



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

September 30, 2014

EA-13-247

Mr. Joseph E. Pacher
Site Vice President
R.E. Ginna Nuclear Power Plant
Exelon Generation Company, LLC
1503 Lake Rd.
Ontario, NY 14519

**SUBJECT: R.E. GINNA NUCLEAR POWER PLANT – NRC SUPPLEMENTAL
INSPECTION REPORT 05000244/2014010 AND ASSESSMENT FOLLOW-UP
LETTER**

Dear Mr. Pacher:

On August 29, 2014, the U. S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure (IP) 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area," at your R.E. Ginna Nuclear Power Plant (Ginna). The enclosed inspection report (IR) documents the inspection results, which were discussed on August 29, 2014, with you and members of your staff.

As required by the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was conducted because a finding of low to moderate safety significance (White) was identified in the fourth quarter of 2013. This issue was documented previously in NRC IR 05000244/2013005 (ML14045A214), dated February 14, 2014, and involved Exelon Generation Company's failure to identify and correct non-hydrostatically sealed penetrations into Battery Room B. The significance of this issue was finalized in NRC IR 05000244/2014009 (ML14107A080), dated April 17, 2014, and the NRC staff was informed on July 16, 2014, of your staff's readiness for this inspection.

The objectives of this supplemental inspection were to provide assurance that: (1) the root causes and the contributing causes of risk-significant performance issues were understood; (2) the extent of condition and extent of cause of risk-significant performance issues were identified; and (3) corrective actions for risk-significant performance issues are sufficient to address the root and contributing causes and prevent recurrence. 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.

Based on the guidance in Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," and the results of this inspection, the White finding will be closed and Ginna will

J. Pacher

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transition from the Regulatory Response Column of the NRC's Action Matrix to the Licensee Response Column effective at the beginning of the fourth calendar quarter of 2014.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System component of the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket No. 50-244
License No. DPR-18

Enclosure: Inspection Report 05000244/2014010
w/Attachment: Supplementary Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-244

License No. DPR-18

Report No. 05000244/2014010

Licensee: Exelon Generation Company, LLC (Exelon)

Facility: R.E. Ginna Nuclear Power Plant, LLC

Location: Ontario, NY

Dates: August 25, 2014, through August 29, 2014

Inspectors: A. Ziedonis, Salem Resident Inspector, Lead Inspector
B. Pinson, Reactor Engineer

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

Enclosure

SUMMARY

IR 05000244/2014010; 8/25/2014 – 8/29/2014; R.E. Ginna Nuclear Power Plant (Ginna); Supplemental Inspection – Inspection Procedure (IP) 95001

A resident inspector and reactor 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, dated February 2014.

Cornerstone: Mitigating Systems

The NRC staff performed 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 evaluation associated with a performance deficiency issued in NRC Inspection Report (IR) 05000244/2013005, dated February 14, 2013. The performance deficiency was associated with Exelon's failure to identify and correct non-hydrostatically sealed penetrations into Battery Room B. Specifically, Exelon failed to identify the need to hydrostatically seal two cable penetrations between manhole 1 and battery room B after the site's design basis flood height was changed during the NRC Systematic Evaluation Program (SEP) in 1983, promptly correct the adverse condition when it was identified in May 2013, and take timely action in September 2013 when Exelon was presented with evidence challenging its May 2013 evaluation related to manhole 1 and the improperly sealed penetrations.

Based on the results of the inspection, the inspectors concluded that Exelon had adequately performed a root cause analysis of the event, and corrective actions, both completed and planned, were reasonable to address the related issues. Based on the guidance in Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," dated October 18, 2013, and the results of this inspection, the White finding will be closed and Ginna will transition from the Regulatory Response Column of the NRC's Action Matrix to the Licensee Response Column effective at the beginning of the fourth calendar quarter 2014 (October 1, 2014). (Section 40A4)

REPORT DETAILS

4. OTHER ACTIVITIES

4OA4 Supplemental Inspection (IP 95001)

.1 Inspection Scope

The NRC staff performed this supplemental inspection in accordance with IP 95001 to assess Exelon's evaluation of a White finding, which affected the Mitigating Systems cornerstone in the Reactor Safety strategic performance area. The inspection objectives were to:

- 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,
- provide assurance that corrective actions for risk-significant performance issues are sufficient to address the root and contributing causes and prevent recurrence.

Ginna entered the Regulatory Response Column of the NRC's Action Matrix in the fourth quarter of 2013 as a result of one inspection finding of low to moderate (White) safety significance. The White finding was associated with a performance deficiency issued in NRC IR 05000244/2013005 (ML14045A214), dated February 14, 2014, for Exelon's failure to identify and correct non-hydrostatically sealed penetrations into battery room B. The finding was characterized as having low to moderate (White) safety significance based on the results of the staff's risk evaluation, performed using IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," as discussed in NRC IR 05000244/2014009 (ML14107A080), dated April 17, 2014.

