



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

September 29, 2016

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - EVALUATIONS OF CHANGES, TESTS, AND EXPERIMENTS AND PERMANENT PLANT MODIFICATIONS BASELINE INSPECTION REPORT 05000254/2016008; 05000265/2016008

Dear Mr. Hanson:

On August 26, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an Evaluations of Changes, Tests, and Experiments, and Permanent Plant Modifications inspection at your Quad Cities Nuclear Power Station, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on August 26, 2016, with Mr. S. Darin, 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.

Based on the results of this inspection, one NRC-identified and one self-revealed findings of very-low safety significance were identified. Both were determined to involve violations of NRC requirements. However, because of their very-low safety significance, and because the issues were entered into your Corrective Action Program, the NRC is treating the issues as Non-Cited Violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Quad Cities Nuclear Power Station.

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 III, and the NRC Resident Inspector at the Quad Cities Nuclear Power Station.

B. Hanson

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In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," 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's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and 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/

Robert C. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-254, 50-265
License Nos. DPR-29; DPR-30

Enclosure:
IR 05000254/2016008; 05000265/2016008

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-254; 50-265
License Nos: DPR-29; DPR-30

Report Nos: 05000254/2016008; 05000265/2016008

Licensee: Exelon Generation Company, LLC

Facility: Quad Cities Nuclear Power Station, Units 1 and 2

Location: Cordova, IL

Dates: August 8 – 26, 2016

Inspectors: A. Dahbur, Senior Reactor Inspector (Lead)
V. Meghani, Reactor Inspector
I. Khan, Reactor Inspector
E. Fernandez, Reactor Engineer (Observer)

Approved by: R. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY

Inspection Report 05000254/2016008; 05000265/2016008; 08/08/2016 - 08/26/2016; Quad Cities Nuclear Power Station, Units 1 and 2; Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications.

This report covers a 2-week announced baseline inspection on evaluations of changes, tests, and experiments, and permanent plant modifications. The inspection was conducted by Region III based engineering inspectors. One U.S. Nuclear Regulatory Commission (NRC) identified and one self-revealed findings of very-low safety significance were identified. Both of which were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process". Cross-cutting aspects were determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Findings for which the Significance Determination Process does not apply may be Green, or be assigned a severity level after NRC management review. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

NRC-Identified and Self-Revealed Findings

Cornerstones: Initiating Events, Mitigation Systems, and Barrier Integrity

Green. A finding of very-low safety significance (Green) and an associated NCV of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written. Specifically, Procedure QCOA 6100-17, Revision 12, "Loss of SBO [Station Black-Out Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71]," included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee's procedural guidance as written were technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied. The licensee entered this finding into their Corrective Action Program as Issue Report 2487426 and Issue Report 2706435 and removed the guidance to cross-tie the 4KV buses from the procedure.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, using other procedural guidance, operators were able to start both station black-out diesels within the hour. The inspectors did not assign a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance. (Section 1R17.1.b.)

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, "Design Control," for licensee's failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering

Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII requirements, without adequate justifications. The licensee captured this issue in their Corrective Action Program as IR 02708406 to evaluate the appropriate corrective actions and revise documentation as required.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any affected structure, system, or components. This finding has a cross-cutting aspect in the area of Human Performance in the area of Design Margin because the licensee failed to maintain equipment within its design margins. (Section 1R17.2.b.) [H.6]

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications (71111.17T)

.1 Evaluation of Changes, Tests, and Experiments

a. Inspection Scope

The inspectors did not review any safety evaluation performed pursuant to Title 10 of the *Code of Federal Regulations* (CFR), Part 50.59 because the licensee did not perform any safety evaluation during the triennial sample period. The inspectors reviewed 19 screenings and/or applicability determinations where licensee personnel had determined that a 10 CFR 50.59 evaluation was not necessary. The inspectors reviewed these documents to determine if:

- the changes, tests, and experiments performed were evaluated in accordance with 10 CFR 50.59, and that sufficient documentation existed to confirm that a license amendment was not required;
- the safety issue requiring the change, tests or experiment was resolved;
- the licensee conclusions for evaluations of changes, tests, and experiments were correct and consistent with 10 CFR 50.59; and
- the design and licensing basis documentation was updated to reflect the change.

The inspectors used, in part, Nuclear Energy Institute 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1, to determine acceptability of the completed evaluations, and screenings. The Nuclear Energy Institute document was endorsed by the U.S. Nuclear Regulatory Commission in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000. The inspectors also consulted Part 9900 of the U.S. Nuclear Regulatory Commission Inspection Manual, "10 CFR Guidance for 10 CFR 50.59, Changes, Tests, and Experiments."

