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September 4, 2002

U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555

Peach Bottom Atomic Power Station, Units 2 and 3  
Facility Operating License No. DPR-44 and DPR-56  
NRC Docket Nos. 50-277 and 50-278

Subject: Additional Information In Response to Preliminary White Findings Identified in  
NRC Inspection Report 50-277/02-07, 50-278/02-07 Concerning Emergency  
Preparedness

Reference: Letter from A. R. Blough (U. S. Nuclear Regulatory Commission) to J. L. Skolds  
(Exelon Generation Company, LLC), dated July 19, 2002

Dear Sir/Madam:

In the referenced letter, the U. S. Nuclear Regulatory Commission (NRC) transmitted NRC Inspection Report 50-277/02-07, 50-278/02-07. Based on the results of the inspection, the NRC identified two preliminary findings of low to moderate safety significance (White). The first preliminary finding is associated with a critique of a February 14, 2002, emergency preparedness exercise. The second preliminary White finding is associated with the length of time that it took Exelon to declare an Alert emergency classification during an actual event that occurred on June 2, 2002. Exelon met with the NRC to discuss these issues on August 23, 2002. Attached is Exelon's response to the identification of the two preliminary White findings which supplements the information provided at the August 23, 2002, regulatory conference.

In summary, the first preliminary finding for the drill critique as written in the NRC Inspection Report is not consistent with the guidance in NRC Inspection Manual Chapter (IMC) 0609, Appendix B, "Emergency Preparedness Significance Determination Process." The performance deficiencies specified in the inspection report do not entail critique performance deficiencies related to the failure to classify, a risk significant planning standard. There was a timely and appropriate declaration of the General Emergency and an adequate critique related to the classification risk significant planning standard was performed. As a result, this should not be a White finding. However, there were critique performance deficiencies which should be a Green finding in accordance with IMC 0609 Appendix B, Sheet 1.

IE35  
IE01

Additional Information In Response to Preliminary White Findings

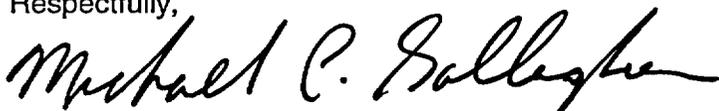
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Exelon contends that the second preliminary finding for the declaration of an Alert also should not be a White finding. Since an emergency classification system was in use, the proper classification was made, and the delay had no impact on consequences, the risk significant planning standard was implemented. The delay has been captured as an unsuccessful opportunity in the Drill & Exercise Performance Indicator. This performance deficiency should be a Green finding in accordance with IMC 0609 Appendix B, Sheet 2.

If you have any questions or require additional information, please contact us.

Respectfully,



Michael P. Gallagher  
Director, Licensing & Regulatory Affairs  
Mid-Atlantic Regional Operating Group

Attachments: 1- Supplemental Information Concerning 2/14/02 Drill Critique  
2- Supplemental Information Concerning 6/02/02 Alert Event

cc: H. J. Miller, Administrator, Region I, USNRC  
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS  
J. P. Boska, Senior Project Manager, USNRC

ATTACHMENT 1

PEACH BOTTOM ATOMIC POWER STATION  
UNITS 2 AND 3

DOCKET NOS. 50-277  
50-278

LICENSE NOS. DPR-44  
DPR-56

**Supplemental Information Concerning 2/14/02 Drill Critique**

## **Introduction:**

In Inspection Report 50-277/02-07, 50-278/02-07<sup>1</sup>, the NRC identified a finding related to the adequacy of a February 14, 2002 emergency preparedness exercise critique at Peach Bottom Atomic Power Station. The NRC indicated in its Inspection Report that the finding involved an apparent violation of 10 CFR 50, Appendix E, IV.F.2.g. The NRC also assessed the finding using the Emergency Preparedness Significance Determination Process (SDP) and assigned a preliminary significance of "White." From the Inspection Report,

*"The formal exercise critique did not identify weaknesses or deficiencies observed by the inspector that were directly related to being able to classify an event, including when the operating crew did not recognize conditions or effectively communicate key information needed by the Emergency Director to classify a General Emergency."*

Exelon is committed to continually improving our performance in the area of Emergency Preparedness. Exelon recognizes the deficiencies in the drill critique process and the potential to miss opportunities to learn. This has been identified in the formal root cause report completed in terms of improvements required in the critique process. Exelon recognizes that the February 14, 2002 exercise critique had improvement opportunities and has conducted a formal root cause analysis to implement corrective actions. However, the performance deficiencies in this critique did not result in a failure to properly classify in a timely manner. Therefore, the Risk Significant Planning Standard was met. Accordingly, these performance deficiencies should be a "Green" finding in accordance with IMC 0609, Appendix B, Sheet 1.<sup>2</sup>

## **Summary of Events:**

On February 14, 2002, Exelon conducted an exercise that included the activation and participation of all its emergency preparedness facilities. The exercise scenario was designed to reach the General Emergency (GE) classification based on loss of two fission product barriers with the potential or loss of the third, in accordance with Exelon's emergency action level (EAL) scheme. The three fission product barriers are Reactor Coolant System (RCS), Primary Containment, and Fuel Cladding. The GE was intended to be declared based on Exelon's procedure, ERP-101, EAL 3.1.4.<sup>3</sup> In fact, the actual exercise did lead to the declaration of the GE based on EAL 3.1.4, but through a different set of plant conditions than was initially intended.

