



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

December 17, 2015

Mr. Bryan C. Hanson
Senior Vice President, Exelon Generation
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION –
SUPPLEMENTAL INSPECTION REPORT 05000219/2015011**

Dear Mr. Hanson:

On November 20, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure (IP) 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," at your Oyster Creek Nuclear Generating Station to assess Exelon's root cause evaluation of a performance deficiency and violation of Yellow safety significance associated with the Mitigating Systems cornerstone, which was documented in NRC Inspection Report 05000219/2014009 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML15112A147). The enclosed inspection report (IR) documents the inspection results, which were discussed on November 20, 2015, with Mr. G. Stathes, Site Vice President, and members of his staff.

The Yellow finding was associated with Exelon's failure to establish adequate measures for selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the electromechanical relief valves (EMRVs), which resulted in two inoperable EMRVs for greater than the Technical Specification allowed outage time of 24 hours. The violation was also determined to meet the Inspection Manual Chapter (IMC) 0305, Section 11.05, criteria for treatment as an old design issue.

Because the finding met the criteria for an old design issue, IMC 0305, Section 11.05(a), states that the finding will not aggregate in the Action Matrix with other performance indicators or inspection findings. Therefore, Oyster Creek did not transition between columns of the Action Matrix due to this Yellow finding. However, IMC 0305, Section 11.05(a) directs that the NRC regional office perform a supplemental inspection using IP 95002 for a Yellow finding to review the licensee's root cause evaluation and corrective action plan for the issue.

On October 12, 2015, you informed the NRC that Oyster Creek Nuclear Generating Station was ready for the supplemental inspection.

The NRC performed this supplemental inspection to determine if (1) the root and contributing causes for the risk-significant performance issues were understood, (2) the extent of condition and extent of cause for the identified issues were understood, and (3) your completed or planned corrective actions were sufficient to address and prevent repetition of the root and contributing causes. The NRC also conducted an independent review of the extent of condition and extent of cause for the Yellow finding. Since the finding was determined to meet the criteria as an old design issue, IMC 0305 allows the NRC regional office to determine the necessity of performing the safety culture assessment portion of the IP 95002. The NRC Region I staff determined that the safety culture assessment was not required because the identified design deficiency which caused the failures of the two EMRVs were part of the original design of the facility and predated current licensee policies and practices.

The NRC determined that your staff's evaluation identified the primary root cause of the issue to be that the design of the EMRV actuators was inadequate in that when placed in an environment where the actuator is subject to the vibration associated with plant operation, the allowed installation tolerances between posts and guides can create a condition where the springs can jam the actuator plunger assembly by wedging between the guides and the posts. The deficiency affected the design of all the EMRV actuators. The corrective action to prevent recurrence was to install redesigned EMRV actuators, which was completed during the October 2015 refueling outage. The NRC completed an independent assessment of the extent of condition and extent of cause of the issue. The inspectors noted one general weakness associated with the extent of cause evaluation completed by your staff. The general weakness was that the completed extent of cause evaluation was narrow in scope and could have missed identifying similar design and maintenance issues on safety related components located in accessible portions of the facility. The inspectors performed additional inspection activities and did not identify any further design or maintenance concerns. The inspectors determined that this issue did not meet the criteria for a more than minor issue and assessed this issue as a general weakness.

The NRC has determined that completed corrective actions were sufficient to address the performance issues that led to the Yellow finding. The NRC inspectors did not identify any findings or violations of more than minor significance.

In accordance with Title 10 of the *Code of Federal Regulations* 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/

Silas R. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket No. 50-219
License No. DPR-16

Enclosure:
Inspection Report 05000219/2015011
w/Attachment: Supplemental Information

cc: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-219

License No.: DPR-16

Report No.: 05000219/2015011

Licensee: Exelon Nuclear

Facility: Oyster Creek Nuclear Generating Station

Location: Forked River, New Jersey

Dates: November 16, 2015 through November 20, 2015

Inspectors: J. Kulp, Senior Reactor Inspector, Lead Inspector
J. Brand, Reactor Inspector
M. Henrion, Reactor Engineer (Observer)

Approved by: Silas R. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

SUMMARY OF FINDINGS

Inspection Report (IR) 05000219/2015011; 11/16/2015 - 11/20/2015; Oyster Creek Nuclear Generating Station; Supplemental Inspection - Inspection Procedure (IP) 95002

A senior reactor inspector and a reactor inspector from the Division of Reactor Safety, NRC Region I, performed this inspection. No findings were identified. 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.

