing activities conducted in March 2011. This undetected failure led to an unexpected injection of water into the RPV on November 6, 2012, during an unplanned outage, resulting in an increase in RPV water level, turbine trip signal, and initiation of HPCI logic.

Description. Unit 1 has three air-operated FCVs (FCV-134, FCV-137, and FCV-141) located downstream of the number 13, 12, and 11 main feedwater pumps, respectively.

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Each FCV has a series of lockup valves that are designed to hold the FCV valve stem in position in the event instrument air is lost. The lockup valves perform this function by directing instrument air to both sides of the FCV positioning diaphragm and thereby 'locking' the valve stem in place in the event instrument air is lost to the FCV. Procedure N1-IPM-029-010, "Calibration of Feedwater FCV-29-134, FCV-29-137, and FCV-29-141," Revision 00603, was used, in part, to test the ability of the lockup valves to hold pressure on both sides of the diaphragm. This is accomplished by a series of steps that pressurizes the actuating cylinder of a FCV under test and simulates a loss of air. Lockup valve performance is deemed acceptable if cylinder pressure differs by less than 20 percent over a 5-minute period. The valves are tested every 2 years as part of a surveillance program.

On November 6, 2012, while establishing isolation to perform work on the Unit 1 feedwater control system, FCV-29-137 unexpectedly failed partially open when instrument air was removed from the valve. Because of the alignment of the feedwater system that existed, water was injected into the RPV causing a subsequent increase in RPV level, creation of a turbine trip signal, and initiation of the HPCI injection logic. During the transient, RPV water level increased from 73 to 105 inches.

A subsequent Constellation investigation concluded that FCV-29-137 failed open when instrument air was removed, in part, because 'O' rings installed in the lockup valves were degraded. This degradation was not detected earlier by Constellation during periodic surveillance testing because procedure N1-IPM-029-010 was not correctly performed in March 2011. Specifically, when maintenance personnel commenced the lockup valve air drop test, they failed to first establish appropriate test conditions and ensure the actuating cylinder was pressurized with air. Because the cylinder was not pressurized, the lockup valves passed the test acceptance criteria of less than a 20 percent drop in air pressure since both the initial and final cylinder pressures were identical—0 pounds per square inch gauge. Constellation's corrective actions included replacing the degraded 'O' rings in FCV-29-137 and initiating a procedure change to N1-IPM-029-010 that would more clearly define the minimum starting air pressure required prior to commencing the air drop test. Constellation entered this issue into their CAP as CR-2012-010141.

Analysis. The inspectors determined that Constellation's failure of maintenance personnel to ensure appropriate initial conditions were established during a surveillance test of the lockup valves for FCV-29-137 as required in N1-IPM-029-010 was a performance deficiency that was reasonably within Constellation's ability to foresee and correct and should have been prevented. This finding is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, because maintenance personnel did not establish appropriate conditions to test the lockup valves for FCV-29-137, degraded valve performance was not detected during a March 2011 surveillance test. As a result, on November 6, 2012, FCV-29-137 unexpectedly failed partially open when instrument air was removed from the valve which caused a subsequent increase in RPV level, creation of a turbine trip signal, and initiation of the HPCI injection logic.

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In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause a reactor trip, and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable, shutdown condition.

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because Constellation maintenance personnel did not effectively use human error prevention techniques such as peer and self checking to ensure plant conditions and system status were adequate to perform an air drop test on the lockup valves for FCV-29-137. As a result, the air drop test was not properly conducted, and the degraded condition of the lockup valves was not identified [H.4(a)].

Enforcement. Enforcement action does not apply because this performance deficiency did not involve a violation of a regulatory requirement. The primary components in this event, the lockup valves in FCV-29-137, are not safety related. As such, the applicable engineering specification procedure is not governed by the requirements of Unit 1 TS 6.4 "Procedures." This issue was entered into Constellation's CAP as CR-2012-010141. This finding does not involve enforcement action because the no regulatory requirement violation was identified. Because this finding does not involve a violation and is of very low safety significance, it is identified as a finding. **(FIN 05000220/2013002-02, Test Conditions Not Properly Established)**

### **Cornerstone: Emergency Preparedness**

#### **1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)**

##### **a. Inspection Scope**

NRC inspectors from the Office of Nuclear Safety and Incident Response performed an in-office review of the latest revisions of various emergency plan implementing procedures and the emergency plan located under ADAMS accession numbers ML130240192 and ML130230023.

Constellation determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the plan and that the revised plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR

Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of Constellation-generated changes; therefore, this revision is subject to future inspection.

##### **b. Findings**

No findings were identified.

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1EP6 Drill Evaluation (71114.06 – 1 sample)Training Observationsa. Inspection Scope

The inspectors observed a simulator training evolution for Constellation's licensed operators on March 5, 2013 which required emergency plan implementation by an operations crew. The inspectors observed Unit 2 licensed operator performance during an evaluated simulator scenario that included the failure of an emergency electrical bus, loss of a reactor feedwater pump, loss of the main turbine, and the failure of the reactor to successfully scram. Constellation planned for this evolution to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that Constellation evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

**2. RADIATION SAFETY****Cornerstone: Public Radiation Safety and Occupational Radiation Safety**2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)a. Inspection Scope

During March 18 to 21, 2013, the inspectors reviewed and assessed Constellation's performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR Part 20 and guidance in Regulatory Guide (RG) 8.38, "Control of Access to High and Very High Radiation Areas for Nuclear Plants," TSs, and Constellation's procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed 2012 PIs for the occupational exposure cornerstone for Constellation. The inspectors reviewed the results of radiation protection (RP) program audits. The inspectors reviewed reports of operational occurrences related to occupational radiation safety since the last inspection.

Radiological Hazard Assessment



The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether Constellation assessed the potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors reviewed the following radiological surveys at Unit 1:

- 1RB-25355, reactor building (RB) 261 feet auxiliary cleanup pump room, December 11, 2012
- 1RB-25355, RB 198 feet 218 feet northeast corner room, December 12, 2012
- TB-34916, TB 261 feet large equipment decon room, January 18, 2013
- 1RB-25364, RB 261 feet reactor water cleanup (RWCU) corridor HX room, February 12, 2013
- 1RB-25367, RB 249 feet outer traversing in-core probe room, March 10, 2013

The inspectors evaluated whether the thoroughness and frequency of the surveys were appropriate for the radiological hazard.

The inspectors conducted walkdowns and independent radiation measurements in the facility including radioactive waste processing, storage, and handling areas to evaluate material and radiological conditions.

The inspectors selected WO C91009108, a risk-significant work activity involving moving fuel from the new fuel vault to spent fuel pool. For this work activity, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if radiological hazards were properly identified.

The inspectors evaluated whether continuous air monitors were located in areas with low sensitivity and were representative of actual work area breathing air. The inspectors evaluated the program for monitoring levels of loose surface contamination in areas of the plant with the potential for airborne radioactivity.

#### Instructions to Workers

The inspectors selected five containers of non-exempt licensed radioactive material. The inspectors assessed whether the containers were properly labeled and controlled.

The inspectors reviewed two occurrences where a worker's electronic pocket dosimeter malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately. The inspectors assessed whether this issue was included in the CAP and whether compensatory dose evaluations were conducted as appropriate.

#### Radiological Hazards Control and Work Coverage

The inspectors evaluated ambient radiological conditions and performed independent radiation measurements during plant walkdowns. The inspectors assessed whether conditions were consistent with applicable posted surveys, radiation work permits (RWPs), and associated worker briefings.

The inspectors evaluated the adequacy of radiological controls such as required surveys, RP job coverage, and contamination controls. The inspectors evaluated the use of electronic pocket dosimeters in high noise areas that were also high radiation areas or locked high radiation areas.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body to effectively monitor exposure to personnel in high radiation work areas with significant dose rate gradients.

The inspectors examined the physical and programmatic controls for highly activated or contaminated materials stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupational PI.

#### Risk-Significant High Radiation Area and Very High Radiation Area Controls

The inspectors discussed the controls and procedures for high risk high radiation areas and very high radiation areas with the RP manager. The inspectors discussed with first-line health physics supervisors the controls in place for special areas that have the potential to become very high radiation areas during certain plant operations. The inspectors evaluated the controls for very high radiation areas and areas with the potential to become a very high radiation area to ensure that an individual was not able to gain unauthorized access to these areas.

