

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/94002(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 Nuclear Power Station

Inspection At: Oak Harbor, Ohio

Inspection Conducted: January 14 - March 2, 1994

Inspectors: S. Stasek  
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Approved By:

  
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3/16/94  
Date

Inspection Summary

Inspection on January 14 through March 2, 1994  
(Report No. 50-346/94002(DRP))

Areas Inspected: A routine safety inspection by resident and regional inspectors of previous inspection findings, operational safety, surveillances, maintenance, and licensee event reports.

Results: An executive summary follows:

Plant Operations: Overall, performance of the operating crews was good this inspection period. Adherence to administrative controls was generally adequate. However, while attempting to place the moisture separator reheater drain demineralizer (MSD) into service, a chemistry technician failed to perform certain procedurally required fill and vent prerequisites (paragraph 3.a).

Maintenance: Maintenance and surveillance activities observed during the inspection period appeared to be conducted in accordance with all applicable plant requirements. However, followup of a September 3, 1993 event, identified that an I&C technician manipulated inplant equipment without operations authorization resulting in both channels of the containment vessel

hydrogen analyzer becoming inoperable (paragraph 2.a). This matter is considered a violation of NRC requirements.

Engineering: Engineering support for the temporary repair of a "weeping" weld on the MSD line at the point of connection to the condensate system was good (paragraph 3.a). Actions were ongoing during the inspection period to resolve fuse sizing/design concerns relating to the containment vessel hydrogen analyzer (paragraph 2.a).

Plant Support: Personnel adherence to the radiation protection and security programs was good this inspection period with no substantive concerns noted. A recently issued quality assurance surveillance documented concerns regarding a large backlog in procedure change requests (paragraph 3.b). Management oversight of the program was considered less than adequate. Also noted, was a case where operators failed to initiate a required procedure change request upon their determining a step in the cold weather preparation checklist was no longer applicable (paragraph 7). The inspectors noted at least two cases this period where potential conditions adverse to quality reports (PCAQRs) were not initiated as required (paragraphs 2.a and 7).

## DETAILS

### 1. Persons Contacted

#### Toledo Edison Company

L. F. Storz, Vice President, Nuclear  
\*G. A. Gibbs, Director, Engineering  
\*S. C. Jain, Director, Nuclear Services  
\*J. K. Wood, Plant Manager  
\*T. J. Myers, Director, Nuclear Assurance  
\*J. W. Rogers, Manager, Maintenance  
\*J. Dillich, Manager, Radiation Protection  
\*S. Byrne, Manager, Plant Operations  
\*B. Donnellon, Manager, Plant Engineering  
\*J. Holden, Manager, Design Engineering  
\*J. E. Moyers, Manager, Quality Assessment  
D. Crouch, Superintendent, Mechanical Maintenance  
\*D. P. Ricci, Supervisor, Operations  
R. C. Zyduck, Manager, Nuclear Engineering  
G. Skeel, Manager, Security  
\*W. O'Conner, Manager, Regulatory Affairs  
G. J. Melssen, Superintendent, Electrical Maintenance  
G. R. McIntyre, Supervisor, Electrical Systems  
\*T. Haberland, Manager, Planning  
\*N. Peterson, Engineer, Licensing  
\*D. Schreiner, Supervisor, Independent Safety Engineering Group  
\*C. Hawley, Manager, Quality Control  
\*T. E. LeMay, Supervisor, Planning  
\*P. W. Smith, Supervisor, Compliance  
\*L. Myers, Shift Supervisor, Plant Operations  
\*R. Scott, Chemistry Department Superintendent  
\*R. A. Greenwood, Radiation Protection Manager

\*Denotes those licensee personnel attending the March 2, 1994, exit meeting.

### 2. Followup of Previous Inspection Findings (92701)

- a. (Open) Inspection Followup Item (346/93017-03(DRP)): This item pertained to the simultaneous inoperability of both containment vessel hydrogen analyzer (CVHA) channels. Specifically, on September 3, 1993, while performing a monthly channel calibration of the electronics string in CVHA channel 2, an instrumentation and controls (I&C) technician inadvertently contacted an energized component in the analyzer cabinet, causing the power supply fuse to fail. After observing the problem, the technician then attempted to start the sample pump in CVHA channel 1, located in an adjacent cabinet, which caused failure of the power supply fuse in that channel as well. This resulted in both CVHA channels being simultaneously inoperable.