Cornerstone: Mitigating Systems

The NRC staff performed this supplemental inspection in accordance with IP 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess Exelon's root cause evaluation of a performance deficiency and violation of Yellow significance associated with the Mitigating Systems cornerstone, which was documented in NRC Inspection Report 05000219/2014009 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML15112A147).

The finding was associated with Exelon's failure to establish adequate measures for selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the electromatic relief valves (EMRVs), which resulted in two inoperable EMRVs for greater than the Technical Specification allowed outage time of 24 hours. The violation was also determined to meet the IMC 0305, Section 11.05, criteria for treatment as an old design issue. The final significance determination letter for this finding, which was issued on April 27, 2015 (ML15112A147), documented the NRC's intentions to conduct a supplemental inspection using IP 95002. The NRC staff was informed on October 12, 2015, of Exelon staff's readiness for this inspection.

Overall, the inspectors determined that Exelon adequately evaluated and addressed the performance issues that resulted in the Yellow finding, and concluded that Exelon successfully met the inspection objectives for IP 95002. Notwithstanding, the inspectors identified one general weakness associated with Exelon's extent of cause evaluation. The inspectors determined that Exelon's extent of cause evaluation was narrow in its scope and potentially excluded similar design tolerance and maintenance issues which may have existed on other safety-related components. The inspectors performed additional inspection activities and did not identify any other safety-related components that were affected. The inspectors determined that this issue did not meet the criteria for a more than minor issue and assessed this issue as a general weakness. (Section 4OA4.2.4.b)

Findings

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA4 Supplemental Inspection (95002)

.1 Inspection Scope

The NRC staff performed this supplemental inspection in accordance with IP 95002 to assess Exelon's evaluation of a Yellow finding, which affected the Mitigating Systems cornerstone in the reactor safety strategic performance area. The 95002 inspection objectives are:

- provide assurance that the root and contributing causes of risk-significant performance issues were understood;
- provide assurance that the extent of condition and extent of cause of risk-significant performance issues were identified and to independently assess the extent of condition and extent of cause of individual and collective risk-significant issues;
- independently determine if safety culture components caused or significantly contributed to the risk-significant performance issues; and
- provide assurance that the Exelon's corrective actions for risk-significant performance issues were sufficient to address the root and contributing causes and to preclude repetition.

On February 11, 2015, Exelon was notified of an inspection finding of preliminarily substantial safety significance (Yellow) and meeting the definition of an old design issue. The finding was associated with the failure of 2 electromatic relief valves (EMRV) identified by Oyster Creek electricians during as-found bench testing in June 2014. The finding was characterized as having substantial safety significance (Yellow) based upon the results of a Phase 3 risk analysis performed by a region based senior reactor analyst (SRA) as discussed in in NRC Inspection Report 05000219/2014009 (ML15042A231). The failure of the two EMRV actuators was attributed to misalignment between the post and guide components of the actuators. Since the 'B' and 'D' actuators had been removed for refurbishment, their failure did not present an immediate safety concern with the operating reactor.

On April 27, 2015, Exelon was notified that the finding was confirmed to be of substantial safety significance (Yellow) and as well as meeting the criteria for designation as an old design issue in NRC letter, "Final Significance Determinations for One Yellow Finding and One White Finding with Assessment Follow-up and Notices of Violation [NRC Inspection Report No. 05000219/2015007] – Oyster Creek Nuclear Generating Station (ML15112A147)."

Because the finding met the criteria for an old design issue, IMC 0305, Section 11.05(a), states that the finding will not aggregate in the Action Matrix with other performance indicators or inspection findings. Therefore, Oyster Creek did not transition between columns of the Action Matrix due to this Yellow finding.

IMC 0305, Section 11.05(a) directs that the NRC regional office perform a supplemental inspection using IP 95002 for a Yellow finding to review the licensee's root cause evaluation and corrective action plan for the issue.

