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

November 5, 2015

Mr. Bryan 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 05000219/2015010 AND ASSESSMENT FOLLOW-UP LETTER

Dear Mr. Hanson:

On September 25, 2015, the U. S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area," at your Oyster Creek Nuclear Generating Station. The enclosed inspection report documents the inspection results, which were discussed on September 25, 2015, with Mr. G. Stathes, Site Vice President, and other members of your staff.

As required by the NRC's Reactor Oversight Process Action Matrix, this supplemental inspection was performed because the "Unplanned Scrams per 7000 Critical Hours" performance indicator (PI) crossed the green-to-white threshold in the second calendar quarter of 2015, based on PI data submitted in July 2015. Specifically, the NRC assigned a white PI Action Matrix input to the Initiating Event cornerstone due to unplanned scrams on July 11, 2014; October 12, 2014; March 22, 2015; and May 7, 2015.

In response to this Action Matrix input, the NRC informed you in our mid-cycle assessment letter dated September 1, 2015, that a supplemental inspection under Inspection Procedure 95001 would be required. The NRC was informed of your staff's readiness for this inspection on August 18, 2015.

The NRC performed this supplemental inspection to determine if (1) the root causes and the contributing causes for the risk-significant issues were understood; (2) the extent of condition and extent of cause of the issues were identified; and (3) corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes. The inspection consisted of examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license.

Based on the results of this inspection, the NRC concluded that, overall, the supplemental inspection objectives were met and no significant weaknesses were identified. Additionally, no findings of significance were identified. Overall, Exelon has adequately identified the individual and collective performance issues associated with the white PI, and has generally appropriate corrective actions, either implemented or planned, to address the performance that led to the white PI.

Based on the guidance in Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," and the results of this inspection, the white PI returned to green in the third quarter of 2015, and Oyster Creek will transition from the Regulatory Response Column of the NRC's Action Matrix to the Licensee Response Column as of the date of the cover letter to this report.

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's 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 website 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 Nos. 50-219
License Nos. DPR-16

Enclosure: Inspection Report 05000219/2015010
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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Docket Nos. 50-219
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-219
License No:	DPR-16
Report No:	05000219/2015010
Licensee:	Exelon Generation Company, LLC
Facility:	Oyster Creek Nuclear Generating Station
Location:	Forked River, NJ
Dates:	September 21 through 25, 2015
Inspectors:	Adam Ziedonis, Salem Resident Inspector, Team Leader Sarah Elkhiamy, Project Engineer
Approved by:	Silas R. Kennedy, Chief Reactor Projects Branch 6 Division of Reactor Projects

SUMMARY

IR 05000219/2015010; 09/21/2015 – 09/25/2015; Oyster Creek Nuclear Generating Station; Supplemental Inspection – Inspection Procedure (IP) 95001

A Resident Inspector and regional Project Engineer from the Division of Reactor Projects, Region I, performed this inspection. No significant weaknesses or 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.

Cornerstone: Initiating Events

The NRC performed this supplemental inspection in accordance with NRC inspection procedure 95001, "Supplemental Inspection for One of Two White Inputs in a Strategic Performance Area," to assess Exelon's evaluation associated with the Initiating Events performance indicator (PI) for "Unplanned Scrams per 7000 Critical Hours." This PI crossed the green-to-white threshold in the second calendar quarter of 2015, due to unplanned scrams on July 11, 2014; October 12, 2014; March 22, 2015; and May 7, 2015. Overall, the inspectors determined Exelon adequately evaluated and addressed the performance issues that resulted in the multiple reactor scrams at Oyster Creek, and concluded that Exelon successfully met the inspection objectives for IP 95001. The inspectors determined that the collective and individual causal evaluations were generally thorough, and the combined effect of the completed and planned corrective actions taken in regards to the four unplanned scrams were reasonable to address the performance issues. Notwithstanding, the inspectors identified three observations associated with the following areas, which are discussed in greater detail in each of the respective inspection report sections: 1) contributing cause for the collective 95001 root cause evaluation (Section 02.02.a); 2) corrective action to prevent recurrence (CAPR) in the collective 95001 root cause evaluation (Section 02.03.a); and 3) corrective actions for two of the scrams (Section 02.03.a). The inspectors evaluated these observations against guidance contained in IP 95001, and determined that they did not represent a substantial inadequacy in Exelon's evaluation of the causes of the performance issues, determination of the extent of the performance issues, or actions taken or planned. As a result, the inspectors determined that Exelon successfully met the inspection objectives of IP 95001. Exelon entered each of the observations into the Corrective Action Program (CAP).

