

November 4, 2005

EA-05-199

Mr. Christopher M. Crane
President and CEO
AmerGen Energy Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: OYSTER CREEK NRC EVENT FOLLOWUP INSPECTION REPORT
05000219/2005011; PRELIMINARY WHITE FINDING

Dear Mr. Crane:

On September 23, 2005, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection of an event that occurred at your Oyster Creek Generating Station on August 6, 2005, involving sea grass intrusion into your intake structure. The enclosed inspection report documents the inspection findings, which were discussed with Mr. B. Swenson, Site Vice President, and other members of your staff during an exit meeting held on September 23, 2005.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed procedures, records, investigation and analysis reports and interviewed personnel.

This report documents one finding that appears to have low to moderate safety significance. This finding involved the failure to properly utilize the Oyster Creek Emergency Plan (E-Plan) emergency action level (EAL) matrix during an actual event. This resulted in operators not recognizing that plant parameters met the EAL thresholds for declaring an unusual event (UE) and a subsequent Alert. Specifically, a large amount of sea grass had clogged the north side intake structure screens resulting in a decrease in the intake structure water level. Subsequently, the intake water level decreased over a period of approximately 60 minutes meeting the values expected for a UE and then an Alert.

The finding was assessed using the emergency preparedness significance determination process dated March 6, 2003, as a potentially safety significant finding that was preliminarily determined to be White (i.e., a finding with some increased importance to safety which may require additional NRC inspection). The finding appears to have low to moderate safety significance because a Risk Significant Planning Standard implementation problem occurred during an actual event. The fact that the shift crew did not recognize Alert conditions prevented the activation of both onsite and offsite emergency response organizations (ERO). Had the event degraded further, the onsite ERO could not have been readily available to assist in the mitigation of the event and the offsite agencies could have been prevented from taking initial

offsite response measures. Although the shift crew took actions to mitigate the event and the actual consequences of this event were minimal, the performance problems that caused the failure to classify, if uncorrected, could result in inadequate protection of the public health and safety under different circumstances.

Your staff implemented immediate corrective actions, including providing additional guidance to the operators and operator training on implementation of the E-Plan. Therefore, the finding does not present an immediate safety concern. We understand that long-term corrective and preventive measures are being developed.

The finding is an apparent violation of NRC requirements (10 CFR 50.54(q) and 50.47(b)(4)) and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current policy is included on the NRC's website at <http://www.nrc.gov>; select **What We Do, Enforcement**, then **Enforcement Policy**.

We believe we have sufficient information to make a final risk significance determination on this issue. However, before we make a final decision on this matter, we are providing you an opportunity to: (1) present to the NRC your perspectives on the facts and assumptions used by the NRC to arrive at the finding and its significance, at a Regulatory Conference, or (2) submit your position on the finding to the NRC in writing. If you request a Regulatory Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference in an effort to make the conference more efficient and effective. If a Regulatory Conference is held, it will be open for public observation and a press release will be issued announcing it. If you decide to submit only a written response, such submittal should be sent to the NRC within 30 days of the receipt of this letter.

Please contact Mr. Raymond K. Lorson at (610) 337-5282 within 7 days of the date of this letter to notify the NRC of your intentions. If we have not heard from you within 10 days, we will continue with our significance determination and enforcement decision and you will be advised by separate correspondence of the results of our deliberations on this matter.

In addition, this report documents four findings of very low safety significance (Green), one of which was licensee-identified. Three of the four green findings involved violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating those three findings as non-cited violations consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any non-cited violations in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Oyster Creek facility.

In accordance with 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 made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at

Mr. Christopher M. Crane

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<http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). Should you have any questions, please contact Mr. Raymond K. Lorson at (610) 337-5282.

Sincerely,

/RA/

A. Randolph Blough, Director
Division of Reactor Safety

Docket No. 50-219

License No. DPR-16

Enclosure: Inspection Report 05000219/2005011
w/Attachments A and B

cc w/encl:

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-219

License No. DPR-16

Report No. 05000219/2005011

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Oyster Creek Generating Station

Location: Forked River, New Jersey

Dates: August 25, 2005 - September 23, 2005

Inspectors: Nancy T. McNamara, Emergency Preparedness Inspector
Jeffrey Herrera, Resident Inspector, Oyster Creek
Steven Dennis, Operator Licensing Examiner
Andrew Rosebrook, Project Engineer

Approved by: Raymond K. Lorson, Chief
Plant Support Branch 1
Division of Reactor Safety

Enclosure

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SUMMARY OF FINDINGS

IR 05000219/2005-011; 08/25/2005 - 09/23/2005; Oyster Creek Generating Station; Event Followup Inspection; Emergency Classification.

The report covered an event followup inspection by three regional inspectors and one resident inspector. Four Green findings, three of which were non-cited violations (NCVs), and one apparent violation (AV) with preliminary White significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing non-cited violation (NCV) of Technical Specification 6.8.1 was identified for failure to follow an abnormal operating procedure that resulted in the loss of the No. 1 North Intake Service Water Pump, the No.1 Emergency Service Water system and the associated containment spray heat exchangers. The licensee took immediate corrective actions which included the issuance of standing orders to reinforce management's expectations and provided interim guidance related to the shortcomings of the shift crew's performance.

