

September 21, 2001

Mr. Guy G. Campbell  
Vice President - Nuclear  
FirstEnergy Nuclear Operating Company  
Davis-Besse Nuclear Power Station  
5501 North State Route 2  
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION  
NRC INSPECTION REPORT 50-346/01-11 (DRP)

Dear Mr. Campbell:

On August 23, 2001, the NRC completed an inspection at your Davis-Besse Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on August 30, 2001, with you and other members of your staff.

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.

No findings of significance were identified.

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Sincerely,

**/RA/**

Christine A. Lipa, Chief  
Branch 4  
Division of Reactor Projects

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

Enclosure: Inspection Report 50-346/01-11(DRP)

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                 R. Owen, Ohio Department of Health  
                 A. Schriber, Chairman, Ohio Public  
                 Utilities Commission

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-346/01-11(DRP)

Licensee: FirstEnergy Nuclear Operating Company

Facility: Davis-Besse Nuclear Power Station

Location: 5501 North State Route 2  
Oak Harbor, OH 43449-9760

Dates: July 1 through August 23, 2001

Inspectors: K. Zellers, Senior Resident Inspector  
D. Simpkins, Resident Inspector  
K. Green-Bates, Reactor Engineer  
J. Larizza, Fermi Resident Inspector

Approved by: Christine A. Lipa, Chief  
Branch 4  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000346-01-11(DRP), on 07/01-08/23/2001, FirstEnergy Nuclear Operating Company, Davis-Besse Nuclear Power Station. Routine Resident Inspector Report.

This report covers a 7-week routine inspection conducted by resident inspectors and a region-based reactor engineer. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

A. Inspector Identified Findings

No findings of significance were identified.

B. Licensee Identified Findings

No findings of significance were identified.

## Report Details

### Summary of Plant Status

The plant operated at 100 percent power throughout most of the inspection period. Exceptions were for brief power reductions to about 93 percent for turbine testing, and to 90 percent at the request of the system dispatcher.

## **1. REACTOR SAFETY**

### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### 1R04 Equipment Alignments (71111.04)

##### a. Inspection Scope

The inspectors conducted partial walk-down inspections of risk significant equipment by comparing station configuration control documentation with actual system/train lineups for:

- #2 Low Pressure Injection train during a #1 Low Pressure Injection train outage
- #2 Emergency Diesel Generator (EDG) during a #1 EDG outage

##### b. Findings

No findings of significance were identified.

#### 1R05 Fire Protection (71111.05)

##### a. Inspection Scope

The inspectors walked down selected risk significant areas looking for any fire protection issues related to: the control of transient combustibles, ignition sources, fire detection equipment manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, and barriers to fire propagation. Areas walked down were the heater bays, deaerator storage tank area, control room, cable spreading room, condensate storage tank room, circulating water bay, main steamline rooms, service water rooms and pipe tunnel, diesel fire pump room, dilution pump room, electric fire pump area, diesel fuel storage areas and outside fire lockers.

##### b. Findings

No findings of significance were identified.

## 1R06 Flood Protection Measures

### a. Inspection Scope (71111.06)

The inspectors followed up licensee resolution for NRC Information Notice 2000-20, "Potential Loss of Redundant Safety-Related Equipment Because of the Lack of High-Energy Line Break Barriers," as part of the Problem Identification and Resolution portion of inspection procedure 71111.06. This was evaluated as part of this procedure to assess the potential for flooding of risk significant equipment with high temperature steam or water.

### b. Findings

The licensee's evaluation of IN 2000-20 identified that design basis documentation pertaining to steam line breaks in the turbine building was potentially incomplete. For example, steam impingement effects from a postulated break in the turbine building on risk-significant high and low voltage switchgear room doors and component cooling water system doors have not been evaluated against standard review plan criteria. Additionally, the auxiliary feedwater pump and component cooling water pump room ventilation systems communicate with the turbine building. The licensee has not rigorously reviewed these ventilation system configurations against the standard review plan criteria. The standard review plan criteria was developed to ensure, among other things, that 10 CFR 50 Appendix A, "General Design Criteria for Nuclear Power Plants," was met for the initial plant design. Because of this potential design basis vulnerability, the licensee performed a risk evaluation of the configurations to determine a time line for resolution. The increase in core damage frequency was  $5E-7$  which did not exceed the Regulatory Guide 1.174 (An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis) threshold for being risk-significant. The licensee had determined that a more detailed evaluation and review needed to be performed and set a time line to complete these reviews by December 4, 2001. Pending further review, this item will be an **Unresolved Item (URI 50-346/2001-011-01)**.

## 1R13 Maintenance Risk Assessment and Emergent Work Evaluation (71111.13)

### a. Inspection Scope

The inspectors evaluated the effectiveness of the risk assessments performed before maintenance was conducted on structures, systems and components (SSCs) and verified how risk was managed and if maintenance risk assessments and emergent work problems were adequately identified and resolved for the following activities:

- Low Pressure Injection/ Decay Heat Removal system train #1 outage
- Component Cooling Water train #2 outage
- Station Blackout Diesel Generator outage concurrent with an Emergency Instrument Air Compressor outage



b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following operability evaluations affecting mitigating systems and barrier integrity. The reviews considered whether the evaluations were technically justified, the adequacy and functionality of any compensatory measures, and any degradations that might cause a loss of function as described in the Updated Safety Analysis Report (USAR) or Technical Specifications (TS).

