

January 19, 2007

EA-07-017

Mr. Gary Van Middlesworth
Vice-President
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER
NRC EMERGENCY PREPAREDNESS INSPECTION REPORT
05000331/2006009(DRS); PRELIMINARY WHITE FINDING

Dear Mr. Van Middlesworth:

On December 5, 2006, the NRC completed an inspection at your Duane Arnold Energy Center. The enclosed report documents the inspection findings, which were discussed at an initial exit meeting on October 19, 2006, with you and members of your staff. Following the on site inspection, additional information was provided by your staff that was reviewed in the Region III office. Following review of this additional information, an exit meeting was conducted with you and members of your staff by telephone on December 5, 2006.

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 selected procedures and records, observed activities, and interviewed personnel. Specifically, this inspection focused on emergency preparedness, including your staff's determinations of performance indicators for the Emergency Preparedness Cornerstone.

The inspection also included a review of the circumstances involving the failure of the Duane Arnold Energy Center full-scale exercise critique presented to the NRC on October 19, 2006, to identify a weakness associated with a risk-significant planning standard (RSPS). Specifically, the licensee's critique did not identify a performance weakness associated with a failure to recognize an emergency action level entry condition. Based on the NRC's review of this issue, the failure of the licensee's full-scale exercise critique to identify a weakness associated with an RSPS is a performance deficiency and an Apparent Violation of emergency preparedness planning standard 10 CFR 50.47(b)(14), associated RSPS 10 CFR 50.54(b)(4), and the requirements of Section IV.F.2.g of Appendix E to 10 CFR Part 50.

This finding was assessed using the applicable Emergency Preparedness Significance Determination Process (SDP) and was preliminarily determined to be of low-to-moderate safety

significance (White) because the planning standard (PS) function was lost in that the critique presented to the NRC failed to identify a performance weakness during a full-scale exercise, where there were multiple emergency response facilities (ERFs) participating as discussed in NRC Inspection Manual Chapter 0609, Appendix B, Section 4.14. Additional details associated with this determination are discussed in Section 1EP1 of the enclosed inspection report.

Before we make a final decision on this matter, we are providing you with an opportunity to: (1) attend a Regulatory Conference where you can present to the NRC your perspective on the facts and assumptions the NRC used to arrive at the finding and assess its significance; 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. If you decide to submit only a written response, such submittal should be sent to the NRC within 30 days of your receipt of this letter.

Please contact Mr. Kenneth Riemer at (630) 829-9757 within 10 business days of the date of your receipt of this letter to notify the NRC of your intentions. If we have not heard from you within 10 business 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.

Since the NRC has not made a final determination in this matter, no Notice of Violation is being issued for this inspection finding at this time. In addition, please be advised that the number and characterization of the Apparent Violation(s) described in the enclosed inspection report may change as a result of further NRC review.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Cynthia D. Pederson, Director
Division of Reactor Safety

Docket No. 50-331
License No. DPR-49

Enclosure: Inspection Report 05000331/2006009(DRS)
w/Attachment: Supplemental Information

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Docket No. 50-331
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Enclosure: Inspection Report 05000331/2006009(DRS)
w/Attachment: Supplemental Information

See Previous Concurrence

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J. Bjorseth, Site Director
D. Curtland, Plant Manager
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-331
License No: DPR-49

Report No: 05000331/2006009(DRS)

Licensee: Florida Power and Light Energy Duane Arnold, LLC

Facility: Duane Arnold Energy Center

Location: Palo, Iowa

Dates: October 16 through December 5, 2006

Inspectors: T. Ploski, Senior Emergency Preparedness Inspector
R. Jickling, Senior Emergency Preparedness Inspector
K. Stoedter, Senior Resident Inspector
R. Walton, Licensed Operator Examiner
M. Garza, Emergency Response Specialist

Observer: J. McGhee, Reactor Engineer

Approved by: K. Riemer, Chief
Plant Support Branch
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000331/2006009(DRS); 10/16/2006 - 12/05/2006; Duane Arnold Energy Center; Emergency Preparedness Specialist Report.