Based on the guidance in IMC 0305, "Operating Reactor Assessment Program," and the results of this inspection, the white PI returned to green in the third quarter of 2015, and Oyster Creek will transfer to the Licensee Response Column of the matrix as of the date of the cover letter to this report.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

.1 (Closed) Licensee Event Report (LER) 05000219/2015-002-00: Reactor Scram due to Digital Protective Relay System Lockout

On May 7, 2015, a main turbine trip and subsequent reactor scram occurred from a protective trip of the Main Transformer Differential Lockout Relay, 86T, provided by the Digital Protection Relay System 'B' (DPRS B). Exelon determined that the 86T relay trip was caused by an intermittent signal that self-cleared within 17 milliseconds, or 1 cycle prior to the main generator output breakers opening. This condition was reportable under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the reactor protection system.

Exelon implemented a complex troubleshooting plan following the trip, which included testing and inspection of the DPRS 'B' circuit, and did not identify a definitive cause. Exelon concluded the most probable cause was age-related cable and terminal block degradation on the auxiliary transformer current transformer (CT) connections. Corrective actions included replacing all phases of the auxiliary transformer CTs prior to reactor start-up, and performing a modification to replace the 'B' DPRS with a new protective logic circuit. A follow-up root cause evaluation (RCE) performed by Exelon confirmed that the complex troubleshooting conclusion was the most probable root cause.

The inspectors performed an in-depth review of this LER and Exelon's RCE, supporting documentation, station procedures, and interviewed members of station staff and management regarding the event. No findings or violations of NRC requirements were identified during this review. This LER is closed.

4OA4 Supplemental Inspection (IP 95001)

.1 Inspection Scope

The NRC conducted this supplemental inspection in accordance with IP 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area," to assess Exelon's evaluations associated with a white Initiating Events cornerstone PI reported in July of 2015. The objectives of this supplemental inspection were to:

- Provide assurance that the root and contributing causes of risk-significant issues were understood;
- Provide assurance that the extent of condition and extent of cause of risk-significant issues were identified; and
- Provide assurance that corrective actions for risk-significant issues were or will be sufficient to address the root and contributing causes and to preclude repetition.

The following four reactor scrams contributed to the white PI:

- On July 11, 2014, during reactor start up from forced outage 1F34, Abnormal Procedure (ABN) ABN-14, “Loss of Condenser Vacuum,” was entered due to rapidly degrading condenser vacuum. Reactor power was lowered in an attempt to stabilize plant conditions. ABN-1, “Reactor Scram,” was subsequently entered and a manual reactor scram was performed when condenser vacuum degraded to 23.5" Hg. The Y-1-26 expansion joint downstream bellows had failed due to fatigue cracking caused by high stress and rigidity on the downstream bellows from repeated temporary leak repairs on the upstream bellows and steam leak-by from V-1-132 (Issue Report (IR) 1680755).

- On October 12, 2014, during reactor startup from refueling outage 1R25, an automatic reactor scram occurred when workers in the field secured power to the main generator automatic voltage regulator (AVR) controllers while the main turbine warming evolution was in progress. The workers were not authorized to perform the action, nor did they have procedures in the field to operate the equipment. Several barriers failed in the process sequence from initial issue identification with AVR problems up to the action to secure power to the AVR in the field. The failed barriers exhibited a common theme of failure to comply with applicable processes and procedures (IR 2394374).

- On March 22, 2015, an automatic reactor scram occurred from full power operation due to a valid reactor protection system actuation on average power range monitor (APRM) Hi-Hi flux. The APRM Hi-Hi flux was caused by an uncontrolled rise in reactor pressure due to the failure of the electric pressure regulator (EPR). In addition, the backup mechanical pressure regulator (MPR) did not limit reactor pressure as it was outside of the normal operating band. The EPR failure was caused by the failure to replace previously identified aged and degraded wiring. The MPR failure was inconclusive, but was previously identified to exhibit setpoint drift due to a steam leak. When workers entered the field to perform MPR repairs, the degraded EPR wiring was disturbed, thereby resulting in failure of the EPR and subsequent reactor scram (IR 2472372).

- On May 7, 2015, an automatic turbine trip and subsequent reactor scram occurred from a trip of the main transformer differential lockout relay, 86T. The 86T relay is a protective function provided by DRPS ‘B’. The DPRS sums the values from the CTs on the main transformers and auxiliary transformer, and compares the value with the output of the main generators. Exelon determined that an ‘A’ phase imbalance was sensed for 17 milliseconds before it self-cleared, but was of sufficient duration to trip the 86T relay and open the main generator output breakers (IR 2497406). Troubleshooting concluded the most probable cause was aged and degraded wiring associated with the auxiliary transformer CTs.

The “Unplanned Scrams per 7000 Critical Hours” PI is based on the number of unplanned scrams that are experienced by a unit within the previous 7000 critical hours of reactor operation as measured on a 12-month periodicity. During a time-frame spanning approximately ten months, from July 2014 to May 2015, Oyster Creek experienced four reactor scrams. As a result, Oyster Creek crossed the green-to-white

threshold for the "Unplanned Scrams per 7000 Critical Hours" PI in the second calendar quarter of 2015, based on PI data submitted in July 2015.