Exelon informed the NRC staff on October 12, 2015, that they were ready for the supplemental inspection. In preparation for the inspection, Exelon performed a root cause evaluation (RCE), 1679428, "Failed As Found Testing of 'B' and 'D' Electromatic Relief Valve Actuators," to identify the cause of the failure of the EMRVs, which allowed for a risk-significant (Yellow) finding. Exelon's actions included entering a forced outage in July 2014 to test, inspect, and replace the then-installed EMRV actuators with rebuilt actuators; redesigning the actuators to preclude the mode of failure identified on the failed actuators; installing the redesigned actuators during the 1R25 refueling outage; and issuing a *10 Code of Federal Regulations Part 21* report to inform the industry and the NRC of the deficient EMRV actuator design. Details of Exelon's actions are documenting in NRC inspection report 05000219/2014009.

The inspectors reviewed Exelon's RCE in addition to other documents listed in the Attachment, which supported Exelon's actions to address the Yellow finding. The inspectors reviewed corrective actions that were taken to address the identified causes. The inspectors conducted interviews with Exelon personnel to ensure that the root and contributing causes were understood and corrective actions taken or planned were appropriate to address the causes and preclude repetition. The inspectors also independently assessed the extent of condition and extent of cause of the identified issues.

IMC 0305 allows the NRC regional office to determine the necessity of performing the safety culture assessment portion of the 95002 inspection procedure. The NRC Region I staff determined that the safety culture assessment was not required because the identified design deficiency which caused the failures of the two EMRVs was part of the original design of the facility and predated current licensee policies and practices.

.2 Evaluation of the Inspection Requirements

2.1 Problem Identification

- a. IP 95002 requires that the inspection staff determine that the licensee's evaluation of the issue documents who identified the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and the conditions under which the issue was identified.

Exelon identified the inoperability of the 'B' and 'D' EMRV actuators during as-found testing conducted prior to refurbishment activities. On June 20, 2014, during pre-refurbishment testing of the 5 removed EMRV actuators, Exelon identified that 2 of the 5 actuators ('B' and 'D') failed to operate. As the EMRV actuators were

not installed in the plant at that time, no operability determination was required for the removed actuators. The inspectors verified that this information was documented in the Exelon's RCE.

- b. IP 95002 requires that the inspection staff determine that the licensee's evaluation of the issue documents how long the issue existed and prior opportunities for identification.

Exelon's RCE documented that the last time that either the 'B' and 'D' EMRV actuators were cycled was July 27, 2012, when the 'D' was cycled due to seat leakage. There were no other opportunities for identification of the issue, until October 22, 2012, when the actuators were removed for replacement during the 1R24 refueling outage. The inspectors determined that Exelon's evaluation was adequate with respect to identifying how long the issue existed and prior opportunities for identification.

- c. IP 95002 requires that the inspection staff determine that the licensee's evaluation documents the plant specific risk consequences, as applicable, and compliance concerns associated with the issue(s) both individually and collectively.

The risk assessment portion of Exelon's RCE documented that: "The failure of the 'B' and 'D' EMRVs, combined with the increased probability of failure for the remaining EMRVs, is considered to be a risk significant event based on an increase in the core damage probability." Exelon performed a risk determination evaluation (OC-SDP-001) in order to quantify the increase in core damage frequency. OC-SDP-001 calculated the change in core damage frequency as $8.9E-6$ per year, which represents an issue of low to moderate (White) safety significance.

The NRC determined this issue was a finding of preliminary substantial risk (Yellow), in IR 05000219/2014009 (ML15042A231).

Exelon provided additional risk information, for the NRC's consideration, in Exelon letter RA-15-021, "Response to Apparent Violation EA-14-178" dated March 13, 2015 (ML15084A107).

The NRC reviewed the information provided by Exelon and determined that the new information provided did not alter the original NRC risk assessment as described in inspection report 05000219/2014009. The NRC confirmed that the finding was of substantial safety risk (Yellow) in NRC letter, "Final Significance Determinations for One Yellow Finding and One White Finding with Assessment Follow-up and Notices of Violation [NRC Inspection Report No 05000219/2015007] – Oyster Creek Nuclear Generating Station" dated April 27, 2015 (ML15112A147).

In addition, RCE 1679428 documented the consequences of the issue, which included the following:

- Increased probability of failure for remaining EMRV actuators; and
- Unplanned entry into a technical specification action statement due to potential common cause failure mode of all five installed EMRV actuators and subsequent plant shutdown.

The inspectors concluded that Exelon appropriately documented the risk consequences and compliance concerns associated with the issue.

d. Findings

No findings of significance were identified.