This finding is greater than minor because the failure to follow the abnormal procedure impacted the control room's ability to adequately monitor intake levels and impacted prompt operator response actions due to decreasing intake level. This finding is associated with the cornerstone objectives of Initiating Events, Mitigating Systems and Containment Barriers Cornerstones. The attributes affected are protection against external factors such as loss of heat sink, equipment performance in availability and reliability, human performance in human error (pre-event), containment structure system and component and barrier performance. The cause of the finding is related to the cross-cutting element of human performance (personnel). (Section 2.0)

Cornerstone: Emergency Preparedness (EP)

- Preliminary White. An NRC-identified apparent violation (AV) of 10 CFR 50.47(b)(4) was identified. This AV, which has low to moderate safety significance, occurred because the Oyster Creek E-Plan EAL matrix was not properly utilized to determine if a plant parameter met the EAL threshold for declaring an emergency classification. This resulted in not recognizing during an actual event, that plant parameters met the EAL thresholds for declaring a UE and a subsequent Alert. Immediate corrective actions were taken in which shift crews were retrained on the implementation of E-Plan requirements.

The finding is greater than minor because it is associated with the EP cornerstone attribute of response organization (RO) performance (actual event response). It affects the cornerstone objective of ensuring the capability to implement measures to protect the health and safety of the public during an emergency. The licensee did not use the Oyster Creek E-Plan EAL matrix when plant parameters met the EAL thresholds for

declaring a UE and a subsequent Alert. As a consequence, both the onsite and offsite EROs were not activated during actual Alert conditions. Had the event degraded further, the onsite ERO would not have been readily available to assist in the mitigation of the event and the offsite agencies could have been prevented from taking initial offsite response measures. This finding is of low to moderate safety significance because it constituted a failure to implement a Risk Significant Planning Standard during an actual event in which plant conditions met an Alert. The cause of the finding is related to the cross-cutting element of human performance (personnel). (Section 3.1)

- Green. A self-revealing NCV of 10 CFR 50.47(b)(2) was identified in which state and local agencies were not notified within 15 minutes after declaring a UE. The licensee immediately re-trained shift managers in the offsite notification process and proper completion of the notification form.

This finding is greater than minor because it affects the RO performance (actual event response) attribute of the EP cornerstone. Failure to notify offsite agencies in a timely manner impacts the EP cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the public health and safety during an emergency. Timely offsite notifications enable state and local agencies to make decisions for taking initial offsite response measures that could affect the general public. This finding is of very low safety significance because it was a failure to implement a Risk Significant Planning Standard during an actual event associated with the notification of a UE. The cause of this finding is related to the cross-cutting element of human performance (personnel). (Section 3.1)

Cornerstone: Miscellaneous

- Green. The inspectors identified a green finding for ineffective corrective actions in that the root cause analysis team did not correctly identify the amount of time Alert conditions existed during the August 6, 2005, event. AmerGen initiated some of their immediate corrective actions and their analysis of the significance of this event based on the Alert lasting for five minutes when it actually lasted for approximately 45 minutes. The licensee confirmed the error, revised the root cause analysis report and entered this issue into their corrective action program.

The finding was more than minor because if left uncorrected, it could have resulted in a more significant safety concern. Specifically, failure to accurately identify information pertaining to operating events can lead to deficiencies in corrective actions. Because this finding does not involve a violation of regulatory requirements, this finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. The cause of the finding is related to the cross-cutting element of problem identification and resolution. (Section 4.0)

B. Licensee-Identified Findings

A violation of very low safety significance, which was identified by the licensee has been reviewed by the inspector. Corrective actions taken or planned by the licensee has been entered into the licensee's corrective action program. The violation and corrective action tracking number are listed in Section 5.0 of this report.

REPORT DETAILS

1.0 EVENT DESCRIPTION

- 1.1 Event Summary: During the evening of August 5, 2005, Oyster Creek had a higher than normal level of sea grass build up on the north side of the intake structure. AmerGen dispatched a team to clear the intake structure screens of the grass. By 1:57 a.m., on August 6, 2005, conditions had deteriorated resulting in a control room alarm due to high traveling water screen differential pressure. AmerGen determines the intake water level from a differential pressure reading via a gas bubbler at the screen wash control panel located at the north side of the intake structure. There is no indicator in the control room for monitoring intake level; therefore, operators have to rely on the information being communicated from personnel in the field. At 2:35 a.m., the level was reported at <1.4 pounds per square inch gauge (psig) which required the shift crew to enter Abnormal Operating Procedure (ABN), No. 32, "Abnormal Intake Level." Based on water level, Procedure ABN-32 required operators to monitor the intake water level every 15-minutes and to refer to the Oyster Creek E-Plan to evaluate the plant parameter against the EAL matrix. Operators did not monitor intake water level as required and also did not refer to the E-Plan EAL matrix at the time the procedure directed.