Exelon staff informed the NRC staff on July 16, 2014, that they were ready for the supplemental inspection. Previously, in October 2013, Exelon completed Apparent Cause Evaluation (ACE) 2013-005463, which examined the causes that led to the non-hydrostatically sealed penetrations into battery room B. In preparation for this supplemental inspection, Exelon performed Root Cause Analysis (RCA) 2014-000902, "Failure to Identify and Correct Non-Hydrostatically Sealed Penetrations between Manhole 1 and Battery Room B." The White finding was accompanied with a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program (CAP) [P.1(c)]. Prior to RCA 2014-000902, Exelon had performed RCA 2013-000546, "Performance Deficiencies Identified in NRC Cross-Cutting Area P.1(c) – Corrective Action Program (CAP) Evaluation," in response to three findings in 2013 with a cross-cutting aspect in P.1(c). RCA 2014-000902 stated that RCA 2013-000546 was germane and credited to help correct performance issues associated with the White finding. During corrective action implementation resulting from RCA 2014-000902, Exelon identified additional unsealed conduit penetrations into Battery Room B. In response to the identification of the additional unsealed conduit penetrations, Exelon performed ACE 2014-004023.

The inspectors reviewed the causal evaluations referenced above, in addition to other documents listed in the Attachment, which supported Exelon's actions to address the White finding. The inspectors reviewed corrective actions, both completed and planned,

to address the identified causes, extent of condition, and extent of cause. The inspectors also interviewed Exelon personnel to ensure that the root and contributing causes and the contribution of safety culture components were understood; and corrective actions taken or planned were appropriate to address the causes and prevent recurrence. Lastly, the inspectors conducted in-plant walkdowns, which included independent inspection of barrier penetrations below the design basis flood (DBF) elevation.

.2 Evaluation of the Inspection Requirements

02.01 Problem Identification

- a. IP 95001 requires that the inspection staff determine that Exelon's evaluation of the issue documents who identified the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and under what conditions the issue was identified.

The inspectors determined that Exelon's RCA 2014-000902, "Failure to Identify and Correct Non-Hydrostatically Sealed Penetrations between Manhole 1 and Battery Room B, adequately documented who identified the issue and under what conditions the issue was identified. Specifically, the RCA described that Exelon identified two unsealed penetration inside of manhole 1 on May 29, 2013. The RCA further described the NRC identification of Exelon's failure to identify the need to hydrostatically seal two cable penetrations between manhole 1 and battery room B after the site's DBF height was changed during the SEP in 1983, Exelon's failure to promptly correct the significant adverse condition in May 2013 when the condition was identified, and Exelon's failure to take timely action in early September 2013 when Exelon was presented with evidence challenging the May 2013 evaluation.

- b. IP 95001 requires that the inspection staff determine that Exelon's evaluation of the issue documents how long the issue existed and prior opportunities for identification.

The inspectors determined that Exelon's RCA 2014-000902 adequately documented how long the issue existed and prior opportunities for identification. Specifically, the RCA documented that the unsealed penetrations in manhole 1 existed since original construction, and further noted that the issue did not become an external flooding concern until the DBF height was changed during the SEP in 1983. The RCA captured Exelon's failure to identify the issue during the SEP in 1983, examined missed opportunities in response to industry operating experience (OE) since 1983, and captured missed opportunities during inspections conducted under the Structural Assessment Monitoring Program.

More importantly, the inspectors determined that Exelon appropriately focused greater attention on missed opportunities since May 2013, since these provided insight into current station performance improvement opportunities. Exelon failed to identify the need to promptly correct the issue when it was discovered in May 2013, and failed to take timely action in early September 2013 when presented with evidence challenging the May 2013 evaluation. In general, consistent with Exelon's overall analysis of the issue, the inspectors' determined that Exelon's missed opportunities in 2013 were the most relevant opportunities to promptly correct the significant condition adverse to quality.

- c. IP 95001 requires that the inspection staff determine that Exelon's evaluation documents the plant specific risk consequences, as applicable, and compliance concerns associated with the issue.

The inspectors determined that Exelon's evaluation adequately documented the plant specific risk consequences, as applicable, and compliance concerns associated with the issue. Exelon's initial analysis determined that the consequences of a DBF flow rate of 26,000 cubic foot per second would eventually result in an unrecoverable station blackout (SBO). The NRC determined that an unrecoverable SBO would result in a conditional core damage probability (CCDP) approaching 1.0. Therefore, the overall core damage frequency was dictated by the frequency of the DBF event. The inspectors acknowledged the complexity of estimating extreme flood events, due to the uncertainties associated with the inputs and methodologies involved. Exelon used various computational methods to produce a range of DBF frequencies. The inspectors noted that the DBF is highly site specific, and there was no standard method to extrapolate flood frequencies to the significance determination process. Subsequent computer models developed by Exelon determined that some power sources may be recoverable in the DBF. The inspectors noted that the NRC final significance determination, documented in IR 05000244/2014009, considered both the initial analysis as well as the results from subsequent computer models, and determined that the overall risk assessment was of low to moderate safety significance (White). The inspectors noted that Exelon's initial analysis bounded the full scope of any additional deficiencies that were identified in the extent of condition review, as discussed in section 02.02.d below.