2.2 Root Cause, Extent of Condition, and Extent of Cause Evaluation

- a. IP 95002 requires that the inspection staff determine that the licensee evaluated the issue using a systematic methodology to identify the root and contributing causes.

Exelon used the following systematic methods to complete RCE-1679428:

- data gathering through interviews and document review
- timeline construction
- events and causal factor charting
- support/refute matrix
- cause and effect analysis

The inspectors determined that Exelon evaluated the issue using a systematic methodology to identify root and contributing causes.

- b. IP 95002 requires that the inspection staff determine that the licensee's RCE was conducted to a level of detail commensurate with the significance of the issue.

Exelon's RCE included an extensive timeline of events and used several evaluation tool products as discussed in the previous section. Exelon documented the root cause of the issue to be that the design of the EMRV actuators is inadequate in that when placed in an environment where the actuator is subject to the vibration associated with plant operation, the allowed installation tolerances between posts and guides can create a condition where the springs can jam the actuator plunger assembly by wedging between the guides and the posts. Exelon determined that the contributing cause was that the maintenance procedure for refurbishment of the EMRV actuator did not provide the necessary acceptance criteria for alignment of the posts to guides to ensure that the springs, posts, and guides do not interact in a way that causes excessive wear allowing the plunger assembly jamming mechanism to exist. Based on the extensive work performed for this root cause evaluation, the inspectors concluded that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

- c. IP 95002 requires that the inspection staff determine that the licensee's RCE included a consideration of prior occurrences of the issue and knowledge of operating experience.

This inspection requirement was accomplished during an IP 71152, "Problem Identification and Resolution" annual inspection sample as documented in inspection report 05000219/2014009 (ML15042A231).

- d. IP 95002 requires that the inspection staff determine that the licensee's RCE addresses the extent of condition and extent of cause of the issue(s).

Exelon's RCE considered the extent of condition associated with the failure of the two EMRV actuators. Exelon determined that issue of the inadequate design and excessive allowed tolerances between the post and guides of the EMRV actuators was applicable to all five EMRV actuators installed at Oyster Creek. A total of ten EMRV actuators are used at Oyster Creek to facilitate service and refurbishment of the five installed EMRVs. In addition, the RCE determined that no other valves at Oyster Creek make use of similar type of actuator design. Extensive as-found inspections, testing, and laboratory analysis of five of the EMRV actuators identified similar wear patterns due to vibration induced fretting. Of all ten actuators removed in 2012 (5) and 2014 (5) all but the two (two identified failures in June 2014), were verified to remain operable and capable of performing their intended safety functions.

Exelon's evaluation also considered the extent of cause associated with the failure of the two ERMV actuators. Exelon determined that the design vulnerabilities, to include adequate tolerances during maintenance activities for components exposed to vibration during plant operation, was applicable to all five EMRVs. In addition, the RCE recognized that although the root cause and contributing cause can relate to other components, there was no clear historical negative trend involving a specific group of components.

The inspectors concluded that Exelon's RCE addressed the extent of condition and the extent of cause of the issue.

- e. Findings

No findings of significance were identified.

2.3 Corrective Actions

- a. IP 95002 requires that the inspection staff determine that (1) the licensee specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation that states no actions are necessary is adequate.

This inspection requirement was accomplished during an IP 71152, "Problem Identification and Resolution" annual inspection sample as documented in inspection report 05000219/2014009 (ML15042A231).

- b. IP 95002 requires that the inspection staff determine that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

This inspection requirement was accomplished during an IP 71152, "Problem Identification and Resolution" annual inspection sample as documented in inspection report 05000219/2014009 (ML15042A231).

- c. IP 95002 requires that the inspection staff determine that the licensee established a schedule for implementing and completing the corrective actions.

This inspection requirement was accomplished during an IP 71152, "Problem Identification and Resolution" annual inspection sample as documented in inspection report 05000219/2014009 (ML15042A231).

- d. IP 95002 requires that the inspection staff determine that the licensee developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.

This inspection requirement was accomplished during an IP 71152, "Problem Identification and Resolution" annual inspection sample as documented in inspection report 05000219/2014009 (ML15042A231).

