



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

October 29, 2010

Mr. Barry Allen  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Davis-Besse Nuclear Power Station  
5501 North State Route 2, Mail Stop A-DB-3080  
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION  
SUPPLEMENTAL INSPECTION REPORT 05000346/2010503(DRS)**

Dear Mr. Allen:

On September 27, 2010, the U. S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," at your Davis-Besse Nuclear Power Station. The enclosed report documents the results of this inspection, which were discussed on September 27, 2010, with you and other members of your staff.

As required by the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was conducted because a finding of White safety significance was identified in the fourth quarter 2009. This issue was documented previously in NRC Inspection Report 05000346/2009503, dated December 28, 2009, and involved the failure to implement the emergency classification and action level scheme during an actual event of an explosion in the switchyard. The NRC staff was informed by letter received on April 1, 2010, of your staff's readiness for this inspection.

The objectives of this supplemental inspection were to provide assurance that: (1) the root causes and the contributing causes for the risk-significant issues were understood; (2) the extent of condition and extent of cause of the issues were identified; and (3) corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes. The inspection consisted of examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license.

Based on the results of this inspection, no findings of significance were identified. However, the NRC concluded that the extent of cause review performed by your staff was narrow in scope in that it did not consider the root causes that led to the White finding. The NRC also concluded that the corrective actions were one-time actions that will not necessarily preclude repetition of the issue and were narrow in scope. As a result of these conclusions, the NRC will not close the White finding. Instead, the NRC will re-perform those portions of the supplemental inspection that precluded closing of the White finding. This inspection will be performed in accordance with Inspection Procedure 95001 following completion of your actions to address concerns identified in the enclosed report.

B. Allen

-2-

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 available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Anne T. Boland, Director  
Division of Reactor Safety

Docket No. 50-346  
License No. NPF-3

Enclosure: Inspection Report 05000346/2010503  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346

License No: NPF-3

Report No: 05000346/2010503

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, Ohio

Dates: August 16 through September 27, 2010

Inspectors: M. Garza, Emergency Response Specialist

Approved by: H. Peterson Chief  
Operations Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR 05000346/2010503; 08/16/2010 – 09/27/2010; Davis-Besse Nuclear Power Station;  
Supplemental Inspection IP 95001

This report covers a five-week period of inspection conducted by one Region III emergency preparedness inspector. No findings of significance were identified. However, based on an incomplete Extent of Condition and one-time corrective actions that were limited in scope, the White finding will remain open. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

### A. NRC-Identified and Self-Revealed Findings

#### **Cornerstone: Emergency Preparedness**

The NRC staff performed this supplemental inspection in accordance with Inspection Procedure (IP) 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," to assess the licensee's evaluation associated with the failure to implement the emergency classification and action level scheme during an actual event of an explosion in the switchyard. The NRC staff previously characterized this issue as having low to moderate safety significance (White) as documented in NRC Inspection Report 05000346/2009503. During this supplemental inspection, the inspectors determined that the licensee performed an adequate evaluation of the specific performance issue and adequately identified the root causes and contributing causes. However, the inspectors determined that weaknesses in the licensee's extent of cause review and corrective actions preclude closure of the White finding. Therefore, the White finding will remain open.

No findings of significance were identified.

### B. Licensee-Identified Violations

No violations of significance were identified.

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA4 Supplemental Inspection (95001)

##### .01 Inspection Scope

The NRC staff performed this supplemental inspection in accordance with IP 95001 to assess the licensee's evaluation of a White finding, which affected the emergency preparedness cornerstone in the reactor safety strategic performance area. The inspection objectives were to:

- provide assurance that the root and contributing causes of risk-significant issues were understood;
- provide assurance that the extent of condition and extent of cause of risk-significant issues were identified; and
- provide assurance that the licensee's corrective actions for risk-significant issues were or will be sufficient to address the root and contributing causes and to preclude repetition.