- EDG #1 Air Start System
- Power Operated Relief Valve Indications

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors verified that the post-maintenance test procedures and test activities were adequate to verify system operability and functional capability for the following risk significant activities:

- Outage activities for #1 Decay Heat Removal System/Low Pressure Injection train
- Outage activities for Component Cooling Water train #1

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed the following surveillance tests and/or reviewed applicable test data, to verify that the subject risk-significant systems, structures and components were capable of performing their intended safety function. The inspectors conducted reviews of TS, USAR, and licensee procedure requirements and evaluated the tests for potential preconditioning, effects on plant risk, clear and adequate acceptance criteria, operator

procedural adherence, test data completeness, test frequency, test equipment range and accuracy, and post-test equipment restoration:

- Steam & Feed Rupture Control System Channel Functional Test & Calibration Actuation Channel 2 Pressure Inputs
- D1 Bus Undervoltage Units Monthly Functional Test
- Steam & Feed Rupture Control System Channel Functional Test & Calibration Actuation Channel 2 Steam Generator Differential Pressure Inputs
- Auxiliary Feedwater Train 2 Level Control, Interlock and Flow Transmitter Test

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES (OA)**

4OA6 Exit Meeting

The inspectors presented the inspection results to Mr. Campbell and other members of licensee management on August 30, 2001. The licensee acknowledged the findings presented. No proprietary information was identified.

## KEY POINTS OF CONTACT

### Licensee

G. Campbell, Site Vice President\*  
H. Bergendahl, Plant Manager\*  
T. Cobbledick, Shift Engineer, Operations  
R. Cook, Compliance Engineer  
D. Eschelman, Manager, Plant Engineering\*  
C. Gale, Senior Engineer, Plant Engineering  
D. Geisen, Manager, Design Engineering\*  
T. Lang, Supervisor of Nuclear Engineering  
G. Melsson, Maintenance Rule Coordinator  
J. Messina, Director, Work Manager\*  
D. Miller, Supervisor, Compliance\*  
R. Pell, Manager, Operations Manager\*  
R. Rishel, PRA Analyst  
M. Smith, Work Week Manager  
A. Stallard, Senior Nuclear Advisor, Operations  
M. Stevens, Maintenance Manager\*  
D. Whalen, Work Week Manager  
M. Widner, Work Week Manager  
G. Wolf, Senior Licensing Engineer\*  
L. Worley, Director, Support Services\*

### NRC

K. Zellers, Senior Resident Inspector\*  
D. Simpkins, Resident Inspector\*

\*Indicates personnel present at the exit meeting.

## LIST OF ITEMS OPENED AND CLOSED

### Opened

50-346/2001-011-01    URI    design basis documentation pertaining to steam line breaks in the turbine building was potentially incomplete

### Closed

None.

## LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
EDG	Emergency Diesel Generator
NRC	Nuclear Regulatory Commission
OA	Other Activities
SDP	Significance Determination Process
SSC	Structures, Systems and Components
TS	Technical Specifications
URI	Unresolved Item
USAR	Updated Safety Analysis Report

## LIST OF DOCUMENTS REVIEWED

### **1R04 Equipment Alignments**

SD-042	Decay Heat/Low Pressure Injection System	Revision 1
USAR Section 3.6.2.7.1.11	Low Pressure Injection System	Revision 14
USAR Figure 6.3-2A	Functional Drawing, Decay Heat/Low Pressure Injection System	Revision 7
P&ID M-033A	Decay Heat Removal Train 1	Revision 29
P&ID M-033B	Decay Heat Removal Train 2	Revision 39
OS-004	Decay Heat Removal/Low Pressure Injection System	Revision 32
SD-003B	Emergency Diesel Generators	Revision 3
USAR Figure 9.5.8	EDG Auxiliary Systems	Revision 1
OS-041A, Sheets 1&2	EDG Systems	Revisions 18, 15
P&ID M-017A	Diesel Generators	Revision 16
P&ID M-017B	Diesel Generator Air Start	Revision 32

### **1R05 Fire Protection**

	Pre-Fire Plan	
	Fire Hazards Analysis Report	Revision 14
Drawings A221F-A226F	Fire Protection General Floor Plan	
Toledo Edison Letter to NRC Serial No. 815	Appendix R Request for Control Room & Component Cooling Water Room	April 29, 1982
NRC Letter to Toledo Edison	Safety Evaluation of Fire Protection Measures at the Davis-Besse Nuclear Power Station	May 30, 1991
NRC Letter to Toledo Edison	Exemption to 10CFR 50, Appendix R, Section III.G & III.J	April 18, 1990
NRC Information Notice 2001-04	Neglected Fire Extinguisher Maintenance Causes Fatality	April 11, 2001
NRC Regulatory Guide 1.189	Fire Protection for Operating Nuclear Power Plants	