#### Radiation Worker Performance

The inspectors observed the performance of radiation workers with respect to stated RP work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace, the RWP controls and limits, and whether their behavior reflected the level of radiological hazards present.

The inspectors reviewed CR-2012-009589, CR-2012-009684, and CR-2013-001299 since the last inspection that attributed the cause of the event to human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective actions taken to resolve the reported problems.

#### Radiation Protection Technician Proficiency

The inspectors observed the performance of the RP technicians at the Unit 1 refuel floor with respect to controlling radiation work. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace, the RWP controls and limits, and whether their behavior was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed CR-2012-011132, CR-2012-011133, and CR-2012-006686 since the last inspection that attributed the cause of the event to RP technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective actions taken to resolve the reported problems.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, RG 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will be As Low As Reasonably Achievable," RG 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposure As Low As Reasonably Achievable," TSs, and Constellation's procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed pertinent information regarding Constellation's collective dose history and the plant's 3-year rolling average collective exposure.

The inspectors compared the site-specific trends in collective exposures against the industry average values for the time period between 2009 and 2011. In addition, the inspectors reviewed changes in the radioactive source term by reviewing the trend in average contact dose rates on recirculation suction and discharge piping.

The inspectors reviewed ALARA procedures that specified the processes used to estimate and track exposures for radiological work activities.

Radiological Work Planning

The inspectors selected the following work activities that had the highest exposure significance:

- ALARA Plan 2013-1-002, Drywell Under-Vessel Activities and Associated Activities N1R22

- ALARA Plan 2013-1-004, Drywell Operations and Local-Leak Rate Test and Integrated Leak Rate Test Activities
- ALARA Plan 2013-1-006, Drywell In-Service Inspection Activities
- ALARA Plan 2013-1-007, Recirculation Pump Seals Replacement and Motor PMs (Numbers 11, 13, 15)
- ALARA Plan 2013-1-010, Drywell Scaffold Activities
- ALARA Plan 2013-1-014, Drywell Emergency Relief Valve and Pilot Valve Work Activities
- ALARA Plan 2013-1-028, Turbine Deck, Moisture Separator Reheater, Stop and Control Valve Work Activities
- ALARA Plan 2013-1-029, Balance of Plant Flow-Accelerated Corrosion Activities in RWCU HX Room and Valve Aisles
- ALARA Plan 2013-1-030, Refuel Floor Activities
- ALARA Plan 2013-1-031, RWCU Miscellaneous Maintenance, PM, Surveillance Test, Operations RFO 22

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure reduction requirements. The inspectors determined whether Constellation reasonably grouped the radiological work into work activities based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether Constellation's planning identified appropriate dose reduction techniques, considered alternate dose reduction features, and estimated reasonable dose goals. The inspectors evaluated whether the ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment. The inspectors determined whether work planning considered the use of remote technologies as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and RWP documents.

#### Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for the current annual collective dose estimate for accuracy. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and for department and station collective dose goals.

The inspectors evaluated whether Constellation had established measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors assessed whether dose threshold criteria were established to prompt additional reviews and/or additional ALARA planning and controls. The inspectors evaluated Constellation's method of adjusting exposure estimates or re-planning work when unexpected changes in scope or emergent work were encountered.

#### Source Term Reduction and Control

The inspectors used station records to determine the historical trends from 1973 to the present as well as current status of plant source term. The inspectors assessed whether

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Constellation had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

#### Radiation Worker Performance

The inspectors observed radiation worker and RP technician performance during work activities being performed in the RWCU corridor which was designated a high radiation areas. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice and whether there were any procedure or RWP compliance issues.

#### b. Findings

No findings were identified.

### **4. OTHER ACTIVITIES**

#### 4OA1 Performance Indicator Verification (71151)

##### Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications (6 samples)

#### a. Inspection Scope

The inspectors reviewed Constellation's submittals for the following Initiating Events cornerstone PIs for the period of January 1 through December 31, 2012.

- Units 1 and 2 Unplanned Scrams (IE01)
- Units 1 and 2 Unplanned Power Changes (IE03)
- Units 1 and 2 Unplanned Scrams with Complications (IE04)

To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed Constellation's operator narrative logs, maintenance planning schedules, CRs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

#### b. Findings

No findings were identified.

#### 4OA2 Problem Identification and Resolution (71152 – 1 sample)

##### .1 Routine Review of Problem Identification and Resolution Activities

#### a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the

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inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Constellation entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP.

b. Findings

No findings were identified.

.2 Annual Sample: Corrective Actions to Address Repetitive Fires in Balance of Plant Areas

a. Inspection Scope

NMPNS has experienced six fires over a 2-year period. Four of these fires have resulted in the declaration of a notification of unusual event (NOUE) per Constellation's emergency plan. The six fires included the following events:

- CR-2011-001831, 2FWS-P1A Inboard Seal Began to Smoke
- CR-2011-002798, Fire in Portable Lift Results in Unusual Event
- CR-2012-003328, Hydrogen Fire in Water Chemistry Vent Pipe
- CR-2011-006003, Fire at Heater Board 12 Results in Unusual Event
- CR-2012-006075, Unusual Event Declared at Unit 2 Due to Fire on 2FWS-P1B
- CR-2012-009630, Unit 1 Declared an Unusual Event for Fire in PB-H111

The inspectors performed an in-depth review of these events to assess Constellation's extent of cause and condition for these fires. To perform this review, the inspectors conducted plant walkdowns, interviewed plant personnel, and reviewed the CAP.

b. Findings and Observations

No findings were identified.

Six small fires on site in a 2-year period, four of which resulted in a declaration of NOUEs, was a clear trend that required corrective action. The inspectors observed that the causes of the fires were different and that the response by fire suppression systems and the on-site fire brigade successfully and promptly extinguished the fires. Damage to equipment was limited to the immediate vicinity of the fire, and there were no personnel injuries. From this perspective, plant and personnel safety were maintained by the prompt actions of the fire brigade.

The Unit 1 electrical panel board fires occurred in non-safety-related electrical switchboards that provided power to heating and lighting circuits. The first fire occurred in June 2011 in panel board PB-H12 and was documented in CR-2011-006003. The second fire occurred in November 2012 in PB-H111, and this event was documented in CR-2012-009630. The switchboards had not been cleaned and inspected for a

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prolonged period of time. The fires occurred within the site protected area and resulted in the declaration of NOUEs.

As a result of the November 2012 fire, Constellation initiated periodic PM to clean and inspect all medium voltage panel boards and prevent recurrence. Additionally, Constellation expedited performing thermography of similar switchboards to identify potentially degraded areas. The inspectors noted similar switchboard thermography was initiated following the June 2011 fire but was not aggressively implemented at Unit 1. As a result, PB-H111 was not examined prior to the November 2012 fire. The inspectors noted that an Exelon power lab report completed after the November 2012 fire identified the switchboard protective fusing/relaying failed to trip when currents reached high levels. There did not appear to be any specific corrective action to review this issue. Following discussions with Constellation, CR-2013-003481 was initiated to document this oversight.

The Unit 2 feedwater pump fires occurred following power up-rate related maintenance activities which resulted in oil-soaked insulation coming into contact with the hot metal turbine casing. CR-2012-006075 and CR-2011-001831 characterized the underlying issues with oil-soaked lagging and specified corrective actions to prevent recurrence.

The causes of the fires in the water chemistry vent pipe documented in CR-2012-003328 and the portable lifting equipment battery documented in CR-2011-002798 were unrelated.

As a result of the six fires occurring over 2 years, Constellation initiated CR 2013-000185 on March 8, 2013, to investigate common causes and extent of condition. The common cause analysis appeared to be thorough and included the defense element of the fire protection program. The overall conclusions were that there had been an inadequate perception of fire risk and less than adequate PM scope or performance. The inspectors concluded that the planned corrective actions appear to be appropriate to prevent recurrence. Further, the planned Constellation inspection schedule was commensurate with the safety significance and included appropriate corrective actions.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 9 samples).1 Plant Eventsa. Inspection Scope

The inspectors reviewed the November 6, 2012 Unit 1 reactor vessel level transient and the related ENR on November 6, 2012 and subsequent EN retraction on December 17, 2012. The inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," issued October 28, 2011, for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Constellation made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Constellation's follow-up actions related to the events to assure that Constellation implemented appropriate corrective actions commensurate with their safety significance.

b. Findings

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.73(a)(2)(iv)(A) in that Constellation personnel inappropriately retracted an ENR and subsequently failed to make the required LER for a valid actuation of the Unit 1 HPCI system. Specifically, Constellation inappropriately retracted ENR number 48477, an 8-hour notification for a valid HPCI actuation, and failed to submit an LER within 60 days of discovery of the actuation.