The Davis-Besse Nuclear Power Station (DBNPS) entered the Regulator Response Column of the NRC's Action Matrix in the fourth quarter of 2009 as a result of one inspection finding of low to moderate safety significance (White). The finding was associated with a failure to implement the emergency classification and action level scheme during an actual event for an explosion in the switchyard on June 25, 2009. Licensee staff failed to assess and recognize the hazard to the station's operations met the emergency action level conditions for declaring an Alert.

The finding was characterized as having White safety significance based on the results of a Significance Determination evaluation performed by a region-based emergency preparedness inspector, as discussed in Inspection Report 05000346/2009503.

The NRC was informed by letter received on April 1, 2010, that the licensee was ready for the supplemental inspection. In preparation for the inspection, the licensee performed a root cause evaluation (RCE) to identify the root cause of this event and any other weaknesses that existed in various organizations which allowed for a risk-significant finding and to determine organizational attributes that resulted in the White finding.

The inspector reviewed the licensee's RCE in addition to other condition reports that were generated as a result of the event. The inspector reviewed corrective actions that were taken or planned to address the identified causes. The inspector also held discussions with licensee personnel to ensure that the root and contributing causes and the contribution of safety culture components were understood and corrective actions taken or planned were appropriate to address the causes and preclude repetition.

.02 Evaluation of the Inspection Requirements

02.01 Problem Identification

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

The licensee's RCE of the issue documents that licensee staff identified that an Alert should have been declared for the explosion that occurred on June 25, 2009. As described in the evaluation, this was identified by the licensee about seven hours after the explosion had occurred. The inspector determined that the licensee's evaluation of the issue appropriately documents who identified the issue and the conditions under which it was identified.

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

The timeline in the licensee's RCE indicates that the explosion occurred at 0048 on June 25, 2009. Licensee personnel determined that Alert conditions existed at the time of the explosion at 0750 that same morning. There were several opportunities throughout this time period where licensee staff could have identified Alert conditions. There were many discussions of an explosion via the intra-security radio transmissions. There were also several calls that were made to the control room describing the conditions in the Switchyard. The inspector determined that the licensee's evaluation of the issue appropriately documents how long the issue existed and prior opportunities for identification.

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

The RCE discusses that this issue was a White finding and that DBNPS failed to activate their full emergency response organization to assist in mitigating the event that occurred on June 25, 2009. The evaluation also stated that State and Local offsite agencies, which rely on information provided by the facility licensee, were not able to take initial offsite measures. The inspector determined that the licensee's evaluation adequately documents the plant specific risks and compliance concerns associated with the issue.

- d. Findings

No findings of significance were identified.

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

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

The root cause evaluator reviewed procedures, condition reports, training records, security and control room phone/radio recordings, and conducted interviews to create a timeline and an Event and Causal Factors Chart. The TapRoot methodology was used to determine the Causal Factors. A Performance Gap Analysis was also conducted. The root causes that were identified were “communication incomplete,” specifically, communication between the Site Security and Operations department; “change management” and “self-checking,” specifically, a procedure change was made related to how an Explosion is defined and training on the change did not occur. The contributing causes identified were “less than adequate procedure content,” and “less than adequate continuing training.” The inspector determined that the licensee evaluated the issue using a systematic methodology to identify root and contributing causes.

- b. Inspection Procedure 95001 requires that the inspection staff determine that the licensee’s RCE was conducted to a level of detail commensurate with the significance of the issue.

The licensee’s RCE includes a problem statement, event narrative (that includes a detailed timeline), an event and causal factor chart, a summary of the main conclusions from the chart, data analysis of each causal factor, why questions, a performance gap analysis, an assessment on safety culture, an evaluation of operating experiences (OE), extent of condition evaluation, a discussion of the root and contributing causes and corrective actions to address root causes as well as a discussion of corrective actions that were previously recommended to address the issue, and an effectiveness review plan. The inspector determined that the licensee’s RCE was conducted at a level of detail commensurate with the significance of the issue.