The exercise critique did identify many issues; these issues have been captured in Exelon's corrective action program. In addition, a subsequent root cause investigation evaluated the effectiveness of the exercise critique and identified critique performance deficiencies which were also captured in Exelon's corrective action program.

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<sup>1</sup> Letter from A. R. Blough (U. S. Nuclear Regulatory Commission) to J. L. Skolds (Exelon Nuclear), dated July 19, 2002.

<sup>2</sup> NRC Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process", dated December 29, 2000.

<sup>3</sup> Exelon Emergency Response Procedure, ERP-101, "Classification of Emergencies," Revision 24.

### **Regulatory Analysis:**

As discussed in the Inspection Report, there are three main issues related to the NRC's assertion that Exelon's February 14, 2002 exercise critique did not identify weaknesses or deficiencies related to being able to classify an event. Per the Inspection Report:

Level Spike. As a result of a planned reactor feed water pump trip, the reactor water level dropped below top of active fuel (TAF) for less than 30 seconds. Whether or not this level spike should have led to a change in emergency classification level was not adequately evaluated in the formal exercise critique.

General Emergency (GE) Classification. The Emergency Director (ED) declared the GE based on his determination that the Fuel Cladding Barrier was potentially lost because of rapidly increasing radiation levels instead of declaring the GE based on reactor water level below TAF (in addition to the loss of the other two barriers). This decision was not adequately evaluated in the formal exercise critique.

Emergency Depressurization. During preparation for emergency depressurization, reactor water level dropped below 2/3 core height which challenged the ability to cool the core. The operator actions related to the preparation for an emergency depressurization were not adequately evaluated in the formal exercise critique.

The first two issues will be discussed below with the intent of showing that Exelon did properly classify the emergency based on plant conditions, and there was no failure to implement a risk significant planning standard. Therefore, any performance deficiencies surrounding the event classification that were not specifically captured in the critique would not result in a failure of a risk significant planning standard. The third issue, Emergency Depressurization, will be discussed below with the intent of showing that the operator actions related to the preparation for an emergency depressurization were appropriate, occurred following event classification, and did not, therefore, impact any risk significant planning standards.

#### Level Spike:

In Inspection Report 50-277/02-07, 50-278/02-07, the NRC identified that 20 minutes prior to the GE declaration, the reactor water level was below TAF. The Inspection Report states that,

*"Exelon's exercise critique did not address crew weakness related to the recognition and communication of information related to [reactor] water level below TAF that met the criteria for escalating the event classification about 20 minutes prior to the actual GE declaration."*

Specifically, on 02/14/02 at 11:44, reactor water level was noted below the top of active fuel (TAF) for about 30 seconds and then immediately recovered above the top of active fuel.

The lack of communication surrounding the level spike was an exercise weakness that was not captured in the original critique and steps have been taken to learn from this weakness. A full root cause investigation has identified improvement opportunities in drill performance and critique to maximize organizational learning. Additionally, areas for crew communications and review were identified. These opportunities have been captured in the corrective action process.

However, while there were critique performance deficiencies, these did not relate to Exelon's ability to classify the emergency. Per Exelon procedure, ERP-101, used by the operating crew and ED to classify EALs, reactor water level spikes should not be considered for EAL escalation unless there are other indications of degrading plant conditions. From the ERP-101 Bases,

*"In the event of a "spike" which rapidly exceeds and then decreases below an EAL, entry into the Emergency Plan or escalation to the higher classification "in retrospect" is not appropriate unless the "spike" is indicative of continuing degrading conditions which will lead to an escalated emergency classification level."*<sup>4</sup>

A level spike is not always considered a challenge to the Fuel Cladding Barrier or the Reactor Coolant System Barrier. From a review of the exercise data, reactor level was below TAF for less than 30 seconds, and only during the transition from reactor feed pumps injection to the HPCI system injection. Since this was a transition period, and was not indicative of degrading conditions in the fuel cladding barrier, it was not appropriate to consider the Fuel Cladding barrier potentially lost and the RCS barrier lost. In addition, Operating crews have been trained to follow the EAL procedures and in this instance, were acting in accordance with the approved ERP-101 Bases.

Since this condition should not have resulted in an escalation to a General Emergency, not capturing the discussion of the level spike in the critique would not have resulted in a failure to implement a risk significant planning standard. Since there is no failure to implement a risk significant planning standard, a White finding is not justified.

