

September 20, 2002

Mr. John L. Skolds
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
5th Floor
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION - NRC EMERGENCY PREPAREDNESS
PROGRAM SUPPLEMENTAL INSPECTION REPORT NOS. 50-352/02-011
AND 50-353/02-011

Dear Mr. Skolds:

On August 26-28, 2002, the NRC conducted a supplemental inspection at your Limerick Generating Station, Units 1 & 2 to assess the corrective actions associated with an inadequate critique of a simulator crew which resulted in an NRC finding of White significance. The enclosed report documents the inspection findings which were discussed on August 30, 2002, with Mr. Robert Braun and other members of your staff.

The supplemental inspection was conducted to provide assurance that the root causes and contributing causes of the White finding were understood, to assess the licensee's extent of condition review, and to provide assurance that the corrective actions to significant performance issues were sufficient to address causes, and to prevent recurrence. To accomplish these objectives, the inspector reviewed your root cause analysis and evaluation of extent of condition and conducted an independent inspection to assess your conclusions. Based on our supplemental inspection, we concluded that your staff performed a sufficiently broad evaluation of the critique deficiency and subsequent corrective actions appears to have corrected the underlying causes.

Given the Exelon's acceptable performance in addressing the inadequate critique issue, the white finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program."

Since the White finding was identified and transmitted to you on October 22, 2001, the end of the four calendar quarters, for purposes of assessing plant performance regarding this issue, would be the end of the third quarter of 2002.

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Mr. John L. Skolds

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Should you have any questions regarding this report, please contact Mr. Richard J. Conte at (610) 337-5183.

Sincerely,

/RA/

Wayne D. Lanning, Director
Division of Reactor Safety

Docket Nos: 50-352, 50-353
License Nos: NPF-39, NPF-85

Enclosure: Supplemental Inspection Report Nos. 50-352/02-011, 50-353/02-011

cc w/encl:

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President and CNO, Exelon Nuclear
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R. Janati, Chief, Division of Nuclear Safety, Pennsylvania Bureau of
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REGION I

Docket Nos: 50-352
50-353

Report Nos: 50-352/02-011
50-353/02-011

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Limerick, Pennsylvania

Date: August 26 - 28, 2002

Inspector: D. Silk, Senior Emergency Preparedness Inspector, DRS, RI

Approved by: Richard J. Conte, Chief
Operational Safety Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000352/02-011, IR 05000353/02-011; on 08/26-28/2002; Limerick Generating Station, Units 1&2. Supplemental Inspection - Follow up on inadequate critique.

This EP supplemental inspection was performed by a region-based inspector. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

A. Supplemental Inspection - Critique Deficiency (White)

Cornerstone: Emergency Preparedness

This supplemental inspection was performed by the NRC using inspection procedure 95001, to assess the licensee's evaluation and corrective actions associated with a finding in the emergency preparedness (EP) area for an inadequate critique that failed to identify a problem with a risk significant planning standard during a February 9, 2001, EP drill evaluated in conjunction with overall crew performance in the simulator. The finding was previously characterized as having low to moderate safety significance (White) in NRC Inspection Report 05000352&353/2001-016. The licensee identified the causal factors and implemented corrective actions. The licensee's root cause evaluation identified the causal factors to be: (1) an inadequate process for Drill and Exercise Performance (DEP) evaluation and critique; (2) correct tools were not provided to the EP evaluator such that a successful critique could be performed; (3) there were no formal expectations for operations training instructor involvement in the evaluation of licensed operator requalification DEP drills; (4) there was no formal training provided to the EP evaluator for methods of evaluation and for the critique process; (5) a miscommunication led to an improper classification; and (6) the words and graph in the Emergency Response Procedure (ERP)-101 procedure were not concise and caused distraction to the crew. The inspector determined that the licensee had performed a thorough evaluation, had taken appropriate corrective actions to prevent recurrence and continues to assess the effectiveness of the corrective actions for this White finding.

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Report Details

1. **REACTOR SAFETY**
Cornerstone: Emergency Preparedness

SUPPLEMENTAL INSPECTION

- 01 Inspection Scope (95001)

This supplemental inspection was performed to assess the licensee's evaluation of the circumstances that resulted in a white finding for an inadequate critique of a simulator drill. Specifically, the licensee failed to identify a problem with a risk significant planning standard (RSPS). The inspector reviewed the licensee's root cause investigation (Condition Report-112356) which identified the root causes, contributing causes, the extent of condition, and corrective actions. The inspector assessed the licensee's analysis to determine if the issue had been adequately addressed to provide reasonable assurance to preclude recurrence. In addition, interviews were conducted with the EP staff, training personnel, the team members of the root cause investigation, key management personnel, personnel involved in the event, and various individuals responsible for developing or implementing the corrective actions. A list of procedures and documents supporting the root cause investigation that were reviewed by the inspector is attached. The significance of this issue was that, if the performance issues related to the RSPS were uncorrected, the public could be adversely impacted during an actual event. The inspector used Inspection Procedure 95001, "Inspection For One or Two White Inputs in a Strategic Performance Area," as guidance to evaluate the licensee's investigation.