- e. IP 95002 requires that the inspection staff determine that the licensee's planned or taken corrective actions adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The NRC issued an NOV to Exelon on April 27, 2015, in NRC inspection report 05000219/2015007 (ML10112A147). In that inspection report, NRC concluded that the information included in NRC inspection report 05000219/214009 adequately addressed the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved, a written response was not required. Exelon chose not to provide a response to the NOV.

- f. Findings

No findings of significance were identified.

2.4 Independent Assessment of Extent of Condition and Extent of Cause

- a. Inspection Scope

IP 95002 requires that the inspection staff perform a focused inspection to independently assess the validity of the licensee's conclusions regarding the extent of condition and extent of cause of the issue(s). The objective of this requirement is to independently sample performance, as necessary, within the key attributes of the cornerstone(s) that are related to the subject issue(s) to ensure that the licensee's evaluation regarding the extent of condition and extent of cause is sufficiently comprehensive.

The inspectors performed an independent assessment of the extent of condition and extent of cause of the issues associated with the Yellow finding. In conducting the independent review, the inspectors interviewed station management and staff, reviewed program and process documentation, reviewed maintenance documentation and corrective action program documents. The inspectors' independent review focused on the root cause associated with the Yellow finding in addition to the identified contributing cause that involved a more specific aspect of the root cause.

The inspectors assessed whether Exelon's extent of condition and extent of cause evaluations sufficiently identified and bounded all engineering design and maintenance aspects of the Yellow finding. The inspectors also assessed whether Exelon's extent of condition and extent of cause evaluations sufficiently determined the actual extent of similar issues that potentially existed in other departments, programs, and processes.

b. Assessment

The inspectors determined that Exelon conducted a comprehensive extent of condition and extent of cause review that sufficiently identified the most relevant areas. The inspectors did not identify any substantive extent of condition and extent of cause issues that Exelon was not aware of and had not already identified with corrective action plans in place.

The inspectors' independent extent of cause review identified that Exelon's extent of cause analysis associated with the Yellow finding was narrowly focused. Specifically, the inspectors determined that Exelon's extent of cause evaluation focused on safety-related components located in areas that are inaccessible during plant operation that have a design vulnerability to include adequate tolerances related to actuator adjustments during maintenance. The inspectors determined that the extent of cause evaluation did not include review of safety-related components with design vulnerabilities where inadequate maintenance guidance could challenge operability of a safety system or component that were located in accessible areas of the plant. To assess this aspect of Exelon's extent of cause evaluation, the inspectors performed interviews of several mechanics, electricians, instrumentation and controls technicians, component maintenance optimization personnel, plant operators, and system engineers to identify other safety-related components experiencing repetitive wear or repetitive maintenance issues. The inspectors also focused on maintenance issues that may not be fully documented or where "skill of the craft" activities are being relied on to maintain operability of a component. No additional issues were identified by the inspectors. Since no additional concerns were identified, the inspectors determined that the issue did not meet the more than minor criteria in IMC 0609, Appendix B, "Issue Screening" and as such, represented a general weakness in Exelon's extent of cause evaluation. Exelon entered the inspectors' concern into the corrective action program as IR 2590258 to document this issue.

c. Findings

No findings of significance were identified.

2.5 Safety Culture Consideration

a. Inspection Scope

IMC 0305 allows the NRC regional staff to determine if the safety culture review portion of IP 95002 is appropriate for an old design issue. Specifically, IMC 0305 Section 11.05, "Treatment of Items Associated with Enforcement Discretion" states that "because old design issues often predate current licensee policies and

practices, performing a review of the licensee's safety culture as part of an IP 95002 inspection may not be necessary." This issue was determined to have met the requirements as an old design issue as documented in inspection report 05000219/2014009 (ML15042A231). As a result, the NRC Region I staff decided not to perform the safety culture review portion of IP 95002 as part of this inspection because the issue predates current Exelon policies and practices and are not indicative of current Exelon performance.

b. Findings

No findings of significance were identified.

2.6 Evaluation of IMC 0305 Criteria for Treatment of Old Design Issues

This issue was determined to be an old design issue as documented in NRC letter, "Final Significance Determinations for One Yellow Finding and One White Finding with Assessment Follow-up and Notices of Violation [NRC Inspection Report No 05000219/2015007] – Oyster Creek Nuclear Generating Station" dated April 27, 2015 (ML15112A147).