General Emergency Classification:

In Inspection Report 50-277/02-07, 50-278/02-07, the NRC identified that the ED's declaration was based on judgment, not on the drill scenario itself and that this was not critiqued properly,

*"Exelon's exercise critique failed to address operation crew weaknesses related to the recognition or communication of information related to water level below the TAF that was key information for the ED to use to upgrade the classification to a GE...When reactor water level dropped below TAF, which met the criteria for the ED to upgrade the classification to a GE, the operating crew did not...communicate this key reactor water level information to the ED. As a result, the ED did not use this key information when he later declared a GE classification based on judgment that some radiological conditions indicated a potential loss of fuel barrier. "*

The February 14, 2002, exercise scenario was designed to reach the GE classification based on a loss of two fission product barriers with the potential loss of a third, in accordance with EAL 3.1.4. The actual exercise did declare a GE based on the correct EAL; however, the GE was based on different plant parameters than ones for which the scenario was designed. These differences resulted from technical problems which complicated how the scenario was run. What is important to note, is that there was an accurate declaration of the GE using the intended EAL.

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<sup>4</sup> Exelon Emergency Response Procedure, ERP-101 BASES, "PBAPS EAL Technical Bases Manual," Revision 4.

Loss of First Barrier:

At 11:41am, the 'A' Main Steam Line failed to isolate on Hi Tunnel Temperature indicating to the ED that the Primary Containment barrier was lost.

Loss of Second Barrier:

At 11:56am, the Shift Manager recognized he had the conditions for a loss of the RCS barrier. The EAL lists the following as an indication of a Potential Loss of RCS:

*"Unisolable primary system leakage outside drywell as indicated by T-103, Temperature Action Level is exceeded in one area requiring a SCRAM."*

The Shift Manager reviewed the bases for this EAL and recognized that he had the described situation,

*"This event signifies that there is a direct path established for the transfer of main steam to inside the Turbine Building."*

The Shift Manager realized that the breach of the 'A' Main Steam Line and turbine casing was allowing fission products to be released directly to the Turbine Building and potentially to the environment (bypassing the scrubbing by the Standby Gas Treatment System). In discussions with the ED at 11:56 am, the Shift Manager and ED concluded that the RCS barrier was lost.

Loss or Potential Loss of Third Barrier:

Between 11:56 am and 12:04 am when the ED declared the GE, the Shift Manager and the ED were in constant communication. After establishing that the first two barriers were lost, they examined plant conditions to determine the state of the third barrier.

At this point it should be noted that there were several technical difficulties in the drill scenario with which the Shift Manager and ED were dealing. The data communication line between the Simulator Control Room (SCR) and the emergency offsite facility had been lost. As a result, the ED was receiving all of his plant condition information data via telephone from the Shift Manager. In addition, radiological data in the SCR was approximately 20 minutes ahead of where the drill scenario was. As a result, the radiation levels in the plant were at a more advanced stage in the drill. However, this was the data that the Shift Manager had and this was the data upon which he and the ED made their decisions.

The ED and the Shift Manager discussed various plant radiological conditions which led them to the belief that the Fuel Cladding barrier had been lost or was potentially lost:

- Main Vent Stack radiation level trend. On the Simulator Control Room (SCR) chart recorder, levels steadily increased one decade approximately every 3 minutes from  $1E-7$  to  $2E-1$   $\mu\text{Ci/cc}$ . Per one EAL, the General Emergency level on release rate alone of  $5.84E+1$   $\mu\text{Ci/cc}$  was rapidly being approached.
- Off Gas Steam Jet Air Ejector radiation level trend. On the SCR chart recorder, levels steadily increased from  $4E1$  to  $1E5$   $\text{mr/hr}$ . Per the Exelon EAL scheme, a level of  $2.5 E3$   $\text{mr/hr}$  is indicative of fuel cladding degradation. Levels in the SCR were 2 decades higher.

- Turbine Deck radiation was > 10R/hr
- Multiple Turbine building ARMs were Off Scale High in the SCR per Shift Manager and on TSC data sheets.
- In the Reactor Building, the HPCI and RHR room radiation monitors were off scale high in the control room and on the TSC data sheets. Since HPCI was running on main steam, and RHR was circulating condensed steam from the SRVs, this was indicative of fuel failure.
- The Main Steam Line radiation monitors in the control room were above their Hi-Hi set points. Per the Exelon EAL scheme, this is indicative of fuel cladding degradation.
- The power plant was in an ATWS condition. In addition to still being critical and at power, the control rod configuration was abnormal with control rods at various positions throughout the core.

With all of this data, the ED and Shift Manager correctly concluded that there was a potential loss of the Fuel Cladding barrier. With the Main Vent Stack radiation level increasing rapidly, there was evidence that fission products were being released to the surrounding environment. At 12:04pm, the ED declared the GE based on the intended EAL for this drill scenario. It should be noted that the applicable EAL for this scenario (EAL 3.1.4) does include an allowance for ED "judgment" which can be applied to any of the three fission product barriers. This was the "judgment" exercised by the ED – all within the intended EAL for the drill scenario.