Exelon informed the NRC on August 18, 2015, of staff readiness for the supplemental inspection. The inspectors reviewed Exelon's collective RCE for the four scrams (IR 2524123), the causal evaluations conducted for each reactor scram (IRs listed above), and a focused area self-assessment completed by Exelon as a readiness review for the NRC supplemental inspection. The inspectors reviewed corrective actions that were taken and planned to address the identified causes. Additionally, the inspectors noted Oyster Creek had previously crossed the green-to-white threshold for "Unplanned Scrams per 7000 Critical Hours" in the third quarter of 2014, with a 95001 Supplemental Inspection performed in December of 2014. Therefore, the inspectors also reviewed Exelon's collective RCE for the four scrams that lead to the 95001 inspection in 2014 (IR 1687264). Finally, the inspectors held discussions with Exelon personnel to ensure that the root and contributing causes, as well as the contribution of safety culture components, were understood, and corrective actions taken or planned were appropriate to address the causes and preclude repetition.

.2 Evaluation of the Inspection Requirements

2.01 Problem Identification

a. As directed by IP 95001, determine that the evaluation documented who identified the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and under what conditions the issue was identified.

Between July 11, 2014, and May 7, 2015, the Oyster Creek reactor scrammed four times. This resulted in Oyster Creek crossing the green-to-white PI threshold value, or greater than three unplanned scrams per 7000 critical hours, during the second quarter of 2015. This was properly reported by Exelon to the NRC during the third quarter 2015 NRC PI submittal, which indicated the "Unplanned Scrams per 7000 Critical Hours" PI as white. Since the PI was characterized and reported properly via Exelon's PI reporting process, the white PI is considered licensee-identified.

Overall, the inspectors determined that Exelon's evaluation of the issue adequately documented the identification of the issue and the conditions under which the issue was identified. A RCE or equipment apparent cause evaluation (EQACE) was conducted for each individual reactor scram event. Additionally, a collective RCE was conducted for the four scrams to determine if a common deficiency existed.

b. As directed by IP 95001, determine that the evaluation documented how long the issue existed and prior opportunities for identification.

The Oyster Creek PI for "Unplanned Scrams per 7000 Critical Hours" crossed the green-to-white threshold value following the May 7, 2015, automatic scram, and was properly reported to the NRC via the third quarter 2015 PI submittal. The inspectors determined that Exelon's evaluation of the issue adequately documented how long the issue existed (since the first scram on July 11, 2014) and prior opportunities for identification.

c. As directed by IP 95001, determine that the licensee's evaluation documents the plant specific risk consequences, as applicable, and compliance concerns associated with the issue(s).

In the collective root cause report (IR 2524123), the inspectors noted that Exelon assessed the risk consequences from four scrams over one year and concluded the increase in core damage frequency to be approximately 1.3E-6. Since the PI program is a voluntarily industry initiative to provide a quantitative measure of a plant's performance to be considered in the Reactor Oversight Process, vice a regulatory requirement, there are no compliance concerns for the white PI. For the individual scrams, findings of very low safety significance (Green) were documented for the July 11, 2014, reactor scram (FIN 05000219/2014010-01) and for the October 12, 2014, reactor scram (FIN 05000219/2015002-04). As documented in the respective inspection reports, corrective actions were planned or completed to restore compliance. The team reviewed these corrective actions as discussed in Section 2.03. No performance deficiencies were identified during review of the May 7, 2015, reactor scram event (Section 4OA3 above). LER review and closure for the March 22, 2015, reactor scram event will be documented under a subsequent inspection report.

Overall, the inspectors determined that Exelon's evaluation of the issue adequately documented the plant specific risk consequences, as applicable, and compliance concerns associated with the issue.

d. Findings

No findings were identified.

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

a. As directed by IP 95001, determine that the issue was evaluated using a systematic methodology to identify the root and contributing causes.

The inspectors verified that Exelon staff implemented PI-AA-125-1001, "Root Cause Analysis Manual," Revision 1, in the conduct of the station's cause analysis to identify the root and contributing causes. The station utilized a variety of causal analysis methods listed in PI-AA-125-1006, "Investigation Techniques Manual," Revision 1, to analyze the four scrams. Such methods included: Why Staircase, Event and Causal Factor Charts, Taproot, Barrier Analysis, Cause and Effect Analysis, Evaluation Guide for Equipment Issues, Event and Causal Factor Chart, Support / Refute Matrix, Identifying Programmatic or Organizational Contributions, and Failure Mode and Effects Analysis. The inspectors noted these techniques were supported by data gathering via interviews and document reviews.

The root and apparent causes for the five cause evaluations performed by Exelon are summarized below.