Based on the current way the CVHA system is operated the apparent cause of the fuse failures appears to be a lack of an adequate fuse replacement program that would account for the accelerated aging of the fuses. The fusing was intended to react quickly to protect the electronics string, as well as for handling of the sample pump inrush current. The fuses were rated below inrush current levels and, due to repeated stop and start operation of the sample pumps for routine calibration and testing, eventually degraded to the point of failure. The licensee intended to establish a fuse replacement schedule to preclude the fuse failures, but had not finalized the schedule by the end of the inspection period. This item will remain open pending establishment of licensee corrective action to prevent recurrence.

Additionally, the inspectors identified concerns related to equipment control aspects of the event. When the technician observed the problem with CVHA channel 2 during performance of calibration activities, the individual proceeded to attempt to start the sample pump in CVHA channel 1. The action was taken without prior notification and/or authorization from the operations shift supervisor (SS), and caused inoperability of both trains of the CVHA, an engineered safety feature. The procedure utilized for the calibration, DB-MI-03730, revision 00, Calibration of Channel 2 Containment Vessel H<sub>2</sub> Analyzer, required the technician, once the malfunction in channel 2 was observed, to immediately notify the SS and Instrumentation and Control (I&C) supervisor. The intent was to ensure that the SS was given the opportunity to determine the effect of the inoperable channel and evaluate possible reporting requirements and, in the case of the I&C supervisor, to determine actions necessary to initiate corrective maintenance. The appropriate personnel were notified after both channels were made inoperable.

The technician's attempt to operate CVHA channel 1 prior to notifying the operations SS and I&C supervisor upon discovery of the malfunction in CVHA channel 2, was contrary to DB-MI-03730, section 4.1.4, and therefore, is considered a violation of 10 CFR Part 50, Appendix B, Criterion V (346/94002-01(DRP)).

The inspectors discussed the matter with operations and I&C management, who explained that the unauthorized manipulation of the CVHA did not meet management's expectations of acceptable equipment control. Of particular concern was that although a Potential Condition Adverse to Quality Report (PCAQR) was initiated and the I&C supervisor held discussions with the technician and I&C staff, the licensee did not identify or document the equipment control aspects of the issue as part of the root cause determination or corrective action to prevent recurrence portions of the PCAQR review process.

- b. (Closed) Unresolved Item (346/93024-01(DRP)): Examples of configuration control and procedural adherence weaknesses. Specifically, followup of an event where the auxiliary building experienced a radioactive airborne problem during chemistry sampling of the makeup tank air volume as well as another event where the wrong "shear" bolts were installed in an auxiliary building blowout panel, identified that personnel failed to implement procedures as intended, and that procedure changes and a plant modification were not appropriately completed. These examples appear to be similar to those addressed in a recently issued escalated enforcement action (reference inspection report 50-346/93019(DRP)), and resolution to that enforcement action should also encompass corrective actions for this matter as well. Therefore, this item is closed.
- c. (Closed) Unresolved Item (346/93017-01(DRP)): Weaknesses identified with implementation of control room administrative controls. The weaknesses included errors in the inoperable equipment tracking log, failure to maintain a fire impairment sheet, and errors associated with the temporary modification tracking system. Each of these examples involved aspects of failure to follow administrative procedures, and, as in the case discussed in paragraph 2.b, appear to be similar in nature to those addressed in a recently issued escalated enforcement action (reference inspection report 50-346/93019(DRP)). The licensee's resolution to the enforcement action should encompass any followup actions for this matter as well. Therefore, this item is closed.
- d. (Closed) Unresolved Item (346/92013-01(DRP) (AMS RIII-92-A-0110)): Missed Fire Watch. During this inspection period, the inspector reviewed the details associated with a September 8, 1992, incident where an hourly firewatch was not properly performed. The review was conducted in response to Generic Letter 93-03, Verification of Plant Records. The missed firewatch was to have been performed to address compensatory measures in response to NRC Bulletin 92-01, Supplement 1, "Failure of Thermo-lag 330 Fire Barrier System to Perform Its Specified Fire Endurance Function."

The licensee identified, via a routine audit of firewatch patrol logs, that the assigned security officer that performed the firewatch had not entered one of the required areas on two sequential occasions. The Security Department subsequently conducted an investigation as to the reason the firewatch was not appropriately completed. Documentation of the event and the subsequent investigation results were submitted to the NRC via a voluntary report dated October 2, 1992.