The report covers a baseline inspection by two regional emergency preparedness inspectors, a senior resident inspector, a licensed operator examiner, and an emergency response specialist. One Apparent Violation (AV), with potential safety significance greater than Green, was identified during the biennial emergency preparedness exercise inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (MC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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. Inspector-Identified and Self-Revealing Findings

Cornerstone: Emergency Preparedness

- TBD. The inspectors identified a finding when the licensee's critique presented to the NRC on October 19, 2006, failed to properly identify a weakness that was associated with a risk significant planning standard.

The finding was more than minor because it was associated with the Emergency Preparedness Cornerstone and affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's critique did not identify a performance weakness associated with a failure to recognize an emergency action level entry condition. Additionally, the critique failed to adequately identify a weakness that demonstrated a level of performance that could preclude effective implementation of the Emergency Plan in an actual emergency. This finding potentially has low to moderate safety significance (White) because the licensee's exercise critique failed to identify a weakness that is associated with a RSPS.

One AV has been identified. The AV is associated with Emergency Preparedness Planning Standards 10 CFR 50.47(b)(14), and 10 CFR 50.47(b)(4), and the requirements of Section IV.F.2.g of Appendix E to 10 CFR Part 50. (Section 1EP1).

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the October 18, 2006, biennial emergency preparedness exercise's objectives and scenario to ensure that the exercise would acceptably test major elements of the licensee's emergency plan, and to verify that the exercise's simulated problems provided an acceptable framework to support demonstration of the licensee's capability to implement its plan. The inspectors also reviewed records of a sample of six emergency preparedness drills, which were conducted during 2005 and 2006, to verify that those drills' scenarios were sufficiently different from the scenario used in the October 2006 exercise.

The inspectors evaluated the licensee's exercise performance, focusing on the risk-significant activities of emergency classification, notification, and protective action decision making, as well as implementation of accident mitigation strategies in the following emergency response facilities:

- Control Room Simulator (CRS);
- Technical Support Center (TSC);
- Operations Support Center (OSC); and
- Emergency Operations Facility (EOF).

The inspectors also assessed the licensee's recognition of abnormal plant conditions, transfer of responsibilities between facilities, internal communications, interfaces with offsite officials, readiness of emergency facilities and related equipment, and overall implementation of the licensee's emergency plan.

The inspectors attended post-exercise critiques in the CRS, TSC, OSC, and EOF to evaluate the licensee's initial self-assessment of its exercise performance. The inspectors later met with the licensee's lead exercise evaluators and management to obtain the licensee's final assessments of its exercise participants' performances. These assessments were then compared with the inspectors' independent observations and evaluations to assess the licensee's ability to adequately critique its exercise performance. The inspectors reviewed additional information submitted by the licensee which included a position paper on the emergency action level timeline, dated October 25, 2006 "Apparent Cause Evaluation, Number 001661," dated November 20, 2006 and "Apparent Cause Evaluation, Number 00161, Revision 1," dated December 25, 2006.

These activities completed one inspection sample.

b. Findings

Introduction: The inspectors identified a finding when the licensee's critique presented to the NRC failed to properly identify a weakness that was associated with a risk significant planning standard. One Apparent Violation (AV) has been identified. The AV is associated with Emergency Preparedness Planning Standards 10 CFR 50.47(b)(14) and 10 CFR 50.47(b)(4) and the requirements of Section IV.F.2.g of Appendix E to 10 CFR Part 50.

Description: The Emergency Preparedness Cornerstone licensee response band is established by the performance indicator (PI) scheme and the licensee's corrective action program. Identified weaknesses come from drill and exercise critiques. The baseline inspection program is based on identification and correction of these performance weaknesses and on accurate PI data. The drill and exercise performance (DEP) PI is based on the licensee's ability to determine whether a PI opportunity is successful. A single failure to identify a weakness associated with a risk-significant planning standard (RSPS) during a full-scale exercise is a high standard based on NRC's need to ensure the efficacy of the licensee's critique program. Thus, a licensee's ability to observe, evaluate, and critique a weakness associated with an RSPS is critical.