The inspector's noted that Exelon's RCA 2014-000902 focused on the station's missed opportunities to properly evaluate the plant specific consequences associated with the unsealed penetrations, and lack of historical rigor associated with DBF compliance. RCA 2014-000902 also captured that when manhole 1 drain functionality was confirmed degraded by flow testing on September 20, 2013, an immediate operability determination was performed, and compensatory measures were established in accordance with DBF compliance. Additionally, the inspectors noted that event notification 49374 was submitted by Exelon on September 20, 2013, for an unanalyzed condition in accordance with Title 10 of the *Code of Federal Regulations* (CFR) 50.72, the penetrations were hydrostatically sealed on October 4, 2013, and licensee event report (LER) 2013-003 was submitted in accordance with 10 CFR 50.73.

- d. Findings

No findings were identified.

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

- a. IP 95001 requires that the inspection staff determine that Exelon evaluated the issue using a systematic methodology to identify the root and contributing causes.

The inspectors determined that Exelon evaluated the White finding using a systematic methodology to identify root and contributing causes. The inspectors verified that Exelon staff implemented CNG-CA-1.01-1004, "Root Cause Analysis," as well as CNG-CA-1.01-GL002, "Causal Analysis Handbook," in the conduct of the station's causal

analyses to identify the root and contributing causes. The station utilized the following systematic methods to complete the RCA:

- data gathering through interviews and document review;
- comparative timeline;
- WHY staircase; and
- hazard-barrier-target analysis.

The inspectors verified these methods were completed by reviewing attachments to the RCA document, and verified that the root and contributing causal conclusions were consistently understood and supported by Exelon staff through the conduct of interviews.

- b. IP 95001 requires that the inspection staff determine that Exelon's RCA was conducted to a level of detail commensurate with the significance of the issue.

The inspectors determined that Exelon's RCA was conducted to a level of detail commensurate with the significance of the White finding. Consistent with CNG-CA-1.01-1004, "Root Cause Analysis," as well as CNG-CA-1.01-GL002, "Causal Analysis Handbook," Exelon conducted an RCA that identified the root and contributing causes associated with the failure to identify and correct the unsealed penetration in manhole 1. RCA 2014-000902 determined that the root cause of the failure to identify and promptly correct the unsealed penetrations in manhole 1 was that engineering and operations leadership and staff have allowed the low probability of occurrence to impact the rigor applied to identifying, evaluating, and correcting external flooding issues. The contributing cause was determined to be the lack of an adequate flood barrier program, which contributed to an unclear understanding of the barriers credited for a design basis flood. Additionally, RCA 2014-000902 stated that RCA 2013-000546 was also credited to correct the performance issues associated with the White finding. RCA 2013-000546 determined that one of two root causes for three NRC findings with an associated cross-cutting aspect of P.1(c), CAP evaluation, was attributed to inadequate risk perception that has resulted in site leaders accepting insufficient supporting basis, facts, or documentation for issues without adequate challenge to assumptions and consequences.

RCA 2014-000902 examined the programmatic aspects of flood barrier control, and developed appropriate corrective actions to address the programmatic deficiencies. RCA 2013-000546 examined the cultural and behavioral aspects that have contributed to deficiencies in corrective action product evaluations, including operability evaluations, and identified the organizational aspects of the issue.

- c. IP 95001 requires that the inspection staff determine that Exelon's RCA included a consideration of prior occurrences of the issue and knowledge of OE.

The inspectors determined that Exelon's RCA included a consideration of prior opportunities to identify and correct the unsealed penetrations in manhole 1, which included a review of OE. Exelon identified the following examples of prior opportunities to identify the unsealed penetrations in manhole 1:

- the consequences of the unsealed penetrations in manhole 1 were not properly evaluated, and therefore not promptly corrected, upon discovery on May 29, 2013;
- 2010 station initiatives on submerged cables, resulted in the development of

preventive maintenance (PM) activities to perform electrical cable manhole inspections;

- previous external flooding issues identified by the station during preparation for the 2007 NRC Component Design Basis Inspection;
- the Structural Assessment Monitoring Program developed by the station in the early 1990s, did not include specific instructions on how to inspect flood barrier penetrations;
- station response to NRC Information Notice 92-69, regarding an external flood event at Grand Gulf; and
- the 1983 SEP examination of external flooding design basis.

Exelon determined that these examples further supported the root cause, in that they highlighted examples where the station has missed opportunities to apply proper rigor to identifying, evaluating, and correcting external flooding issues.

- d. IP 95001 requires that the inspection staff determine that Exelon's RCA addresses the extent of condition and extent of cause of the issue.

