

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/88007(DRP)

Docket No. 50-346

Operating 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: February 16 to March 31, 1988

Inspectors: P. M. Byron
D. C. Kosloff

Approved By: R. DeFayette, Chief
Reactor Projects Section 3A

RC Knop for

4/27/88
Date

Inspection Summary

Inspection on February 16 to March 31, 1988 (Report No. 50-346/88007(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspectors of licensee action on previous inspection findings; operational safety; maintenance; surveillance; licensee event report followup; onsite followup of events; independent safety engineering; team inspections; and public meetings.

Results: One violation was identified in the area of onsite followup of events (failure to implement a procedure).

DETAILS

1. Persons Contacted

a. Toledo Edison Company (TED)

- D. Shelton, Vice President - Nuclear
- *L. Storz, Plant Manager
- *N. Bonner, Assistant Plant Manager, Maintenance
- *R. Flood, Assistant Plant Manager, Operations
- E. Salowitz, General Superintendent Outage and Program Management
- *L. Ramsett, Quality Assurance Director
- S. Jain, Independent Safety Engineering Director
- D. Briden, Chemistry Program Manager
- G. Grime, Industrial Security Director
- *B. Beyer, Nuclear Projects Director
- *M. Stewart, Nuclear Training Director
- T. Myers, Nuclear Licensing Director
- J. Scott-Wasilk, Nuclear Health & Safety Director
- *P. Hildebrandt, Engineering General Director
- J. Wood, Systems Engineering Director
- *W. Johnson, Primary Systems Manager
- G. Gibbs, Performance Engineering Director
- V. Watson, Design Engineering Director
- D. Wilczynski, Configuration Management Program Manager
- R. Scott, Chemistry Superintendent
- *G. Honma, Compliance Supervisor
- *R. Schrauder, Nuclear Licensing Manager
- D. Haiman, Engineering Programs Director
- *D. Erickson, Radiological Control Superintendent
- *L. Harder, Radiological Operations Supervisor
- R. Donnellon, Mechanical Superintendent
- T. Haberland, Electrical Superintendent
- *C. Daft, Technical Planning Superintendent
- *C. Gordon, Senior Nuclear Specialist
- D. Lightfoot, Outage and Program Management Superintendent
- L. Young, Licensing, Fire Protection
- *J. Moyers, Quality Verification Manager
- S. Zunk, Nuclear Group Ombudsman
- D. Harris, Manager Quality Systems
- *J. Sturdavant, Licensing Principal
- C. Bramson, Document Systems Manager
- G. Skeel, Nuclear Security Operations Manager
- L. Wade, Quality Control Supervisor
- L. Worley, Configuration Process Manager
- E. Benson, Nuclear Materials Manager

b. USNRC

- *P. Byron, Senior Resident Inspector
- *D. Kosloff, Resident Inspector

*Denotes those personnel attending the April 7, 1988 exit meeting.

2. Licensee Action on Previous Inspection Findings (92701)

- a. (Closed) Open Item (346/86032-01(DRP)): Shift Technical Advisors (STA) will have Senior Reactor Operator (SRO) licenses. The inspectors verified that all STA's but one have SRO licenses. The STA without a license is a relief STA who is scheduled to sit for his SRO license in May 1988. This item is closed.
- b. (Closed) Open Item (346/86032-02(DRP)): Determine other limit switches that may affect the operation of the Atmospheric Vent Valves (AVV). The inspectors reviewed licensee memorandum NED 87-20229 which documented a licensee verification that there were no limit switches that affected the operation of the AVV's. This item is closed.

No violations or deviations were identified in this area.

3. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the months of February and March. The inspectors verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components.