The minimum sample size of 6 safety evaluations were not achieved, because the licensee did not perform any safety evaluation during the triennial sample period. Therefore, this inspection constituted only 19 samples of screenings and/or applicability determinations as defined in Inspection Procedure 71111.17-04.

b. Findings

Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator

Introduction: A finding of very low-safety significance (Green) and associated Non-Cited Violation (NCV) of Technical Specification 5.4.1.a, "Procedures," was self-revealed on December 2, 2014 when procedural guidance failed to be implemented as written.

Specifically, Procedure QCOA 6100-17, Revision 12, “Loss of SBO Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71,” included inappropriate guidance to cross-tie Bus 61 and Bus 71. The licensee’s procedural guidance as written was technically infeasible and could not be implemented due to breaker interlocks caused by the digital control system interface that precluded the 4kV buses 61 and 71 from being cross-tied.

Description: Prior to August 2013, Procedure QCOA 6100-17, “Loss of SBO [Station Black-Out] Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71, provided instructions in response to a loss of normal power to the SBO buses which included a start of one of the SBO Diesel Generators to provide power to its associated bus and connecting the maintenance spare charger to provide power to the other SBO battery. The licensee implemented a procedure revision to Procedure QCOA 6100-17, Revision 12, which instructed operations personnel to cross-tie 4kV bus 61 and 71 in the event of a loss of normal 13.8kV power. The licensee performed this procedure change as an enhancement to provide additional margin for the time critical action of aligning a battery charger to the SBO Diesel Generator batteries within one hour as this action was considered challenging to complete within one hour. This cross-tie would energize the battery chargers for both SBO Diesel Generators and ensure that the batteries remained charged to support the availability of the SBO Diesel Generators. The procedure provided instructions to start one of the SBO Diesel Generators and actions from inside and outside the control room to attempt to cross-tie both SBO buses (Bus 61 and Bus 71). In September 2015, during a planned maintenance activity when the 13.8kV bus was taken out of service for maintenance, it was self-revealed that breaker interlocks prevented 4kV bus 61 and 71 from being cross-tied. Specifically, operations staff attempted to cross-tie 4kV bus 61 and 71, as instructed by the procedure, when the 13.8kV bus was out of service; however, the operations staff discovered that the cross-tie breaker would not close. Based on operators’ knowledge of plant equipment and their training, the Operators were able to start both SBO Diesel Generators within an hour using other procedural guidance. Subsequent investigation by the licensee revealed that breaker interlocks in the digital control system for the SBO Diesel Generator precluded the cross-tie of 4kV bus 61 and 71. The licensee initiated Assignment Report (AR) 2487426 and AR 2706435 to document this issue with the procedure. The licensee’s immediate corrective action included revising the procedure to remove the guidance to cross-tie 4kV Bus 61 and 71.

Analysis: The inspectors determined that the failure to provide appropriate instructions to ensure that a battery charger to each SBO Diesel Generator was aligned within an hour, in the event of loss of power to SBO buses, was contrary to the requirements of Technical Specification 5.4.1.a, “Procedure,” and was a Performance Deficiency. Specifically, Procedure QCOA 6100-17 provided inappropriate steps to cross-tie buses 61 and 71 which were not feasible due to breaker interlocks that precluded the cross-tie of buses 61 and 71. As a result, these procedural steps could further complicate the already challenging time-critical action of aligning a battery charger to the SBO Diesel Generator battery within one hour.

The performance deficiency was determined to be more-than-minor because the finding was associated with the Mitigating Systems cornerstone attribute of procedure quality and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, this performance deficiency challenged

the ability of the operators to restore power to the SBO Diesel Generator batteries within one hour, and, consequently, could have challenged the availability, reliability, and capability of the SBO Diesel Generators in the event of a loss of the 13.8 kV bus.

In accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 2 the inspectors determined the finding affected the Mitigating Systems cornerstone. As a result, the inspectors determined the finding could be evaluated using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2 for the Mitigating Systems cornerstone. The finding screened as having very-low safety significance (i.e., Green) because it did not result in the loss of operability or functionality of any structure, system, or component. Specifically, per the operators' knowledge and training, the licensee was able to use other procedural guidance that started both SBO Diesel Generators within one hour.