The inspectors determined that Exelon's RCA appropriately addressed the extent of condition and extent of cause of the issue. RCA 2014-000902 described how Exelon identified the unsealed penetrations in manhole 1 during plant flood protection feature walkdowns performed in response to NRC Recommendation 2.3 of the March 12, 2012, 50.54(f) letter, using the NRC-endorsed industry guidance document Nuclear Energy Institute (NEI) 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features." Exelon previously classified manhole 1 as a "restricted area" under the industry guidance, because a detailed work plan was required to breach the manhole for confined space entry and subsequent inspection. Manhole 1 was the final area inspected by Exelon under the flood protection feature walkdowns. Exelon's RCA 2014-000902 determined that the walkdowns performed a thorough assessment of the flood protection features, including the identification of penetrations that had been previously unidentified during the SEP in 1983. Exelon acknowledged in RCA 2014-000902 that the consequences of the unsealed penetrations in manhole 1 were not properly evaluated, and therefore not promptly corrected, upon discovery on May 29, 2013.

Therefore, Exelon determined that an appropriate extent of condition would consist of a re-review, walkdown, and evaluation of all discrepancies that were previously identified during the flood protection feature walkdowns. The purpose of this extent of condition was to ensure no additional issues existed that were subject to previous inadequate evaluation, such that there was an adverse impact on the operability of equipment during a DBF. As a second component to the extent of condition, Exelon contracted an independent vendor to re-perform the entire scope of flood protection feature walkdowns. Additionally, Exelon created corrective actions to perform walkdowns of all areas previously classified as "inaccessible" under the industry guidance. No significant discrepancies were discovered as a result of the extent of condition and the inaccessible area walkdowns. The inspectors determined these extent of condition actions were appropriate to the circumstances, based on Exelon's knowledge of the issue when the actions were created.

On July 8, 2014, Exelon discovered two unsealed, 4-inch, round conduit penetrations through manhole 1 into battery room B. These open conduits were discovered as a result of RCA 2014-000902 corrective actions to develop a comprehensive barrier control program document to include flood, fire, and high energy line break (HELB) barriers. Exelon entered the 4-inch unsealed conduits issue into the CAP, performed an immediate operability determination, which included the development of compensatory measures, and promptly sealed the penetrations on July 10, 2014. The inspectors questioned Exelon as to how the 4-inch conduit penetrations from manhole 1 into battery room B were not identified during prior actions performed between discovery of the original unsealed conduits on May 29, 2013, and corrective actions to seal the penetrations on October 4, 2013. During extensive review of original construction drawings during the development of the barrier control program, Exelon engineers discovered telecommunications cables running underground from a training building into a handhole located outside the protected area, continuing underground and into manhole 1. Exelon subsequently performed field inspection and determined that two unsealed 4-inch conduits originate in the handhole and subsequently penetrate the manhole 1 / battery room B wall via a junction box. Although the conduits were not sealed on either end, this was not readily apparent from initial inspection activity inside of the manhole 1 confined space.

Exelon performed ACE 2014-004023 to determine how the 4-inch penetrations were not identified prior to performance of corrective actions to develop the barrier control program. Exelon determined that conflicting guidance and insufficient interpretation of the NEI 12-07 document led to the station not discovering all flood barriers required to mitigate a DBF. Specifically, Exelon determined that NEI 12-07 did not specifically require opening electrical panels as part of the walkdown actions. However, ACE 2014-004023 also determined that the intent of NEI 12-07 walkdowns was only to identify penetrations through barriers, such as trenches and cable openings, that could provide a path for flood water to enter buildings. As a result of ACE 2014-004023, Exelon performed additional extent of condition actions to examine all penetrations into buildings with equipment required to achieve safe shutdown following a DBF. Specifically, all electrical boxes below flood level on exterior walls were opened and inspected, and flood barrier drawings were developed to document all credited penetrations. Exelon's extent of condition actions identified no additional flooding discrepancies. The inspectors performed walkdowns of interior and exterior building walls housing equipment required during a DBF, inspected all areas of the station with credited flood barrier penetrations that had been identified by Exelon, reviewed the newly developed flood barrier drawings, reviewed detailed pictures of opened electrical panels and trenches with credited flood barrier penetrations, and interviewed engineers involved with flood barrier control and DBF program development dating back to the 1983 SEP.

The inspectors determined that through the extent of condition actions captured in RCA 2014-000902, as well as ACE 2014-004023, Exelon appropriately identified the extent of condition associated with the White finding. The inspectors provided Exelon with a general observation that the initial extent of condition actions were narrowly focused, in that Exelon staff and management never considered or questioned the additional 4-inch conduits during multiple entries and actions in manhole 1 between May 29, 2013, and October 4, 2013. Exelon captured the inspector's observation in the CAP under CR-2014-005014. The inspectors determined that because Exelon's NEI 12-07 walkdowns lead to the discovery of the original unsealed penetrations associated with the White

finding; because Exelon did not recognize the limited scoping efforts in the station's application of NEI 12-07 flood protection feature walkdowns until ACE 2014-004023; and because corrective actions from RCA 2014-000902 lead to the discovery of the 4-inch unsealed penetrations, Exelon's initial extent of condition actions in RCA 2014-000902 were therefore reasonable and would not have been expected to discover the 4-inch penetrations. The inspectors concluded that the 4-inch unsealed penetrations in battery room B constituted additional examples of the failure to identify unsealed penetrations, required to be protected from external flooding following the SEP in 1983. The enforcement aspects of these additional examples are discussed in section 02.02.f.