Description. On November 6, 2012, the 12 feedwater level control valve on Unit 1 unexpectedly partially opened while the reactor was in cold shutdown. As a result, RPV level rose to the high level turbine trip set point, causing a main turbine trip and actuation of the HPCI logic channels 11 and 12. HPCI injection was not required for the high vessel level condition, and there were no actual component starts or HPCI injection due to the plant configuration at the time of the actuation. Constellation reported this condition to the NRC within 8 hours of discovery of the valid actuation of the HPCI system as required by 10 CFR 50.72(b)(3)(iv)(A).

On December 17, Constellation retracted the 8-hour notification that had been made on November 6 for a valid HPCI actuation. Constellation concluded that the reported HPCI system actuation was invalid because, although the HPCI logic actuation on a turbine trip signal was caused by an actual high vessel level condition, vessel level is not a plant condition requiring HPCI. Constellation determined that per the Unit 1 UFSAR, HPCI's design function is to actuate on conditions indicative of a small break LOCA, low vessel water level, and high drywell pressure, but neither condition was present during the November 6 event. Constellation also noted that during cold shutdown, the probability of a LOCA is small, and Unit 1 plant's TSs do not require HPCI to be operable. Additionally, Constellation stated in the retraction that with the high vessel level condition, the safety function of the HPCI system was already completed.

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The inspectors reviewed the December 17 retraction of the 8-hour notification and compared it to guidance outlined in NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 2, the statements of consideration for 10 CFR 50.72 and 10 CFR 50.73 in the *Federal Register* notice (FRN). The inspectors also reviewed UFSAR Section VII.I.3.0 which describes the design evaluation of the HPCI system. At Unit 1, HPCI is not an emergency core cooling system (ECCS); however, the HPCI system is designed to initiate on a turbine trip signal with a backup initiation signal due to low reactor water level.

NUREG-1022 and the FRN associated with the original 1983 rule [48 FR 33854] states, "actuation of multichannel actuation systems is defined as actuation of enough channels to complete the minimum actuation logic." NUREG-1022, Section 3.2.6, "System Actuation," are those actuations that result from 'valid signals' or from intentional manual initiation unless it is part of a preplanned test. Valid signals are those signals that are initiated in response to actual plant conditions or parameters satisfying the requirements for initiation of the safety function of the system. 48 FR 33854 states, "This paragraph requires events to be reported whenever a system actuates either manually or automatically, regardless of plant status. The Commission is interested both in events where a system was needed to mitigate the consequences of an event and events where a system actuated unnecessarily."

Based on the inspectors review and the NUREG-1022 guidance, the inspectors did not concur with the basis for Constellation's retraction and it was determined that the HPCI actuation at Unit 1 on November 6 was a valid actuation. Although not an ECCS or engineered safety feature system, HPCI is a system listed in paragraph (b)(3)(iv)(B)(5), "boiling-water reactor (BWR) core isolation cooling system, isolation condenser system, and feedwater coolant injection system." The actuation was valid because it was the result of an actual plant condition (valid turbine trip signal), the minimum number of actuation logic channels was made up, and the actuation did not result from and was not part of a preplanned sequence during testing or reactor operation. The inspectors determined that the HPCI actuation was reportable under 10 CFR 50.72(b)(3)(iv)(A) and 50.73(a)(2)(iv)(A).

NUREG-1022, Section 3.2.6, example (1) "Reactor Protection System Actuation," supports the inspectors' position. This example states, "An ENR and LER are both required because although the systems' safety functions had already been completed, the RPS scram and primary containment isolation signals were valid and the actuations were not part of the planned procedure. The automatic signals were valid because they were generated from the sensor by measurement of an actual physical system parameter that was at its set point."

Although Constellation retracted the November 6, 2012, ENR, there was no violation of the requirements of 10 CFR 50.72 because the required 8-hour report was made in a timely manner on November 6. Further, unlike a 10 CFR 50.73 LER submittal, ENRs are retained in the NRC database when they are retracted. Therefore, retracting the ENR report on December 17 did not impact the NRC's ability to review this issue and no regulatory decisions were made based on the retraction. Additionally, the ENR has

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remained publically available. However, the incorrect basis for retracting the ENR is the reason Constellation determined an LER was not required.

Analysis. The inspectors determined that the inappropriate retraction of a notification required by 10 CFR 50.72(b)(3)(iv)(A) and failure to make a required event report in accordance with 10 CFR 50.73(a)(2)(iv)(B)(4) were performance deficiencies that were reasonably within Constellation's ability to foresee and correct and should have been prevented. Because this issue had the potential to affect the NRC's ability to perform its regulatory function, the inspectors evaluated these performance deficiencies in accordance with the traditional enforcement process. Using example 6.9.d.9 from the NRC Enforcement Policy, the inspectors determined that the violation was a Severity Level IV (more than minor concern that resulted in no or relatively inappreciable potential safety or security consequence) violation. Because this violation involves the traditional enforcement process and does not have an underlying technical violation that would be considered more than minor, the inspectors did not assign a cross-cutting aspect in accordance with IMC 0612, Appendix B, "Issue Screening," issued September 7, 2012.

Enforcement. 10 CFR 50.73(a)(2)(iv)(A) requires submittal of an LER within 60 days after the occurrence of, "Any event or condition that results in valid actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section except when the actuation results from and is part of a preplanned sequence during testing or reactor operation." 10 CFR 50.73 (a)(2)(iv)(B) states, "The systems to which the requirements of paragraph (a)(2)(iv)(A) of this section apply are: (5) BWR reactor core isolation cooling system; isolation condenser system; and feedwater coolant injection system." Contrary to the above, Constellation inappropriately retracted the notification and failed to make the required event report for a valid actuation of HPCI, a non-ECCS feedwater coolant injection system. Specifically, from January 5, 2013, to present, Constellation failed to submit a LER for the valid HPCI actuation that occurred on November 6, 2012. However, because this issue was entered into Constellation's CAP (CR-2013-001859), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000220/2013002-03, Failure to Submit a Required Licensee Event Report)**

.2 (Closed) LER 05000220/2012-001-00: Automatic Reactor Scram Due to Electronic Pressure Regulatory Failure

On July 17, 2012, Unit 1 experienced a reactor scram on high neutron flux due to a failure of the electronic pressure regulator (EPR). The EPR failure sent a close signal to the turbine control valves which caused a brief increase in reactor pressure and a subsequent high neutron flux. Typically, the EPR has the lead control function for pressure control of the reactor system at Unit 1 with the mechanical pressure regulator in backup. On February 26, 2012, the EPR was removed from service due to erratic EPR servo indications. Constellation created an operational decision-making checklist for Unit 1 which was approved on April 10 to place the EPR back in service following the completion of repairs. Following a management challenge meeting on June 20, the EPR was restored to service on June 26. When the EPR failed on July 17, it was determined that parameters specified in the operational decision-making checklist for proper EPR operation were not followed. Following the scram, the EPR was removed from service

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pending replacement during the April 2013 Unit 1 RFO. The enforcement aspects of this issue are discussed in NRC Integrated Inspection Report 05000220/2012004, Section 1R12. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.3 (Closed) LER 05000220/2012-002-00: Automatic Reactor Scram due to Automatic Generator Protective Trip

a. Inspection Scope

On September 20, 2012, Unit 1 experienced a reactor scram due to a generator protective relay trip. The protective relay trip of the generator occurred due to electrical oscillations experienced on the main generator that were not able to be controlled by plant operators. Constellation conducted a root cause evaluation of the reactor scram and determined that due to the AVR setting at 10 to 20 volts boost, operators could not have mitigated the electrical oscillations to prevent the reactor scram. The AVR setting was established in 2003 to be 10 to 20 volts boost to prevent amplidyne commutator wear. A design engineering cross-disciplinary review was not performed to identify that the AVR setting should have been at 'null'. Since the reactor scram, Constellation has updated the AVR setting to be at 'null'. The inspectors review identified a self-revealing Green finding for the failure to perform the cross-disciplinary review in 2003. The enforcement actions associated with this LER are discussed below. This LER is closed.

b. Findings

Introduction. A self-revealing Green finding was identified for Constellation's failure to perform a design engineering cross-disciplinary review in 2003 as required by station procedures, of the amplidyne excitation system operation setting. On September 20, 2012, Unit 1 experienced electrical oscillations at the main generator that required operators to take the AVR from automatic to manual. As a result of the incorrect amplidyne operation setting at 10 to 20 volts boost, operators were unsuccessful at mitigating the electrical oscillations at the main generator, ultimately leading to a reactor scram.