### **1R06 Flood Protection Measures**

NRC Information Notice 2000-0020	Potential Loss of Redundant Safety-Related Equipment Because of the Lack of High-Energy Line Break Barriers	December 11, 2000
Operating Experience Review for IN 2000-20	Potential Loss of Redundant Loss of Redundant Safety Related Equipment Because of the Lack of High-Energy Line Break Barriers	
CR 01-2019	Initial Results of Investigation into NRC Information Notice 2000-20	
USAR Section 3.6	Protection Against Dynamic and Environmental Effects Associated with Postulated Rupture of Piping	
Branch Technical Position MEB 3-1 (rev 2) of NUREG-0800	USNRC Standard Review Plan Section 3.6.2	
NUREG -0136	Safety Evaluation Report related to operation of Davis-Besse Nuclear Power Station Unit 1	December 1976
NUREG 0136, S1	Supplement No. 1 to the Safety Evaluation Report by the Office of Nuclear Reactor Regulation United States Nuclear Regulatory Commission in the matter of Toledo Edison Company and Cleveland Electric Illuminating Company Davis Besse Nuclear Power Station Unit 1 Docket 50-346	April 1977
NUREG-1177	Safety Evaluation Report related to the restart of Davis-Besse Nuclear Power Station, Unit 1, following the event of June 9, 1985	June 1986

### **1R12 Maintenance Rule Implementation**

CR 01-1547	MS106 Failed to Stroke Open From Control Room Switch HIS 106A	
	Unit 1 Operating Logs	June 14, 2001
MRPM 05	Maintenance Rule Program Manual	Rev 05
CR 01-1687	AFW Status Changing to Category A1 per Maintenance Rule	

### **1R13 Maintenance Risk Assessment and Emergent Work Evaluation**

	Key Work Activities and Surveillances	week of 7/9/01
	Davis-Besse Weekly Maintenance Risk Summary Daily Review	week of 7/9/01
	Work Week Schedule for July 9-15	
NG-DB-0001	Risk Significant Component Matrix Safety Monitor	Rev 0
	Unit Logs	
MWO 01-1238-00	Component Cooling Water Pump 1 Clean, Inspect and megger	
MWO 00-0970-48	Overhaul Breaker AC113	
CR 2001-0722	Equipment not fully prepared for mini-outage	
CR 2001-1728	Work not properly scheduled	
	Key Work Activities and Surveillances	week of 8/13/01
	Davis-Besse Weekly Maintenance Risk Summary Daily Review	week of 8/13/01
MWO 01-4354-00	DH7B BWST Isolation Valve Inspection	
	Key Work Activities and Surveillances	week of 8/6/01
	Davis-Besse Weekly Maintenance Risk Summary Daily Review	week of 8/6/01

### **1R15 Operability Determinations**

CR 01-1795	EDG Air Start Failure
CR 01-1050	EDG 2 Fail to Start on DA31 Side
OJ 01-013	Operability Justification for CR 01-1795
OJ 01-011	Operability Justification for CR 01-1050
CR 01-0816	PORV Indicating Light

### **1R19 Post-Maintenance Testing**

CR 2001-1728	Work not properly scheduled
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MWO 01-1238-00	Component Cooling Water Pump 1 Clean, Inspect and Megger	
MWO 00-0970-48	Overhaul Breaker AC113	
DB-PF-03205	ECCS Valves Train 1 Quarterly Test	Revision 03
DB-SP-03136	Decay Heat Pump 1 Quarterly Pump and Valve Test	Revision 03

### **IR22 Surveillance Testing**

DB-ME-03046	D1 Bus Undervoltage Units Monthly Functional Test	Revision 00
DB-MI-03202	Steam & Feed Rupture Control System Channel Functional Test & Calibration Actuation Channel 2 Pressure Inputs	Revision 03
DB-MI-03204	Steam & Feed Rupture Control System Channel Functional Test & Calibration Actuation Channel 2 Pressure Inputs	Revision 03
CR 01-0535	Unplanned Inoperability of SFRCS Instrument String Due to Out of Tolerance	February 23, 2001
CR 01-1109	Removing AFW from Service after an SFRCS May Cause Entry into TS 3.0.3	April 20, 2001
M-007B	DBNPS Unit 1 Piping & Instrument Diagram; Steam Generator Secondary System	Rev 45
M-050A	DBNPS Unit 1 Main Steam Line & Main Feedwater Line Rupture Control System Logic	Rev 11
PDS-2685A	Instrumentation Information & Calibration Sheet for MN FW/SG2 Pressure Differential Switch SFRCS CH2	
PDS-2686C	Instrumentation Information & Calibration Sheet for MN FW/SG1 Pressure Differential Switch SFRCS CH2	
PS-3687A	Instrumentation Information & Calibration Sheet for Main Steam Line 2 Pressure Switch Low to SFRCS	
PS-3687C	Instrumentation Information & Calibration Sheet for Main Steam Line 1 Pressure Switch Low to SFRCS	
PS-3687K	Instrumentation Information & Calibration Sheet for Main Steam Line 2 Pressure Switch Low Trip Block to SFRCS	