The inspectors determined that corrective actions in RCA 2014-00546 addressed the extent of cause for the failure to identify and correct the unsealed penetrations in battery room B. Specifically, the corrective actions were focused on the organizational and programmatic aspects of recent performance deficiencies in the cross-cutting area of P.1(c), as related to inadequate evaluation of CAP products and operability evaluations. Corrective actions included training for operations, engineering, station leadership, management review committee (MRC) members, and causal analysis-qualified reviewers. The training was focused on technical rigor associated with evaluations, including validating facts, challenging assumptions, questioning attitude, and risk mitigation. The inspectors interviewed a sample of engineers and station management, to verify that impacts of the training were consistent and effective across the station. The inspectors noted that Exelon appropriately included continued training for engineering and operations personnel in CA-2014-000680/000681. The inspectors observed that training for station personnel was adding value, as supported by the station's response to the identification of the unsealed 4-inch conduits on July 8, 2014. Exelon entered the issue into the CAP, performed an immediate operability determination (OD), which included the development of compensatory measures, and promptly sealed the penetrations on July 10, 2014.

The inspectors also noted one recent example where Exelon did not apply the appropriate technical rigor, questioning attitude, and validation of facts during the evaluation of CAP products. Exelon completed corrective action number two from ACE 2014-004023 by performing a past OD to evaluate the impact of the unsealed 4-inch conduits in battery room B. During review of the past OD, the inspectors identified that Exelon failed to consider the battery room sump pump was powered from a source that would be unavailable in a DBF. Exelon entered this issue into the CAP under CR-2014-004874 and reported an update to LER 2013-003 on September 12, 2014, to include the additional examples of unsealed penetrations in battery room B. The inspectors determined that this example highlighted the importance of continued training and organizational focus on the application of technical rigor in areas such as operability evaluations and general CAP products. The inspectors determined the inadequate past OD constituted a performance deficiency that screened to minor in accordance with IMC 0612, Appendix B, "Issue Screening," because there was no cornerstone impact as a result of the inadequate past OD. However, the results of the past OD confirmed that the additional unsealed 4-inch conduits did adversely impact the mitigating systems cornerstone objective. The inspectors concluded these were additional examples of the failure to identify unsealed penetrations, required to be protected from external flooding following the SEP in 1983. The enforcement aspects of these additional examples are discussed in section 02.02.f.

- e. IP 95001 requires the inspection staff to determine that Exelon's root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0305, "Operating Reactor Assessment Program."

The inspectors determined that Exelon's root cause, extent of condition, and extent of cause evaluations did consider the safety culture components as described in IMC 0305. The inspectors noted that Exelon performed the evaluation of the safety culture components in accordance with station procedures. However, the inspectors observed that Exelon's process for the evaluation of the safety culture components was not reflective of the January 1, 2014, revision of IMC 0310, "Aspects Within the Cross Cutting Areas." As a result of the inspector's observations, Exelon subsequently re-performed a review of the components reflected in the latest revision to IMC 0310. The inspectors identified that the subsequent re-evaluation did not include the new supplemental cross-cutting aspects under section 06.04 of the latest version to IMC 0310. Exelon entered this issue into the CAP under CR-2014-004949, and noted that the Exelon corporate procedure also did not contain the guidance to evaluate the supplemental cross-cutting aspects under section 06.04 of IMC 0310. Overall, the inspectors noted that Exelon appropriately identified station performance gaps in the cross-cutting areas of human performance and problem identification and resolution. Finally, the inspectors noted that Exelon's corrective actions were adequate to address the performance gaps.

- f. Findings

On July 8, 2014, during Exelon's actions under RCA 2014-000902, Exelon discovered two additional 4-inch unsealed conduits penetrating the B battery room east wall through manhole 1. These unsealed conduits were hydrostatically sealed on July 10, 2014, thereby restoring compliance. The risk-significance of the two additional conduits remained bounded by the risk-significance of the original White NOV, because the CCDP approached 1.0 and the overall risk significance was dictated by the DBF event frequency, as discussed in the NRC Final Significance Determination IR 05000244/2014009, dated April 17, 2014. The penetrations into battery room B were required to be protected from external flooding following the SEP in 1983; therefore, this issue is a violation of NRC requirements. In accordance with NRC Enforcement Manual Section 1.3.6, "Documenting Examples of Violations Previously Cited," this violation constitutes an additional example of Notice of Violation (NOV) 00005244/2013005-01, and is not being cited individually. No additional response to NOV 00005244/2013005-01 is required. Corrective actions to address the two additional unsealed penetrations were completed, as discussed in this IR, and full compliance has been restored.