At 12:01pm the reactor water level was intentionally lowered to below TAF. This information was received by the ED shortly after 12:04pm, the time when the ED had already classified the event as a General Emergency. The ED used the level information as confirmatory information that a General Emergency existed. The level information did not and should have not resulted in a change to the emergency classification. Since this level information was not needed to classify, it was not key information that should have been critiqued to assess performance in determining emergency classification.

The original drill critique did evaluate the difference between the intended drill scenario classification and the actual drill classification and concluded that the GE classification was appropriate. From the March 18, 2002 Training Drill Findings and Observation Report,

*"Based on a thorough critique with the Shift Manager and key TSC staff of the decision-making process used, the General Emergency classification was appropriate based on event conditions observed."*

#### Emergency Depressurization:

In Inspection Report 50-277/02-07, 50-278/02-07, the NRC identified that the ability to cool the core was challenged when in preparation for an emergency depressurization, the Shift Manager directed the crew to terminate injection into the reactor vessel. This decision was based on radiological conditions that could not be maintained below the radiation release emergency action level threshold for a GE. The Inspection Report states,

*"Exelon's exercise critique did not address crew deficiency when the crew's event mitigation actions challenged the ability to cool the core".*

The operating crew entered the trip procedure, T-104, "Radioactive Release," due to simulated Main Stack Hi-Hi radiation levels. The trend on the Main Stack radiation recorder was rapidly increasing from 1E-7 to 2E-1  $\mu\text{Ci/cc}$ . Additionally, the "A" Main Steam line inboard and outboard isolation valves were failed open and there was a breach in the main condenser, allowing the transfer of Main Steam to the Turbine Bldg. At that time T-104 directed,

**"WHEN THE RAD RELEASE CANNOT BE MAINTAINED BELOW THE GENERAL EMERGENCY LEVEL, AND THE PRIMARY SYSTEM CAUSING THE RAD RELEASE HAS NOT BEEN ISOLATED, THEN PERFORM AN EMERGENCY BLOWDOWN ON THE OFFENDING UNIT USING T-112."** [Note that T-112 is the Exelon procedure for emergency blowdown.]

The T-104 Bases for this step states that an emergency blowdown may be performed prior to reaching the General Emergency threshold since it could reduce onsite and offsite doses. The General Emergency set point in ERP-101 for Main Stack radiation is 5.84E+1  $\mu\text{Ci/cc}$ . However, due to the rapidly increasing trend and based on the unisolable steam leak, the crew decided to execute the step and perform the emergency blowdown procedure. The release rate was steadily increasing at a rate of approximately one decade every 3 minutes. The General Emergency release rate of 5.84 E+1 was rapidly being approached. The release rate combined with the unisolable main steam leak indicates the decision to perform an emergency blowdown was appropriate.

There were some operator performance issues relative to conducting and exiting the Emergency Blowdown procedures that were not captured in the original critique which focused on the Emergency Plan functions. These issues have been captured in the corrective action program. However, since the emergency blowdown occurred after the declaration of a General Emergency, there was no impact on emergency classification or any other risk significant planning standard.

The preliminary White finding was issued based on the fact that Exelon's "critique did not identify weaknesses or deficiencies related to being able to classify an event."<sup>5</sup> This standard is not consistent with the IMC 0609 Appendix B criteria and considerations for drill critiques,

**"Criteria**

*The licensee has failed to identify in a critique of a drill or exercise weaknesses that would have resulted in the failure to implement a PS or regulatory requirement in an effective, timely and/or accurate manner if the event had been an actual emergency.*

**Considerations**

*The problem (that was missed by the critique) must be a failure to implement a PS or regulatory requirement as committed in the Plan or stated in 10 CFR."*

These criteria and considerations combined with IMC 0609, Appendix B, Sheet 1 would determine a White finding if the "failure to implement" involved a risk significant planning standard. In this case, the Inspection Report did not specifically cite any failure to properly classify, a risk significant planning standard. The three issues identified by the NRC in their Inspection Report - Level Spike, General Emergency Classification and Emergency

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<sup>5</sup> Letter from A. R. Blough (U. S. Nuclear Regulatory Commission) to J. L. Skolds (Exelon Nuclear), dated July 19, 2002.

Depressurization - do not entail critique performance deficiencies related to the failure to classify, a risk significant planning standard. There was a timely and appropriate declaration of a GE. As a result, this should not be a White finding since it does not meet the criteria specified in IMC 0609, Appendix B. However, there were critique performance deficiencies which should be a Green finding in accordance with IMC 0609 Appendix B, Sheet 1.