At approximately 3:05 a.m, the control room was notified that conditions had further degraded. The sea grass caused a trash rack on each of the three bays of the north side of the intake structure to collapse. This placed a heavy load on each of the north side traveling water screens and caused the screen's shear pin to break. The three screens on the south side were not affected during the event. Water level downstream of the screens on the north side lowered due to the operation of two circulating water pumps with the clogged intake. In response to the continued lowering of the north intake bay level, the operators conducted a rapid reactor power reduction to 75% power and tripped one of the two operating circulation pumps taking a suction from the north intake bay. This action decreased the possibility of a reactor scram due to low condensers vacuum conditions and reduced the water flow across the north intake bay traveling screen, allowing level downstream of the screens to increase.

The level reduction in the north intake bay rendered the No. 1 Emergency Service Water Pump, the No. 1 Emergency Service Water (ESW) system and associated containment spray heat exchangers inoperable. The shift crew entered technical specification Limiting Condition for Operation (LCO) 3.4.C.3 and continued to reduce power. It was reported to the control room at 3:10 a.m., that the differential pressure level was 0.5 psig and rising slowly. Sometime between 2:35 a.m. and 3:05 a.m., plant parameters had met the thresholds for declaring a UE and a subsequent Alert. However, since the operators had not instituted level monitoring or entered the E-Plan, they were not cognizant that plant parameters had met the EAL thresholds for making an emergency declaration.

At 3:35 a.m., the shift technical advisor (STA), who had been supervising the activities at the intake structure in the capacity of the field supervisor, returned back to the control room. The STA reviewed the E-Plan EAL scheme and requested a confirmation of the current intake water level which was reported at 0 psig. Apparently, the water level did not recover on a consistent upward trend as initially believed at 3:10 a.m. This was due to the second circulating water pump still operating, causing the water level to fluctuate

up and down. The STA informed the shift manager that the Alert threshold had been met. At 3:45 a.m., with power reduced to 44%, the second circulating water pump was secured and all north side intake loads were transferred to the south side intake structure or removed from service. At that time, the intake water level recovered to 2.7 psig, which no longer met the Alert conditions.

Although the shift manager recognized that the Alert no longer existed, he erroneously believed that conditions still met the criteria for a UE. Therefore, at 4:03 a.m., the shift manager declared a UE based on low intake level.

The designated on-shift communicator, who was performing other assigned duties at the rad waste building and the intake structure, returned to the control room at 4:11 a.m. The communicator attempted to contact the State of New Jersey via the automatic ring-down phone which was found to be out of service. The communicator contacted the state manually and completed the notification by 4:26 a.m., followed by the notification to the NRC. At 7:55 a.m., AmerGen terminated the UE.

There were no injuries or radiation release associated with this event.

The licensee performed a root cause analysis and identified several operator performance problems which were related to: inadequate communications; not recognizing the significance of the degrading conditions; lack of teamwork; and, inadequate command and control. Short and long-term corrective actions to prevent recurrence were being developed as a result of the root cause analysis.

2.0 PLANT RESPONSE: PERSONNEL

Cornerstone: Initiating Events

2.1 Operator Performance

a. Inspection Scope

The inspectors reviewed and assessed licensed operator performance during an actual event which occurred on August 6, 2005, due to low intake water level. The inspectors reviewed and evaluated the operators' use and adherence to abnormal and emergency procedures during transient mitigation and subsequent plant operations. The inspectors interviewed licensed operators involved in the event to assess operator performance during the transient. Documents reviewed included the following:

1. operator logs;
2. normal and abnormal operating procedures;
3. Exelon's corporate event investigation team report; and
4. AmerGen's prompt investigation report.

b. Findings

Introduction. A self-revealing Green NCV of Technical Specification 6.8.1 was identified for failure to follow an abnormal operating procedure that resulted in the loss of the No.

1 North Intake Service Water Pump, the No.1 ESW system and the associated containment spray heat exchangers.

Description. During the August 6, 2005, event, control room operators did not establish a plan to monitor the intake water level as directed by Procedure ABN-32. They never stationed an individual to specifically monitor the intake level every 15 minutes as directed by the procedure. This led them to miss a significant drop in level between 2:35 a.m. and 3:05 a.m., which met the UE and Alert classification thresholds. The failure to follow procedure ABN-32, directly impacted the operators' ability to track, trend and recognize the degrading conditions. This resulted in the loss of the No. 1 Emergency Service Water Pump, the No. 1 ESW system, the associated containment spray heat exchangers and missed entry into the E-Plan EALs. Refer to Sections 1.0 and Appendix B for additional details of the actions taken by the shift crew while mitigating the event.

Immediate corrective actions were taken in that the licensee issued standing orders reinforcing management's expectations and provided interim guidance related to the shortcomings of the shift crew's performance. Long-term corrective actions to prevent recurrence were being developed as a result of the root cause analysis.

Additionally, the root cause analysis identified previous corrective action items (CAP Nos. 02003-2361, 02004-0165, and 02004-0123), regarding communication challenges with respect to the monitoring of intake level from the control room. AmerGen proposed that a modification to add a control room indicator for recording the intake level be made to resolve reliance on verbal communications between the control room and operators in the field. The enhancement was never made a priority or scheduled for implementation and had remained open since 2003.

