

U.S. NUCLEAR REGULATORY COMMISSION

Report No. 50-346/85-017

Docket No. 50-346

License No. NPF-3

Licensee: Toledo Edison Company  
Edison Plaza, 300 Madison Avenue  
Toledo, OH 43652

Facility Name: Davis-Besse 1  
Inspection At: Oak Harbor, OH  
Inspection Conducted: March 11-14, 1985

Inspectors:

*ET Baker*

E. T. Baker, Reactive Inspection Section (RIS)

*6/4/85*  
Date

*N. J. Miegel*

N. J. Miegel, RIS

Date

*J. J. Petrosino*

J. J. Petrosino, RIS

*6/4/85*  
Date

Approved By:

*E. W. Merschoff*

E. W. Merschoff, Chief  
Reactive Inspection Section

*6/4/85*  
Date

Inspection Summary

Inspection on March 11-14, 1985 (Report No. 50-346/85-017)

Areas Inspected:

An announced inspection by inspectors from the Vendor Program Branch, Office of Inspection and Enforcement, of the licensee's handling and implementation of vendor supplied information was conducted. The inspection involved a total of 63 inspector hours onsite by three NRC inspectors.

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## Results:

Of the nine vendor related concerns inspected, one was found not applicable to Davis-Besse, five were found to be adequately addressed, Davis-Besse was not in receipt of vendor correspondence on two concerns, and had failed to adequately address one concern. One potential enforcement finding resulted from the inspection as a result of several identified deficiencies in the area of handling vendor supplied information. Two unresolved items and one open item involving the seismic qualification of the DC battery racks, the modification of fire dampers, and maintenance of reactor trip breakers, respectively, were also identified during the inspection.

## DETAILS

### 1. Persons Contacted

- \*Terry Murray, Assistant Vice President, Nuclear Operations
- \*John Wood, General Supervisory Facility Engineer
- \*Don Lee, Maintenance Engineer
- \*Jim Faris, Administrative Coordinator
- \*Dennis Mominee, Quality Engineering Supervisor
- \*Dale L. Miller, Staff Assistant
- \*Steve Wideman, Senior Licensing Specialist
- Tom Hiss, Mechanical Engineering Supervisor
- Dan Wilczynski, Assistant Engineer
- John Hartigan, Lead Maintenance Engineer
- Tim Thompson, Maintenance Engineer
- Steve Henry, Maintenance Engineer

\*Denotes those attending the exit interview on March 14, 1985.

The inspectors also interviewed other licensee employees, including members of the technical and maintenance staff.

### 2. General Electric AK-2/2A Breakers

The inspectors reviewed GE Service Advice Letters 175/9.3S and 175/9.20 and Davis-Besse's implementation of the information contained in the letters. In response to 175/9.3S dated June 1983, Davis-Besse issued a revised maintenance procedure MP 1405.05.2 on August 17, 1983, instructing maintenance personnel to use WD-40 to revitalize the grease used in lubricating the circuit breakers. In response to 175/9.20 dated March 22, 1984, Davis-Besse replaced the front frames on the circuit breakers in December 1984 during the refueling outage. At the time of the inspection, Davis-Besse was in the process of revising MP 1405.05.2 to delete the instructions to revitalize the grease using WD-40 as instructed by 175/9.20. Since no maintenance had been performed on the breakers since the front frames had been replaced, the fact that the revised procedure had not been implemented did not adversely affect the operation of the breakers. This is considered an open item (346/85-017-02) for followup during a future inspection.

3. General Electric Magnablast Breakers

It was determined during the entrance meeting that Davis-Besse does not have any breakers of this type.

4. Pacific Scientific (PSA) Snubbers

The Davis-Besse correspondence file concerning the inspection and replacement of defective capstan springs on PSA snubbers was reviewed. The Davis-Besse file contained a letter from PSA dated January 19, 1984 which stated that upon re-evaluation of the microcracks in the capstan springs, PSA determined that the springs still met PSA specifications and that no action by Davis-Besse was necessary. However, Davis-Besse sent all but four of the snubbers at the plant back to PSA for inspection and repair, as necessary. The four remaining snubbers had been installed in the plant and Davis-Besse determined that the installed snubbers were acceptable as is.