- c. Inspection Procedure 95001 requires that the inspection staff determine that the licensee’s RCE included a consideration of prior occurrences of the issue and knowledge of OE.

The RCE discussed the results of an OE review that was conducted on the INPO website as well review of similar issues within FENOC. The inspector determined that the licensee’s root cause included a consideration of prior occurrences of the issue and knowledge of OE.

- d. Inspection Procedure 95001 requires that the inspection staff determine that the licensee’s RCE addresses the extent of condition and extent of cause of the issue.

The licensee’s RCE addressed the extent of condition. The RCE considered the extent of condition associated with various procedure changes that were recently made to determine if training on the changes was necessary. The licensee’s evaluation included a review of off-normal procedures to determine if the initiating conditions needed validation steps. The evaluation also included a review of missed drill and exercise performance opportunities for missed classification.

The licensee's RCE contains an extent of cause review. However, the inspectors determined that the extent of cause was narrow in scope because it only considered missed classification issues that occurred onsite and did not consider the root causes: "communication incomplete" and "change management." By not conducting a more thorough extent of cause review, there was a missed opportunity to correct potential issues that involve inter-department communication and procedure change management.

Since the extent of cause review did not consider the root causes that led to the White finding, the White finding will remain open. The licensee has entered this issue into their corrective action program and will re-perform the extent of cause.

- e. Inspection Procedure 95001 requires that the inspection staff determine that the licensee's root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0305.

The licensee's RCE contained a Safety Culture Aspect Review and Justification Matrix. This included a review of the five causal factors and determined how they related to the Safety Culture Attributes that are described in NOBP-LP-2011, FENOC Cause Analysis. This review determined that there were a few safety culture aspects associated with this event. The first safety culture aspect is "Systematic Process" because station personnel failed to make safety significant decisions using a systematic process and failed to obtain adequate reviews on the decisions that were made during the event on June 25, 2009. Another safety culture aspect is "Communication" because less than adequate communication and questioning attitude was demonstrated between Site Protection and Operations personnel. The inspectors determined that the licensee's RCE contains proper consideration of whether a weakness in any safety culture attribute was related to the root causes and contributing causes to this event.

- f. Findings

No findings of significance were identified. However, due to the lack of the licensee's extent of cause review, this White finding will remain open.

#### 02.03 Corrective Actions

- a. Inspection Procedure 95001 requires that the inspection staff determine that: (1) the licensee specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation that states no actions are necessary is adequate.

There were several corrective actions taken by the licensee that resulted from condition reports written following the switchyard explosion event. The RCE lists these corrective actions and how they are related to and address the root causes that were identified. There were also a few corrective actions generated as a direct result of the RCE. The inspectors reviewed all of the corrective actions that were listed in the licensee's evaluation and determined that the actions were appropriate. However, the corrective actions were short-term actions which included, email messages, presentations, and one-time training sessions to various site personnel on lessons learned from the event. By not including lessons learned in processes like training curriculum or in procedures, the licensee missed an opportunity to benefit from the lessons learned on a long-term basis.

Based on the corrective actions being short-term and one-time actions, the White finding will remain open. The licensee has entered this issue into their corrective action program and will evaluate developing long-term corrective actions to address the root causes.

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

The licensee's corrective actions to address the root and contributing causes were appropriately prioritized. The inspectors determined that the corrective actions were prioritized with consideration of the risk significance and regulatory compliance.

- c. Inspection Procedure 95001 requires that the inspection staff determine that the licensee established a schedule for implementing and completing the corrective actions.

The licensee established appropriate due dates for the corrective actions that had not been completed as of the inspection end date and completion dates were identified for corrective actions completed. The inspectors determined that a schedule had been established for implementing and completing the corrective actions.