The security investigation determined: 1) the individual had been trained on how to perform firewatch rounds, 2) that he had been briefed previously on how to conduct the specified rounds, 3) his route taken to conduct the rounds would have placed him next to the entrance door to the subject room on both occasions, 4) the

security officer initially indicated that he had thought he had performed the firewatch in an appropriate manner, 5) the security officer was aware that periodic audits of security card reader transactions were made to verify firewatch rounds, 6) when the error was identified to him, he accepted the fact that he had made an error, 7) the investigation concluded that the cause of the event was human error and inattention to detail. Additionally, overall performance of the security officer had previously been acceptable and since the time of error, subsequent firewatch rounds were acceptably completed. Further audits of the individual's firewatch rounds activities were also done on several occasions with no further problems noted.

As a note, during the second missed firewatch rounds of the one room, another individual had entered the room during that time frame who was firewatch qualified and had not noted any potential fire in the area.

Although the firewatch rounds log had been inappropriately completed, the licensee's program had identified the inconsistency, an appropriate investigation was conducted into the matter, and appropriate corrective action was taken as a result. Therefore, the violation will not be cited because the licensee's efforts to identify and correct the violation met the criteria specified in section VII.B.2 of the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C).

No deviations were identified in this area; however, one cited violation and one non-cited violation were identified.

3. Operational Safety Verification (40500) (71707) (92701)

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during the inspection period. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified tracking of limiting conditions for operation (LCO) associated with affected components. Tours of the auxiliary and turbine 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 certain pieces of equipment in need of maintenance. Walkdowns of the accessible portions of the following systems were conducted to verify operability by comparing system lineups with plant drawings, as-built configuration, or present valve lineup lists; observing equipment conditions that could degrade performance; and verifying that instrumentation was properly valved, functioning, and calibrated.

- Emergency Diesel Generator Air Start System (Three Trains)
- Essential High and Low Voltage Electrical Switchgear (Both Trains)
- Auxiliary Feedwater System (Both Trains)
- Essential Service Water System (Both Trains)
- Station Blackout Diesel Generator

The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan, including badging of personnel, access control, security walkdowns, security response (compensatory actions), visitor control, security staff attentiveness, and operation of security equipment.

Additionally, the inspectors observed plant housekeeping, general plant cleanliness conditions, and verified implementation of radiation protection controls.

Specific observations and reviews included the following:

- a. On February 3, 1994, an auxiliary (zone) operator observed a leak in the suction piping to booster feedwater pump (BFP) #1. Visual inspection revealed a minor leak at the toe of the weld where the horizontal 4-inch diameter moisture separator reheater drain demineralizer (MSD) heat exchanger cooling water line formed a "tee" into the vertical 24-inch diameter BFP suction piping. The leakage was described as "weepage" and later quantified at about one drop per 3-5 minutes. Further non-destructive examination revealed surface indications over approximately 120 degrees of the weld circumference. The MSD was isolated from the BFP piping during this time.

The licensee performed a structural repair consisting of welding two 1-inch thick rolled steel plates to the BFP suction line and to the MSD line. The repair was a structural reinforcement and did not serve as a pressure boundary. A 1/4-inch diameter hole was drilled through the steel plate to facilitate monitoring of the leakage. The repair was completed on February 5, 1994. On March 1, a Region III Division of Reactor Safety inspector performed onsite review of the structural design calculations, and viewed the field repair. No concerns were identified.

The root cause of the weld failure was undetermined, however, on February 2, 1994, while chemistry personnel were attempting to place the moisture separator drain demineralizer into service, a pressure transient was experienced in the MSD line. Personnel observed the MSD line "swinging" when flow was initiated through the line. The attempt to place the MSD into service was then aborted and appropriate personnel informed. Walkdowns of the piping and hangers performed by civil/structural engineers concluded the piping moved approximately six to eight inches. The temperature control valve (TCV) in the MSD line had been replaced the previous day, which required draining of the system, a non-

routine occurrence requiring filling and venting of the heat exchanger prior to return to service. The licensee determined that the demineralizer heat exchanger was not properly filled and vented prior to initiating flow through the MSD line. It was postulated that the improper venting of the line caused the pressure transient, however, repeated attempts to place the MSD line in service after proper filling and venting resulted in similar MSD line swings. The licensee subsequently determined that the disc for the butterfly type TCV was installed improperly, as was the disc that was removed the previous day. The licensee was continuing to evaluate effects caused by the improper disc installations on the operation of the TCV as a possible cause. On March 2, with the TCV properly installed, the MSD line was returned to service without complication. The apparent cause of the weld failure was postulated as a combination of the pressure transient stress, thermal stress, and weld fatigue. A final repair will be performed during the upcoming refueling outage, when the weld crack will be further analyzed to determine specific failure mechanism(s).