5. GNB Battery Racks

Davis-Besse had not received notification from Gould concerning the spacing between the ends of the battery rack and the adjacent battery cell. When Davis-Besse contacted Gould, they were told that Gould and the NRC had agreed that notification of Gould's customers was not necessary. This was contrary to the written commitment Gould had made to the NRC in a letter dated January 22, 1985. The inspector performed a visual examination of the battery racks at Davis-Besse and determined that on six of the sixteen battery racks the spacing between the rack and the cell exceeded the 1/4" dimension Gould assumed for seismic qualification of the battery racks. The gaps between the rack and the adjacent cell ranged from less than 1/8 inch to 1-1/2 inches.

This is a deviation from seismic qualification requirements and is considered an unresolved item (346/85-017-03).

6. Terry Turbine

Three notifications sent by the Terry Corporation (Terry), Windsor, Connecticut, to Davis-Besse relaying design changes and/or recommended maintenance for turbines and the subsequent action taken by Davis-Besse in response to the information were reviewed.

- a. Terry notified Mr. T. D. Murray, Davis-Besse Superintendent, by letter dated January 28, 1983 that during an inspection at an operating plant it was discovered that a turbine bearing locator pin had not been installed at the time of assembly. The pins assure proper orientation of the bearings within the housings at assembly, and bearing movement is prevented by an interference fit between the bearing and housings. Omission of this pin could result in mislocation of, and a possible reduction of, the oil supply to the bearing.

Terry recommended in their letter of January 28, 1983, that the turbine be inspected during the next scheduled maintenance to verify that the pins were installed in the bearing caps during assembly. Terry would supply pins if they were found to be missing.

The inspector verified that Davis-Besse Nuclear Power Station Unit No. 1, Maintenance Procedure MP1401.33, "Auxiliary Feed Pump Turbine Radial Bearing Removal and Replacement" was revised (Revision No. 1, approved 3/16/83) to include verification of the presence of the bearing locator pins. This maintenance had not been performed as of March 15, 1985 on the Davis-Besse turbines. It is therefore not known if the bearing locator pins were installed by Terry when the turbines were assembled.

- b. Terry notified Davis-Besse by letter dated June 29, 1977 of a problem with turbines equipped with the PG-PL Woodward governor using a ramp bushing for quick start. It was found that oil could be temporarily captured under the main speed piston within the governor after each shut down operation. Terry issued recommended procedures for manually bleeding off the entrapped oil. After each shut down operation the speed selection mechanism on the governor must be manually exercised to its lowest speed setting and then returned to the desired speed setting. Failure to manually exercise the speed selector as described could cause the turbine to overshoot to trip speed if the turbine were started within thirty minutes of the last start-up.

The inspector reviewed Davis-Besse Nuclear Power Station Unit No. 1 Surveillance Test Procedure ST 5071.01, "Auxiliary Feedwater System Monthly Test" and System Procedure SP1106.06, "Auxiliary Feedwater System". Section 8 of System Procedure SP1106.06 requires that the speed control be operated manually and at the governor only. Surveillance Test ST5071.01 includes provisions to exercise the governor speed selector to its lowest setting as recommended by Terry.

- c. Terry notified Mr. T. D. Murray, Davis-Besse Plant Superintendent via letter dated February 3, 1984 of a Gimpel trip and throttle valve that did not fully close under conditions of high inlet pressure and low steam flow. Review of the valve design by Gimpel indicated that the spring load in the closing direction was not sufficient to overcome the valve stem unbalance when pressure below the valve seat exceeded approximately 700 psig. This condition does not occur during normal operation and is only possible at no load or near no load on the turbine, when the governor valve is almost closed. In discussions with Terry Corporation it was determined that the only situation where these conditions could occur is a quick start transient where the turbine overspeeds on start, resulting in both the governor valve and the trip and throttle valve closing, trapping high pressure steam between the two valves. Terry recommended replacing the spring, and Gimpel made replacements available through Terry. The replacement springs have sufficient force to overcome the valve stem unbalance with full rated pressure at all flow conditions.