The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance. Specifically, the inappropriate procedural steps to cross-tie buses 61 and 71 were added in August 2013.

Enforcement: Technical Specification Section 5.4.1.a "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978."

Regulatory Guide 1.33, Appendix A, Section 6, addresses "Procedures for Combating Emergencies and Other Significant Events" and Section 6.c, addresses "Loss of Electrical Power (and/or degraded power sources)." Procedure QCOA 6100-17, "Loss of SBO Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71," was the implementing procedure to response to loss of electrical power to the SBO buses.

Contrary to the above, from August 14, 2013, until September 16, 2015, the licensee failed to maintain a written procedure covering loss of electrical power (and/or degraded power sources). Specifically, the licensee failed to maintain Procedure QCOA 6100-17, "Loss of SBO Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71," such that it provided appropriate guidance on how to align a battery charger to each SBO diesel generator battery within an hour from the loss of power event to these buses.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was of very low safety significance and was entered into the licensee's Corrective Action Program (CAP) as Issue Report 2487426 and 2706435. The licensee's immediate corrective action included revising the procedure to remove the guidance to cross-tie 4kV Bus 61 and 71. (NCV 05000254/2016008-01; 05000265/2016008-01, Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator).

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed 15 permanent plant modifications that had been installed in the plant during the last 3 years. This review included in-plant walkdowns for portions of EC 385177, "1B-RHRSW Piping Replacement for Piping Installation," and EC 401167,

“Upgrade Unit 2 Secondary Containment Interlock Doors 2-0020-152 and 2-0030-119,” and the 250 Vdc battery room. The modifications were selected based upon risk significance, safety significance, and complexity. The inspectors reviewed the modifications selected to determine if:

- the supporting design and licensing basis documentation was updated;
- the changes were in accordance with the specified design requirements;
- the procedures and training plans affected by the modification have been adequately updated;
- the test documentation as required by the applicable test programs has been updated; and
- post-modification testing adequately verified system operability and/or functionality.

The inspectors also used applicable industry standards to evaluate acceptability of the modifications. The list of modifications and other documents reviewed by the inspectors is included as an Attachment to this report.

This inspection constituted 15 permanent plant modification samples as defined in Inspection Procedure 71111.17-04.

b. Findings

Failure to Evaluate the Target Rock Relief Valve Accumulator per American Society of Mechanical Engineers Code

Introduction: The inspectors identified a finding of very-low safety significance (Green), and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to assure that quality standards for the Target Rock Relief valve accumulator were specified and included in the design documents and that deviations were identified and controlled. Specifically, Engineering Change (EC 394119) fabricated the replacement Unit 2 Target Rock valve accumulator to American National Standard (ANSI) B31.1 Power Piping code requirements instead of the applicable American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII, requirements, without adequate justifications.

Description: Previous Component Design Basis Inspection identified that a critical parameter in calculation NUC-60, “Air Accumulator System Analysis to Ensure Operability in loss of coolant accident for 1(2)-0203-3AB at Quad Cities,” was not correct. This error impacted the margin available in the number of strokes which the accumulator can support. One of the adjustable parameters in this calculation was the size of accumulator. In order to resolve this issue, the licensee replaced the existing accumulators in both units, which resulted in increasing the capacity and adding margin to the system. The replacement accumulators were fabricated using piping material capped at both ends per design modification EC 392761 (accumulator 1-0203-3AB, Unit 1) and EC 394119 (accumulator 2-0203-3AB, Unit 2). The original accumulators were 4 inches in diameter. Replacement for Unit 1 was a 4 inch diameter accumulator,

however, the replacement Unit 2 accumulator size was increased to 8 inches due to seismic qualification of the piping which required the accumulator to be shorter in length.

Based on the information provided by the licensee, the existed accumulators were fabricated under specification K-2202, which required the drywell air piping to the target rock valve operator to be classified, constructed, and tested per ANSI B31.1, 1973 code. In reviewing EC 394119, which had referenced the ANSI B31.1 code edition 1967, the inspectors noted the following:

- According to Subsection 100.1.3.B of the 1967 as well as 1973 editions of B31.1, this code did not apply to economizers, heaters, tanks, nuclear reactor vessels and other pressure vessels covered by Sections of the ASME Boiler and Pressure Vessel Code.
- The licensee indicated that the general code of construction was ASME Section VIII, 1965, when applicable. Per Section U-1.d(5) in the 1965 and 1968 editions of ASME Section VIII, vessels having an inside diameter not exceeding 6 inches were not within jurisdiction of this division of Section VIII.
- Based on the above, since the original as well as the Unit 1 replacement were all less than 6 inches in diameter, they were exempt from the ASME Section VIII requirements and therefore could be fabricated per ANSI B31.1 requirements. However, when the licensee increased the Unit 2 replacement accumulator size from 4 inch to 8 inch diameter, the exemption was no longer applicable and therefore the accumulator needed to meet the ASME Section VIII requirements. Design Consideration Summary Section 4.1.7 in EC 394119 incorrectly stated that the accumulator was exempt from ASME Section VIII requirements due to its size.