Analysis. In accordance with IMC 0612, Appendix B, "Issue Disposition Screening," the inspectors determined that this finding was more than minor because the failure to follow the abnormal procedure impacted the control room's ability to adequately monitor intake levels and impacted prompt operator response actions due to decreasing intake level. Specifically, operators did not adequately monitor intake levels for degrading intake conditions which rendered the No. 1 Emergency Service Water Pump, the No. 1 ESW system and associated containment spray heat exchangers inoperable.

The finding is associated with the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The attributes affected include protection against external factors such as loss of heat sink, equipment performance availability and reliability, and human performance. The finding is also associated with the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The attributes affected include protection against external factors such as loss of heat sink, equipment performance in availability and reliability, and human performance error (pre-event). In addition, the finding is associated with the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide release caused by accidents or events. The attributes affected included containment structure system, and component and barrier performance. The

cause of the finding is related to the cross-cutting element of human performance (personnel).

In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a significance determination process (SDP) Phase 1 screening and determined that this finding required a Phase 2 approximation based upon the finding affecting the Initiating Events, Mitigating Systems, and Containment Barriers Cornerstones. The inspectors conducted a Phase 2 evaluation using the Risk-Informed Inspection Notebook for Oyster Creek Nuclear Generating Station, Revision 1. The inspectors made the following assumptions: the duration of the low intake water level event was less than one hour, accordingly, the Table 1, < 3 days column was used to assign Initiating Event Likelihood; the special initiator worksheet Table 3.10, "Loss of Intake Water Pump Pit (TIW)" was used for the Phase 2 approximation; the initiating event likelihood value was increased by one order of magnitude, in accordance with IMC 0609, Appendix A, Attachment 2 Rule 1.3; and no operator recovery credit was provided. The approximate change (increase) in core damage frequency as a result of this performance deficiency was mid E-9, or of very low risk significance (Green). The most dominant core damage sequence involved a loss of intake water to pump pit, followed by the failure of an electromatic relief valve (stuck open) and subsequent failure of the low pressure injection system. For the short duration of the actual event, the adjacent intake bay was unaffected, and thus, ensured the availability of the redundant trains of mitigating equipment.

Enforcement. Technical Specification 6.8.1 states that written procedures shall be established, implemented, and maintained covering the items referenced in AmerGen's Appendix "A" of Regulatory Guide 1.33 as referenced in the licensee's Quality Assurance Topical Report. Abnormal procedures are included in Regulatory Guide 1.33. Contrary to the above, the licensee's failure to monitor intake level, as required by procedure ABN-32, led to an untimely response to a degrading condition caused by heavy grassing at the intake. As a consequence, the No. 1 Intake Service Water Pump, the No. 1 ESW system and the associated containment spray heat exchangers were rendered inoperable. However, because the violation was of very low safety significance and has been entered into the licensee's corrective action program under issue report (IR) 360630, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000219/2005011-01, Failure to Follow Procedures)**

3.0 EMERGENCY PREPAREDNESS

3.1 Emergency Response Performance

a. Inspection Scope

The inspectors reviewed and assessed the licensee's performance related to emergency response and the implementation of the E-Plan during the August 6, 2005, event. The assessment included interviews with control room operators and plant personnel who responded to the intake structure to remove the grass. Items reviewed included the following:

- operator logs;
- abnormal procedures;
- Oyster Creek Exelon/AmerGen Radiological Emergency Plan;
- emergency plan implementing procedures;
- state/local notification forms;
- Exelon's corporate event investigation team report; and
- AmerGen's prompt investigation report.

b. Findings

One NRC-identified preliminary White finding and one self-revealing Green finding are documented in the section below.

Emergency Classification

Introduction. An NRC-identified apparent violation (AV) was identified of low to moderate safety significance (White) associated with the emergency classification during an actual event. AmerGen did not properly utilize the Oyster Creek EAL matrix which resulted in not recognizing that plant parameters had met the EAL thresholds for declaring a UE and a subsequent Alert.

Description. Procedure, ABN-32, step four, requires the evaluation of the condition using the E-Plan EAL matrix, which lists the initiating condition threshold values for making an emergency declaration. The EAL threshold for intake canal water level (differential pressure) is <0.94 psig for meeting a UE and <0.50 psig for meeting an Alert classification. The control room received notification at 2:35 a.m., that the water level at the north side of the intake structure was measured at <1.4 psig. Sometime between 2:35 a.m. and 3:05 a.m. plant conditions had met the EAL criteria for declaring a UE and a subsequent Alert due to the level dropping 1.4 psig to 0 psig. The inspector determined that the shift manager did not properly utilize the E-Plan EAL matrix as required by the abnormal procedure, to determine if an emergency classification was warranted.

The shift manager did not review the E-Plan EAL matrix until approximately 3:40 a.m., after being prompted by the STA that plant conditions had met an Alert. Between 3:40 a.m. and 4:00 a.m., the shift manager reviewed the EAL technical basis document and determined, based on the intent of the EAL, an Alert had been warranted. The shift manager recognized the Alert no longer existed because the level had recovered to 2.4 psig. However, he erroneously believed the conditions still met the criteria for a UE and at 4:03 a.m., the shift manager declared a UE based on low intake level.