Description. The AVR at Unit 1 is a device that controls the voltage output of the main generator. The AVR works in conjunction with the amplidyne which controls excitation of the main generator field. The AVR senses generator load, and if the generator load changes, the AVR will produce an amplidyne control signal to raise or lower the excitation of the generator field thus adjusting generator terminal voltage. The AVR has two modes of operation, automatic and manual (commonly the 'test' position at Unit 1).

On September 20, 2012, at 9:23 a.m., Unit 1 experienced an automatic reactor scram due to an automatic generator protective trip. Just prior to the reactor scram, operators noticed main generator electrical oscillations which prompted them to take the AVR from the automatic to manual mode of operation per an approved operational decision-making checklist. However, operators were unsuccessful in mitigating the electrical oscillations; and the reactor scram occurred. Following the scram, a root cause evaluation was performed. Constellation identified that operators were not able to

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mitigate the electrical oscillations when the AVR was placed in manual because the default set point of the AVR was not correct. Specifically, the default AVR set point of 10 to 20 volts boost under excited the main generator leading to the generator protective trip and subsequent reactor scram. Constellation determined the incorrect set point adjustment occurred in 2003 when a procedure change was made to N1-OP-32, "Generator," Revision 22.

Following the scram, Constellation conducted a root cause evaluation and discovered that in 2003, Constellation identified in CR-2003-000295 that the amplidyne was experiencing excessive commutator wear. N1-OP-32 was subsequently revised to address the excessive commutator wear by adjusting the AVR setting to 10 to 20 volts boost. The Constellation root cause evaluation determined that contrary to NIP-PRO-03, "Preparation and Review of Technical Procedures," Revision 14, and NIP-PRO-04, "Procedure Change Evaluations and Future Procedure Enhancements," Revision 14, a cross-disciplinary review by design engineering was not performed before revising N1-OP-32 in 2003. Had a cross-disciplinary review been performed, Constellation concluded design engineering would have identified that the default AVR control setting should have been set at 'null'. Having the AVR control setting at 'null' would have allowed operators to mitigate the electrical oscillations and prevent a reactor scram since the generator would not have been in an under excited condition.

Constellation's corrective actions included modifying N1-OP-32 to establish the amplidyne operation set point at 'null' and entering this issue into their CAP as CR-2012-008673.

Analysis. The inspectors determined that Constellation's failure to perform a design engineering cross-disciplinary review in 2003 of the amplidyne excitation system operation setting in accordance with NIP-PRO-03 and NIP-PRO-04 is a performance deficiency that was within Constellation's ability to foresee and correct and should have been prevented. This finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, contrary to NIP-PRO-03 and NIP-PRO-04, Constellation failed to perform a design engineering cross-disciplinary review to identify the inadequate amplidyne operation setting. As a result, the default set point of the AVR was not correct, and when electrical oscillations occurred at the Unit 1 main generator on September 20, the main generator became under excited when the AVR was placed in manual resulting in a reactor scram.

In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because while the performance deficiency caused a reactor scram, it did not result in the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency is not indicative of present performance because it did not occur within the last 3 years.

Enforcement. Enforcement action does not apply because this performance deficiency did not involve a violation of a regulatory requirement. Specifically the primary component in this event, the AVR, is not safety related. As such, the applicable engineering specification procedure is not governed by the requirements of Unit 1 TS 6.4.1 "Procedures." This issue was entered into Constellation's CAP as CR-2012-008673. Because this finding does not involve a violation and is of very low safety significance, it is identified as a finding. **(FIN 05000220/2013002-04, Inadequate Procedure Change Review Results in Reactor Scram)**

.4 (Closed) LER 05000220/2012-003-00: Loss of Isolation Function on Shutdown Cooling System Suction Line due to an Operating Procedure Deficiency

a. Inspection Scope

On October 18, 2012, Constellation discovered that during a forced outage on September 20, 2012, in accordance with the system operating procedure, the SDCS was in service with both suction line isolation valves open and de-energized. Constellation determined that operation in this condition could have prevented fulfillment of a safety function needed to mitigate consequences of an accident because both of the SDCS isolation valves were incapable of closing in the event of a low-low reactor water level due to a leak in the SDCS. The inspectors determined this was a minor violation of regulatory requirements due to a failure to meet TS 3.2.7, "Reactor Coolant System Isolation Valve," on September 21 and 22, 2012, when Constellation initiated an operation with a potential for draining the reactor vessel (OPDRV) to maintain RPV level through the bottom head drains while the SDCS isolation valves were inoperable and failed to immediately either suspend the OPDRV or restore the SDCS isolation valves to operable status. Constellation initiated CR-2013-003479 to track this issue. While reviewing this LER, the inspectors identified an additional Severity Level IV NCV and associated Green finding as described below. No additional issues were identified. This LER is closed.

b. Findings

Introduction. The inspectors identified a Severity Level IV NCV and associated Green finding of 10 CFR 50.59, "Changes, Tests and Experiments," because Constellation failed to perform a written 50.59 evaluation for changes to the Unit 1 operating procedure for the SDCS isolation valves. Specifically, Constellation added steps to the procedure to defeat the design basis safety function of the SDCS isolation valves to automatically isolate on a RPV low-low water level signal without performing a written 50.59 evaluation.

Description. On March 24, 2009, Constellation revised the operating procedure for the SDCS, N1-OP-4, "Shutdown Cooling System," Revision 03701, to add section H.20, "Defeating Shutdown Cooling Isolation and Restoration." In this section, Constellation

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added instructions to de-energize the SDCS isolation valves in the open position. This section was added with the intention of enhancing shutdown safety by preventing inadvertent loss of the SDCS while it is required for decay heat removal.

On September 22, 2012, CR-2012-008756 was generated to evaluate reportability of operation with SDCS isolation valves de-energized in the open position concurrent with ongoing OPDRVs as a condition prohibited by TS 3.2.7. On October 18, 2012, Constellation reviewed CR-2012-008756 and determined that on September 22, no violation of TS occurred so this issue was not reportable as a condition prohibited by TS. However, during this review, Constellation identified that de-energizing the SDCS isolation valves in the open position would defeat their safety function to automatically isolate on a low-low RPV water level signal. Constellation determined that this condition was reportable under 50.73(a)(2)(v) as a condition that could result in prevention of fulfillment of a safety function and generated CR-2012-009540 to document the condition.

Constellation conducted an apparent cause evaluation for CR-2012-009540. Constellation determined that the apparent cause of the event was that N1-OP-4 was revised to include steps that, when implemented, resulted in a reportable condition. This was not recognized during the procedure revision development because personnel involved did not recognize the need for, or coordinate with, other key team members. As a result, licensing did not perform a cross-disciplinary review. Constellation determined that a contributing cause was that training on reportability requirements was not adequate to prepare personnel to recognize that de-energizing the SDCS isolation valve in the open position created a reportable condition prior to implementing N1-OP-4. The extent-of-condition review determined that the SDCS isolation valves had been placed in that condition during forced outages in February, July, and September 2012. As corrective actions, Constellation submitted LER 05000220/2012-003-00, updated their safety system function failure performance indication to include the three identified safety system function failures of the SDCS, suspended use of N1-OP-4 Section H.20, and initiated a training needs analysis to determine required training on reportability requirements.

The inspectors reviewed LER 05000220/2012-003-00, CR-2012-009540, TS 3.2.7, the UFSAR description for the SDCS, N1-OP-4, and the procedure change documentation for the March 24, 2009, revision to N1-OP-4. The inspectors identified that during the 50.59 screening for the procedure change, Constellation personnel checked the box on the 50.59 screening form that indicated the proposed change did not involve a modification to the procedure that adversely affected how UFSAR described functions are performed or controlled. Constellation's basis for why the change did not adversely impact a UFSAR function was that defeating the isolation logic for the SDCS isolation valves would improve shutdown safety. Additionally, the screening concluded that the UFSAR functions for SDCS are not required in the refuel condition with the system in service.