The White finding as written seems to be imposing a standard for critiques that is not consistent with IMC 0609 Appendix B. The Emergency Preparedness Cornerstone Performance Expectation is to

*“Demonstrate that reasonable assurance exists that the licensee can effectively implement its emergency plan to adequately protect the public health and safety in the event of a radiological emergency.”*

Critiques should be adequate and sufficient to provide this reasonable assurance. Exelon contends that our critique did provide reasonable assurance that it could identify weaknesses or deficiencies related to proper and timely classifications. Therefore, an apparent violation of 10 CFR 50, Appendix E, IV.F.2.g is not warranted.

Exelon does, however, acknowledge that there were drill critique performance deficiencies that need to be addressed. These have been entered into our corrective action program.

### **Corrective Actions:**

Based on the 2/14/02 exercise critique as well as the subsequent root case investigation, a number of programmatic changes have been made to the Exelon Emergency Preparedness program. Additional Operator training has also been performed.

- Written procedural direction has been implemented through common EP procedures at Peach Bottom, Limerick and the common EOF/JPIC to address drill scenario development, execution, evaluation, critique, and report generation and report approval. These procedure revisions addressed the following corrective actions:
  - Improved the number of and required experience for controllers and evaluators needed per facility to support a drill.
  - Improved training of controllers and evaluators.
  - Conducted peer reviews of evaluators' performance during drills and critiques.
  - Improved the number of and required experience of personnel for scenario development.
  - Developed specific guidance for scenario development and validation. Specific responsibilities and management sponsorship have been defined for the multi-disciplined scenario development team including use of the simulator and licensed operators during the scenario validation.
  - Implemented specific criteria for aborting and starting/restarting a drill scenario. Situations requiring scenario suspension and termination (e.g., loss of simulator or actual security event) have been provided along with the necessary actions to ensure successful restart of the scenario.
  - Implemented specific criteria for use of data (electronic vs. hard copy) including guidance on the hierarchy of data use during a drill.

- Improved expectations for critiques, i.e., who is to attend, what needs to be discussed, logs & note-keeping
  
- Operator training has been performed for the following:
  - Operating crew's knowledge and expectations relative to T-112 have been evaluated and training revised to address identified issues.
  - Expectations regarding reactor water level spikes have been reinforced with the operating crews.

These corrective actions have been implemented and were shown to be effective during recent, full-scale evaluated Exercises successfully completed for Limerick and Oyster Creek Generating Stations.

ATTACHMENT 2

PEACH BOTTOM ATOMIC POWER STATION  
UNITS 2 AND 3

DOCKET NOS. 50-277  
50-278

LICENSE NOS. DPR-44  
DPR-56

**Supplemental Information Concerning 6/02/02 Alert Event**

## **1. Introduction:**

This document supplements the information provided in the meeting between the U. S. Nuclear Regulatory Commission and Exelon on August 23, 2002. In the following analysis, Exelon provides: 1) an introduction; 2) a summary of the events; 3) a review of the safety significance of the event; 4) a list of corrective actions that were identified during the event; 5) an analysis of the apparent violation, and 6) an analysis of the SDP aspects of the event.

In summary, Exelon contends that the cornerstone of ensuring that the licensee is capable of implementing adequate measures to protect the public health and safety in the event of a radiological emergency was met.

During the time period prior to the declaration of the Alert classification, the Shift Manager was involved with activities to ensure the safety of the operators, making management notifications which would have been necessary to bring valuable resources to bear on a situation, and assessing the condition on other safety related equipment. These delays did not significantly compromise Exelon's ability to notify State and local authorities and meet regulatory requirements specified in 10 CFR 50, Appendix E, IV.D.1. Additionally, the actual event posed minimal impact to plant personnel and the public.

With regards to the apparent violation, no regulatory requirement exists for the 15-minute declaration. The inspection report attempts to impose a 15-minute declaration rule defined in the internal memorandum (EPPOS-2) as the basis for violation of several regulations (10 CFR 50.54, 50.47, and Appendix E). The imposed 15-minute declaration goal attempts to implement a new position, not originally intended by the regulation. Although the 15-minute declaration goal is discussed through the voluntary guidance of the Reactor Oversight Process (Appendix B to Manual Chapter 0609), the Reactor Oversight Process should not be used as a means for implementing new staff positions in contradiction with the original intent of the emergency planning rule. Imposition of a new and different interpretation of the regulatory requirements does not follow the provisions of the backfitting rule (10 CFR 50.109). Exelon's position is that the violation is unwarranted.

The delay in classification has been counted as an unsuccessful opportunity in the Drill and Exercise Performance Indicator, since opportunities for performance improvement were identified. Since a classification system was in use, classification was made, and the delay had no impact on consequences, the risk significant planning standard was met. Additionally, the 15-minute emergency classification goal is not a regulatory requirement. Even if considered a failure of a risk significant planning standard, the finding should be downgraded because of low safety significance of the actual event. As such, Exelon contends that this event should be characterized as a Green finding in accordance with Appendix B to Manual Chapter 0609, Sheet 2.