The spring in question had not been replaced at the time of the inspection and there were no records at Davis-Besse that



indicate that the notification sent by Terry had been received or evaluated by the addressee. This failure to control and evaluate vendor supplied information for appropriate action forms part of the basis for a potential enforcement finding in the area of control of vendor supplied documents (346-85-017-01).

## 7. Emergency Diesel Generators

Davis-Besse Nuclear Power Station Unit No. 1 has two emergency diesel generator units which were supplied by the Power Systems Division of Morrison-Knudsen (M-K) Company, Inc., Rocky Mount, North Carolina. The diesel engines for the units were manufactured by the Electro-Motive Division (EMD) of General Motors. EMD issues "Maintenance Instructions" (MIs) and "Power Pointers" to its diesel engine customers. The MIs and Power Pointers cover recommended maintenance procedures and design changes for EMD engines.

Davis-Besse Nuclear Power Station Unit No. 1 Maintenance Procedure (MP) 1410.19, "Maintenance of Diesel Generators," Revision 2, approved 10/10/84, establishes the conditions and defines the procedure for inspection and maintenance of the diesel units. MP 1410.19 references fifteen documents, including other maintenance and administrative procedures, which are used to complete the instructions of MP 1410.19. The maintenance staff at Davis-Besse was not aware of MIs and Power Pointers until August 1984 when the maintenance specialist responsible for the diesel units attended a course sponsored by EMD. The maintenance specialist received several MIs while at the course, and has since obtained MIs, Power Pointers, and an MI index from an M-K Power Systems vendor representative.

Davis-Besse does not have an established method or procedure for evaluating these MIs and Power Pointers. Power Pointers and MIs should be individually evaluated to determine their applicability to the units at Davis-Besse. The diesel maintenance specialist had started, but had not completed, a review of all the MIs and Power Pointers obtained from M-K Power Systems. Power Pointers and MIs which had been evaluated were not recorded, nor was it possible to determine which MIs and Power Pointers (or portions thereof) had been incorporated into the Davis-Besse procedures without directly comparing the recommendations to the procedures. In addition, there was neither technical justification nor a list provided of MIs and Power Pointers which had been evaluated and found to be either not applicable or unnecessary to follow. For example, MI 5352, "Time Delay Relays - Square D," recommends examining the relay assembly at regular intervals to ensure free movement of all moving parts, security of mounting, continuity of circuits, and tightness of connections. The MI also recommends visually checking the relay and performing electrical tests annually. Davis-Besse procedure MP 1410.19, Section 6.1.31 requires the relays to be inspected and cleaned during the eighteen month maintenance, but does not address electrical tests. At the time of the inspection, the diesel maintenance specialist did not know if Davis-Besse's diesel generators had Square-D relays. MI 1728, "Scheduled Maintenance Program Domestic Stationary Power Units with Turbocharged Engines", recommends that certain maintenance be performed yearly, such as replacing the lube oil filters and inspecting circuit breakers. Current Davis-Besse procedures require these activities to be performed on an 18 month basis. Technical evaluations and justification for deviating from the manufacturer's recommendations were not available.

This failure to control and evaluate vendor supplied information for appropriate action forms part of the basis for a potential enforcement finding in the area of control of vendor supplied documents (346-85-017-01).

8. Ruskin Fire Dampers

The Ruskin Manufacturing Company (Ruskin), in a letter dated November 6, 1984, notified Davis-Besse that the test methods originally used by Ruskin may not have accurately depicted actual field installed conditions for dampers installed inside ducting, and these dampers may not close under actual flow conditions. Ruskin recommended that all licensees test the dampers under actual flow conditions to determine whether or not the dampers would perform satisfactorily. The inspector reviewed Davis-Besse's correspondence file for Ruskin and determined that Davis-Besse had received the notification. The inspector reviewed the nonconformance report written on the two dampers, the work request written to perform the testing and inspected one of the two Ruskin dampers at Davis-Besse. The results of the inspection were that the dampers were being used as a fire barrier in a room air transfer application. Both dampers are installed in a wall between two rooms with a protective louvered grill on each side. Since the dampers were not installed in a duct the application at Davis-Besse is outside the scope of the testing recommended by Ruskin.