The inspectors determined Constellation's basis and conclusions were incorrect. TS 3.2.7 requires SDCS isolation valves to be operable when reactor coolant temperature is less than 212 degrees Fahrenheit with fuel in the vessel. The inspectors concluded that

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although defeating the isolation logic could reduce shutdown risk associated with loss of SDCS due to inadvertent isolation, defeating the isolation logic would adversely impact the design function of the valves. This change resulted in a more than minimal change in the frequency of occurrence of a previously evaluated accident (LOCA). The inspectors concluded that as a result of the incorrect information in the 50.59 screening, Constellation failed to perform a written 50.59 evaluation for the March 24, 2009, revision to N1-OP-04.

Analysis. The inspectors identified that Constellation's failure to perform a written 50.59 evaluation for changes to N1-OP-4 as required by 10 CFR 50.59, "Changes, Tests, and Experiments," was a performance deficiency that was reasonably within Constellation's ability to foresee and correct and should have been prevented. Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. The violation was determined to be more than minor because the inspectors could not reasonably determine that the changes would not have ultimately required NRC prior approval, because the change resulted in a more than minimal change in the frequency of occurrence of a previously evaluated accident (LOCA).

However, both the NRC Enforcement Policy and NRC IMC 0612 Appendix B, "Issue Screening," direct the inspector to evaluate the finding under the SDP as well. This violation has an associated finding when evaluated by the SDP and is communicated with an SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider the regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding.

When evaluated under the SDP, this finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and impacted the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, by failing to maintain the safety function of the SDCS isolation valves to automatically isolate on low-low RPV water level, Unit 1 increased the likelihood of a LOCA.

In accordance with IMC 0609.04, "Initial Characterization of Findings," IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process," and Checklist 6 of IMC 0609 Appendix G, Attachment 1, "BWR Cold Shutdown or Refueling Operation, Time to Boil <2 hours: RCS Level <23 feet Above Top of Flange," the inspectors determine this finding to be of very low safety significance (Green) because this finding was not a loss of control and did not impact checklist attributes requiring a Phase 2 or Phase 3 analysis.

In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as a Severity Level IV, because the resulting conditions were evaluated as having very low safety significance (Green) by the SDP.

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The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency is not indicative of present performance, because it did not occur within the last 3 years.

Enforcement. 10 CFR 50.59, "Changes, Tests, and Experiments," Section (d)(1), in part, requires that the licensee maintain records of changes in the facility, of changes in procedures, and of tests and experiments. These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2). Contrary to the above, Constellation failed to perform a written 50.59 evaluation for changes to the operating procedure for the SDCS isolation valves. Specifically, on March 24, 2009, Constellation added steps to the procedure to defeat the design basis safety function of the SDCS isolation valves to automatically isolate on a RPV low-low water level signal without performing a written 50.59 evaluation. Constellation immediate corrective actions included suspending use the procedure section that removes power from the SDC isolation valves, and entering this issue into the CAP as CR-2013-003478. Other corrective actions included removing that section from the procedure, performing a training needs analysis to determine required training on this event, and conducting an extent-of-condition review for other procedures defeating the SDC isolation valves' automatic isolation function.

Although this violation was evaluated for significance and characterized using both the traditional enforcement and SDP processes, it is considered a single enforcement action and single input into the NRC Plant Assessment process as described in IMC 0305, "Operating Reactor Assessment Program."

Because this violation was of very low safety significance and was entered into Constellation's CAP (CR-2013-003478), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000220/2013002-05, Failure to Perform a 50.59 Evaluation for a Procedure Change)**

.5 (Closed) LER 05000220/2012-004-00: Automatic Reactor Scram due to a Generator Load Reject

On October 29, 2012, during high winds that resulted from Hurricane Sandy, a lightning arrester fell in the 345-kilovolt (kV) Scriba switchyard. The lightning arrester impacted the 'A' electrical bus in the switchyard causing an electrical fault on Line 8 which is one of two electrical supply lines from Unit 1 to the grid. The electrical fault was detected by a protective relay device. Typically this relay is setup to be sensing electrical faults that exist between the Unit 1 main generator and the main transformer. However, Constellation discovered main transformer bus bars for current transformers (CTs) 11 and 12 had been improperly configured, causing the relay to sense faults located between the switchyard and the main transformer. This allowed the relay to detect the fault in the 345-kV Scriba switchyard, and subsequently caused a generator trip. The generator trip resulted in a subsequent turbine trip followed by a reactor scram. Had the CT bus bars been installed correctly, the directional portion of the over-current relays would not have actuated, and the plant would not have scrambled when the fault

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occurred in the Scriba switchyard. Constellation took immediate corrective actions to correct the configuration of the CTs 11 and 12 bus bars and entered this issue into their CAP as CR-2012-009820. The enforcement aspects of this issue are discussed in NRC Integrated Inspection Report 05000220/2012005, Section 1R04. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.6 (Closed) LER 05000220/2012-005-00: Feedwater Level Control Failure, High-Pressure Coolant Injection Initiation and Reactor Scram

At Unit 1, on November 3, 2012, a reactor scram occurred on low RPV water level when a failure occurred in the feedwater control system. At the time of the event, the plant was operating at 24 percent power and operators were in the process of restoring the plant to full power following an October 29 reactor plant scram that resulted from a generator load reject. A Constellation investigation determined that the root cause of the event was the failure of two transistors in a module located in the feedwater control system. The transistor failures caused a false low flow signal to occur in the feedwater control system which, in turn, caused a feedwater system transient that ultimately resulted in a low RPV water level condition and subsequent reactor scram. Constellation's corrective actions involved replacing the failed module and revising electronic module refurbishment procedures to include a check of transistor performance. The inspectors reviewed the LER. No findings or violations of NRC requirements were identified. This LER is closed.

.7 (Closed) LER 05000410/2012-002-00: Loss of Isolation Function on Residual Heat Removal Shutdown Cooling Suction Line due to Breaker Trip

On May 25, 2012, 600-volt emergency load center 2EJS\*US1 lost power during a remote shutdown disconnect switch surveillance test. As a result, multiple components that relied on power from the 600-volt bus lost power which included the Division I outboard containment isolation valve 2RHS\*MOV113. At the time of the event, RHR shutdown cooling was in service and 2RHS\*MOV113 was in the open position; thus, when power failed, it remained in the open position. In addition, the inboard containment isolation valve 2RHS\*MOV112 was also in the open position with power to the valve removed.

During normal operation of the shutdown cooling system, power is typically removed from one of the two shutdown cooling isolation valves to reduce the probability of a spurious closure and interruption of the shutdown cooling decay heat removal function. The loss of power to the 2RHS\*MOV113, combined with the de-energized 2RHS\*MOV112, created a path without the ability to provide containment isolation. The event which lasted approximately 5 hours prevented the containment isolation valves from being able to fulfill their design function of closing on a low (level 3) RPV water level signal. The inspectors reviewed the LER to determine if there was any enforcement aspects associated with this event. The inspectors concluded, since the design function was lost for less than the allowed TS outage time, no TS violation occurred. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.8 (Closed) LER 05000410/2012-003-00: Suppression Pool Level Below Technical Specification Limit During Mode Change

On June 4, 2012, Unit 2 was conducting a reactor startup. At 5:17 a.m., Unit 2 entered Mode 2 with suppression pool water level below the TS limit of 199.5 feet. TS 3.6.2.2, "Suppression Pool Water Level," requires water level to be maintained greater than or equal to 199 feet 6 inches and less than or equal to 201 feet. The low suppression pool water level was discovered during shift checks at 8:46 a.m. Operators entered the appropriate TS limiting condition for operation, took action to restore suppression pool water level to the required band and this issue was entered into Constellation's CAP as CR-2012-005507. The station performed a Tier 2 apparent cause evaluation which determined that control room operators who had the responsibility for verifying that suppression pool water level was adequate did not recognize a decreasing trend in suppression pool level prior to the mode change. The apparent cause evaluation also stated that 2RHS\*MOV1B, the 'B' RHR system train suppression pool suction isolation valve, may have been leaking and contributing to the lowering suppression pool level. Constellation initiated WO C92086721 to evaluate the valve for leakage during the next RFO. The inspector's review of the LER determined that not all potential sources of suppression pool leakage were considered in the apparent cause evaluation. Specifically on June 1, 2012, at approximately 2:00 p.m., multiple evolutions were in progress which had the potential to impact suppression pool water level including securing RHR system 'A' from shutdown cooling, raising RPV water level to support main steam isolation valve local leak rate testing, starting RHR system 'A' to support suppression pool cooling, and realigning RWCU from radwaste to the main condenser. During these evolutions, other valves could have been a leakage path. After discussions with Constellation, CR-2013-002420 was created to re-evaluate the potential for other suppression pool leakage sources and to modify WO C92086721 to consider examining 2RHS\*MOV1B at an earlier opportunity. The inspectors also determined that the failure to meet TS 3.6.2.2 on June 4, 2012, was a minor violation of regulatory requirements. The issue is minor because although Constellation failed to meet TS 3.6.2.2, Unit 2 was in a low power condition, there was no adverse impact on the suppression pool to perform its safety function, or any adverse impact on net positive suction head for ECCS systems. Constellation initiated CR 2013-003480 to track this item. This LER is closed.