July 11, 2014 Reactor Scram due to Degrading Condenser Vacuum (EQACEs 1680755 and 1680766)

The apparent cause of the condenser expansion bellows (Y-1-26) failure was determined to be less than adequate execution of engineering processes resulting in inadequate awareness and communication of risk. The bellows failure occurred

because of fatigue cracking from overstress due to upstream bellows restriction, which was further accelerated by flow induced vibration. Previous temporary leak repairs on the upstream side of the bellows, performed without the appropriate execution of the engineering process rigor, caused the expansion joint to be restricted and unable to account for loading variations during plant operation. This failure was accelerated by ongoing leak-by, and subsequent vibration, of the steam supply relief valve for the 2nd stage reheater, V-1-132, into the condenser bellows.

A separate EQACE was performed for the second stage reheater relief valve, V-1-132. The apparent cause was determined to be inadequate simmer margin between the expected operating pressure and the final set pressure. The contributing cause was determined to be insufficient torque applied to the relief valve stud nuts.

October 12, 2014 Reactor Scram due to AVR Troubleshooting (RCE 2394374)

The root cause of the event was determined to be station leadership has inconsistently reinforced human performance error reduction tool use and procedure use and adherence. The contributing cause was determined to be individuals made decisions to deviate from processes, procedures, and human performance tool use because they assumed there was low risk involved and they had a desire to complete the assigned task to meet schedule commitments.

March 22, 2015 Reactor Scram due to EPR Failure (RCE 2472372)

The root cause for this event was determined to be previously identified aged and degraded EPR wiring was not replaced prior to failure. The contributing cause was determined to be the enforcement of risk management processes and procedures needs improvement.

May 7, 2015 Reactor Scram due to 'B' DPRS Actuation (RCE 2497406)

The root cause for this event was indeterminate, based on Exelon root cause team review of complex troubleshooting performed after the scram on May 7, 2015. The root cause team created a list of all potential causes for the DPRS 'B' trip, compared the list to those in the complex troubleshooting plan, and verified that all potential failures were addressed by the complex troubleshooting. Subsequently, the root cause team used Taproot and Evaluation Guide for Equipment Issues to determine the most probable cause, which was degraded auxiliary transformer wiring or terminations experienced an intermittent short or momentary high resistance due to aging.

White NRC PI for "Unplanned Scrams per 7000 Critical Hours" (RCE 2524123)

The root cause for the Oyster Creek scram frequency crossing the green-to-white threshold in the second quarter of 2015 was determined to be the key corrective action to address the cause of the 2014 white PI for unplanned scrams (RCE 1687264) was not yet fully implemented. Specifically, the implementation of AD-AA-3000, "Nuclear Risk Management Process," should have been expedited, or a bridging strategy implemented at Oyster Creek, rather than waiting for the Exelon fleet rollout. No contributing causes were identified.

The inspectors reviewed the five root causes and two EQACEs identified above, and identified one observation with respect to the collective RCE (2524123) for the white NRC PI. Specifically, the need to reinforce adherence to station standards was not identified as a contributing cause to the overall elevated scram frequency. The inspectors noted that for three of the four scrams, Exelon identified a root, apparent, or contributing cause that involved issues with standards adherence, as discussed above. Exelon entered this observation into the CAP under IR 2560638. The inspectors determined that this observation was not significant, because Exelon took multiple corrective actions to address these standards issues in each of the individual causal evaluations, as discussed in section 02.03 below.

b. As directed by IP 95001, determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the issue.

   The inspectors concluded that Exelon's root cause and apparent cause teams appropriately implemented their procedures and processes to determine the appropriate causal factors in each of the four reactor scram events, as well as the collective RCE. Overall, the inspectors determined that Exelon's root cause and apparent cause evaluations were conducted to a level of detail commensurate with the significance of the issues.

c. As directed by IP 95001, determine that the root cause evaluation included a consideration of prior occurrences of the issue and knowledge of operating experience (OE).

   As required by Exelon procedures, Exelon's root cause and apparent cause teams reviewed OE from multiple sources, including the Exelon fleet CAP and the Oyster Creek CAP. In each of the four reactor scram events, as well as the collective RCE, Exelon's root and apparent cause teams identified several internal and external OE items that were relevant to the station's experience. Exelon used that information to inform the root cause and apparent cause process and corrective actions. The inspectors determined that, in general, Exelon's root cause team appropriately considered relevant OE to inform the investigations and causal determination process.

d. As directed by IP 95001, determine that the root cause evaluation addresses the extent of condition and extent of cause of the issue.

   Exelon completed individual cause evaluations for each of the four reactor scrams. Additionally, Exelon performed a common root cause evaluation that considered the collective impact of the four reactor scrams that occurred from July 2014 to May 2015.

   The inspectors concluded that adequate extent of cause and extent of condition reviews were conducted for each individual reactor scram event as part of Exelon's root cause and apparent cause evaluations. The inspectors also noted that Exelon conducted a programmatic and organizational factors review to identify latent organization weaknesses in each of the four reactor scram events. Overall, the inspectors determined that Exelon's root cause and apparent cause evaluations adequately addressed the extent of condition and extent of cause for each of the events.

e. As directed by IP 95001, determine that the root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0305.