Upon identification of the concern, while acknowledging incorrect application of the size exemption, the licensee contended that a later version of the ASME code provided an additional exemption that could be applied in this case. Specifically, the licensee referred to the 1989 edition of the Section VIII code, subsection U-1 (c)(5) that excludes the following components from within the scope of this division: "piping components, such as pipe flanges, bolting, gaskets, valves expansion joints, fittings, and the pressure containing parts of other components, such as strainers and devices which serve such purposes as mixing, separating, snubbing, distributing, and metering flow, provided that pressure containing parts and components are generally recognized as piping components or accessories." The inspectors did not agree with the licensee's interpretation that the accumulator would be a part of the category describe under the exemption and further noted that using a later edition would require the licensee to perform a code reconciliation.

Based on the above, the inspectors concluded that the licensee's determination that the ASME Section VIII requirements were not applicable was not justified. The inspectors reviewed and discussed the additional information provided by the licensee during a conference call with the licensee and reiterated their position that the Engineering Change (EC 394119) failed to verify that the design specification and codes for the original 4 inch accumulator were still applicable and valid for the replacement 8 inch accumulator.

The licensee entered this issue into their CAP as Issue Report 02708406 to evaluate the appropriate corrective actions and revise documentations as required.

Analysis: The inspectors determined the licensee's failure to evaluate the Target Rock Relief valve accumulator per ASME Section VIII requirements was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. Specifically, the licensee failed to recognize that the size exemption under ASME Section VIII no longer applied to the replacement 8-inch diameter accumulator for Unit 2. EC 394119 also failed to verify that the original 4-inch design specification was still valid for the replacement accumulator and hence failed to provide justification as to why the 8 inch replacement did not need to meet the ASME Section VIII code requirement.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability and reliability of a system that responds to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to evaluate the design for the replacement 8 inch diameter accumulator per the ASME Section VIII requirements, or to ensure that the design specification for the original 4 inch accumulator was not affected and would still apply to the replacement 8 inch accumulator did not ensure that the replacement 8 inch accumulator was fabricated correctly per the applicable codes.

In accordance with IMC 0609, "Significance Determination Process," IMC 0609.04 Attachment, "Initial Characterization of Findings," Table 2, the inspectors determined the finding affected the Mitigating Systems cornerstone because it affected the Automatic Depressurization System, a system used for long term heat removal. As a result, the inspectors determined the finding could be evaluated using Appendix A, "The SDP for Findings At-Power," Exhibit 2, for the Mitigating Systems cornerstone screening questions. The inspectors answered "Yes" to Question 1 because the finding did not result in the loss of operability or functionality of any affected structure, system, or component. Specifically, weld Non-Destructive Examinations and the leak tests performed during and after the installation provide reasonable assurance for operability of the system. The finding screened as having very-low safety significance (Green). The finding screened as having very-low safety significance (Green).

The inspectors determined this finding had an associated cross-cutting aspect, Design Margins (IMC 0310, Item H.6), in the Human Performance cross-cutting area because of the licensee's failure to maintain equipment within its design margins. Specifically, the licensee failed to verify that the design margin was maintained by application of appropriate quality requirements when the accumulator size was increased.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and that deviations from such standards are controlled.

Contrary to the above, in April 2014, the licensee failed to assure that the applicable quality standards were translated into specification K-2202 for the Target Rock Relief valve replacement accumulator approved in Revision 001 of EC 394119. Specifically, the licensee did not incorporate the applicable design basis standard (ASME Boiler and

Pressure Vessel code, Section VIII) for fabrication of the accumulator vessel into the design specification K-2202. Consequently, the licensee fabricated the accumulator in accordance with the incorrect standard (ANIS B31.1 piping code).

This was not an immediate safety concern because weld Non-Destructive Examinations and the leak tests performed during and after the installation provided reasonable assurance for operability of the system. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was a very-low safety-significant and was entered into the licensee's CAP as Issue Report 02708406 with the action to evaluate the appropriate corrective actions and revise documentation as required. (NCV 05000254/2016008-002; 05000265/2016008-002, Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code.)

