

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-346/97013(DRP)

Licensee: Toledo Edison Company

Facility: Davis-Besse Nuclear Power Station

Location: 5503 N. State Route 2
Oak Harbor, OH 43449

Dates: September 29 - November 10, 1997

Inspectorss: S. Stasek, Senior Resident Inspector
S. Campbell, Senior Resident Inspector
K. Zellers, Resident Inspector

Approved by: Thomas J. Kozak, Chief
Reactor Projects Branch 4

EXECUTIVE SUMMARY

Davis-Besse Nuclear Power Station NRC Inspection Report No. 50-346/97013(DRP)

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection.

Operations

- The excellent material condition of the plant resulted in minimal operator challenges. Operators provided immediate response to plant annunciators and exhibited good adherence to procedures. On-shift communications were good. Tagouts provided adequate protection of equipment and personnel during maintenance activities (Section O1.1).
- Important-to-safety system lineups and major flowpaths were verified to be in conformance with plant procedures/drawings and the Updated Safety Analysis Report. Equipment material condition was excellent in all cases (Section O2.1).
- Management Review Committee members effectively administered the initial categorization and assignment of Potential Condition Adverse to Quality Reports (Section O7).

Maintenance

- Good communications between several departments contributed in minimizing the #2 Emergency Diesel Generator unavailability time during a routine maintenance outage. Diesel load swings observed during post maintenance surveillance testing were corrected in a timely manner. Appropriate housekeeping, foreign material exclusion, and fire protection measures were observed. Surveillance activities were performed in conformance with written instructions, and surveillance results satisfied regulatory requirements (Sections M1.1, M1.2).
- The inspector noted that the implementing procedure for a technical specification surveillance test did not require that test data be recorded. This lack of documented test data prevented supervisory personnel from having the opportunity to verify that the acceptance criteria had been met. This is an **inspection follow up item** (Section M1.3).

Engineering

- Operability recommendations were technically sound and consistent with regulatory requirements. Plant engineering personnel pursued corrective actions relating to degraded material conditions that affected the operability of plant components in a timely manner (Section E7).

Plant Support

- Radiological conditions were properly communicated to plant personnel through postings, barriers and signs. Actual radiation conditions were verified to be consistent with radiation area postings (Section R1).
- Security personnel were observed to be performing their duties and access control equipment was observed to be operating in accordance with regulatory requirements (Section S1).

Report Details

Summary of Plant Status

The unit was operated at about 100 percent rated thermal power throughout the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors observed control room activities and reviewed routine evolutions throughout the inspection period. The excellent material condition of the plant minimized the challenges and burdens to the operators. Operators provided immediate response to plant annunciators, and referenced applicable annunciator response procedures for immediate and supplemental actions. Operators exhibited good adherence to procedures. The control room log adequately reflected shift activities and plant/equipment status. On shift communications conveyed important information with operators. Control room personnel were kept informed of degraded material conditions in a timely and coherent manner. Issued clearances [tagouts] that were reviewed were assessed to have provided adequate protection of equipment and personnel during maintenance activities.

O2 Operational Status of Facilities and Equipment

O2.1 System Walkdowns (71707)

The inspectors walked down the accessible portions of the following engineered safety features (ESF) and important-to-safety systems during the inspection period:

- Emergency Diesel Generator Train 1
- Emergency Diesel Generator Train 2
- Auxiliary Feed Water Train 1
- Auxiliary Feed Water Train 2
- Low Voltage Switchgear Train 1
- Low Voltage Switchgear Train 2
- Low Pressure Injection Train 1
- Low Pressure Injection Train 2
- High Pressure Injection Train 1
- High Pressure Injection Train 2

No substantive concerns were identified as a result of the walkdowns. System lineups and major flowpaths were verified to be in conformance with plant procedures/drawings and the Updated Safety Analysis Report. Equipment material condition was excellent in all cases.

O7 Quality Assurance in Operations (71707)

The station initiated changes to its corrective action program to increase the level of management attention directed towards the categorization and relative importance of individual problem reports (Potential Condition Adverse to Quality Reports (PCAQRs)). A Management Review Committee, consisting of members of plant management, started discussing recent PCAQRs about 3 times a week to determine the priority of the PCAQR and the action organization. Previously, these functions had been performed by corrective action process personnel. The inspector observed one of the meetings and observed that Management Review Committee members effectively implemented the initial categorization and assignment of PCAQRs.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance and Surveillance Activities (61726) (62707)

The inspectors observed/reviewed the following maintenance and surveillance testing activities during the inspection period:

- | | |
|------------------------|---|
| • DB-SC-03070 | Emergency Diesel Generator 1 Monthly Test |
| • DB-SP-03150 (Rev 02) | AFP 1 (Auxiliary Feed Pump Number 1)
Monthly Jog Test |
| • DB-SC-03077 (Rev 01) | Emergency Diesel Generator 184 Day Test |
| • MWO 3-97-2522-01 | Clean, Lubricate, and ECAD MDPF and Motor |
| • MWO-2-95-0020-03 | Replace Emergency Diesel Generator
CFD Differential Relays |
| • MWO 7-96-0517-01 | Inspect Emergency Diesel Generator Inboard and
Outboard Generator Bearings |

Plant personnel observed performing surveillance testing rigidly adhered to surveillance procedure instructions. Surveillance procedure acceptance criteria were consistent with technical specification, USAR, and other technical requirements. Equipment was verified to perform as described in the USAR. In addition, maintenance activities performed on plant equipment were observed to have been conducted with appropriate housekeeping, foreign material exclusion, and fire protection measures taken.