Exelon performed safety culture reviews for each of the root cause evaluations, as required by PI-AA-125-1001, "Root Cause Analysis Manual," Revision 1. Apparent cause evaluations are not required to have a safety culture review. The inspectors verified that Exelon performed the safety culture assessments in accordance with PI-AA-125-1006, "Investigation Techniques Manual," Revision 1, Attachment 17. The inspectors determined that PI-AA-125-1006 appropriately considered the safety culture components as described in IMC 0305 and NRC Regulatory Issues Summary 2006-13, as well as the specific aspects described in IMC 0310, "Components Within the Cross-Cutting Areas."

The inspectors identified the following examples of missed opportunities by Exelon to identify impacts to the safety culture components during the assessments:

- Work Management (H.5) and Identification (P.1)

    - October 12, 2014, AVR scram (RCE 2394374): Specifically, Exelon identified in the RCE that a work order to upgrade the AVR software was inappropriately planned and risk screened, but did not capture the work management aspect in the safety culture component assessment. Additionally, Exelon identified that an IR was not written following receipt of a vendor notice to upgrade the AVR software, but did not capture the identification aspect in the safety culture component assessment. Exelon entered these items into the CAP under IR 2560520.

    - March 22, 2015, EPR scram (RCE 2472372): Specifically, Exelon identified in the RCE that a work order to repair degraded EPR wiring was inappropriately closed, but the work management aspect was not captured in the safety culture component assessment. Additionally, Exelon identified that an IR was not written following subsequent identification of degraded EPR wiring (re-identified after the previous work order closure), but did not capture the identification aspect in the safety culture component assessment. Exelon entered these items into the CAP under IR 2560515.

- Change Management (H.3)

    - In the collective 95001 RCE 2524123, Exelon identified that a bridging strategy should have been implemented when the collective 2014 95001 RCE 1687264 created a CAPR through implementation of AD-AA-3000, "Nuclear Risk Management Process." Therefore, the change management that was implemented for the fleet rollout of AD-AA-3000, which was already in place at the time of the 2014 CAPR, needed more rigorous mitigating actions (i.e., bridging strategy) once the procedure implementation became a CAPR at Oyster Creek. However, Exelon did not capture the change management aspect in the safety culture component assessment. Exelon entered this item into the CAP under IR 2560638.

The inspectors did not consider the above issues to be significant weaknesses, because Exelon identified each of the issues in the respective RCEs, and took corrective actions to address the issues, as discussed in section 02.03 below. Overall, the inspectors determined that Exelon's root cause report included a proper consideration of whether the root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components.

f. Findings

No findings were identified.

2.03 Corrective Actions

a. As directed by IP 95001, determine that (1) appropriate corrective actions were specified for each root and/or contributing cause, or (2) an evaluation that states no actions were necessary was adequate.

The inspectors determined that corrective actions for each individual reactor scram RCE and collective RCE were reasonable and appropriate, with specific actions to address the equipment, personnel and procedural issues associated with the white PI and its individual reactor scram inputs. However, the inspectors identified two observations associated with the corrective actions:

- 2015 95001 collective RCE 2524123: The CAPR of the increased Oyster Creek scram frequency above the white PI threshold did not establish appropriate measures to ensure that the corrective action would succeed in preventing recurrence. Specifically, the CAPR was to ensure full implementation of AD-AA-3000, including an action to ensure that all issues entered into the risk map were processed within the required 30 days. However, the inspectors identified that new procedure AD-AA-3000, Nuclear Risk Management Process, Revisions 0 and 1, did not have the appropriate annotation to ensure that the procedure was recognized as a CAPR, in order to prevent inadvertent change or deletion. Additionally, the inspectors identified that AD-AA-3000, steps 3.8.2 and 4.6.11, did not contain any specific 30-day requirement for risk issues to be processed. Exelon entered these issues into the CAP under IR 2559812. The inspectors determined this observation was primarily administrative in nature, and not significant, because the inspectors verified that AD-AA-3000 was fully implemented, and the inspectors reviewed data and examples of risk issues since December 2014 that showed successful implementation at or near the 30-day timeframe.

- AVR scram RCE 2394374, and EPR scram RCE 2472372: The inspectors identified that the corrective actions established to address standards and behaviors were not specific, measurable, accountable, reasonable, timely, effective and reviewed, or "SMARTER," per PI-AA-125, step 4.6, and did not demonstrate that Level 2 and Level 3 program procedure usage issues were being addressed. Specifically, AVR scram RCE 2394374 established a CAPR whereby station performance observations would be reported out to senior management at various meetings. However, the inspectors determined from interviews that the station performance observation program was already in place prior to the CAPR, and the performance observations were primarily targeted and

focused on Level 1 procedures used by plant staff performing tasks in the field. Issues with failure to follow Level 2 and Level 3 program procedures did not have actions to show programmatic behaviors and standards were specifically reinforced, such as: inappropriate work order closures (EPR scram), inadequate work order planning (AVR scram), failure to generate IRs (EPR and AVR scram), engineering task manager errors (AVR scram) and failure to perform critical digital asset screening for new software (AVR scram). Exelon entered this observation into the CAP under IRs 2560515 (EPR scram) and 2560520 (AVR scram).