The inspectors determined that the licensee's exercise critique failed to identify a weakness that occurred during the exercise on October 18, 2006. In the simulator control room, the NRC evaluators observed a loss of the first fission product barrier (FPB) at 9:20 a.m. when indications of greater than five rem per hour in the drywell occurred. The weakness was that the simulator control room crew failed to recognize the indications available to them at 10:50 a.m. for a loss of the containment resulting in the loss of the second FPB.

At 10:50 a.m. the inspectors observed torus-to-reactor building vacuum breaker valves showing dual red-green indicator lights lit for CV4304 and both lights were extinguished for V43-169. Dual indication means that a valve is partially open. No indication means that the valve's status is indeterminate. The valves position lights indicated a potential release path to the environment was available. The valves position indication lights changed as expected at 10:50 a.m., as described in the licensee's scenario timeline and also for the DEP PI. The licensee's expectation was that the operators in the control room simulator would observe the change in valve position indications and recognize a release pathway to the environment, as other operators had on previous scenario validation runs.

The Duane Arnold Energy Center's (DAEC) Emergency Plan initiating conditions in "Table F-1, Fission Product Barrier Matrix," Revision 7, dated December 16, 2005, for a Loss of the Primary Containment Barrier was the following:

LEAKAGE

Failure of both valves in any one line to close and a downstream pathway to the environment exists.

OR

Unisolable primary system leakage outside the drywell as indicated by area temperatures or area radiation monitors exceeding the maximum safe limits per EOP3, Table 6, when containment isolation is required.

OR

Primary containment venting per EOPs.

OR

PRIMARY CONTAINMENT ATMOSPHERE

Rapid unexplained decrease following initial increase in pressure.

OR

Drywell pressure response not consistent with loss of coolant accident conditions.

Of the emergency action level (EAL) conditions listed above, only the first EAL condition, "Failure of both valves in any one line to close and a downstream pathway to the environment exists," was present at 10:50 a.m.

DAEC's emergency action level scheme identified that under EAL FS1, "Loss or Potential Loss of Any Two (Fission Product) Barriers (Table F-1)," a Site Area Emergency (SAE) should be declared. The first FPB had been lost earlier at 9:20 a.m. when indications of greater than five rem per hour in the drywell occurred. The second FPB was lost at 10:50 a.m. with the indications on the torus-to-reactor building vacuum breaker valves and a potential pathway to the environment existed. Together, the 9:20 a.m. and 10:50 a.m. indications met the conditions for declaring a SAE using EAL FS1.

At 10:54 a.m. the inspectors in the simulator control room, observed that the Technical Support Center recognized the increase in the stack radiation release rate and asked the operators if there was an increase in the offgas stack radiological release rate. At 10:56 a.m., the operators notified the TSC that there was a release pathway to the environment. At 11:02 a.m., the Shift Manager in the simulator control room announced the reactor building vacuum breaker failure and the release pathway to the environment. At 11:11 a.m., the Emergency Coordinator in the TSC declared a SAE based on loss of two FPBs (21 minutes after indications were initially available).

The inspectors identified that operators did not recognize the change in the valve

position indications available to them and therefore did not take proper actions for the emergency conditions. The operators' failure to recognize the valve position indications available to them delayed them from recognizing the threshold for entering the SAE event classification, even after they were prompted by the TSC concerning changes in plant conditions. The failure to take action by the operators led to a delay in classification of the SAE.

This control room crew weakness was not identified or critiqued by the licensee which is the basis for the preliminary White finding. Due to the failure of the licensee to critique the operators' weakness, the licensee also inappropriately evaluated the DEP PI for classification timeliness as a PI success.

Analysis: The inspectors determined that the failure of the licensee's critique to identify the operators' performance weakness was a performance deficiency which warranted a significance evaluation. The Emergency Preparedness Cornerstone was impacted by this finding. The inspectors determined that the finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Disposition Screening," because it is related to the attribute of response organization performance and adversely impacted the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. More specifically, the licensee's critique failed to identify the fact that the operators in the control room simulator did not recognize indications available to them and did not take proper actions for these conditions. This delayed them from recognizing the threshold for entering the SAE event classification.