During the inspection of the fire damper it was noted that one of the "S" hooks was installed backwards, i.e., open loop towards the blades. Ruskin has published information, which the licensee was not aware of, that a backwards "S" hook may get caught in the blade package and prevent the damper from closing.

In addition, the inspector reviewed Davis-Besse's maintenance procedures for fire dampers. Two observations were made during the review. The first was that although Davis-Besse has fire dampers supplied by three different manufacturers on site, Air Balance, Inc., Advanced Air Flow Company, and Ruskin, procedure MP-1405.07, revision 0 dated 2/24/84, "Fire Damper Maintenance," only references Air Balance Inc.

This failure to reflect appropriate vendor supplied information in maintenance procedures form part of the basis for a potential enforcement finding in the area of control of vendor supplied documents (346-85-017-01).

The second observation was that Davis-Besse procedure M.P. 1405.07, Section 7.2.4, allows field modifications of curtain type fire dampers (CTFD). This modification involves the "trimming" of the CTFD blade packages. Procedure MP-1405.07 states in part "...this trimming will not violate Underwriters Laboratory (UL) fire damper rating requirements providing the maximum operating clearance does not exceed 3/8 of an inch."

However, subsequent discussions between the NRC and UL representatives of the North Brook, Illinois, office indicate that the UL approval may be voided for any fire damper which has been modified.

Three (3) significant points were brought out in the UL discussions. Specifically:

- (1) The "3/8 of an inch" operating clearance mentioned in UL standard 555 and M.P. 1405.07 is not applicable to curtain type fire dampers, only to shutter type fire dampers.
- (2) UL standard requirements are only applicable to the "product" manufacturer's locations for construction, performance, conditions of acceptance, and manufacturer's installation instructions.
- (3) Field modifications to any UL listed "product" voids the classification of that product.

In addition to the possible voiding of the UL label for specific CTFD's which have been modified, the maintenance procedure did not require a design review.

This issue is considered an unresolved item (346/85-017-04).

9. Administrative Procedures

A review of Davis-Besse's Administrative Procedures for controlling vendor supplied information revealed the following inadequacies:

- a. The procedures do not require that vendor supplied information be reviewed or evaluated.
- b. The procedures do not require that applicable recommendations be implemented or that justification be provided when recommendations are not implemented.
- c. The procedures do not require tracking of vendor supplied information to assure the information is reviewed, evaluated and implemented, if applicable, in a timely manner.

These failures to control vendor information to incorporate current technical information, as appropriate, in maintenance procedures form part of the basis for a potential enforcement finding in the area of control of vendor supplied documents (346-85-017-01).

PERSONS CONTACTED

Toledo Edison Company

D. Mominee  
D. L. Miller  
J. Faris  
J. Wood  
T. Murray  
S. Wideman  
D. Lee

Underwriters Laboratory Inc.

M. Frantti\*  
E. Iwanski\*

NRC

E. Baker  
G. Zech  
J. Petrosino  
N. Miegel

\*Contacted telephonically



Attachment A

DOCUMENTS REVIEWED

The documents listed below were reviewed by the inspectors to the extent necessary to satisfy the objectives of the inspection.

1. General Electric Service Advice Letters  
175/9.3S dated June 1983  
175/9.20 dated March 1984
2. Davis-Besse Maintenance Procedures  
MP 1401.33, Auxiliary Feed Pump Turbine Radial Bearing Removal  
and Replacement  
MP 1410.19, Maintenance of Diesel Generators  
MP 1405.05.2, Maintenance of AK-2/2A Reactor Trip Breakers  
MP 1405.07, Fire Damper Maintenance
3. Davis-Besse Administrative Procedures  
AD 1848.05, Vendor Drawings  
AD 1848.02  
AD 1848.00, Station Records Management
4. Other Procedures  
  
SP 1107.11, Diesel Generator Operating Procedure  
SP 1106.06, Auxiliary Feedwater System  
ST 5071.01, Auxiliary Feedwater System Monthly Test
5. Other Documents  
Nonconformance Report 85-0011  
UL Standard 555  
Nonconformance Report 83-113  
Bechtel SDR 3276  
Pacific Scientific letter to Toledo Edison dated 1/19/84  
Response to Generic Letter 83-28 dated 1/18/85