The inspectors did not consider this observation to be a significant weakness, because Exelon demonstrated implementation of a station improvement initiative focused on behaviors and standards, which included station improvement plan goals, a lowered threshold for department clock resets, and thousands of general standards performance observations performed across the major departments. Also, the inspectors noted that corrective actions were established to replace all of the equipment that had either failed or was identified as degraded in each of the individual scrams. Overall, the inspectors determined that the root cause, apparent cause, and collective root cause reports identified appropriate corrective actions to address the root, contributing, and common causes for the individual reactor scrams and collective performance issues.

b. As directed by IP 95001, determine that corrective actions were prioritized with consideration of risk significance and regulatory compliance.

   The inspectors noted that immediate corrective actions for each of the reactor scrams were performed in a timely manner to support plant restart. Longer term actions were scheduled in an appropriate time frame. Overall, the inspectors determined that the corrective actions were prioritized commensurate with their significance.

c. As directed by IP 95001, determine that a schedule was established for implementing and completing the corrective actions.

   CAPRs that were established in the root cause evaluations, corrective actions from the apparent cause evaluations, and a significant number of lower-tier corrective and preventive actions had all been completed at the time of this inspection, with one exception. Specifically, there was one CAPR still open for the EPR scram: perform main turbine front standard inspection during the next refueling outage in the Fall of 2016, 1R26, and evaluate for replacement any additional degraded wiring associated with the EPR. The inspectors noted that Exelon also captured this issue on the new site risk map under “low voltage wiring: OYS-0-2015-0616,” and created actions under IR 2480314 to track the extent of condition regarding aged and degraded low voltage wiring throughout the plant. The inspectors determined that the scope, extent and due dates for these actions were reasonable and appropriate to the circumstances.

d. As directed by IP 95001, determine that quantitative and/or qualitative measures of success were developed for determining the effectiveness of the corrective actions to preclude repetition.

   Effectiveness reviews for the root and apparent cause evaluations were assigned, but only one had been completed at the time of the inspection. The inspectors verified that the due dates for completion of the open effectiveness reviews were reasonable.

Overall, the inspectors determined that Exelon adequately developed measures of success for determining the effectiveness of the corrective actions to preclude repetition.

e. As directed by IP 95001, determine that planned or taken corrective actions adequately address the Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The NRC staff did not issue an NOV to Exelon for the white PI; therefore, this inspection requirement was not applicable.

f. Findings

No findings were identified.

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

The inspectors determined this issue did not meet the IMC 0305 criteria for treatment as an old design issue.

4OA6 Exit Meeting

On September 25, 2015, the inspectors presented the inspection results to Mr. G. Stathes, Site Vice President, and other members of his staff. The inspectors verified with Exelon that any proprietary information reviewed during the course of this inspection was returned prior to departing the site.

Regulatory Performance Meeting

Following the September 25, 2015, exit meeting, the NRC discussed with Exelon its performance at Oyster Creek in accordance with IMC 0305, Section 10.01.a. The meeting was attended by the Chief, Reactor Projects Branch 6, Region I Division of Reactor Projects; NRC inspectors; the Oyster Creek Site Vice President; and other Exelon staff. During this meeting, the NRC and Exelon discussed the issues related to the white PI for unplanned scrams that resulted in Oyster Creek being placed in the Regulatory Response Column of the Action Matrix. This discussion included the causes, corrective actions, extent of condition and extent of cause for the issues identified as a result of the white PI.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
G. Stathes, Site Vice President
J. Dostal, Plant Manager
M. Caldeira, Performance Improvement Manager
T. Cappuccino, Regulatory Programs
J. Costic, Work Management On-Line Manager
R. Csillag, Mechanical / Structural Engineering Manager
R. Dutes, Regulatory Compliance
R. Fitts, CAP Manager
R. Larzo, Procurement Engineering Supervisor
M. McKenna, Regulatory Assurance Manager
T. Powell, Work Management
J. Ruark, Cyber Security Lead and Site Risk Map Manager
T. Ruggiero, Engineering Staff
B. Shehata, Performance Improvement Manager
R. Skelskey, Electrical Maintenance Manager
H. Tritt, Electrical / I&C Engineering Manager
D. Yatko, Design Engineering

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Closed

05000219/2015-002-00	LER	Reactor Scram due to Digital Protective Relay System Lockout