The finding is an identified weakness that demonstrated a level of performance that could preclude effective implementation of the Emergency Plan in an actual emergency. This finding is also determined to potentially have greater than Green significance because the licensee's exercise critique process failed to properly identify a weakness associated with an RSPS that was determined to be a DEP PI opportunity failure during a full-scale exercise.

Using IMC 0609, Appendix B, Sheet 1 (Failure to Comply) and Section 4.14, the inspectors preliminarily determined the finding to be of low to moderate safety significance (White). A loss of PS function occurred when the exercise critique process failed to identify the operator's performance as a weakness associated with an RSPS. According to IMC 0609, failure to critique the delayed classification is considered a loss of PS function and a White finding.

Section IV.F.2.g of Appendix E to 10 CFR Part 50 requires in part, licensees to conduct critiques to identify weak or deficient areas. Any weaknesses or deficiencies that are identified shall be corrected. The identification and correction of weaknesses is fundamentally important to the EP Cornerstone Objective. Failure of a critique to identify a weakness is a finding with a corresponding potential violation of 10 CFR 50.47(b)(14) and Section IV.F.2.g of Appendix E to 10 CFR Part 50.

Enforcement: The 10 CFR 50.47(b)(14) requires, in part, that periodic exercises be conducted to evaluate major portions of emergency response capabilities and that deficiencies identified as a result of exercises are corrected.

The 10 CFR 50.47(b)(4) requires, in part, that a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and that State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Section IV.F.2.g of Appendix E to 10 CFR Part 50 requires that all training, including exercises, shall provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected.

Contrary to the above, on October 19, 2006, during the critique of the October 18, 2006 exercise, the licensee failed to identify a weakness that led to a delay in classification once conditions for a Site Area Emergency were met.

This finding is identified as AV 05000331/2006009-01, failure of the exercise critique to identify an RSPS weakness. This issue has been entered into the licensee's corrective action system as CAP 044936, "Biennial Exercise Scenario Identified an Incorrect Time Zero for the Site Area Emergency Declaration" and CAP 044942, "Site Area Emergency Declaration Did Not Match Scenario Time Line."

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Emergency Preparedness

.1 Reactor Safety Strategic Area

a. Inspection Scope

The inspectors reviewed the licensee's records associated with each of the three emergency preparedness PIs to verify that the licensee's program was implemented consistent with the industry guidelines in NEI Publication No. 99-02, "Regulatory Assessment Performance Indicator Guideline," and related licensee procedures. Specifically, licensee records related to the performance of the Alert and Notification System (ANS), key Emergency Response Organization (ERO) members' drill participation, and DEP were reviewed to verify the accuracy and completeness of the PI data submitted to NRC for the period from April 1, 2005, through June 30, 2006. The following three PIs were reviewed:

- ANS;
- ERO Drill Participation; and
- DEP.

These activities completed three PI samples.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meetings

Exit meetings were conducted for:

- Emergency Preparedness with Mr. G. Van Middlesworth and other members of licensee management and staff on October 19, 2006. The licensee acknowledged the information presented. No proprietary information was identified.
- Following assessment of additional information submitted by the licensee in late October and late November 2006, a second exit meeting was conducted with Mr. G. Van Middlesworth and other members of licensee management and staff on December 5, 2006. The licensee acknowledged the information presented. No proprietary information was identified.

.2 Public and Media Briefing

- On October 20, 2006, an inspector summarized NRC's preliminary exercise inspection conclusions at a public and media briefing hosted by Department of Homeland Security Region VII Field Office staff in Cedar Rapids, Iowa.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Anderson, Business Support Manager
A. Browning, Acting Licensing Manager
S. Catron, Licensing Manager
D. Curtland, Plant Manager
M. Davis, Emergency Preparedness Coordinator
S. Haller, Engineering Director
C. Kress, Outage Manager
D. Lowens, Quality Assurance Manager
J. Morris, Training Manager
D. Mothena, Fleet Emergency Preparedness Manager
R. Murrell, Regulatory Affairs
R. Nelson, Communications Manager
G. Pry, Maintenance Manager
G. Rushworth, Operations Manager
P. Sullivan, Emergency Preparedness Manager
R. Titus, Emergency Preparedness Coordinator
G. Van Middlesworth, Site Vice President
J. Windschill, Radiation Protection Manager
B. Wohlers, Project Manager
T. Zimmerman, Emergency Preparedness Coordinator

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

AV 05000331/2006009-01

Failure of the licensee's exercise critique process to properly identify a weakness associated with a risk significant planning standard during a full-scale exercise.