02.03 Corrective Actions

- a. IP 95001 requires the inspection staff to determine that (1) Exelon specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation stating no actions are necessary is adequate.

Overall, the inspectors found that Exelon specified appropriate corrective actions for each root cause, contributing causes, extent of condition, and extent of cause for the White finding. Exelon's corrective actions to address the root and contributing causes were assigned in accordance with station procedures CNG-CA-1.01-1004, "Root Cause

Analysis,” as well as CNG-CA-1.01-GL002, “Causal Analysis Handbook.” The inspectors noted that, although not required, all of the key corrective actions were completed by Exelon prior to the 95001 Supplemental Inspection and included:

RCA 2014-000902 (performed in response to the White finding):

- A comprehensive barrier control program procedure was created under IP-CON-9, “Plant Barrier Control Program Implementation,” and included flood, fire, and HELB barriers. This corrective action added significant value in that it resulted in identification of two additional unsealed penetrations in battery room B.
- An engineering evaluation was completed to provide a qualification for each external flood barrier, and testing was performed to validate DBF seal integrity.
- Flood protection feature walkdowns were re-performed by an independent third party vendor. No additional degraded flood barriers were identified. As an overall recommendation of the third party walkdown report, all junction boxes and electrical panels below the DBF elevation in buildings with equipment required for safe shutdown were opened and inspected under the extent of condition actions in ACE 2014-004023.
- Flood protection feature walkdowns were performed in the areas previously determined to be inaccessible under NEI 12-07, with no significant issues identified.
- A self-assessment of condition report evaluations and corrective actions related to flooding was performed, with no significant issues identified.

RCA 2014-000546 (performed in response to three P.1(c) findings):

- A review of all open operability determinations was conducted to verify they were appropriately evaluated. No significant issues were identified.
- Training was conducted for operations, engineering, station leadership, MRC members, and causal analysis-qualified reviewers. The training was focused on technical rigor associated with evaluations, including validating facts, challenging assumptions, questioning attitude, and risk mitigation.

ACE 2014-004023 (performed in response to identification of unsealed 4-inch conduits):

- All penetrations were examined in buildings with equipment required to achieve safe shutdown following a DBF. To ensure all penetrations were inspected, all junction boxes below flood level on exterior walls were opened and inspected. No additional degraded flood barriers were identified.
- Flood barrier drawings were developed to display all barriers required to mitigate a DBF.

Overall, the inspectors determined that the corrective actions were appropriate and addressed the root and contributing causes. The inspectors did identify two observations in the area of Exelon’s corrective actions:

- The inspectors identified that ACE 2014-004023 corrective action number one, to develop flood barrier drawings to display all flood barriers, did not include two check valves credited as flood barriers in the emergency diesel generator cable vault area. Additionally, the inspectors identified that the PM work order instructions for the two check valves did not include specific tasks to inspect the check valve internals, as did the PM work order instructions for other check valves credited as flood barriers. Exelon captured this observation in CR-2014-004909.

- EP-2-P-0169, “Structural Assessment and Monitoring Program,” requires that flood barriers be inspected, but includes no specific guidance discussing how to perform the inspections, nor where the flood barriers are located within the plant. The inspectors identified that there were no corrective actions to incorporate flood barrier locations and inspection guidance from the newly developed barrier control program into EP-2-P-0169. Exelon entered this observation in CR-2014-000515.

The inspectors evaluated these issues in accordance with IMC 0612, Appendix B, “Issue Screening,” and IMC 0612, Appendix E, “Examples of Minor Issues.” The inspectors determined each issue was of minor safety significance because the issues could not reasonably be viewed as a precursor to a significant event and did not adversely affect the mitigating systems cornerstone objective.

- b. IP 95001 requires that the inspection staff determine that the Exelon prioritized corrective actions with consideration of risk significance and regulatory compliance.

The inspectors noted that the failure of Exelon to appropriately prioritize corrective actions for unsealed penetrations into battery room B, between initial discovery on May 29, 2013, and corrective action to hydrostatically seal the penetrations on October 4, 2013, were major contributing factors to the White finding and NOV 05444/2014009-01. In response to the White finding, Exelon performed RCA 2014-000902. The inspectors determined that RCA 2014-000902 appropriately prioritized corrective actions with consideration of risk significance and regulatory compliance. The inspectors noted that Exelon did not identify any additional unsealed penetrations, which would have required corrective action prioritization, in the extent of condition performed under RCA 2014-000902. However, RCA 2014-000902 included a corrective action to develop a flood barrier control program within an approximately four month period, during which a planned refueling outage was also scheduled. The inspectors noted that prior to this corrective action, none of the flood barrier penetrations were identified as flood barriers on any plant drawings, nor labeled in the plant, and therefore determined this was a significant corrective action that was appropriately prioritized.