Tours of the auxiliary, turbine, water treatment and service water buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspectors by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping and cleanliness conditions and verified implementation of radiation protection controls. During the months of February and March, the inspectors walked down the accessible portions of the Auxiliary Feedwater, Main Feedwater, Reactor Protection, Anticipatory Reactor Trip, Steam and Feedwater Line Rupture Control, Service Water, Emergency Diesel Generator, Essential 120 Volt AC, Essential 4160 Volt AC, Essential 480 Volt AC, Essential 125 Volt DC, Component Cooling Water and Control Room Emergency Ventilation Systems to verify operability.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

On February 16, 1988, while reviewing the Unit Log for February 13, 1988, the inspectors noted that the Component Cooling Water (CCW) Pump Room ambient temperature had been below 60 degrees F for an unknown period of time due to a malfunction of the room ventilation system. Section 9.4.2.1.2.5 of the Updated Safety Analysis Report (USAR) states that the "... system is designed to maintain the CCW pump room temperature between

60 degrees F and 104 degrees F year round." On February 19, 1988, the inspectors discussed the incident with cognizant licensee managers and only one appeared to be aware of the event. Shortly after the discussion, the licensee issued Potential Condition Adverse to Quality (PCAQ) report 88-0123, documenting that bearing temperatures on CCW pump #2 dropped "...below 32 degrees F for a significant period of time..." and that the bearing temperatures on CCW pump #3 "...also dropped below 32 degrees F but for an insignificant period of time." The licensee declared CCW pump #2 inoperable pending engineering evaluation.

Late in 1986 the inspectors had asked licensee Independent Safety Engineering (ISE) personnel about the potential effects of cold temperatures on ventilation system functions (Inspection Report 50-346/86027). On January 26, 1987, ISE issued Intra-Company Memorandum ISE-87-10003, "Possible CCW Pump Room Low Temperature Condition" stating that the CCW pump bearing low temperature computer alarms "...are properly set at 40 degrees F..." and concluding that "...adequate mechanism/protection exists to detect low temperature conditions." Ambient room temperatures dropping below ventilation system design limits is of unknown significance. However, the inspectors have observed that licensed operators are sensitive to such situations. One indication of this sensitivity is PCAQ report 87-0602, which was written by an SRO to document low temperature (57 degrees F) in #2 Low Voltage Switchgear Room and the immediate corrective action taken. The inspectors have discussed this issue with Region III and Headquarters personnel in an attempt to ascertain the safety significance of such low temperature conditions. This is considered an unresolved item (346/88007-01(DRP)) until the inspectors can review the licensee's engineering evaluation and receive further guidance.

While reviewing the licensee's corrective action system the inspectors noted that there had been two administrative errors in the implementation of the locked valve control program. The licensee documented these errors in PCAQ reports 88-0230 and 88-0247. The affected valves were not in an improper position for existing plant conditions. This is considered an unresolved item (346/88007-02(DRP)) pending the inspector's review of the licensee's corrective actions.

The licensee historically has had problems with air operated valves (AOV) SW 1424, 1429, and 1434 which are the service water (SW) outlet valves of the component cooling water (CCW) heat exchangers. System Review and Test Program (SRTP) Report SW-RR-007 described a history (1976-1983) of reported sticking and poor throttling ability. The report stated that past problems appeared attributable to poor maintenance and follow up testing. It contained the recommendation that maintenance procedures be reviewed and revised to improve valve reliability. On September 6, 1987, the plant tripped and multiple equipment failures occurred during and subsequent to the event. One of the failures involved AOV SW 1434, which did not open on demand.

On March 3, 1988, with SW 1434 inoperable, SW 1429 did not open on demand and was declared inoperable. The licensee failed SW 1434 open (its

accident or safety position), isolated the actuator from its normal air supply, and declared SW 1434 operable. About 90 minutes later the valve was found to be not fully open. The licensee again declared SW 1434 inoperable along with CC 1467 and 1469, which are similar CCW valves on the Decay Heat Removal (DHR) coolers. This made both DHR loops inoperable although both loops were functioning normally. The DHR loops were declared inoperable because the time they would remain in their safety position following a loss of the non-safety grade air system was unknown. The licensee declared a transitional Alert in accordance with its emergency procedures. The licensee locked open one of the CCW valves and declared the associated DHR loop operable. The event was downgraded 44 minutes after it was declared. The licensee also changed its emergency procedure EP 1202.01, "RPS, SFAS, SFRCS Trip or SG Tube Rupture," to require the operators to lock the affected SW and CCW valves open after a Safety Features Actuation System (SFAS) actuation.