## **2. Summary of Events:**

At 0031 hours on June 2, 2002, an automatic injection of the CARDOX system occurred in the E3 Emergency Diesel Generator (EDG) room while the diesel was being operated for testing purposes. Testing of the EDG began at 0025 hours. Both Peach Bottom Atomic Power Station (PBAPS) Units were operating at 100% power with testing of the E3 EDG in progress to support

a planned outage of the E2 EDG on June 3, 2002. At the time of the CARDOX injection, two operators were present in the E3 room. The operators promptly evacuated the room when they saw a CARDOX cloud and smelled the CARDOX wintergreen additive. They promptly reported the situation to the Control Room. The diesel engine automatically tripped, as designed by the CARDOX System Logic. The trip is required since the EDG intakes for combustion air are located within the EDG room. The reason for the CARDOX injection was due to foreign material on the CARDOX Solenoid and Timer Circuit Card.

An ALERT emergency classification was declared at 0102 hours following confirmation of an injection of carbon dioxide into the E-3 Diesel Generator Bay by the CARDOX system in accordance with ERP-101 8.2.2.b "Report or detection of toxic gases within Plant Vital Structures in concentrations that will be life threatening to plant personnel." The classification of an ALERT was declared 31 minutes after the event initiated.

During the time period prior to the declaration of the event, the Shift Manager was involved with activities: 1) to ensure the safety of the operators, 2) necessary to assess the condition on other safety related equipment, 3) to make management notifications, and; 4) to review the ERP-101 bases to determine if the ALERT was required.

The following is a timeline of the events:

Date	Time	Event
6/2	0025	Plant Reactor Operator Starts E-3 per RT-O-052-203-2. Control Room and local indications normal for EDG start.
6/2	0031	Following Control Room Alarms Received: <ul style="list-style-type: none"> <li>• Alarm 004 (E-5) E3 Diesel Gen Not Reset</li> <li>• 007 (M7B) "E3 Diesel Gen Bldg, CO2 Discharged A256 Elev 127</li> <li>• 209 (D-5) 2 Turbine South CO2 Deluge Sprinkler Ckt Trouble.</li> </ul>
6/2	0031	Equipment Operators (EO) Evacuated Diesel Bay.
6/2	0036-0039	EO's reported E3 D/G was Tripped and CO2 Injection into E-3 D/G Bay had occurred. Control room has confirmed that CARDOX injection occurred.  GP-15 Local Evacuation performed for all D/G Bays and D/G CO2 Room.
6/2	0040	Shift Manager (SM) goes to SM office to call Station Duty Manager (SDM), Director Operations and & Shift Operations Superintendent to inform them of "Significant Event."
6/2	0047	SM returns to control area and begins review of ERP's.
6/2	0050	SM Identifies possible entry for ERP 8.2.2.b. and begins review of ERP 8.2.2.b Bases to understand if entry is based on single EDG Bay or entire EDG building.
6/2	0058	SM hears report that EO's smelled CO2 outside of EDG building and concludes impact to more than one EDG Bay.
6/2	0102	SM declares Alert for Toxic Gas in a Vital Area and appoints NRC Communicator.

### **3. Safety Significance of the Event:**

The actual safety consequences from the event were minimal. The definition of Alert from our Emergency Plan includes events "that involve actual or potential substantial degradation of the level of safety of the plant." There was no actual fire as a result of the event. The incident did not impact safe operation of the plant. No release of radiation was involved. During the event, both reactors at the station remained at 100 percent power. Testing of the E-3 Emergency Diesel Generator (EDG) was taking place when the fire suppression system was inadvertently activated. Additionally, no injuries occurred, and all other plant operations proceeded as normal. The Alert was terminated at 3:01 a.m.

Exelon maintained compliance with regulations in that federal, state and area officials were notified of the Alert. Equipment damage was limited to the CARDOX "Solenoid and Timer Circuit Card," and no actual adverse impact to the E-3 EDG occurred.

As further evidence of the minimal safety impact resulting from this event, the E-1, E-2 and E-4 EDGs remained operable and accessible during this event and would have been capable of meeting plant loads if needed for an accident. The E-3 EDG had been declared inoperable at 0017 on June 2, 2002 for the performance of the Emergency Diesel two hour run. The E-3 EDG was then declared unavailable at 0031 June 2, 2002 due to the CARDOX Injection into the E-3 Diesel Bay. The E-3 EDG was already inoperable at the time of the event for routine testing. Acceptable risk was determined by the Sentinel program prior to the conduct of the testing.

With regards to the Emergency Action Level (EAL), a review of EAL 8.2.2.b identifies that the initiating condition for entry into the EAL is a "Release of Toxic or Flammable Gases Within a Facility Structure Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown." The bases for EAL 8.2.2.b identifies that the cause and/or magnitude of the gas concentrations is not a concern, but rather that access is impeded when these systems are performing their safety function. As a result of this event, no access was necessary to the room. Therefore, the declaration of the EAL was conservative.