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Routine Review of Condition Reports

a. Inspection Scope

The inspectors reviewed several corrective action process documents that identified or were related to 10 CFR 50.59 evaluations and permanent plant modifications. The inspectors reviewed these documents to evaluate the effectiveness of corrective actions related to permanent plant modifications and evaluations of changes, tests, and experiments. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification, and incorporation of the problems into the corrective action system. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On August 26, 2016, the inspectors presented the inspection results to Mr. S. Darin and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Darin, Site Vice President
C. Alguire, Design Engineering Senior Manager
R. Luebbe, Regulatory Assurance
D. Collins, Engineering
T. Bell, Engineering Director
T. Petersen, Regulatory Assurance Lead
T. Scott, Work Management Director
H. Dodd, Operation Director
R. Hight, Maintenance Director
T. Wojick, Site Engineering
D. Damhoff, Design Engineering Acting Manager
M. Wagner, Contractor
Y. Fedorov, Engineering
C. Boelte, Engineering Programs

U.S. Nuclear Regulatory Commission

R. Murray, Senior Resident Inspector
K. Carrington, Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000254/2016008-01; 05000265/2016008-01	NCV	Failure to Provide Appropriate Operating Instructions for Aligning a Battery Charger to the Station Black-Out Diesel Generator (Section 1R17.1.b.)
05000254/2016008-02; 05000265/2016008-02	NCV	Failure to Evaluate the Target Rock Relief Valve Accumulator per ASME Code (Section 1R17.2.b.)

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
EC	Engineering Change
IMC	Inspection Manual Chapter
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
PARS	Public Available Records System
SBO	Station Black-Out

Enclosure

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

10 CFR 50.59 SCREENINGS

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
QC-S-2008-0032	Margin Improvement for MOV 1-1001-26A	0
QC-S-2010-0112	Revise Calibration of RHR Rosemount DP Transmitters on DPT 1(2)-1001-81A/B	0
QC-S-2011-0022	Modification of Supports M-1053-BB and M-1053-BC Required for 2B RRC Motor Replacement During Q2R21	0
QC-S-2012-0044	1B-RHRSW Piping Replacement for Piping Installation	0
QC-S-2013-0079	RCS Pressure and Temperature (P/T) Limits Reactor Recirculation System Startup	0
QC-S-2013-0086		
QC-S-2013-0090	Temporary Power for ½ EDG Immersion Heater 0-6664, Lube Oil Turbo Pump 0-6660, and Lube Oil Circulation Pump 0-6657 for Bus 18/MCC 18-3 OOS QCOP 6700-47	0
QC-S-2013-0092	UFSAR Table 6.2-7, Penetration of PCIV-X-210 A/B Penetrations Do Not Require LLRT(1001-36A/B)	0
QC-S-2013-2093	Technical Requirement Manual Change TRM-12-002	0
QC-S-2014-0034	Installing Alternate Power Supply to Primary Containment Vent and Purge Valves	0
QC-S-2014-0056	Lift Lead to Remove Nuisance alarm 901-8 F8 Due to ESS UPS High Inverter AC Voltage	0
QC-S-2014-0068	Operation of Control Room HVAC "A" Train Service Water and Chilled Water Systems	0
QC-S-2014-0095	EDG Frequency Band	0
QC-S-2015-0007	Install Temporary Space Heaters in the Unit 01/02 Battery Rooms	0
QC-S-2015-0016		
QC-S-2015-0038	Upgrade Unit 0 (1) (2) Secondary Containment Interlock Doors to Improve Reliability	0
QC-S-2015-0039	Provide Temporary Alternate Compressor to Supply the Service Air System	0
QC-S-2015-0053	Maintenance Specification Replacement of Digital to Digital Recorders	0
QC-S-2015-0068	Install Manual Valve at AOV-0-2007-12	0

CORRECTIVE ACTION PROGRAM DOCUMENTS INITIATED DURING INSPECTION

<u>Number</u>	<u>Description or Title</u>	<u>Date</u>
02706393	Error ID in Historical Calculation QDC-0300-S-1819	08/19/2016
02705490	MODS –CRD Hydraulic System Calculations Not On-Site	08/17/2016
02708347	MODs – NRC Identified Discrepancy in Calculation	08/25/2016