.9 (Closed) LER 05000410/2012-005-00: Automatic Diesel Actuation due to the Loss of a 115-kV Offsite Power Source

On October 29, 2012, at 9:00 p.m., Unit 2 experienced an automatic initiation of the Division I EDG due to a loss of power to Line 5, which is one of two offsite power sources used to power the safety-related 4-kV switchgear. The loss of power was due to an electrical fault caused by a lightning arrestor falling onto the 'A' bus in the 345-kV Scriba switchyard. The electrical fault was immediately isolated by a protective relay. The Division I EDG responded in accordance with its design by starting immediately following the loss of power to Line 5 and supplied power to the safety-related 4-kV switchgear. The inspectors reviewed the LER. No findings or violations of NRC requirements were identified. This LER is closed.

#### 4OA5 Other Activities

##### .1 Institute of Nuclear Power Operations (INPO) Report Review

###### a. Inspection Scope

The inspectors reviewed the January 30, 2013, report for the INPO plant assessment of Constellation for the period of September 2010 to December 2012. The report primarily relied on observations made by INPO representatives during the weeks of October 5 and October 18, 2012.

The inspectors evaluated the report to ensure that NRC perspectives of Constellation's performance were consistent with any issues identified during the assessment. The inspectors also reviewed the report to determine whether INPO identified any significant safety issues that required further NRC follow-up.

###### b. Findings

No findings were identified.

#### 4OA6 Meetings, Including Exit

##### Exit Meeting

On April 25, 2013, the inspectors presented the inspection results to Mr. Christopher Costanzo, Vice President, and other members of the Constellation staff. The inspectors verified that no propriety information was retained by the inspectors or documented in this report.

### **ATTACHMENT: SUPPLEMENTARY INFORMATION**

Enclosure

**SUPPLEMENTARY INFORMATION**

**KEY POINTS OF CONTACT**

**Licensee Personnel**

C. Costanzo, Vice President  
M. Philippon, Plant General Manager  
P. Bartolini, Supervisor, Design Engineering  
K. Clark, Director, Security  
T. Darling, Licensing Supervisor  
K. Dellinger, Senior Engineering Analyst  
P. Doran, Engineering Supervisor  
J. Dosa, Director, Licensing  
M. Kunzwiler, Security Supervisor  
J. Manley, General Supervisor, Shift Operations  
F. Payne, Manager, Operations  
M. Shanbhag, Licensing Engineer  
J. Snyder, Maintenance Rule Coordinator  
A. Sterio, Manager, Maintenance  
T. Syrell, Manager, Nuclear Safety and Security  
J. Thompson, General Supervisor, Mechanical Maintenance  
D. Vanamee, Site Fire Marshall  
A. Verno, Director, Emergency Preparedness

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**Opened/Closed

05000410/2013002-01	NCV	Inadequate Maintenance Rule Monitoring of the Leak Detection System Performance (Section 1R12)
05000220/2013002-02	FIN	Test Conditions Not Properly Established (Section 1R22)
05000220/2013002-03	NCV	Failure to Submit a Required Licensee Event Report (Section 4OA3)
05000220/2013002-04	FIN	Inadequate Procedure Change Review Results in Reactor Scram (Section 4OA3)
05000220/2013002-05	NCV	Failure to Perform a 50.59 Evaluation for a Procedure Change (Section 4OA3)

Closed

05000220/2012-001-00	LER	Automatic Reactor Scram due to Electronic Pressure Regulatory Failure (Section 4OA3)
05000220/2012-002-00	LER	Automatic Reactor Scram due to Automatic Generator Protective Trip (Section 4OA3)
05000220/2012-003-00	LER	Loss of Isolation Function on Shutdown Cooling System Suction Line due to an Operating Procedure Deficiency (Section 4OA3)
05000220/2012-004-00	LER	Automatic Reactor Scram due to a Generator Load Reject (Section 4OA3)
05000220/2012-005-00	LER	Feedwater Level Control Failure, High-Pressure Coolant Injection and Reactor Scram (Section 4OA3)
05000410/2012-002-00	LER	Loss of Isolation Function on Residual Heat Removal Shutdown Cooling Suction Line due to Breaker Trip (Section 4OA3)
05000410/2012-003-00	LER	Suppression Pool Level Below Technical Specification Limit During Mode Change (Section 4OA3)
05000410/2012-005-00	LER	Automatic Diesel Actuation due to the Loss of a 115-kV Offsite Power Source (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Documents

Engineering Calculation HVC-64, Heat Gain and Cooling Requirements for Standby Switchgear Rooms – Control Building Elevation 261 feet 0 inches, Revision 3  
 NER-1S-001, Nine Mile Point Unit 1 Safety Evaluation Report Flooding Potential and Protection, Revision 0  
 Unit 2 UFSAR, Section 2.4, Revision 10  
 Unit 2 UFSAR, Section 8.3, Revision 13

#### Procedures

EPIP-EPP-26, Natural Hazard Preparation and Recovery, Revision 00301  
 N2-ESP-BYS-W675, 125-Volt Direct Current Weekly Battery Surveillance, Revision 1200  
 N2-OP-102, Meteorological Monitoring, Revision 01101  
 NAI-PSH-11, Seasonal Readiness Program, Revision 00700

#### Condition Reports

CR-2011-007655  
 CR-2012-011546

### **Section 1R04: Equipment Alignment**

#### Documents

A300-EL, Instruction Book for SW Pumps, Revision 12.00  
 Reactor Core Isolation Cooling System Health Report, October to December 2012  
 Unit 1 Control Room Logs  
 Unit 1 UFSAR Section VII-C, Revision 21  
 Unit 2 UFSAR Section 5.4.6, Revision 10  
 Unit 2 UFSAR Section 9.4.1, Revision 13

#### Procedures

N1-OP-2, Core Spray System, Revision 03400  
 N1-OP-43C, Plant Shutdown, Revision 01100  
 N2-OP-35-LINEUPS, Reactor Core Isolation Cooling – Lineups, Revision 0000  
 N2-OSP-RHS-Q@004, RHR System Loop 'A' Pump and Valve Operability Test, and System Integrity Test, and ASME XI Pressure Test, Revision 00700

#### Condition Reports

CR-2006-005843	CR-2012-010268	CR-2013-000643
CR-2011-000887	CR-2012-011245	CR-2013-001054
CR-2011-008998	CR-2012-011392	CR-2013-001068
CR-2011-005062	CR-2013-000179	CR-2013-001970
CR-2012-000570	CR-2013-000634	

Drawings

C-19019-C, Reactor Liquid Poison System, Revision 35  
O2-OPS-001-217-2-00, Turbine Governor Control System, Revision 0  
PID-11J, Service Water System, Revision 19  
PID-32A, Low-Pressure Core Spray, Revision 19  
PID-35B, Reactor Core Isolation Cooling, Revision 14  
PID-35C, Reactor Core Isolation Cooling, Revision 27  
PID-35D, Reactor Core Isolation Cooling, Revision 25

Work Orders

WO C91076323  
WO C91768528  
WO C91719051  
WO C92142028

**Section 1R05: Fire Protection**

Documents

Unit 1 UFSAR, Appendix 10A, Fire Hazards Analysis, Revision 22  
Unit 2 UFSAR, Section 9.5 and 9, Appendix A, Revision 20

Procedures

N1-PFP-0101, Unit 1 Pre-Fire Plans, Revision 00200  
N2-FPI-PFP-0201, Unit 2 Pre-Fire Plans, Revision 001

**Section 1R11: Licensed Operator Regualification Program and Licensed Operator Performance**

Document

NEI-99-01, Methodology for Development of Emergency Action Levels, Revision 5

Procedures

2102-SIMEVLS23A, Unit 2 Simulator Scenario  
CNG-OP-1.01-1000, Conduct of Operations, Revision 00800  
EPIP-EPP-02, Nine Mile Point Emergency Action Levels, Revision 23  
N1-ST-Q6D, Containment Spray System Loop 122 Quarterly Operability Test, Revision 00902