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1EP1 Exercise Evaluation

Duane Arnold Energy Center October 2006 Exercise Scenario Manual

Slide Presentation; October 2006 Exercise Critique Conclusions

September 2006 Integrated Drill Scenario

May 2006 Full Scale Drill Scenario

2006 Training Drill II Report; dated April 12, 2006

2006 Training Drill I Report; dated February 22, 2006

2005 Off-Year Drill Report; dated October 19, 2005

2005 Off-Year Practice Drill Report; dated October 5, 2005

Emergency Action Level Technical Bases Document

EPIP 1.1; Determination of Emergency Action level; Revision 26

EPIP 1.2; Notification; Revision 33

EPIP 1.3; Plant Assembly and Site Evacuation; Revision 11

EPIP 1.5; Activation and Operation of the EOF; Revision 7

EPIP 2.1; Activation and Operation of the OSC; Revision 14

EPIP 2.2; Activation and Operation of the TSC; Revision 24

EPIP 2.5; Control Room Emergency response Operations; Revision 16

EPIP 3.1; In-Plant Radiological Monitoring; Revision 15

EPIP 3.3; Dose Assessment and Protective Action; Revision 21

EPIP 4.3; Rescue and Emergency Repair Work; Revision 14

EPIP Form EAL-01

Relevant Excerpts from EAL Technical Bases Document

ACE 001661, Revision 1; 2006 Biennial Exercise Identified Incorrect Start Time for Site Area Emergency Declaration; dated December 20, 2006

ACE 001661; 2006 Biennial Exercise Identified Incorrect Start Time for Site Area Emergency Declaration; dated November 20, 2006

Position Paper; Timeliness of Site Area Emergency Declaration During October 18, 2006, Biennial Exercise; dated October 25, 2006

CAP 044936; Biennial Exercise Scenario Identified an Incorrect "Time Zero" for the Site Area Emergency Declaration; dated October 19, 2006

CAP 044941; DEP PI Evaluation Process Was Not Completed Prior to the Exercise Critique Presentation; dated October 20, 2006

CAP 044942; Site Area Emergency Declaration Did Not Match Scenario Time Line; dated October 20, 2005

4OA1 Performance Indicator Verification

Emergency Planning Department Manual 1010; Emergency Planning Department Performance Indicators; Revision 6

Sample of ERO Participation PI Records from April 2005 through June 2006

Sample of DEP Performance Indicator Data from April 2005 through June 2006

Sample of Emergency Planning Zone Sirens' Test Reports and Associated Records from April 2005 through June 2006

Emergency Planning Zone Siren System Description Document

Apparent Cause Evaluation 001561; 14 Sirens Failed During January 2006 Test

NRC Event Report 42299; Unusual Event Due to Loss of Communications with Most Offsite Agencies; dated February 1, 2006

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Documents Access and Management System
ANS	Alert and Notification System
AV	Apparent Violation
CA	Corrective Action
CAP	Corrective Action Program (record)
CFR	Code of Federal Regulations
CRS	Control Room Simulator
DAEC	Duane Arnold Energy Center
DEP	Drill and Exercise Performance
EAL	Emergency Action Levels
EOF	Emergency Operations Facility
EPIP	Emergency Plan Implementing Procedure
ERF	Emergency Response Facility
ERO	Emergency Response Organization
FPB	Fission Product Barrier
IR	Inspection Report
IMC	Inspection Manual Chapter
NEI	Nuclear Energy Institute
NRC	United States Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide
OSC	Operations Support Center
PARS	Publicly Available Records
PI	Performance Indicator
PS	Planning Standard
RSPS	Risk Significant Planning Standard
SBGTS	Standby Gas Treatment System
SDP	Significance Determination Process
TSC	Technical Support Center