Background

During the February 9, 2001, simulator drill, players declared a general emergency (GE) classification because of misapplying an emergency action level (EAL). Specifically, the crew declared a GE on the potential loss of primary containment due to their incorrect assessment that the maximum core uncover time curve had been exceeded. Crew performance was contrary to training and the EAL basis. Meanwhile, the crew failed to identify the criteria (that existed for a minimum of 13 minutes before the conclusion of the scenario) for a GE classification because of focusing their attention on evaluating the maximum core uncover time curve. The condition and criteria missed by the crew were a loss of primary containment integrity indicated by a drywell pressure response inconsistent with loss of coolant accident (LOCA) conditions. Specifically, following the manual depressurization of the reactor vessel, to mitigate the event, drywell pressure decreased and approached the pressure of the suppression chamber. The indicated differential pressure between the drywell and suppression chamber and the decreasing drywell pressure, without the use of drywell sprays, was inconsistent with the LOCA conditions and therefore indicative of a loss of primary containment integrity. At the end of the scenario, the crew was at the appropriate classification level but for the wrong reason. Exelon had initially credited this classification as a success toward the NRC's "Drill and Exercise Performance" (DEP) performance indicator (PI).

02 Evaluation of Inspection Results

02.01 Problem Identification

- a. Determination of whom (i.e., licensee, self-revealing, or NRC) identified the issue and under what conditions.

The licensee's report stated that the NRC resident inspector found that an inadequate critique failed to identify a problem with a risk significant planning standard during an EP drill evaluated in the simulator. Subsequent investigations and self-assessments by the licensee identified programmatic and procedural issues as contributing factors to the critique issue.

- b. Determination of how long the issue existed, and prior opportunities for identification.

The licensee determined that the conditions that resulted in this issue only existed for the particular event on February 9, 2001. Although the lack of programmatic guidance for evaluating drills had been lacking, an un-experienced evaluator was present that day. Previous drills had utilized an experienced evaluator.

- c. Determination of the plant-specific risk consequences (as applicable) and compliance concerns associated with the issue.

The licensee's risk assessment of this issue was qualitative in nature. If a control room crew was to improperly classify an event or not fully recognize the basis for a classification, actions might be taken that could put the public at risk. The issue was determined to be a white finding as per the NRC's significance determination process. However, there was no violation identified by NRC staff then and therefore no compliance concerns associated with this issue.

02.02 Root Cause and Extent of Condition Evaluation

- a. Evaluation of methods used to identify the root causes and contributing causes.

The licensee root cause investigation was performed by using the TAPRoot Method of Event and Causal Flow Chart / Barrier Analysis which identified root causes and contributing causes. The analysis included information from condition reports and interviews with personnel involved with the issue. The licensee's method for performing the root causes analysis was determined to be adequate.

- b. Level of detail of the root cause evaluation.

The licensee's root cause investigation indicated that the causal factors were: (1) an inadequate process for DEP evaluation and critique (root cause); (2) correct tools were not provided to the EP evaluator such that a successful critique could be performed; (3) there were no formal expectations for operations training instructor involvement in the evaluation of licensed operator requalification DEP drills; (4) there was no formal training provided to the EP evaluator for methods of evaluation and for the critique

process; (5) a mis-communication led to an improper classification (contributing cause); and (6) the words and graph in the ERP-101 procedure were not concise and caused distraction to the crew (root cause). In these areas, the licensee's evaluation was thorough and had a sufficient level of detail.

The inspector determined that the above mentioned factors adequately encompassed the programmatic and procedural aspects of the issue. From the date of the drill, there was sufficient time (several months) for the licensee to review the video tape of the particular drill, re-interview personnel, and reassess their initial evaluation of the crew's classification. However, the White finding was issued for failing to identify a RSPS problem. The licensee did not disagree with the NRC's assessment when issued in IR 352&353/2001-016 on October 21, 2001. However, the root cause investigation did not address the licensee's delay recognizing that the crew's classification was made for the incorrect reason. The inspector was concerned that there may be an environment that exists that is reluctant to identify/admit problems which would ultimately preclude resolution of issues. The inspector conducted interviews with the root cause team members expressing this concern. The root causes team members stated that when they conducted their investigation (May 2002 - fifteen months after the event) that they encountered no resistance or defensiveness on the part of those that they had interviewed. All parties were fully cooperative with the investigation. The inspector also interviewed the key managers associated with the critique issue and determined that they initially supported their subordinates decision that the crew had properly classified the event. However, these managers recognized that Limerick was untimely in reversing their initial assessment of the crew's performance. Based upon the interviews with the root cause investigation team members and key managers, the inspector concluded that the licensee has learned from this event to recognize problems promptly so that they can be addressed. The licensee generated CR00122123 to review this aspect that was not addressed by the root cause report.

- c. Consideration of prior occurrences of the problem and knowledge of prior operating experience.

The licensee determined that there were no prior occurrences nor prior industry operating experience pertaining to this issue.

- d. Consideration of potential common causes and extent of condition of the problem.