Analysis. The performance deficiency associated with the response to this actual event is the Oyster Creek E-Plan EAL matrix was not properly utilized to determine if a plant parameter met the EAL classification thresholds. Although the intake level exceeded an EAL threshold sometime between 2:35 a.m. and 3:05 a.m., it was not recognized until approximately 3:40 a.m., that plant parameters met the EAL threshold for declaring an Alert. However, an emergency declaration was not made until 4:03 a.m. The inspectors determined that the licensee should have known of the exceeded EAL threshold by 3:05 a.m., and the delay in recognition and classification could not be reasonably attributed to

competing safety-related activities. The inspectors also determined that this finding was indicative of a cross-cutting weakness in the area of human performance (personnel).

The finding was greater than minor because it is associated with the EP cornerstone attribute of RO performance (actual event response). It affects the cornerstone objective of ensuring the capability to implement measures to protect the health and safety of the public during an emergency. The inspectors reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process, Sheet 2, Actual Event Implementation Problem." The finding has low to moderate safety significance (White) because a Risk Significant Planning Standard implementation problem occurred during an actual event in that the Oyster Creek E-Plan EAL matrix was not properly utilized when plant conditions met an Alert. This prevented the activation of both onsite and offsite EROs during an actual event. Had the event degraded further, the onsite ERO would not have been readily available to assist in the mitigation of the event. Additionally, state and local agencies, which rely on information provided by the facility licensee, could have been prevented from taking initial offsite response measures.

Immediate corrective actions were taken in that shift crews were re-trained on the implementation of E-Plan requirements during transient events. Therefore, the finding does not present an immediate safety concern. Long-term corrective actions to prevent recurrence were being developed as a result of the root cause analysis.

Enforcement. In accordance with 10 CFR 50.54(q), a licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b). In accordance with 10 CFR 50.47(b)(4) a standard emergency classification and action level scheme shall be in use by facility licensees. State and local response plans call for reliance on information provided by facility licensees for the determination of minimum initial offsite response measures. Contrary to the above, between 2:35 a.m. and 3:40 a.m., on August 6, 2005, AmerGen did not use the Oyster Creek E-Plan EAL matrix during an actual event to determine if plant parameters met the EAL thresholds for declaring a UE and a subsequent Alert. As a consequence, AmerGen failed to make an Alert declaration and, as a result, failed to activate their ERO to assist operators in mitigating the event. Additionally, state and local agencies, which rely on information provided by the facility licensee, could have been prevented from taking initial offsite response measures. This finding is identified as an apparent violation of low to moderate safety significance (White), in accordance with the NRC Enforcement Policy and was entered into AmerGen's corrective action program as IR 360630. **(AV 05000219/2005011-02, E-Plan EAL Matrix Not Reviewed During Alert Conditions)**

Notification of State and Local Agencies

Introduction. A Green self-revealing NCV was identified in that state and local governmental agencies were not notified within 15 minutes of the declaration of a UE.

Description. As stated previously, at 4:03 a.m., the shift manager declared a UE. The licensee is required to notify state and local governmental agencies within 15 minutes after making a declaration. However, for reasons unrelated to the delay in making the

declaration, the notification to the State and local governmental agencies was not completed until 4:26 a.m. The completion time exceeded the notification time criterion by seven minutes.

The following performance and equipment problems were identified as contributing factors to the untimely notification: the notification form was not completed in a timely manner; there was a delay in requesting the on-shift communicator to report to the control room; on-shift communicator was not able to immediately report to the control room as required by procedure due to other responsibilities; the state/local automatic ringdown telephone was inoperable; and, the on-shift communicator was not familiar with the backup notification process. The inspectors determined that the notification delays could not be reasonably attributed to competing safety-related activities.

Additionally, the completed notification form contained numerous errors and omissions including an incorrect emergency classification. The form indicated the declaration of an Alert when, the shift manager had declared a UE.

AmerGen took immediate corrective actions in which they retrained Oyster Creek shift managers in the offsite notification process and proper completion of the notification form. Long-term corrective actions to prevent recurrence were being developed as a result of the root cause analysis.

Analysis. The inspectors concluded that a performance deficiency was identified associated with timely notification to state and local governmental agencies during an actual event. AmerGen did not notify state and local governmental agencies within the required 15 minutes after declaring a UE. The inspectors also determined that this finding was indicative of a cross-cutting weakness in the area of human performance (personnel).

This self-revealing finding was greater than minor because it is associated with the EP cornerstone attribute of RO performance (actual event response). It affects the cornerstone objective of ensuring the capability to implement measures to protect the health and safety of the public during an emergency. The inspectors reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process, Sheet 2, Actual Event Implementation Problem." Although a timely notification was not made for either the UE or Alert condition, the inspectors based the significance evaluation on a UE classification since the shift manager ultimately declared a UE. The finding has low safety significance (Green) because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE.