The licensee performed an engineering evaluation of the problem at the request of the inspectors. System Engineering determined that the failure of the valve to maintain its safety position was caused by instrument air system deficiencies. The failure-to-open problems were attributed to poor maintenance practices. In addition an independent assessment of the unexpected response of SW 1434 to the isolation of instrument air was performed by Independent Safety Engineering (ISE). ISE concluded that the air-operated actuators and air tubing for the valves were inadequate. The ISE report noted that SRTP report SIA-NRR-019 recommended that an engineering study be initiated to address the concern that sufficient air may not be available for plant control during operation or to maintain a controlled shutdown. The SRTP report stated that the study should be finished in time to support the fifth refueling outage.

This item is an open item (346/88007-03(DRP)) pending review of the licensee's response to the recommendations in the previously identified SRTP reports.

No violations or deviations were identified in this area.

4. Monthly Maintenance Observation (62703)

Station maintenance activities of safety related systems and components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by

qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests and maintenance work orders were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

- ° EDG preventive maintenance
- ° Packing replacement on Service Water (SW) valve SW 1434
- ° Immediate Action Maintenance (troubleshooting) on valve SW 1429
- ° Immediate Action Maintenance to replace open fuse for power to control rod 7-3
- ° Immediate Action Maintenance to repair an EDG protective relay
- ° Modification to air filters for the Control Room Air Conditioning system
- ° Installation of piping to provide a safety-grade supply of water to the motor driven feedwater pump
- ° Relocation of valve SW 34
- ° Removal of main steam safety valves to allow them to be refurbished and tested off site
- ° Preventive maintenance of motor operated Component Cooling Water valve CC 5095

Following completion of maintenance on the Emergency Diesel Generator and Rod Control System the inspectors verified that these systems had been returned to service properly.

No violations or deviations were identified in this area.

5. Monthly Surveillance Observation (61726)

The inspectors observed technical specifications required surveillance testing on the Fire Protection System, ST 5016.02 (DB-OP-03001), "Fire Protection System Electric Pump Weekly Surveillance Test," and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspectors also witnessed portions of the following test activities:

- o ST 5031.07 (EN-SC-03013), Integrated SFAS. This test was a modified version of the normal integrated SFAS test intended primarily to perform Technical Specification Surveillance Requirement 4.8.1.1.2.d.2, 4.8.1.1.2.d.3, and 4.8.1.1.2.d.5. During the performance of this test two EDG sequencer relays failed, Containment Vessel Normal Sump Drain Containment Isolation Valve DR 2012A failed to close, and the Motor Driven Feedwater Pump breaker tripped when attempts were made to supply power to it from EDG 1-1. The licensee documented these deficiencies in PCAQ reports 88-0181, 88-0182, 88-0183 and 88-0194. Evaluation of these deficiencies is an open item (346/88007-04(DRP)).
- o EN-SC-03100, Diesel Generator Refueling Surveillance Test. While reviewing administrative procedure AD 1838.00, Rev. 16, "Surveillance and Periodic Test Program" the inspectors noted that Attachment 1 of this procedure listed no implementing procedures for Technical Specification Surveillance Requirements 4.8.1.1.2.c.6, 4.8.1.1.2.c.7, and 4.8.1.1.2.d. The inspectors also noted other apparent errors in Attachment 1. Correction of these deficiencies is an open item (346/88007-05(DRP)).

No violations or deviations were identified in this area.

6. Licensee Event Reports Followup (92700)

- a. Through direct observations, discussions with licensee personnel, and review of records, the following event report was reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

(Closed) LER 85-13 Reactor Trip and Loss of Feedwater Event at Davis-Besse on June 9, 1985, Rev. 0 and Rev. 1

The inspection activities related to the event reported by this LER were documented in inspection reports 85020, 85021, 85022, 85023, 85025, and 85030; and NUREG 1154, "Loss of Main and Auxiliary Feedwater Event at the Davis-Besse Plant on June 9, 1985". Numerous violations and open items were identified as a result of those inspections. Although a few items remain open, most of the items were closed in followup inspections documented in several inspection reports issued in 1985 through 1988. NUREG 1177, "Safety Evaluation Report related to the restart of Davis-Besse Nuclear Power Station, Unit 1, following the event of June 9, 1985", summarized the NRC evaluation of the licensee's corrective actions. This LER is closed.