M1.2 Station Performance During an Emergency Diesel Generator Outage was Excellent

a. Inspection Scope (62707)

The inspectors reviewed maintenance and testing activities relating to a #2 Emergency Diesel Generator (EDG) maintenance outage. This routine EDG outage included inspection of generator bearings, modification of several relays to make them fully seismically qualified, other minor equipment repairs, and routine preventive maintenance activities.

b. Observations and Findings

Although several emergent material and modification issues were identified during the outage and during post maintenance surveillance testing, plant personnel were able to resolve them in an acceptable manner without significantly affecting the EDG outage duration. This was achieved through redistribution of resources, good communications between plant engineering, maintenance, operations and plant support personnel and effective teamwork. This resulted in only a 4 hour addition to the emergency diesel generator unavailability time.

One of the emergent material items related to varying #2 EDG load during the routine 6-month surveillance test following the outage. The plant engineer, after observing several 400-500 kw load swings, recommended to operations that the diesel be shutdown prior to its three hour duration run completion. The EDG was shut down and the vendor consulted for troubleshooting recommendations. The vendor recommended troubleshooting activities be concentrated to a motor operated potentiometer. This was checked and found to be operating satisfactorily. Further investigation identified that new relays, installed during the system outage, were faulty. Testing of the relays determined that two of three new relays had contacts that would unexpectedly change state when they were subject to vibrations. The relays to be installation on the other emergency diesel generator were also found to be defective. These relays were installed to address seismic qualification concerns. The old relays were reinstalled, and the diesel was subsequently tested with no undesirable load swings noted.

The licensee generated FCAQR 97-1420 to perform further investigation into the relay failure issue. The plant's intentions were to determine what the cause of the failures were and to determine the extent of the condition. The relays, Model # KPD13, were manufactured by Square D and purchased from Farnwell and Hendricks Testing Labs, Cincinnati, Ohio, who performed the seismic qualification.

c. Conclusions

Good communications between multiple organizations contributed to minimizing the unavailability of the #2 EDG during a routine maintenance outage. Diesel load swings observed during post maintenance surveillance testing were promptly identified and corrected.

M1.3 Oversight Verification that Surveillance Test Data Satisfied Technical Specification Acceptance Criteria

a. Inspection Scope (61726)

The inspector conducted a review of an inoperable control rod absolute position indication (API) condition and the plant's subsequent actions to comply with associated technical specification limiting conditions for operation requirements. This inoperable API condition was documented by PCAQR 97-1467.

b. Observations and Findings

On October 28, 1997, control rod 4-6 API drifted below its expected value; the 100 percent out light for rod 4-6 was on, indicating that the rod had not actually moved. Operations personnel declared the API for rod 4-6 inoperable. Additionally, the asymmetric alarm bypass switches for group four were placed in bypass in order to eliminate frequent asymmetric rod position annunciator alarms in the control room. The problem with rod 4-6 API had occurred previously during the current operating cycle.

The API indication problem was thought to be caused by reduced temperature conditions. Lower containment and containment annulus ambient temperatures caused the containment electrical penetration for rod 4-6 API circuitry to be thermally contracted. This contraction was thought to cause the API voltage divider return path resistance to change, which ultimately affected the API indication. The plant's current plans were to troubleshoot and repair the circuit during the next refueling outage scheduled to commence April 11, 1998.

The inspector determined that operators had correctly initiated applicable technical specification action statements and surveillance requirements by implementing the applicable surveillance test procedures. The inspector also periodically verified that technical specification surveillance test acceptance criteria were satisfied by independent observations of the rod position indication system.

During a review of surveillance test procedure, DB-OP-03006 (Rev 03), "Miscellaneous Instrument Shift Check," the inspector noted that the only documentation and review requirement for 4-hour surveillance testing of the API versus group average comparison was that a unit log entry be made stating that the surveillance had been accomplished. Additionally, for the 12 hour periodicity surveillance test, no API data was recorded to allow supervisory personnel the opportunity to independently determine whether the acceptance criteria had been met.

The administrative procedure for the surveillance and periodic test program, DB-DP-00013, Section 6.6.1 indicated as follows: "The test leader's supervisor shall review the test results and package as follows: (a) Review the test, test data and any related calculations for completeness, accuracy and acceptability. (b) Confirm that the acceptance criteria has been met."