Enforcement. In accordance with 10 CFR 50.54(q), a licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b). In accordance with 10 CFR 50.47(b)(5) procedures shall have been established for notification of state and local response organizations. Also, 10 CFR Part 50, Appendix E.D.3, states that a licensee shall notify the state and local governmental agencies within 15 minutes after declaring an event. Contrary to the above, during the August 6, 2005, event, the licensee declared a UE at 4:03 a.m. and completed the notification to the State and local governmental agencies

at 4:26 a.m. Therefore, AmerGen did not notify state and local governmental agencies within the required 15 minutes after making a declaration. Timely offsite notifications enable state and local agencies to make decisions for taking initial offsite response measures that could affect the general public. Since the violation was of very low safety significance (Green) and since AmerGen entered the deficiency in to their correction action program under IR 360630, this finding is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000219/2005011-03, Late State Notification of UE)**

4.0 EVENT ROOT CAUSES AND CAUSAL FACTORS

Cornerstone: Miscellaneous

4.1 Root Causes Analysis

a. Inspection Scope

The inspectors reviewed AmerGen's Root Cause Analysis Report, Revision 0 (IR 360630) and interviewed the root cause team leader to assess AmerGen's capability to determine the event's causal factors for implementing the appropriate corrective actions to prevent recurrence. Also the inspector reviewed Oyster Creek Procedure LS-AA-125-1001, "Root Cause Analysis Manual," to determine if the root cause analysis was conducted in accordance with the procedure.

b. Findings

Introduction: The NRC identified a green finding for ineffective corrective actions in that the root cause analysis team did not correctly identify the amount of time Alert conditions existed during the August 6, 2005, event. AmerGen initiated some of their immediate corrective actions and their analysis of the significance of this event based on the Alert lasting for five minutes when it actually lasted for approximately 45 minutes.

Description: NRC inspectors conducted interviews and reviewed operator logs to verify and validate the licensee's event time line and conclusions of the root cause analysis report. The inspectors identified a significant discrepancy in the licensee's event time line concerning the amount of time the plant was in the Alert condition. The root cause team had determined that the plant had only been in an Alert condition for a period of approximately five minutes (3:05 a.m. - 3:10 a.m.) because the level was reported as slowly rising. However, the NRC inspector discovered during an interview with the STA, that at 3:35 a.m., the STA requested a pressure level measurement which was reported at 0 psig. Apparently, the water continued to fluctuate until the second circulating water pump was secured at 3:45 a.m. The STA stated it was due to this, he recommended to the shift manager to declare an Alert. Thus, it appears the plant was actually in Alert conditions for approximately 45 minutes versus the five minutes concluded by the root cause team.

As a result of the erroneous assumption regarding the duration of the Alert, standing orders were issued which stated that an event that terminates before identification, should still be classified and reported, but not declared to implement the E-Plan. They

provided further guidance concerning a short “spike” where conditions rapidly recovered above the EAL threshold. The appropriate action implied by the briefing, was the event should have been classified after-the-fact, but not declared.

Based on information provided by the NRC, the licensee issued a revised version of the root cause report and entered this issue into their corrective action process.

Analysis: A performance deficiency occurred in which AmerGen’s staff did not properly determine the amount of time the plant was in an Alert condition as part of a root cause analysis. Not determining all the significant facts, did not meet the intent of Procedure LS-AA-125-1001, “Root Cause Analysis Manual.” The performance deficiency was that the licensee inaccurately determined the duration that Alert conditions existed during the August 6, 2005, event, and influenced some of the corrective actions that were developed to prevent recurrence. The finding was more than minor because if left uncorrected, it could have resulted in a more significant safety concern. Specifically, failure to accurately identify information pertaining to operating events can lead to deficiencies in corrective actions. Specifically, AmerGen initiated some of their immediate corrective actions and their analysis of the significance of this event based on the Alert lasting for a short duration. The inspectors also determined that this finding was indicative of a cross-cutting weakness in the area of problem identification and resolution.

This finding is not suitable for significance determination process evaluation, but has been reviewed by NRC management and is determined to be a finding of very low safety significance (Green). There was no direct impact on human performance and equipment reliability, and the NRC intervened so that appropriate corrective actions could be performed. This issue was entered into the licensee’s corrective action program as IR No. 00384615. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as **FIN 05000219/2005011-04, Inadequate Root Cause Analysis.**

Enforcement: Enforcement action does not apply because the performance deficiency did not involve an explicit violation of a requirement.

5.0 Licensee-Identified Violations

The following finding of very low significance was identified by AmerGen and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a non-cited violation.

- In accordance with 10 CFR 50.47(b)(2), adequate staffing must be provided for initial facility accident response and maintained at all times. Contrary to the above, during the August 6, 2005, event, both the STA and on-shift communicator did not perform their emergency response duties in a timely manner. This was identified in a root cause analysis report and documented in the licensee’s corrective action program as IR 360630. This finding was considered not more than Green significance because it did not constitute a failure to meet a risk significant planning standard. The inspectors determined

that this finding was indicative of a cross-cutting weakness in the area of human performance (personnel).

6.0 Meetings, including Exit

On September 23, 2005, the inspector presented the inspection results to Mr. B. Swenson and other AmerGen staff. The inspector confirmed that no proprietary information was provided or examined during the inspection.