LIST OF DOCUMENTS REVIEWED

** Issued as a result of NRC inspection.*

Condition Reports

1590409	2481812	2546223
1603279	2481910	2559477*
1605658	2482776	2559746*
1606503	2483560	2559812*
1622181	2486207	2560515*
1624849	2524123	2560525*
2472372	2542729	2560638*
2480314	2546198	2560639*
2481615	2546213	

Drawings
GE 991D0217, Sheet 2, Revision 37

Procedures

AD-AA-3000, Nuclear Risk Management Process, Revisions 0 and 1
CC-AA-102, Design Input and Configuration Change Impact Screening, Revision 28
CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 27
CC-AA-112, Temporary Configuration Changes, Revision 23
CC-AA-404, Maintenance Specification: Application Selection, Evaluation and Control of Temporary Leak Repairs, Revision 8
ER-AA-2001, Plant Health Committee, Revision 20
ER-AA-2002, System Health Monitoring, Revision 18
ER-AA-2004, System Vulnerability Identification and Mitigation, Revision 8
HU-AA-101, Human Performance Tools and Verification Practices, Revision 9
HU-AA-104-101, Procedure Use and Adherence, Revision 5
HU-AA-1101, Change Management, Revision 4
HU-AA-1211, Pre-Job Briefings, Revision 10
MA-AA-716-003, Tool Pouch / Minor Maintenance, Revision 9
MA-AA-716-011, Work Execution and Close Out, Revision 19
MA-AA-716-234, FIN Team Process, Revision 10
OP-AA-106-101-1006, Operational Decision Making Process, Revision 16
OU-AA-102, Forced Outage Management, Revision 7
OU-AA-101-1007, Outage Scope Control, Revision 11
PI-AA-115, Operating Experience Program, Revision 0
PI-AA-120, Issue Identification and Screening Process, Revision 3
PI-AA-125, Corrective Action Program Procedure, Revision 2
PI-AA-125-1001, Root Cause Analysis Manual, Revision 1
PI-AA-125-1003, Apparent Cause Evaluation Manual, Revision 2
PI-AA-125-1006, Investigation Techniques Manual, Revision 1
WC-AA-104, Integrated Risk Management, Revision 23
WC-AA-2000, Emergent Issue Response, Revision 6

Work Orders

A2339472	C2032612	C2034507	C2034520	R2118149	R2118153
R2118159	R2118167	R2118169	R2213101	R2213102	R2213105

Miscellaneous

ACM: MPR Relay Position / Paddle Gap, dated 04/10/2015
Assignment Reports 1686590-01 and 02
CISA 2534245, EFR – RC 1687264 White NRC PI for SCRAMS – Forced Outage Scope vs. Risk, dated 08/14/2015
Confirmation 2394374, CAPR 44, Implement FLS Obs with SLT Members – Implement the Daily Observation & SLT Presentation / Challenge
Confirmation 2394374, CAPR 45, SLT Will Review at Least Once per Week the Station Performance Observations
Confirmation 2394374, CA 51, Implement Behavior Based Performance Policy
Confirmation 2472372-36, Complete a Read and Sign for All Planners That Reinforces Risk Screening Requirements
Confirmation 2472372-37, Complete a Read and Sign for All Maintenance FLS That Reinforces That Every FLS is Accountable for Ensuring Implementation of Risk Screening and the Associated Requirements
Confirmation 2472372-49, Document Repair of MPR Sensing Line Steam Leak
Confirmation 2472372-53, Document Degraded EPR Wiring and DT-1 was Replaced
Confirmation 2472372-54, Document Restoration of MPR Position Indication