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

<u>Number</u>	<u>Description or Title</u>	<u>Date</u>
01324828	Potential Non-Conservatism with TRM 3.7.b	02/09/2012
01336369	Technical Requirement Manual Change Section 3.7.H - Snubbers	03/05/2012
01490581	Different Group 3 Signals in Various Documents	03/21/2013
02614599	Installed Circuit Breaker Size Differs from Design Documents	01/20/2016
01542572	NOS ID: Two Mods Omitted Discussion of Impact and Reviews	08/02/2013
02447569	Q1R23 AVR Mod EC 394980 Cyber Security Requirements	02/04/2015

DRAWINGS

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
4E-1317A	250VDC MCC 1C Non-ESS Single Line Diagram	C

MODIFICATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
EC 391990	Evaluate Use of Bottom Head Metal Temp Indication when Bottom Head Drain Temp Indication is not Available for Restart of a Reactor Recirculating Pump	0
EC 356054	Seismic Qualification, Mounting, and Electrical/Functional Approval of Replacement Temperature Switches for Control Room HVAC Heater Cutout Switches FS 0-5795-350A and 0-5795-350B	0
EC 356694	Engineering Change 356054 Did Not Address Temperature Setpoint of Replacement Switches for 0-5795-350A/B	0
EC 364363	Margin Improvement for MOV 1-1001-26A	0
EC 381305	Modification of Supports M-1053-BB and M-1053-BC Required for 2B RRC Motor Replacement During Q2R21	2
EC 382283	Revise Calibration of RHR Rosemount DP Transmitters for Span Shift on DPT 1-1001-81A/B	0
EC 382305	Revise Calibration of RHR Rosemount DP Transmitters for Span Shift of DPT 2-1001-81A/B	0
EC 385177	1B-RHRSW Piping Replacement for Piping Installation	1
EC 392030	Recirculating Pump ASD Power Cell Firmware Upgrade	0
EC 393851	Reserve Aux Transformer Load Tap Changer (LTC) Primary Controller Upgrade (T22)	0
EC 394119	Modify Instrument Air to the Target Rock by Increasing the Accumulator volume	1
EC 397857	Install Piping Supports on 2-7642A-1/2" CO2 Piping	2
EC 401167	Upgrade Unit 2 Secondary Containment Interlock Doors 2-0020-152 and 2-0030-119	0
EC 404315	Replace Bias Relays	0
ECR 409225	15 AMP Breaker Range Too Low for Locked Rotor	03/19/2013

CALCULATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
QDC-8300-S-2095	Structural Evaluation of Support and Mounting Details for Junction boxes 1-0030-JB200 and 2-0030-JB200	0
QDC-8350-S-2107	Unit 1(2) 250VDC Breaker Mounting Evaluation and Review of Curtiss-Wright (QualTech NP) Report No. S1429.0 for Seismic Qualification of Eaton LD2600F Circuit Breaker with Eaton LT2400T Magnetic Trip Unit for Beyond Design Basis Flex event	0
QDC-1000-S-1979	Turbine Building Concrete Evaluation for the RHRSW Pipe 1-10105B-16 Reroute	1
QDC-1000-S-2003	Evaluation of Turbine Building Structural Steel for RHRSW Pipe 1-10105B-16 Supports	1
QDC-1000-S-2002	Evaluation of Turbine Building Pipe Supports for RHRSW Pipe 1-10105B-16	1
QDC-0020-S-1822	Structural Evaluations Associated with Replacing Recirculation Motor and Pump Internals	2
SA-050-81-003-R13	Stress Analysis for CRD Supports	3
QDC-0030-S-1611	Turbine Building Crane Column and Girder Evaluation	1, 2A, 2B
055570(CMED)	Generation of Required Response Spectra, for 250 VDC, #1 and #2 MCCs to Install Molded Case Circuit Breakers	0

OTHER DOCUMENTS

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
SL-010356	Plan for the 2B Reactor Recirculation Pump Motor and Pump Internal Replacement	0
UFSAR-15-R14		
UFSAR-13-R13-011		
UFSAR-13-R13-010		

PROCEDURES

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
QCOP 5750-29	Operation of Control Room HVAC "A" Train Service Water and Chilled Water Systems	10
CC-QC-408	Maintenance Specification Replacement of Digital to Digital Data Recorders	0
QCOA 6100-17	Loss of SBO Normal 13.8kV Transformer T42R-6 Feed to 4kV Bus 61 and 71	12

B. Hanson

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Sincerely,

/RA/

Robert C. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

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