During corrective actions to develop the barrier control program, Exelon discovered two additional unsealed 4-inch penetrations on July 8, 2014 (see section 02.02.d above). Exelon entered the issue into the CAP and performed an immediate OD. The OD consisted of compensatory measures in the event of a DBF and corrective actions to seal the 4-inch penetrations were prioritized and completed on July 10, 2014. In response to the identification of additional unsealed penetrations, Exelon identified that the station’s original flood protection feature walkdown scoping, per NRC Recommendation 2.3 and NEI 12-07, was too limited. Exelon expanded the extent of condition review, as appropriate, and no additional discrepancies were identified. In response to the identification of the 4-inch unsealed penetrations, the inspectors determined that Exelon appropriately prioritized corrective actions with consideration of risk significance and regulatory compliance.

- c. IP 95001 requires that the inspection staff determine that Exelon established a schedule for implementing and completing the corrective actions.

The inspectors determined that Exelon established an appropriate schedule for implementing and completing the corrective actions. The inspectors noted that RCAs 2013-000546 and 2014-000902 were approved in April 2014, ACE 2014-004023 was

approved in August 2014, and all major corrective actions for the three causal analyses were completed prior to the end of August 2014. The inspectors noted that certain corrective actions required significant resource commitments and included programmatic changes, including: training for station personnel; development of a barrier control program procedure and drawings; oversight of independent flood protection feature walkdowns by a third party vendor; walkdowns of plant areas previously determined to be inaccessible per NEI 12-07; development of engineering evaluation and testing to qualify plant flood seals; and plant walkdowns that removed all junction box covers below the DBF level.

- d. IP 95001 requires that the inspection staff determine that Exelon developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence.

The inspectors determined that Exelon developed quantitative and qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence. Exelon established measures for determining the effectiveness of the corrective actions in RCA 2014-000546 and RCA 2014-00902. These measures included the following:

- The flood protection feature walkdowns, per NRC Recommendation 2.3 and NEI 12-07, were re-performed by an independent third party vendor. As an overall recommendation of the third party walkdown report, all junction boxes and electrical panels below the DBF elevation in buildings with equipment required for safe shutdown were opened and inspected under the extent of condition actions in ACE 2014-004023.
 - A self-assessment of condition report evaluations and corrective actions related to flooding was performed. Although no additional deficiencies were noted, the self-assessment did recommend that the new barrier control program include a requirement for periodic documented flood barrier inspections under the program. Exelon implemented an annual 10 percent sampling requirement under the barrier control program.
 - CA-2014-002214 was assigned to perform an effectiveness review of the barrier control program by performing an inspection sampling of flood penetrations against the criteria developed within the program, and was scheduled for completion by September 26, 2014.
 - CA-2014-000694 was assigned to perform final effectiveness reviews of operability evaluations, human performance condition reports, non-field technical activity human performance tool usage observations, and training effectiveness follow-up interviews with station leaders and staff, and was scheduled for completion by December 1, 2014. Quantitative criteria were established to measure effectiveness for each of the items.
- e. IP 95001 requires that the inspection staff determine that Exelon's planned or taken corrective actions adequately address an NOV that was the basis for the supplemental inspection.

The NRC issued an NOV to Exelon on April 17, 2014, as characterized in IR 05000244/2014009. Exelon restored compliance to address the original set of unsealed conduits on October 4, 2013. The NRC concluded, as discussed in IR

05000244/2014009, that no further information or written response was required regarding the circumstances surrounding the violation or with regard to corrective actions planned or taken. During this inspection, the inspectors confirmed that Exelon's planned and taken corrective actions addressed the NOV. The inspectors determined that Exelon restored full compliance on July 10, 2014, by sealing the additional 4-inch penetrations that were discovered to be unsealed during corrective actions to address the White finding (see sections 02.02.d and 02.02.f).

f. Findings

No findings were identified.

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

Exelon did not request credit for self-identification of an old design issue; therefore, the risk-significant issue was not evaluated against the IMC 0305 criteria for treatment of an old design issue.

40A6 Exit Meeting and Regulatory Performance Meeting

On August 29, 2014, the inspectors presented the inspection results to Mr. Joseph E. Pacher, Site Vice President, and other members of his staff, who acknowledged the inspection results. The inspectors asked Exelon if any of the material examined during the inspection should be considered proprietary. Exelon did not identify any proprietary information.

Upon completion of the exit meeting, the Region 1 Chief, Reactor Projects Branch 1, Mr. Daniel L. Schroeder, conducted the Regulatory Performance Meeting, in accordance with IMC 0305, with Mr. Joseph E. Pacher, Site Vice President, and other members of his staff. The purpose of the meeting was to discuss Exelon's corrective actions in response to the White finding and NOV, and the transition of Ginna from the Regulatory Response Column of the NRC's Action Matrix to the Licensee Response Column, effective at the beginning of the fourth quarter of 2014.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Pacher, Site Vice President, Ginna
W. Carsky, Plant Manager
T. Harding, Manager Site Regulatory Assurance
T. Mogren, Director, Site Engineering
T. Paglia, Director Site Operations
K. Charland, Regulatory Engineer
R. Everett, Engineering Manager
E. Durkish, Engineering Manager
G. Wrobel, Engineering
J. Bruenig, Engineering
J. Gardener, Engineering
D. Garofoli, Engineering
D. Crowley, Engineering
C. Bradshaw, Engineering