In summary, this event had a minimal impact on safety and plant personnel based on the following conclusions:

- The plant was not impacted by the event (both units remained operating at 100% power).
- Individuals were promptly evacuated from the area and the CARDOX system was isolated.
- All other Emergency Diesel Generators remained operable.
- No additional technical support was needed to terminate the event.
- There was no increase in Core Damage Frequency as a result of this event (the issue screened out of the mitigating system and fire protection SDPs).

#### 4. Corrective Actions:

The corrective actions include:

- ERP-101 (Emergency Classification Procedure) and its Bases document were confusing with regards to whether one (1) or all the EDG rooms would need to be uninhabitable to result in an Alert classification. Subsequently, EAL 8.2.2.b was clarified to be consistent with its original purpose (i.e., to address conditions impacting safe shutdown or safe plant operations).
- A review of EALs and bases for other ambiguities or overly conservative requirements was performed.
- CARDOX systems have been changed to manual initiation only.
- As an interim step, an operator aid has been placed in the control room to assist operators in recognizing EALs.
- Procedures will be upgraded to provide consideration for EAL entry.
- Training was provided to ensure that EALs are reinforced to licensed operators and other personnel who are required to perform EAL classifications.
- Additional Emergency Planning drills were conducted with Emergency Response Organization facilities.

#### 5. Analysis of the Apparent Violation:

##### A. Discussion of Emergency Preparedness Rule:

The USNRC issued a final rule revising the emergency planning requirements (including 10 CFR 50.54(q)), effective November 3, 1980<sup>6</sup>. As discussed in the final regulation<sup>7</sup>, the NRC established requirements for the 15-minute notification capability. The Commission recognized that:

*“...the technical basis for this requirement is not without dispute.”*

As further discussed in the final rule:

*“The Commission recognizes that no single accident scenario should form the basis for choice of notification capability requirements for offsite authorities and for the public. Emergency plans must be developed that will have the flexibility to ensure response to a wide spectrum of accidents. This wide spectrum of potential accidents also reflects on the appropriate use of the offsite notification capability. The use of this notification capability will range from immediate notification of the public (within 15 minutes) to listen*

<sup>6</sup> 45 Fed. Reg. 55402 (August 19, 1980).

<sup>7</sup> 45 Fed. Reg. 55407 (August 19, 1980).

*to predesignated radio and television stations, to the more likely events where there is substantial time available for the State and local government officials to make a judgment whether or not to activate the public notification system."*

As inferred from these statements, although the 15-minute requirement is a "line... drawn somewhere"<sup>8</sup>, public notification must be flexible to respond to a variety of events from significant to non-significant events. The final rule clearly established a 15-minute requirement for notification of State and local authorities (15 minutes)<sup>9</sup>, but at no point was a set time established for the declaration of an event. To the contrary, the final rule established "flexibility" for response to the "wide spectrum of potential accidents." This flexibility would be tempered by the degree of response necessary to respond to the severity of the accident.

**B. Discussion of Internal Memorandum Concerning Classifying An Emergency:**

Introduction of the 15-minute limit for classification appears to be introduced in an August 17, 1995 internal memorandum<sup>10</sup> referred to as an "Emergency Preparedness Position (EPPOS)". In this memorandum (EPPOS), USNRC states that:

*"...regulations do not specify a time limit for classifying an emergency."*

Additionally:

*"It is the staff's position that 15 minutes is also an appropriate limit for classification of an event once indications are available to control room operators that an EAL has been exceeded."*

This statement provided in this internal memorandum appears to be an extension of the wording provided in NUREG-0654; FEMA-REP-1<sup>11</sup> in which the guidance refers only to:

*"The time is measured from the time at which operators recognize that events have occurred which make declaration of an emergency class appropriate."*

**C. Violation Analysis:**

No regulatory requirement exists for the 15-minute classification. Since a classification system was in use, the proper classification was made and any delay in classification did not have any consequential impact ; compliance with 10CFR 50.54, 50.47 and Appendix E was met.

The Inspection Report attempts to impose a 15-minute declaration rule defined in the internal memorandum (EPPOS-2) as the basis for violation of several regulations (10 CFR 50.54, 50.47, and Appendix E). The imposed 15-minute declaration rule attempts to implement a new

<sup>8</sup> 45 Fed. Reg. 55407 (August 19, 1980).

<sup>9</sup> 10 CFR 50, Appendix E, IV.D.3

<sup>10</sup> Internal Memorandum from C. L. Miller (Chief, Emergency Preparedness and Radiation Branch), "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions", dated August 17, 1995.

<sup>11</sup> NUREG-0654; FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, November, 1980, Appendix 1, Page 1-3.

position, not originally intended by the regulation. Although the 15-minute declaration rule is discussed through the voluntary guidance of the Reactor Oversight Process (Appendix B to Manual Chapter 0609), the Reactor Oversight Process should not be used as a means for implementing new staff positions in contradiction with the original intent of the emergency planning rule. Imposition of a new and different interpretation of the regulatory requirements does not follow the provisions of the backfitting rule (10 CFR 50.109). Exelon's position is that the apparent violation is unwarranted.