Cross-Functional Paired Observation Summary, 08/10-16/2015
Department PIIMs: Maintenance, and Work Management
Degraded Equipment Write-Up 1680766-05, V-1-132 Leakage
E-20 Scope, Week 1607 - 02/08/2016
ECR 15-00197, Modification to Replace Differential Relay Trip with Sudden Pressure Trip
EPRI 1003288, Repair of Metal Bellow, December 2002
EPRI 1008035, Expansion Joint Maintenance Guide, Revision 1, May 2003
EFR 1687264, White NRC PI for Unplanned Scram – Forced Outage Scope vs. Risk
EFR 1687264-17, Proper Use of Operating Experience, AD-AA-3003, and RCM Tool
EFR 1687264-18, Implement AD-AA-3000, Nuclear Risk Management Process
EQACE 1568503, Condenser Expansion Bellows (Y-1-26) Hole and Fracture
EQACE 1680755, Condenser Expansion Bellows (Y-1-126) Failure
EQACE 1680766, V-1-132, Second Stage Reheater Relief Valve (to 'B' Condenser) Internal Leakage and Loose Inlet Flange Nuts
Equipment Reliability Management Review Meeting, 08/04/2015
Exelon Power Labs Failure Analysis of Condenser 1-B Steam Inlet Expansion Joint, dated September 15, 2014, project number OYS-32061
FASA 2539643, Pre-NRC Supplemental Inspection 95001 Unplanned Scrams per 7,000 Critical Hours, dated 08/25/2015
FMCT 2497406, Reactor SCRAM due to 86T Main Transformer Lockout Relay
LER 05000219/1986-034-01: Manual Scram due to Inability to Maintain Condenser Vacuum Caused by Equipment Failure and Cooldown in Excess of Tech Spec Limit as a Result of Procedure Inadequacy
LER 05000219/2015-002-00: Reactor Scram due to Digital Protective Relay System Lockout
List of 2015 Engineering Department Clock Resets
Main Generator Protection System Overview
NRC Regulatory Issue Summary 2006-13, Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture
Nuclear Safety Review Board Meeting Slides, dated 05/21/2015
NWS Technologies Inspection Report and Test Certification 0070224, Relief Valve S/N 01AL003-2, dated 07/11/2014
NWS Technologies Inspection Report, Oyster Creek Purchase Order 80 057730, Relief Valve S/N 1AL003-2, Testing Completed June 2014
NWS Technologies Inspection Report, Oyster Creek Purchase Order 80 058660, Relief Valve S/N 11-20177, Inspection Completed July 2014
NWS Technologies, Oyster Creek Repair Purchase Order 80 058959, Revision 6, 3 Relief Valves, Promised Date 09/05/2014
NWS Technologies, Oyster Creek Repair Purchase Order 80 057730, Revision 0, 1 Relief Valve, Issue Date 05/13/2014
Online Backlog 21 Week Look Ahead, dated 09/21/2015
OYS-0-2014-0086, DCC-X/Y Replacement, Approved 11/24/2014
OYS-0-2014-0242, 'A' Condensate Pump Suction Casing, Approved 10/03/2014
OYS-0-2014-0704, 'B' DWEDT Pump Check, Approved 04/06/2015
OYS-0-2014-0817, Steam Leak in Front Standard, Approved 03/02/2015
Oyster Creek OE-MRM Meeting, 08/20/2015
Oyster Creek End of Day SLT Performance Review Meeting Agenda
Oyster Creek Nuclear Station Integrated Improvement Plan Weekly Status Meeting, 08/20/2015
Oyster Creek Nuclear Station Integrated Improvement Plan Weekly Status Meeting, 09/16/2015
Oyster Creek Plant Health Committee Meeting Agenda and Package, dated 09/15/2015
Oyster Creek Site Risk Maps, dated 07/14/2014 and 09/21/2015
Oyster Creek SLT Alignment Meeting Agenda

Passport Assignment Closeout 2449719-53, Issue Standing Order Concerning Shift Manager Actions to Improve Risk Management
Passport Assignment Closeouts 1686590-03 and 07
Paired Observation Raw Data, 06/01/2015 – 09/23/2015
Performance Observation Raw Data, 06/01/2015 – 09/23/2015
RCE 1567196, IRM Erratic Behavior Causes Full Reactor SCRAM During 1M30 Start-Up
RCE 1597041, Turbine Control System to Control Reactor Pressure
RCE 1687264, White NRC PI for Unplanned SCRAMs per 7,000 Critical Hours
RCE 2394374, Reactor Scram due to Unauthorized AVR Troubleshooting
RCE 2472372, Reactor Scram due to Neutron High Flux Following the Failure of the EPR
RCE 2497406, Main Transformer Differential Lockout Relay Actuation with Reactor SCRAM
RCE 2524123, White NRC PI for Unplanned Scrams per 7,000 Critical Hours
Procedure Use and Adherence and Safety Behavior Based Performance Policy
Standing Order 15-001, Shift Manager Actions to Improve Risk Management
Supplemental Oversight Observation Raw Data, 06/01/2015 – 09/23/2015
System 711 Generator Protection High Consequence Cable List
System 723 Main and Auxiliary Transformers High Consequence Cable List
Technical Evaluation 1603279-03, V-1-132 Leakage
The Oyster Creek Edge Weekly Alignment Information, 08/24/2015
Turbine Control System High Consequence Cable List, 09/24/2015
Weekly EOS Report – Observation Raw Data, March – September 2015
Weekly Observation Roll-Up, March 30, 2015

LIST OF ACRONYMS USED

ABN	Abnormal Procedure
ADAMS	Agencywide Document Access Management System
APRM	Average Power Range Monitor
AVR	Automatic Voltage Regulator
CAPR	Corrective Action to Prevent Recurrence
CAP	Corrective Action Program
CT	Current Transformer
DPRS	Digital Protection Relay System
EPR	Electric Pressure Regulator
EQACE	Equipment Apparent Cause Evaluation
FIN	Finding
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report (Summary section only)
IR	Issue Report
LER	Licensee Event Report
MPR	Mechanical Pressure Regulator
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
OE	Operating Experience
PARS	Publicly Available Records System
PI	Performance Indicator
RCE	Root Cause Evaluation