4OA6 Exit Meeting

On November 20, 2015, the inspectors presented the inspection results to Mr. G. Stathes, Site Vice President and other members of the Exelon staff, who acknowledged the findings. The inspectors verified that any documents that were identified as proprietary had been returned to the licensee.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

G. Stathes, Site Vice-President
J. Dostal, Plant Manager
M. Arnao, Operations Service Manager
W. Brostow, CMO Engineer
T. Cappuchino, Principle Regulatory Specialist
C. Coyle, Mechanical Maintenance Supervisor
Z. Demeke, In-service Testing Engineer
R. Derr, Instrumentation and Control Lead Technician
R. Dutes, Senior Regulatory Assurance Specialist
G. Harttraft, In-service Inspection Program Engineer
R. Lanning, Maintenance Team Supervisor
S. Magee, Mechanical Maintenance Technician
M. McKenna, Regulatory Assurance Manager
D. Siecinski, Electrical Technician
H. Tritt, Design Engineering Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000219/2014009-01	VIO	Inadequate Application of Materials, Parts, Equipment, and Processes Associated with the Electromatic Relief Valves
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LIST OF DOCUMENTS REVIEWED

Procedures

MA-AA-716-011, Work Execution & Close Out, Revision 21
2400-SME-3918.03, EMRV Solenoid Operator Removal, Refurbishment, and Installation, Revision 19
2400-SME-3918.03, EMRV Solenoid Operator Removal, Refurbishment, and Installation, Revision 20
2400-SME-3918.03, EMRV Solenoid Operator Removal, Refurbishment, and Installation, Revision 22

Drawings

3E-212-A2-1001, ISI Configuration Drawing Automatic Depression System, Revision 3
3E-411-A2-1000, ISI Configuration Drawing Main Steam System, Sheet 1, Revision 5
3E-411-A2-1000, ISI Configuration Drawing Main Steam System, Sheet 2, Revision 6
3NC117, Dresser Consolidated Electromatic Relief Valve, Sheet 3, Revision 8
3NC206, Dresser Consolidated Electromatic Relief Valve, Sheet 5E, Revision 2
DR 3NC206, Consolidated Electromatic Relief Valve, Sheet 5, Revision 6
001N7450, EMRV Actuator Modification Kit-Oyster Creek, Revision 2
3NC117, Consolidated Electromatic Relief Valve, Sheet 3C, Revision 8

Condition Report

1673665	1679428	1686134	2570260	2589846	2590258
2452092	2413924	2059938	2059950	2555788	1673665
2589109	1679428				

Work Orders

C2032482	C2032680	R2211822	R2211367	R2212053	R2212052
R2212051	C2032628	R2246662	R2250115	R2247123	R2250115
R2250114	R2246997	C2032482	R2242774	R2243285	

Miscellaneous

VM-OC-0030, Installation and Maintenance Manual for Electromatic Relief Valves, Revision 7
EQ-OC-301, Project Engineer Program Test Dresser Relief Valve Actuator, dated June 11, 1968

MPR Associates Letter, Valve Acceptance Criteria for ERV Valve Actuators, dated April 13, 2006

OC-14-00371-001, EMRV Actuator Spring Modification, Revision 1

14Q3259-DR-002, Oyster Creek EMRV Solenoid Actuator Vibration Test Report, dated 9/11/14
42963, Project Engineer Program Test Dresser Relief Valve Actuator,

50495, Part 21 Report-Electromatic Relief Valve Excessive Wear, dated 9/25/14

Licensee Event Report (LER) 2014-002-00, Technical Specification Prohibited Condition
Caused by Two Electromatic Relief Valves Inoperable for Greater than Allowed Outage
Time, dated 10/8/14

PI-AA-125-1001, Root Cause Evaluation 1679428 for Failed As Found Testing of B and D
Electromatic Relief Valve Actuators, Revision 0

02565942, Focused Area Self-Assessment Pre-NRC Supplemental Inspection 95-002,
Revision 0

LIST OF ACRONYMS

ADAMS	Agency-Wide Documents Access and Management System
EMRV	Electromatic Relief Valve
Exelon	Exelon Generation Company, LLC
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	inspection Report
NOV	Notice of Violation
NRC	U.S. Nuclear Regulatory Commission
Oyster Creek	Oyster Creek Nuclear Generating Station
RCE	Root Cause Evaluation
SRA	Senior Reactor Analyst
VIO	Violation