- b. The following LER's were reviewed during the inspection period but could not be closed:

(Open) LER 88-003 Fire Detection System Supervision Not Tested For Ground Fault Detection Due to An Inadequate Procedure.

Information on the event described by this LER is being reviewed by fire protection specialists in Region III. The LER identified one corrective action to be "review/training of the lessons learned from the event", which was to be completed by April 10, 1988. The licensee informed the inspectors that personnel in the Fire Protection Group and I&C personnel completed this training through their required reading programs. However, the Operations department decided that more extensive training was appropriate for Operations personnel. Training for operations personnel will be included in requalification training and will be completed by June 30, 1988. A second corrective action was revision of the acceptance criteria for three surveillance procedures. This was to be completed by March 30, 1988. The licensee stated that, although procedures DB-MI-03402.06, .07, and .08 had been revised, they would not be issued until May 31, 1988.

(Open) LER 88-004 Intentionally Missed Hourly Fire Watch Due to Radiological Control Area Evacuation.

Information on the event described by this LER is being reviewed by fire protection specialists in Region III.

(Open) LER 88-005 Inoperable Fire Barrier With Inoperable Fire Detection.

Information on the event described by this LER is being reviewed by fire protection specialists in Region III.

(Open) LER 88-006 Software Error in Kaman Radiation Monitors.

Information on the event described by this LER is being reviewed by health physics specialists in Region III.

No violations or deviations were identified in this area.

7. Onsite Followup of Events (62702 and 93702)

During the inspection period, the licensee experienced several events, one of which required prompt notification of the NRC pursuant to 10 CFR 50.72. The inspectors pursued the events onsite with licensee personnel. In each case, the inspectors verified that the notification was correct and timely, if appropriate, that the licensee was taking prompt and appropriate actions, that activities were conducted within regulatory requirements and that corrective actions would prevent future recurrence. The specific events are as follows:

- ° Failure of an air-operated service water (SW) valve to fully open on demand on March 3, 1988. The licensee documented this event in PCAQ

report 88-0150. Maintenance activities and engineering evaluations related to this event caused the licensee to declare six air-operated valves (AOV) inoperable at 6:43 p.m. on March 4, 1988. This required the plant to enter an Alert because two of the inoperable valves caused both trains of the Decay Heat Removal System to be inoperable. At 6:55 p.m. on March 4, 1988 the licensee ended the Alert after mechanically locking one of the valves in its safety position. The licensee documented this event in PCAQ report 88-0158. The valves involved in these events are also discussed in paragraph 3.

- ° Inadvertent partial actuation of the Steam and Feedwater Line Rupture Control System (SFRCS). The licensee documented this event in PCAQ report 88-0175. On March 11, 1988, with the reactor in cold shutdown (mode 5), the licensee was filling both Steam Generators (SG) to place them in wet layup. The licensee was using Plant Procedure PP 1102.10, Rev. 16, dated August 12, 1987. "Plant Shutdown and Cooldown" and System Procedure SP 1106.08, Rev. 12, dated July 21, 1986, "Steam Generator Secondary Side Fill, Drain and Layup", to control the SG fill. PP 1102.10 indicates when filling is to begin, but does not include detailed steps for placing the SG's in wet layup. Step 6.2.25 of PP 1102.10 directs the operators to proceed to SG wet layup conditions as described in SP 1106.08, Section 5 (this is the wrong section, section 4 must be used). Note 1 for step 6.2.25 (located after the step in the procedure) states, "If MSiV's are closed the SG's must be vented to prevent pressurization during fill." Although the MSiV's were closed, the operators did not vent the SG's and SG 1-2 was pressurized to 954 psia during filling. This is a violation (346/88007-06(DRP)) of Technical Specification 6.8.1.a for failure to implement procedure PP 1102.10.