The inspectors were concerned regarding inadequate procedure adherence on the part of the chemistry technician when returning the MSD line to service. The technician assumed operations personnel who restored the skid from the maintenance configuration had properly filled and vented the heat exchanger. Due to the erroneous assumption, the technician failed to complete critical steps as required by DB-CH-06019, MSD Demineralizer System Procedure, which outlined the necessary steps to fill and vent the heat exchanger. Administrative procedure, DB-OP-00000, Conduct of Operations, Section 2.1, "Applicability," stated "non-operations personnel who participate in any activity related to station operations shall also comply with the requirements in this procedure." Section 6.8.3, "Procedure Use," required that procedures shall be reviewed prior to use, that the procedures be open, and that the procedures be followed step-by-step when performing an infrequent or unusual evolution, when performing tasks in which operations must occur in a specified sequence, when errors could cause significant adverse impact to the plant and, when in the case of system operating procedures, prerequisites shall be completed prior to proceeding with the procedure. The failure of the technician to comply with DB-OP-00000 while returning the MSD line to service was a violation of 10 CFR Part 50, Appendix B, Criterion V which specified, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings and shall be accomplished in accordance with these instructions, procedures, or drawings. The violation will not be cited because the licensee's efforts to identify and correct the violation met the criteria specified in section VII.B.2 of the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C). In particular, the matter was licensee identified, and was of minimal safety significance. The



chemistry technician was counselled as to his error and actions subsequently were taken to assure an adequate fill and vent of the system was accomplished and the improper TCV installation was corrected.

- b. During the inspection period, the inspector reviewed a copy of Nuclear Assurance Surveillance Report SR-93-PROCE-02 that addressed the procedure change program. The inspector noted the number of procedure change requests (PCRs) appeared to be high. Specifically noted during the QA surveillance was that over 3,000 open PCRs were outstanding with approximately 800 or more being greater than 2 years old. The surveillance report also indicated that management was not fully aware of the number of outstanding PCRs and no means of trending the number of open PCRs was in place up until that time. Discussions with QA personnel indicated that a trending mechanism was subsequently initiated with management oversight strengthened in this area. The inspectors will continue to evaluate the PCR backlog and the level of management cognizance and direction given in this area.
- c. During the inspection period the Vice President-Nuclear announced his resignation effective March 1, 1994. At the close of the inspection period, no replacement had been named. The Senior Vice President-Nuclear will function in both capacities until a replacement is selected. A transition plan (i.e. turnover list) is under development to insure a smooth transition when the new Vice President is selected. In the interim, the inspectors will continue to monitor management's performance and effectiveness as part of the routine inspection program.

No deviations were identified in this area; however, one non-cited violation was identified.

4. Surveillance (61726)

The inspectors observed safety-related surveillance testing and verified that the testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting condition for operation (LCOs) were met, that removal and restoration of the affected components were accomplished, that test results conformed with Technical Specification 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 following test activities were observed and/or reviewed:

- DB-SP-03150, Auxiliary Feedwater (AFW) Pump 1 Monthly Jog Test
- DB-SP-03159, AFW Pump 2 Monthly Jog Test
- DB-SC-04271, Station Blackout Diesel Generator Monthly Test
- DB-SC-03070, Emergency Diesel Generator (EDG) 1 Monthly Test
- DB-SC-03071, EDG 2 Monthly Test
- DB-MI-03730, Containment Vessel Hydrogen Analyzer Calibration

No violations or deviations were identified in this area.

5. Maintenance (62703)

Station maintenance activities of safety-related systems and components were observed and/or reviewed during the inspection period to ensure 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 (LCO) 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.