ATTACHMENT A
SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

J. Kandasamy, Manager, Regulatory Assurance and Licensing
J. Karkoska, Exelon, MAROG EP Manager
K. Poletti, Site EP Manager
R. Detwiler, Plant Operations Manager
J. Freeman, Plant Operations Superintendent
J. Hackenberg, Training Manager
P. Cervenka, Root Cause Team Leader
R. Brown, Prompt Investigation Team Leader

New Jersey State Department of Environmental Protections

R. Russell, Nuclear Engineer, Bureau of Nuclear Engineering (BNE)
D. Zannoni, Supervisor, Nuclear Engineering, BNE

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000219/2005011-02	AV	EAL Matrix Not Reviewed For Declaring an Alert (Section 3.1)
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Opened and Closed

05000219/2005011-01	NCV	Failure to Follow Procedures (Section 2.1)
05000219/2005011-03	NCV	Untimely State/Local Notification of UE (Section 3.1)
05000219/2005011-04	FIN	Inadequate Root Cause Analysis (Section 4.1)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Procedures

Exelon Standardized Emergency Plan
Oyster Creek Radiological Emergency Plan
Oyster Creek Emergency Plan Implementing Procedures
OP-OC-100, Oyster Creek Conduct of Operations, Revision 4
EPIP-OC-.01, Classification of Emergency Conditions, Revision 14
EP-OC-114-100, State/Local Notifications, Revision 0
EP-OC-112-100, Control Room Operations, Revision 2
OP-AA-106-101-1001, Event Response Guidelines
LS-AA-125-1001, Root Cause Analysis Guidelines

Corrective Action Reports

IR No. 00360630, UE Declared on August 6, 2005 Due to Low Intake Level
IR No. 00360632, Heavy Grassing at Intake Collapses 3 North Intake Grates
IR No. 00360667, Intake Trash Rake Cable Damaged During Grating Collapse
IR No. 00360670, State/Local Phones Found Inoperable in Intake Level Event
IR No. 00360716, Opportunity To Capture Key Decisions in Operator Logs Missed
IR No. 00360956, Returned to Full Power 4.5 Hrs. Prior Than Shown
IR No. 00361537, Suggested Intake Improvements
IR No. 00362061, Problems at Intake Leading to Alert Declaration on 8/6/2005
IR No. 00362269, OCC Critique for Aug 6th Intake Grassing Event
IR No. 00362338, Revised EP-OC-114-100 Attachment 1
IR No. 00362472, Issues w/OC EAL Matrix
IR No. 00362554, Data Supports an Earlier LCO Entry Time for 8/6/5 ESW LCO
IR No. 00362628, Prompt Investigation Not Commenced in a Timely Manner
IR No. 00365568, NOS Identifies Inadequate ABN-32 Procedure Guidance
IR No. 00366205, Latest OC NLO Class did not Receive Shift Comm. DLA
IR No. 00371847, NOS ID Error Likely Situation During OC EAL Change
IR No. 00384615, Root Cause Report Missing Data Point
CAP No. 02003-2361, Plant Required Rapid Reduction in Power Due to Debris'
CAP No. 02004-0165, Unexpected Low Intake Level Event on January 16, 2004
CAP No. 02004-0123, UE Declared on January 16, 2004 Due to Low Intake Level

Miscellaneous

Root Cause Analysis, IR Number 360630, dated September 13, 2005, Revision 0
Oyster Creek Prompt Investigation Report
Independent Review Team Assessment, dated August 15, 2005, Rev. 0
State/Local Notification Form for the UE
State/Local Notification Form for Termination of the Event
Memorandum from State of New Jersey, dated August 10, 2005, Oyster Creek Event
Reactor Plant Event Notification Worksheet No. 41899
Event Summary Report
E-Plan EAL Event Termination and Shift Communicator Expectations White Paper
Operation's Standing Order Nos. 69 and 70
LS-AA-125-1001, Root Cause Investigation, dated January, 22, 2004, Low Intake Events

LIST OF ACRONYMS

ABN	Abnormal Operating Procedure
AV	Apparent Violation
CAP	Corrective Action Process
EAL	Emergency Action Level
E-Plan	Emergency Plan
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESW	Emergency Service Water
IMC	Inspection Manual Chapter
IR	Issue Report
LCO	Limiting Condition for Operation
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
Psig	Pounds per Square Inch Gauge
RO	Response Organization
RSPS	Risk Significant Planning Standard
SDP	Significant Determination Process
SM	Shift Manager
STA	Shift Technical Advisor
UE	Unusual Event

ATTACHMENT B**SEQUENCE OF EVENTS**

Entries that appear in italics are notes or observations made by the NRC inspection team. Times that appear in italics are due to approximations. All entries were obtained from control room logs, interviews conducted by both the licensee and the NRC, and event notification forms.

Initial Plant Conditions (Pre-Event) - 100% Reactor Power

Time Event

[August 5, 2005]

23:00 Higher than normal levels of grass at intake structure reported to control room. Plant personnel performed backwashing, raking and screen cleaning in attempts to keep flow through the intake screens.