The requirement that supervisory personnel confirm that acceptance criteria should be met appeared to imply that test data had been recorded. By recording test data, a reviewer has the opportunity to independently evaluate whether acceptance criteria was satisfied.

Operations management personnel, in response to the inspectors' question, committed to review the meaning of the words "review" and "confirm" to determine if they implied that supervisory personnel were required to independently verify test data versus acceptance criteria or that supervisory personnel were merely required to verify that the acceptance criteria had been satisfied.

c. Conclusions

Pending the results of the licensee's review, this is an **inspection follow up item (50-346/97013-01(DRP))**.

- M8.1 (Closed) Inspection Followup Item (50-346/97004-01(DRP)): Foreign material exclusion (FME) control procedural weaknesses identified during maintenance activities. This matter involved inspector identification that a MWO package for maintenance on the auxiliary feedwater bearing oil system had not required FME controls. However, proper FME controls had been implemented by the maintenance craft. Subsequently, the licensee was in process of revising Administrative Procedure DB-DP-00005, "Foreign Material Exclusion" to better define FME control requirements associated with maintenance. In addition, cleanliness classifications of several systems were clarified. The inspectors reviewed the proposed change, with no further concerns noted. This matter is closed, however, adequacy of FME controls will continue to be evaluated as part of the routine inspection program.

III. Engineering

E7 **Quality Assurance in Engineering Activities (37551)**

The inspector reviewed the PCAQRs listed below at various stages of the corrective action process to assess the performance of engineering personnel in making operability recommendations, initiating corrective actions, determining root causes, and initiating measures to prevent recurrence. The inspector found that operability recommendations were technically sound and were consistent with regulatory requirements. Plant engineering personnel were observed to be pursuing corrective actions relating to degraded material conditions that affected the operability of plant components in a timely manner.

PCAQRs reviewed:

97-1287 DC Oil Pump Fail to Shutdown
97-1325 GL 96-01, MSIV Bypass Valves
97-1410 Rod 4-6 API Drifting
97-1411 Pipe Stress Code Allowable
97-1420 EDG 2 Load Swings
97-1429 Linear Amp Voltage Swings

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls (71750)

The inspectors routinely toured radiologically restricted areas. Radiological conditions were properly communicated to plant personnel through postings, barriers and signs. The inspector utilized a portable radiation meter to validate that actual radiation conditions were consistent with radiation area postings on a sampling basis.

S1 Conduct of Security and Safeguards Activities (71750)

The inspectors, during after hours and weekend inspections, observed that access control personnel were attentive to duty and were adhering to NRC access control requirements. Security patrols were observed to be fulfilling their rounds in accordance with security department procedures. Security related access control equipment was verified to be operating correctly.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on November 10, 1997. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. L. Eshelman, Manager, Operations (Acting Plant Manager)
 R. E. Donnellon, Director, Engineering and Services
 L. W. Worley, Director, Nuclear Assurance
 T. J. Myers, Director, Nuclear Support Services
 J. L. Freels, Manager, Regulatory Affairs
 J. L. Michaelis, Manager, Maintenance
 W. J. Molpus, Manager, Nuclear Training
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 C. A. Price, Manager, Business Services
 R. J. Scott, Manager, Radiation Protection
 J. W. Rogers, Manager, Plant Engineering
 G. A. Skeel, Manager, Security
 H. W. Stevens, Manager, Nuclear Safety & Inspections
 M. C. Beier, Manager, Quality Assessment
 F. L. Swanger, Manager, Design Basis Engineering
 L. M. Dohrmann, Manager, Quality Services
 D. H. Lockwood, Supervisor, Compliance
 R. B. Coad, Superintendent, Radiation Protection
 D. M. Imlay, Superintendent, Operations
 G. W. Gillespie, Superintendent, Chemistry
 G. M. Wolf, Engineer, Licensing
 T. J. Chambers, Shift Manager

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
 IP 61726: Surveillance Observations
 IP 62707: Maintenance Observation
 IP 71707: Plant Operations
 IP 71750: Plant Support Activities
 IP 92902: Followup - Maintenance

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-346/97013-01(DRP)	IFI	Oversight Verification that Surveillance Test Data Satisfied Technical Specification Acceptance Criteria
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Closed

50-346/97004-01(DRP)	IFI	Foreign Material Exclusion (FME) control procedural weaknesses identified during maintenance activities
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LIST OF ACRONYMS AND INITIALISMS USED

API	Absolute Position Indication
CFR	Code of Federal Regulations
EDG	Emergency Diesel Generator
ESF	Engineered Safety Feature
FME	Foreign Material Exclusion
IR	Inspection Report
MWO	Maintenance Work Order
NRC	Nuclear Regulatory Commission
PCAQR	Potential Condition Adverse to Quality Report
PDR	Public Document Room
TS	Technical Specification
USAR	Updated Safety Analysis Report