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Closed

05000244/2013005-01	NOV	Failure to Identify and Correct Non-Hydrostatically Sealed Penetrations into Battery Room B
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LIST OF DOCUMENTS REVIEWED

Procedures

CC-AA-201, Plant Barrier Control Program, Revision 4
CNG-CA-1.01, Performance Improvement Program, Revision 2
CNG-CA-1.01-1004, Root Cause Analysis, Revision 08-04
EP-2-P-0169, Structural Assessment and Monitoring Program, Revision 15
ER-SC.2, High Water (Flood) Plan, Revision 8-01
FPS-3, Periodic Inspection of Fire Barrier Penetration Seals, Revision 1-01
IP-CON-9, Flood Barrier Control Implementation, Revision 2
M-95, Fire Protection Backflow Prevention and Drains Inspection, and Sump Pump Operability Check, Revision 15
OP-TM-108-115, Functionality Assessment for Flood Barrier System Degradation, Revision 0

Drawings

21488-0500, Auxiliary Building Flood Barriers, Sheets 1 and 2, Revision 0
21488-0501, Control Building Flood Barriers, Sheets 1 and 2, Revision 0
21488-0502, Diesel Generator Building Flood Barriers, Sheets 1 and 2, Revision 0
33013-0014, 345 kV Cable and Control Ducts – Plan and Profile, Revision J
33013-0025, Control Cable – Manhole #1, Revision F
33013-2681, Sump Pumps, Drains and Sewage Pumps, Revision 15
D-215-161, Emergency Diesel Generators Power Duct Run, Revision 7

D-311-004, Floor and Equipment Drains, Turbine Elevations 271'-0" and 289'-6", Revision 9
 D-421-302, Containment Electrical Cable Tunnel Plan and Sections, Revision 6

Condition Reports

2008-001993	2013-007303	2014-004874*
2012-005884	2014-000546	2014-004949*
2012-006175	2014-003603	2014-005014*
2013-001516	2014-004023	2014-004909*
2013-003407	2014-004192	2014-000515*
2013-005262	2014-004193	
2013-005643	2014-004350	

**Issued as a result of NRC inspection*

Miscellaneous

ACE 2014-004023

ACE 2013-005463

CENG Response to Preliminary White Finding, dated March 14, 2014

Check Valve PMs P301987, P301988, P312155, P301659, P312154

CNSG012-RPT-01, Ginna Third Party Flooding Walkdown Report

ECP-13-00854, Battery Room to Manhole 1 Penetrations Flood Barrier, Revision 0

ECP-14-000571, Flood Barrier Qualification, Revision 0

EN 49374, Potential Design Basis Flooding Issues Related to Battery Room Wall Penetrations
 and Cable Vault Flood Drains, dated September 20, 2013

Ginna IPEEE, dated January 1997

LER 2013-003, Unanalyzed Condition for Potential Floodwater Intrusion into Vital Battery
 Rooms, Revision 1 and 2

NEI 12-07, Guidelines for Performing Verification Walkdowns of Plant Flood Protection
 Features, Revisions 0 and 0-A

NRC Annual Assessment Letter 05000244/2013001

NRC IRs 05000244/2013004 (ML13317A587), 05000244/2013005 (ML14045A214),
 05000244/2013009 (ML14107A080)

Operability Determination CR 2014-004023, Revision 0

RCA 2014-000902, Failure to Identify and Correct Non-Hydrostatically Sealed Penetrations
 between Manhole 1 and Battery Room B

RCA 2013-000546, "Performance Deficiencies Identified in NRC Cross-Cutting Area P.1(c) –
 Corrective Action Program (CAP) Evaluation"

NRC SER of Ginna IPEEE, dated December 21, 2000

NRC 50.54(f) Letter Regarding Recommendations 2.1, 2.3 and 9.3, dated March 12, 2012

SA-2014-000146, Self-Assessment of Condition Reports and Corrective Actions Related to
 External Flooding

SA-2014-000157, Self-Assessment in Preparation for the 95001 Supplemental Inspection

TR-2014-0003, Diesel Generator Vault Cable Penetration Flood Qualification Testing, Revision
 0

UFSAR, Revision 24

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
CAP	Corrective Action Program
CCDP	Conditional Core Damage Probability
CFR	Code of Federal Regulations
DBF	Design Basis Flood
Exelon	Exelon Generation Company, LLC
HELB	High Energy Line Break
IP	Inspection Procedure
IMC	Inspection Manual Chapter
IR	Inspection Report
LER	Licensee Event Report
MRC	Management Review Committee
NEI	Nuclear Energy Institute
NOV	Notice of Violation
NRC	U. S. Nuclear Regulatory Commission
OD	Operability Determination
OE	Operating Experience
PM	Preventive Maintenance
RCA	Root Cause Analysis
SBO	Station Blackout
SEP	Systematic Evaluation Program