The increase in pressure automatically returned the low pressure SFRCS trip to service, and when the operators responded to the pressure transient by reducing pressure, pressure dropped too quickly for the operators to block the low pressure trip and SFRCS channel 2 actuated on low pressure. The Shift Supervisor concluded that the SFRCS actuation was reportable as an ESF actuation and made a telephone report to the NRC. However, at the time of the event, plant conditions did not require the SFRCS or the Auxiliary Feedwater (AFW) System to be operable (the AFW System was not in service). Therefore, only three valves changed position as a result of the SFRCS actuation and the licensee later determined that the event was not reportable based on NUREG 1022, Supplement 1, question and answer number 6.9.

Although Note 1 for step 6.2.25 of PP 1102.10 states that the SG's must be vented, there is no guidance on how such venting might be accomplished. SP 1106.08, the detailed procedure for filling the SG's, states that the Atmospheric Vent Valves (AVV) are to be opened if it becomes necessary to vent the SG's to prevent overpressurization during fill when the SG secondary side temperature is less than 110 degrees F. However, steps 4.1.2.1 and 4.1.2.2 of SP 1106.08 direct the operators to fill the SG's when

the SG secondary side temperature could be greater than 110 degrees F. On March 11, 1988, when the SG's were being filled, SG secondary side temperatures were greater than 110 degrees F. When PP 1102.10 and SP 1106.08 are viewed independently they appear to be usable and compatible. However when they are actually used together, as intended, they are inadequate. The operators' training and experience, combined with proper planning of complex evolutions will usually compensate for such inadequacies. However, all three factors (correct procedures, properly trained operators, and adequate planning) are required to consistently achieve excellence in plant operations.

- Improper entry into a designated high radiation area. The licensee documented this event in PCAQ report 88-0204. Although workers entered an area identified as a high radiation area it appears that there was no violation of Technical Specification requirements for entry into a high radiation area. The actual area with high radiation was much smaller than the area designated and the workers apparently did not enter an actual high radiation area. Information on this event is being evaluated by health physics specialists in Region III.

No other violations or deviations were identified in this area.

8. Independent Safety Engineering (ISE) (71707)

On March 25, 1988, the inspectors continued their monthly meetings with representatives of the licensee's ISE group to discuss areas of mutual interest, including results of previous ISE reviews and studies, subjects which the ISE planned to investigate, and subjects of interest to the inspectors. Although some of the subjects discussed are not clearly encompassed in existing regulatory requirements the discussions may help develop insights that lead to improving safe operation of the plant. The meetings provide a valuable opportunity for synergistic interaction between two groups whose primary responsibility is nuclear safety.

The inspectors initiated additional discussion on the advantages of using an electric motor rather than a turbine as the prime mover for an auxiliary feedwater (AFW) pump. The licensee stated that preliminary studies indicated that use of a motor driven pump would significantly increase AFW system reliability. The licensee plans further study to determine motor power requirements and identify reliable power sources. The licensee also discussed its plans to perform one or two safety system function inspections (SSFI's) during the outage.

No violations or deviations were identified in this area.

9. Team Inspections

A Region III team inspected the Facility Change Request (FCR) process and other engineering activities from February 22 through February 26, 1988, and March 7 through March 11, 1988. The team reviewed completed FCR's

and both old and current in-process FCR's. The results of this inspection are documented in Inspection Report 50-346/88006.

On February 22 through February 25, 1988, and March 7 through March 11, 1988, a Region III team inspected the of programs of the recently reorganized Chemistry and Health Physics Departments. The results of this inspection are documented in Inspection Report 50-346/88008.

10. Public Meeting

On March 30, 1988, the Regional Administrator and members of his staff met with Ottawa County Commissioners, other officials of Ottawa County and Oak Harbor, representatives of the State of Ohio (including the Public Utilities Commission of Ohio), members of the public and the press. The purpose of the meeting was to discuss the NRC and its role, the resident inspection program, the resident inspectors and a brief overview of the Davis-Besse SALP VI results. The meeting was positive and at the conclusion the Commissioners stated that they would like to periodically meet with the NRC.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in paragraph 3.

12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of NRC or licensee or both. Open items disclosed during the inspection are discussed in paragraphs 3 and 5.

13. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection and summarized the scope and findings of the inspection activities. The licensee acknowledged the findings. After discussions with the licensee, the inspectors have determined there is no proprietary data contained in this inspection report.