Work Order

WO C91756081

**Section 1R12: Maintenance Effectiveness**

Documents

CSR957R0, Final Report: EMI Troubleshooting and Mapping of Temperature Switches at Nine Mile Point Unit 2, dated February, 2012  
EC20080065-000 dated August 12, 2008

Procedure

CNG-AM-1.01-1023, Maintenance Rule Program, Revision 00200

Condition Reports

CR-2011-010062  
CR-2011-005782  
CR-2011-002157  
CR-2012-009380  
CR-2013-000634

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

N1-OP-45, Emergency Diesel Generators, Revision 03201  
N2-OP-31, Residual Heat Removal System, Revision 02500  
N2-OP-61B-LINEUPS, Standby Gas Treatment System – Lineups, Revision 00000  
N2-OP-100A, Standby Diesel Generator, Revision 01201  
N2-OSP-CSL-M001, LPCS Discharge Piping Fill and Valve Lineup Verification, Revision 00501  
N2-OSP-RHS-M001, RHS Discharge Piping Fill and Valve Lineup Verification, Revision 00502  
S-ODP-OPS-0122, Posting and Control of Protected Equipment during Online and Outage Operations, Revision 00500

Condition Reports

CR-2013-000218  
CR-2013-000223

Drawing

PID-32A, Low-Pressure Core Spray, Revision 19

Work Orders

WO C92142407  
WO C90101960  
WO C92013274  
WO C91216407

**Section 1R15: Operability Evaluations**

Documents

Engineering Change Package-09-000168-000, Revision 00.00  
S15-79-HTX04, Thermal Performance Evaluation for the Unit 1 Emergency Diesel Generator Jacket Water Coolers  
Standard Design Basis Document -804, Emergency Diesel Generator System, Revision 11  
UFSAR Section VIII-C, Instrumentation Systems, Revision 17  
UFSAR Section IX-4.1, Diesel Generator System, Revision 17

Procedures

N1-CSP-Q504, Quarterly Diesel Fuel Oil Sampling and Analysis, Revision 00600  
N1-CTP-M500, Monthly Diesel Fuel Oil Sampling and Analysis, Revision 00402  
N1-OP-38C, Local Power Range Monitors and Average Power Range Monitors, Revision 2100  
N1-ST-Q25, Emergency Diesel Generator Cooling Water Quarterly Test, Revision 01200



Condition Reports

CR-2011-004891	CR-2013-000442	CR-2013-001134
CR-2012-004966	CR-2013-000538	CR-2013-001300
CR-2013-000440	CR-2013-000979	CR-2013-001546

Drawing

F-42199-C, Emergency Diesel Fuel Oil Storage Tanks Sections and Details, Revision 8

Work Orders

WO C090657100  
WO C919277768

Miscellaneous

OE-2013-000133

**Section 1R18: Plant Modifications**

Documents

UFSAR Section VIII, Instrumentation and Control, Revision 16  
UFSAR Section XI, Steam to Power Conversion System, Revision 15

Procedure

CNG-CM-1.01-1004, Temporary Plant Configuration Change Process, Revision 00201

Condition Report

CR-2013-001823

**Section 1R19: Post-Maintenance Testing**

Documents

N21320 (N2B23700VALVOP006), Operation and Maintenance Instructions for Bettis Pneumatic Actuators, Revision 01  
Unit 2 UFSAR Section 5.4.6, Revision 10

Procedures

N1-ST-M9, Control Room Air Treatment System Operability Test, Revision 02000  
N1-ST-M9, Control Room Air Treatment System Operability Test, Revision 02000.01  
N1-ST-Q25, Emergency Diesel Generator Cooling Water Quarterly Test, Revision 02200  
N2-ISP-GTS-R@001, Standby Gas Treatment System Pneumatic Supply/Accumulator Leak Rate Test, Revision 00202  
N2-OP-100B, HPCS Diesel Generator, Revision 01001  
N2-OSP-GTS-M001, Standby Gas Treatment System Functional Test, Revision 00201  
N2-OSP-ICS-Q@002, RCIC Pump and Valve Operability Test, System Integrity Test, and ASME XI Functional Test, Revision 01000  
N2-OSP-EGS-M@002, Diesel Generator and Diesel Air Start Valve Operability Test – Division III, Revision 00900  
N2-OSP-ICS-Q001, RCIC Valve Operability Test, Revision 00600  
N2-OSP-SWP-Q@001, Division I Service Water Operability Test, Revision 00301

Condition Reports

CR-2013-001369  
CR-2013-001382  
CR-2013-001419  
CR-2013-001467  
CR-2013-001490

Drawings

0005360923413, Base II NT420-SR3(CW)-M7-S, Revision E  
C-18026-C, Emergency Diesel Generator 103 Starting Air, Cooling Water, Lube Oil, and Fuel,  
Revision 26  
PID-32A, Low Pressure Core Spray, Revision 19  
PID-35B, Reactor Core Isolation Cooling, Revision 14  
PID-35C, Reactor Core Isolation Cooling, Revision 27  
PID-35D, Reactor Core Isolation Cooling, Revision 25  
PID-11H, Service Water System, Revision 32

Work Orders

WO C91083905  
WO C91784085  
WO C91820583  
WO C92178457  
WO C92186453  
WO C92188849

**Section 1R20 Refueling and Other Outage Activities**

Procedures

CNG-SE-1.01-1001, Fitness for Duty Program, Revision 00500  
CNG-SE-1.01-1002, Fatigue Management and Work Hour Controls, Revision 00600

**Section 1R22: Surveillance Testing**

Documents

CA-2010-005860  
CA-2011-004734  
OE-2010-002890  
UFSAR Section 7.4, Systems Required for Safe Shutdown, Revision 10  
Unit 2 Standby Liquid Control System Health Report, October to December 2012

Procedures

CNG-PR-101-1005, Control of Technical Procedure Format and Control, Revision 00500  
N1-IPM-029-010, Calibration of Feedwater FCV-29-134, FCV-29-137, and FCV-29-141,  
Revision 00603  
N1-ST-C25, Liquid Poison Pump Operability Test, Revision 00101  
N1-ST-Q1C, Core Spray 112 Pump and Valve Operability Test, Revision 00900  
N1-ST-Q6D, Containment Spray System Loop 122 Quarterly Operability Test, Revision 00902  
N1-ST-Q20, Reactor Building Heating, Cooling, and Ventilation System Test, Revision 01300  
N2-CSP-SLS-M110, Standby Liquid Control Monthly Surveillance, Revision 00900

N2-CSP-SLS-@112, Adjustment of SLS Tank Sodium Pentaborate Concentration, Revision 00601  
N2-OSP-GTS-M001, Standby Gas Treatment System Functional Test, Revision 00201  
N2-OSP-SLS-Q001, Standby Liquid Control Pump, Check Valve, Relief Valve Operability Test, and ASME XI Pressure Test, Revision 01300

Condition Reports

CR-2010-011626  
CR-2011-011069  
CR-2012-008455  
CR-2012-009007  
CR-2012-009202

Drawings

C-18007-C, Core Spray System Piping and Instrumentation Drawing, Revision 58  
C-26845-C, Reactor Core Spray Systems 81 and 81.1 Piping Isometric from Torus to Topping Pumps and from Topping Pumps to External Isolation Valves, Revision 17

Work Orders

WO C91756081  
WO C91819197

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

Documents

Evacuation Time Estimate Study Update  
Site Emergency Plan, Revision 59

**Section 1EP6: Drill Evaluation**

Procedure

EPIP-EPP-02, Nine Mile Point Emergency Action Levels, Revision 23

**Section 2RS1: Radiological Hazard Assessment and Exposure Controls**

Procedures

CNG-OP-4.01-1000, Integrated Risk Management, Revision 10  
GAP-RPP-08, Control of High, Locked High and Very High Radiation Areas, Revision 16  
S-RAP-RPP-0103, Posting and Barricading Radiological Areas, Revision 28  
S-RAP-RPP-0201, Radiation Work Permit Initiation, Preparation, Control, and Use, Revision 23  
S-RAP-RPP-0704, Personnel Dosimetry Issue and Processing, Revision 18  
S-RAP-RPP-0801, High, Locked High, and Very High Radiation Area Monitoring and Control, Revision 30  
S-RPIP-3.0, Radiological Surveys, Revision 19  
S-RPIP-6.0, Control and Use of HEPA Vacuum Cleaners and Portable HEPA Ventilation Units, Revision 2