#### **6. Significance Determination Process (SDP) Analysis:**

Exelon acknowledges that there was a delay in classifying the event. The delay in classification has been counted as an unsuccessful opportunity in the Drill and Exercise Performance Indicator, since opportunities for performance improvement were identified.

Failing to classify within 15 minutes is not a regulatory requirement and appears to be introduced in an August 17, 1995 internal memorandum<sup>12</sup> referred to as an "Emergency Preparedness Position (EPPOS-2)". In this memorandum, USNRC also stated that: "...regulations do not specify a time limit for classifying an emergency." There is also some discussion in IMC 0609, Appendix B about the use of 15 minutes as a trigger to further evaluate the delays.

The criteria and considerations in IMC 0609 Appendix B Section 3.0 for Actual Event Implementation Problem are

*Criteria*

*Failure to implement a regulatory requirement as committed in the Plan or stated in Regulations during an actual event.*

*Considerations*

*Review the impact on the EP Cornerstone Objective. If the error had little impact on meeting this it may be appropriate to consider issuing a lower level of finding (e.g., green instead of white), or no finding at all."*

These criteria and considerations combined with IMC 0609 Appendix B, Sheet 2 would determine a White finding if the "failure to implement" involved a risk significant planning standard. Since a classification system was in use, the proper classification was made, and the delay had no impact on consequences, the risk significant planning standard was met. Alternatively, even if this delay is considered a failure of a risk significant planning standard, the finding should be downgraded because of low safety significance of the actual event. As such, Exelon contends that this event should be a Green finding in accordance with Appendix B to Manual Chapter 0609, Sheet 2.

An analysis was performed of the Alerts that have occurred since the start of the revised Reactor Oversight Process (i.e., April, 2000). This analysis evaluates the declaration times associated with seven (7) Alerts using USNRC Inspection Reports, LERs and ENS documents.

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<sup>12</sup> Internal Memorandum from C. L. Miller (Chief, Emergency Preparedness and Radiation Branch), "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions", dated August 17, 1995.

Seven (7) Alerts have occurred in that time frame (excluding the recent Peach Bottom Alert, which occurred on June 2, 2002). Two (2) of the seven (7) Alert events exceeded the 15-minute declaration goal. An Alert was declared at Farley on August 16, 2000 in 33 minutes and resulted in no Emergency Preparedness related finding (Joseph M. Farley Nuclear Plant, ENS No. 37232, Inspection Report No. 50-348/00-04 and 50-364/00-04, dated October 30, 2000). An Alert was declared at Fermi on March 21, 2001 in 34 minutes and resulted in no Emergency Preparedness related findings (Fermi 2, ENS No. 37855, Inspection Report No. 50-341/01-06, dated April 27, 2001).

The most directly related Alert event is the Fermi event. An operator discovered a fire coming from the emergency diesel generator outboard bearing area. The fire was put out in less than one minute using a portable CO2 extinguisher. The fire was discovered at 2211 hours; however, the Alert was not declared until 2245 hours (i.e., 34 minutes later). Inspection Report 50-341/01-06 identified this event as an unresolved item. In comparison to the Peach Bottom Cardox event, the time to declare the Alert was less at Peach Bottom (31 minutes for PBAPS as compared to 34 minutes for Fermi), but the event at Fermi was a more significant event in that an actual fire occurred which resulted in damage to the diesel generator. No EP related finding was issued on the delayed classification.

An analysis was performed of the Unusual Events that have occurred since the start of the revised Reactor Oversight Process (i.e., April, 2000). This analysis evaluates the declaration times associated with each of the Unusual Events using USNRC Inspection Reports, Licensee Event Reports, and Emergency Notification System documents. As a result of this research, at least 3 Unusual Events declared were greater than 15 minutes and did not result in a finding. One finding (non-cited) was issued for late unusual event classification (approximately 3 hours) (Edwin I. Hatch Nuclear Power Plant, Inspection Report No. 50-321/01-08, 50-366/01-08, dated April 29, 2002). In two other cases, a finding (non-cited) was issued for a missed Unusual Event classification in one event (Joseph M. Farley Nuclear Plant, Inspection Report No. 50-348/00-03, 50-364/00-03, dated July 31, 2000), but in the second event, no finding was issued for a missed Unusual Event classification (D. C. Cook Nuclear Power Plant, Units 1 and 2, NRC Special Inspection Report No. 50-315/01-17(DPR); 50-316/01-17(DPR), dated June 10, 2002).

This research has demonstrated that issuing a White finding associated with not declaring an event within 15-minutes is an inconsistent policy in the implementation of the emergency planning standards associated with the reactor oversight program. Our conclusion is that the NRC has used the flexibility in IMC 0609 Appendix B to downgrade findings or issue no findings at all based on the actual safety significance of the event.