[August 6, 2005]

01:57 Received alarm "k-5-e Intake Screen ^aP Hi" into the control room. *This was due to high traveling water screen differential pressure. Alarm cleared within a few minutes. This was the operator's first indication the grass was impeding water flow.*

02:05 On-shift communicator reports to intake structure from rad waste building (normal duty station) to assist in removing debris.

02:35 Received alarm "k-5-e Intake Screen ^aP Hi" for second time. Entered Abnormal Procedure "ABN-32, Abnormal Intake Level." Intake level pressure indicator is less than 1.4 psig or -2.0 ft mean sea level. *ABN-32 requires monitoring the water level at 15 minute intervals. No monitoring schedule was established. No review of EAL matrix was performed. (UE threshold is <0.94 psig and Alert threshold is <0.5 psig.)*

02:54 STA leaves control room and reports to the intake structure as field supervisor.

03:00 North side #1 traveling screen grate collapsed, traveling screen pin #1 shear pin had broken.

03:05 Control room receives report that all three traveling screens had broken shear pins. Screen damage confirmed. Performed rapid power reduction to 75% power by reducing reactor recirculation flow. Control room informed that the intake level instrument for the north side indicated 0 psig on the bubble gage. *Plant conditions for the Alert were reached at this time. Since level was not monitored it is unknown at what time conditions crossed the threshold for a UE.*

B-2

- 03:10 No.1-1 main circulator pump removed from service. *This was due to the loss of all north intake traveling screens.* No. 2 NRW SW pump was started and #1 pump was secured.
- 03:10 Water level is noted to have recovered to 0.5 psig and slowly rising. *This was not reported back to the control room.*
- 03:13 No. 1-1 service water pump removed from service. *This was due to loss of all north intake traveling screens.*
- 03:15 A-Reactor Water Cleanup removed from service. *This was due to partial loss of cooling to reactor building closed cooling water system.*
- 03:30 Entered: LCO 3.4.C.3. Unplanned. *Risk = Yellow action statement; the reactor may remain in operation for a period not to exceed 7 days provided remaining containment spray system loop and its associated emergency service water system loop each have no inoperable components and are verified daily to be operable. Emergency service water system no.1 and its associated containment spray system loop is declared inoperable due to loss of the north side screens.*
- 03:34 STA returned to control room, reviewed plant conditions and EAL matrix.
- 03:35 STA requested another reading of the water level which is reported at 0 psig. STA made recommendation to declare an Alert. *This was the first time the EAL matrix was reviewed. Although the level initially recovered at 03:10 hours, it appears the level continued to fluctuate.*
- 03:40 Power is reduced to 44% to remove loads from north side of intake structure.
- 03:40 Shift Manager reviewed EAL basis document for clarification on the Alert classification.
- 03:45 No.1-2 Main circulation water pump removed from service. All north side intake loads were transferred to the south side intake structure or removed from service.
- 03:50 Control room received report that the lower trash grate at No.1-2 traveling screen had collapsed - intake structure trash rake was stuck where the grating was damaged.
- 03:50 Control room is informed that the intake pressure gauge indicated 2.7 psig and steady. *This indicated that the plant was no longer in a Alert condition.*
- 03:55 Communicator returned to rad waste building to take required 04:00 surveillance readings.
- 04:00 No. 1-3 traveling screen returned to service.

- 04:03 SM assumed the duty of Emergency Director and declared a UE. *Shift manager log stated, "The north intake water level had been at EAL for an "Alert" but had recovered to level for EAL for a UE." The 15-minute notification clock begins.*
- 04:05 Control Room informs the communicator that he is needed in the control room.
- 04:08 Station alarm sounded and an announcement was made that a UE was declared.
- 04:10 No. 1-2 Traveling screen returned to service.
- 04:11 Communicator entered control room. Shift manager informed communicator that plant was at an Alert and de-escalated to a UE.
- 04:15 Communicator attempted to make the offsite notifications using the automatic ring-down phones. Phone was out of service. *This was due to a storm from the previous evening had tripped a circuit breaker.*
- 04:20 Communicator manually dialed telephone number. *This is the backup method to the ring-down phone.*
- 04:26 Notification completed.
- 04:30 Intake trash rake returned to service for screens 4, 5, 6 only. Upper grate on No. 1 bay and middle grates on No. 2 and No. 3 bays had collapsed.
- 04:43 NRC notified of event.
- 04:50 No. 1 screen returned to service. All north screens were in service. No. 1 and No. 2 high pressure and No. 4 low-pressure screen wash pumps were in service.
- 04:55 No. 1 service water pump returned to service.
- 0755 UE Terminated.
- 08:11 Exited procedure ABN-32. *This was due to satisfactory intake levels above the requirements to enter ABN-32.*
- 09:08 Exited LCO: 3.4.C.3. *Risk is Yellow. This is due to emergency service water system No. 1 and its associated containment spray system loop was declared operable after starting each emergency service water pump in system No. 1 and verifying pumps responded appropriately to a start and 5 minute run. There was no indication of any air binding. Discharge pressures, system flows and pump amps all were normal. The north intake was functionally available but degraded, and as such plant risk remained at yellow until both the north side intake collapsed racks were replaced and the plant returned to full power.*