- d. Inspection Procedure 95001 requires that the inspection staff determine that the licensee developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.

The inspectors determined that the licensee's RCE describes an Effectiveness Review Plan to determine the effectiveness of the corrective actions to preclude repetition.

- e. Inspection Procedure 95001 requires that the inspection staff determine that the licensee's planned or taken corrective actions adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The NRC issued an NOV to the licensee on February 25, 2010. As part of the corrective actions, the emergency action levels (EALs) in RA-EP-01500, Emergency Classification, Revision 11 were changed to address and clarify EAL entry conditions during a fire or an explosion. This change aligns Davis-Besse EALs with the new changes in NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 5.

- f. Findings

No findings of significance were identified. However, due to the licensee's corrective actions being short-term and one-time actions, this White finding and NOV will remain open.

4OA6 Exit Meeting

.01 Exit Meeting Summary

On September 27, 2010, the inspectors presented the inspection results to Mr. B. Allan, by telephone conference and other members of the Davis-Besse staff, who acknowledged the inspector's conclusions for this inspection. The licensee indicated that there was no material examined during this inspection that was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee

B. Allen, Davis Besse Site Vice President  
B. Boles, Davis Besse Director/Plant Manager  
J. Vetter, Davis Besse Emergency Response Manager  
J. Sturdavant , Davis Besse Senior Compliance Specialist

Nuclear Regulatory Commission

D. Kimble, Senior Resident Inspector  
A. Wilson, Resident Inspector  
H. Peterson, Chief, Operations Branch  
B. Dickson, Chief, Plant Support Team

**List of Items Opened, Closed and Discussed**

Discussed

05000346/1009503-01	VIO	Failure to Use Classification Scheme for an Allert
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## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or 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.

### 40A4 Supplemental Inspection

NOP-LP-2001; Corrective Action Program; Revision 26  
NOBP-LP-2011; FENOC Cause Analysis; Revision 10  
NORM-LP-2003; Analytical Methods Guidebook; Revision 2  
NOBP-LP-2010; CREST Trending Codes; Revision 9  
RA-EP-01500; Emergency Classification; Revision 10  
RA-EP-01500; Emergency Classification; Revision 11  
RA-EP-01500; Emergency Classification; Revision 12  
RA-EP-02840; Explosion; Revision 04  
RA-EP-028 50; Hazardous Chemical and Oils Spills; Revision 6  
RE-EP-00100; Emergency Plan Training Program; Revision 16  
DBRM-EMER-1500A; Davis-Besse Emergency Action Level Basis Document;  
Revision 1  
DBRM-EMER-1500A; Davis-Besse Emergency Action Level Basis Document;  
Revision 2  
CR 09-69475; Switchyard White Finding Root Cause Evaluation and Corrective Actions  
CR 09-61038; Security (DBSP) to Critique Opportunities for Improvement on Response  
to Switchyard Event  
CR 09-61115; Transitory Alert Emergency Classification Declared Following Switchyard  
Event  
CR 09-62916; Lessons Learned (Operations-DBOP): Switchyard Event NRC Follow-up  
Inspection  
CR 09-62919; Lessons Learned (Security-DBSP): Switchyard Event NRC Follow-up  
Inspection  
CR 09-65326; NRC Performance Indicator (PI) for Drill/Exercise Performance in Action

## **LIST OF ACRONYMS USED**

ADAMS	Agencywide Document Access Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
EAL	Emergency Action Level
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IR	Inspection Report
LOOP	Loss of Off-site Power
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOV	Notice of Violation
NRC	U. S. Nuclear Regulatory Commission
OE	Operating Experiences
PARS	Publicly Available Records System
PI	Performance Indicator
RCE	Root Cause Evaluation
SDP	Significance Determination Process

B. Allen

-2-

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Sincerely,

*/RA/*

Anne T. Boland, Director  
Division of Reactor Safety

Docket No. 50-346  
License No. NPF-3

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