Condition Reports

CR-2012-007060

CR-2012-007366

CR-2012-007680

CR-2012-008265  
CR-2012-009589  
CR-2012-009621

CR-2012-009622  
CR-2012-009624  
CR-2012-009684

CR-2013-001299

Work Order

WO C91099108

Audits, Self Assessments, and Surveillances

Periodic Assessment Report 12-2P-N, June 8 to August 31, 2012, dated September 28, 2012

Periodic Assessment Report 12-3P-N, September 1 to December 31, 2012, dated January 28, 2013

Q&PA Assessment Report 12-044, Backshift Assessment of Operations, Security, Chemistry, and RP Personnel, dated August 31, 2012

Q&PA Assessment Report 12-045, Independent Spent Fuel Storage Installation (ISFSI) – Cask Loading of the First Dry Shielded Canister NMP61 B-001-A at Unit 1, dated October 2, 2012

Q&PA Assessment Report 12-062, Backshift Assessment of Operations, Security, Chemistry, and RP Personnel, dated November 7, 2012

Q&PA Assessment Report 12-064, ISFSI Campaign for Unit 1, dated December 19, 2012

Q&PA Assessment Report 13-006, Attentiveness of Plant Staff and Other Backshift Activities, dated February 14, 2013

Q&PA Assessment Report 13-010, Assess Station Preparedness for Managing and Executing N1R23, dated February 8, 2013

SA-2012-000206, Focused Self Assessment, Radiation Worker Practices, dated October 15, 2012

SA-2012-000226, Snapshot Assessment, 2012 3<sup>rd</sup> Quarter Dose and Dose Rate Alarms, dated October 5, 2012

SA-2012-000250, Focused Self Assessment, Surveys, and Postings, November 2, 2012

SA-2013-000005, Snapshot Assessment of 2012 4<sup>th</sup> Quarter Dose and Dose Rate Alarms, dated January 7, 2013

SA-2013-000034, Snapshot Assessment of RP Job Hazard Analysis Process Usage, dated February 20, 2013

Miscellaneous

1RB-25355, RB 198 feet 218 feet Northeast Corner Room, December 10, 2012

1TB-34916, TB 261 feet Large Equipment Decon Room, January 18, 2013

1RB-25364, RB 261 feet RWCU Corridor HX Room, February 12, 2013

1RB-25355, RB 261 feet Auxiliary Cleanup Pump Room, December 11, 2012

1RB-25367, RB 249 feet Outer Traversing In-Core Probe Room, March 10, 2013

2012 PI Data, Occupational Exposure Control Effectiveness

BRAC Survey Trends in Recirculation Suction Piping Dose Rates, Unit 1

BRAC Survey Trends in Discharge Piping Dose Rates, Unit 1

RWP 113380, RB 353 feet Refueling Floor, Cleanup/Decon

Unit 1 UFSAR

**Section 2RS2: Occupational ALARA Planning and Controls**

Procedures

CNG-RP-1.01-2003, Operational ALARA Planning and Controls, Revision 0

CNG-RP-1.01-1001, Station ALARA Committee, Revision 0  
GAP-ALA-01, Site ALARA Program, Revision 17  
GAP-CHE-01, BWR Chemistry Operating Limits, Revision 18  
N1-OP-34, Refueling Procedure (includes Primary Chemistry Controls), Revision 31  
N1-CTP-GEN-@621, Chemistry Shutdown/Startup Action Guidelines, Revision 5  
N1-PM-082, RPV Floodup/Draindown, Revision 5  
S-RAP-ALA-0101, Temporary Shielding, Revision 10  
S-RAP-ALA-0102, ALARA Reviews, Revision 15  
S-RAP-RPP-0201, Radiation Work Permit Initiation Preparation Control and Use, Revision 23

Condition Reports

CR-2012-009731  
CR-2012-011132  
CR-2012-011133

Audits, Self Assessments, and Surveillances

SA-2012-000172, Snapshot Assessment, Review of 2<sup>nd</sup> Quarter 2012 ALARA Committee Effectiveness, dated July 27, 2012  
SA-2012-000190, Interim Review for ALARA Best Practices, dated August 27, 2012  
SA-2012-000227, On-Line CRE Reduction Efforts, dated October 4, 2012  
SA-2012-000283, Review of 4<sup>th</sup> Quarter 2012 ALARA Committee Effectiveness, dated December 31, 2012

Miscellaneous

5-Year Collective Radiation Exposure Reduction Plan 2012 -2016  
2012 Collective Dose Goals and Actual by Department  
Strategic Water Chemistry Plan, dated October 11, 2011

**40A1: Performance Indicator Verification**

Document

NEI-99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6

**40A2: Problem Identification and Resolution**

Documents

Apparent Cause Evaluation for CR-2012-006075  
Exelon Power Labs Report NIN-37530, dated January 22, 2013

Condition Reports

CR-2011-002592  
CR-2011-004212  
CR-2011-006003  
CR-2011-007303  
CR-2011-011040  
CR-2012-006075  
CR-2012-009630  
CR-2013-000185

### **Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

#### **Documents**

License Amendment Request Pursuant to 10 CFR 50.90: Revisions to Operability Requirements for Reactor Coolant System Isolation Valves – TS Sections 3.2.7 and 3.6.2, dated September 27, 2007

Nine Mile Point Nuclear Station, Unit No. 1 – Issuance of Amendment RE: Revised Operability Requirements for Reactor Coolant System Isolation Valves (TAC Number MD6942), dated August 27, 2008

#### **Procedures**

CNG-CA-1.01-1000, Corrective Action Program, Revision 00801

CNG-CA-1.01-1005, Apparent Cause Evaluation, Revision 00603

CNG-NL-1.01-1011, 10 CFR 50.59/10 CFR 72.48 Applicability Determinations, Screenings, and Evaluations, Revision 00300

N1-OP-4, Shutdown Cooling System, Revision 03701

N1-PM-A4, Main Generator VAR Testing, Revision 00502

N1-RCPM-GMS-002, Amplidyne AC Voltage Regulator On-Line or Off-Line Calibration/On-Line Stability Test, Revision 00200

N2-OSP-LOG-S@ALL, Comprehensive Shift Checks, Revision 02000

N2-OSP-LOG-D001, Daily Log Checks, Revision 01604

#### **Drawings**

12177-EJ-ECCS-A-0, Emergency Cooling Systems Flow Diagram

PID-32A, Low Pressure Core Spray, Revision 19

PID-34F, Residual Heat Removal, Revision 16

#### **Condition Reports**

CR-2010-000874	CR-2012-000110	CR-2012-008756
CR-2010-008933	CR-2012-001677	CR-2012-009540
CR-2011-000518	CR-2012-005507	CR-2012-010487
CR-2011-004023	CR-2012-008673	CR 2013-003478
CR-2013-003479	CR 2013-003480	CR 2013-003481

#### **Work Order**

WO C92086721

## LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ADAMS	Agencywide Documents Access and Management System
ALARA	as low as reasonably achievable
AVR	automatic voltage regulator
BWR	boiling-water reactor
CAP	corrective action program
Constellation	Constellation Energy Nuclear Group, LLC
CR	condition report
CT	current transformer
EAL	emergency action level
ECCS	emergency core cooling system
EDG	emergency diesel generator
ENR	event notification report
EPR	electronic pressure regulator
FA	fire area
FCV	flow control valve
FIN	finding
FRN	<i>Federal Register</i> notice
GTS	standby gas treatment system
HPCI	high-pressure coolant injection
HX	heat exchanger
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
kV	kilovolt
LDS	leak detection system
LER	licensee event report
LOCA	loss-of-coolant accident
NEI	Nuclear Energy Institute
NCV	non-cited violation
NMPNS	Nine Mile Point Nuclear Station, LLC
NRC	Nuclear Regulatory Commission
NOUE	notification of unusual event
OPDRV	operation with a potential for draining the reactor vessel
PI	performance indicator
PM	preventive maintenance
RB	reactor building
RCIC	reactor core isolation cooling
RFO	refueling outage
RG	regulatory guide
RHR	residual heat removal
RP	radiation protection
RPV	reactor pressure vessel
RWCU	reactor water cleanup
RWP	radiation work permit
SDCS	shutdown cooling system
SDP	significance determination process

SSC	structure, system, and component
SW	service water
TB	turbine building
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
WO	work order