The licensee's evaluation considered the potential for common cause and extent of condition associated with the inadequate critique. The licensee did not identify any common causes. In reviewing the extent of condition, the licensee reviewed the other EP PI as well as other areas of the EP program to identify programmatic weaknesses. The licensee also performed a review of how human performance issues are addressed in the areas that generate other PI data. The licensee shared insights from this issue with other sites within the corporate fleet. Overall, the inspector determined that the licensee's review of this area was thorough.

02.03 Corrective Actions

a. Appropriateness of corrective actions.

The licensee's corrective actions were developed that addressed the causal factors that were identified in the root cause investigation. Initial corrective actions have been completed by the licensee and, based upon the inspectors review, were determined to be adequate. Quarterly self-assessments are being conducted and based upon those results the licensee is enhancing or performing additional corrective actions to improve their overall program. The only outstanding corrective action for this issue is to perform an effectiveness review for their corrective actions. This review is planned for the spring of 2003. Overall, the licensee's corrective actions adequately address the issue.

b. Prioritization of corrective actions.

The licensee's corrective actions associated with this issue have been appropriately prioritized. It should be noted that due to the protracted time of this issue (February 9, 2001, to the present) evaluations and corrective actions have been conducted and implemented at various times through out this period. The earliest and most significant evaluation was conducted in May 2001 and generated numerous corrective actions. These, and subsequently generated corrective actions, were appropriately prioritized by the licensee.

c. Establishment of a schedule for implementing and completing the corrective actions.

As stated above, corrective actions have been completed except for their review of the effectiveness of the corrective actions which is to be performed in the spring of 2003. The inspector sampled and confirmed the completion of selected corrective actions. Overall, this area was satisfactory.

d. Establishment of quantitative or qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence.

The licensee has been and will continue to conduct self-assessments to verify that improved programmatic controls and other corrective actions are adequately addressing the evaluation process to prevent the recurrence of a critique problem.

4. OTHER ACTIVITIES [OA]

40A6 Meetings, including Exit

The inspector presented the inspection results to Mr. R. Braun, and other licensee personnel, at the conclusion of the inspection on August 28, 2002 and the licensee accepted the results of the inspection.

Attachment 1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

R. Braun, Plant Manager
R. Harding, Regulatory Assurance Engineer
J. Karkoska, Lead Emergency Planning Coordinator, Limerick
H. Langley, Emergency Planning, TMI
R. Mandik, Emergency Planning Coordinator, Limerick
D. Neff, Emergency Planning, Kennett Square
R. Rogers, Emergency Planning, Kennett Square
D. Tailleart, MAROG Emergency Planning Manager
W. Tracey, Operations Training Instructor
J. Tucker, Manager, Systems Engineering

NRC

A. Burritt Senior Resident Inspector, Limerick

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened: None

Closed: FIN 05000352/353/01-016-01 Inadequate Drill Critique

Discussed: None

LIST OF DOCUMENTS REVIEWED

Emergency Plan for Limerick, Units 1&2
ERP-101 Basis, Rev 3
ERP-101, Classification of Emergencies, Rev 12
LS-AA-2120 Monthly Performance Indicator Data Elements for Drill/Exercise Performance Rev 2
EP-MA-122, Exercise and Drills, Rev 0
EP-MA-122-1001, Drill Development, Conduct and Evaluation, Rev 2
EP-MA-122-1002, Exercise Development, Conduct and Evaluation, Rev 2
EP-MA-125-1002, Collection and Evaluation of Data for Indicator R.EP.01, DEP, 6/21/01
LR-CG-15, Collection of NRC Performance Indicators, Rev. 0
LS-AA-125, Corrective Action Program (CAP) Procedure, Rev. 0
LS-AA-125-1001, Root Cause Analysis Manual, Rev 3
LS-AA-126, Self-Assessment Program, Rev 2
LS-AA-126-1001, Focused Area Self-Assessments, Rev 0
May 2001 EP Program Assessment Report and Schedule

EP Self-Assessments of NRC PI Data (3rd and 4th Quarter 2001 and 1st Quarter 2002)
Nuclear Event Report (NER) KS-02-001, Emergency Preparedness Lessons Learned
Root Cause Investigation Report, CR-112356, Limerick Licensing Operator Requalification
(LOR) Drill and Exercise Performance (DEP) November 2001 White Finding
Letter from Exelon Nuclear, Mr. William Levis to NRC dated January 31, 2002 regarding
corrective actions for the White finding.
Limerick Generating Station -NRC Inspection Report 352&352/2001-003
Limerick Generating Station -NRC Inspection Report 352&353/2001-016,
Letter from NRC to Mr. Oliver D. Kingsley dated November 19, 2001, Subject: Final
Significance Determination for a White Finding at the Limerick Generating Station

LIST OF ACRONYMS

DEP	Drill and Exercise Performance
EAL	Emergency Action Level
EP	Emergency Preparedness
ERP	Emergency Response Procedure
GE	General Emergency
LOCA	Loss of Coolant Accident
PI	Performance Indicator
RSPS	Risk Significant Planning Standard
SDP	Significance Determination Process