Maintenance work orders (MWOs) were reviewed to determine status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activities were observed and/or reviewed:

- MWO-7-94-0141-01, Booster Feedwater Suction Line Structural Repair
- MWO-1-93-0132-03, Repair of ECCS Room Cooler 1-4 Inlet Valve
- MWO-3-93-4173-01, Decay Heat Cooler 1-2 Outlet Valve Controller Calibration

No violations or deviations were identified in this area.

6. Followup of Licensee Event Reports (92700)

Through direct observations, discussions with licensee personnel, and review of records, the following licensee event reports (LERs) were 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.

- a. (Closed) LER 93-008-00, Manual Initiation of Emergency Ventilation Due to High Airborne Activity. On December 21, 1993, during sampling of the makeup tank air volume, the radwaste ventilation system tripped due to the sensing of abnormal radiation levels. Upon receipt of the ventilation system trip, the auxiliary building was evacuated and operators manually started the emergency ventilation system (EVS). Because the EVS was started in response to an actual concern with auxiliary building radiation levels, the licensee determined that notifications were required per 10 CFR 50.72 and 50.73.

This event was further documented in inspection report 50-346/93024(DRP). As discussed in that report, several concerns were identified that appear to include examples of inadequate configuration control and procedure adherence weaknesses and as such were considered part of an unresolved item (50-346/93024-01b(DRP)). Further inspector followup of this event is documented in paragraph 2.b of this report. This LER is closed.

- b. (Closed) LER 93-009-00, Entry into TS 3.0.3 Due to Inoperable Control of Emergency Ventilation System. Followup of this event, which occurred on December 21, 1993, was documented in Inspection Report 50-346/93024(DRP). The inspector reviewed the licensee's root cause analysis as well as the corrective actions taken. This LER is closed.

No violations or deviations were identified in this area.

7. Cold Weather Preparations (71714) (71707)

The objective of this inspection was to determine whether the licensee had effectively implemented a program to protect safety-related systems against extreme cold weather. The inspector reviewed the scope and licensee implementation of procedures DB-OP-6913, "Plant Winterization Checklist" and DB-OP-06331, "Freeze Protection and Electrical Heat Trace," the primary control mechanisms utilized to assure protection of safety-related equipment. Additionally, the inspector reviewed operations' effectiveness in dealing with cold weather-related problems.

Overall, the cold weather program scope and implementation appeared effective, with no significant operational occurrences, however, several noteworthy problems occurred during the period. Specifically, on January 8, 1994, due to both main steam line room penthouse outer doors being left open, freezing of the common pressure sensing line occurred, causing the downstream pressure switches, PS-3689M and PS-3687C (channel 2 #1 steam generator low pressure trip block permit and channel 2 #1 steam generator low pressure trip, respectively), to trip. Although the trips did not affect unit operation, remedial operator response was required (i.e., closing the doors) to correct the condition and allow reset of the trips. Additionally, freezing of a fire water

storage tank level sensing line and minor heat trace alarms were received during the coldest periods.

The licensee identified two administrative problems which concerned the inspectors. The first issue was related to apparent failure to adhere to procedure DB-OP-00000, Conduct of Operations and DB-OP-06331, which required work requests to be initiated to address electrical heat trace problems noted on the control room (CR) Doric recorder. The licensee identified this item and documented it in Potential Condition Adverse to Quality Report (PCAQR) 94-0114. In the second case, on January 18, 1994, the licensee initiated PCAQR 94-0054, which documented that the drawing referring to the service water pump room sprinkler electrical heat trace (SWHT) differed from the field condition and was not incorporated into DB-OP-6331, the freeze protection and electrical heat trace implementing procedure. The circuit was verified installed and operable. During review of the plant winterization checklist (DB-OP-06913) the inspector noted that on November 8, 1993, step 3.1.11 "verify the SWHT is in place and in service" was initialed as "not applicable" on the basis that the "heat trace system is obsolete and no longer used." The inspector was concerned about the apparent discrepancy in the implementation of SWHT circuit operability requirements, as well as the aforementioned apparent failure to initiate work requests in accordance with requirements related the CR Doric recorder points. The inspectors' review of these items was not complete at the end of the period, and will be tracked as an unresolved item (346/94002-02(DRP)).

No violations or deviations were identified in this area.

8. Unresolved Items

An unresolved item is a matter requiring more information in order to ascertain whether it is an acceptable item, a violation, or a deviation. An unresolved item was identified in paragraph 7.

9. Non-cited Violations

The NRC uses the Notice of Violation to formally document failure to meet a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not issue a Notice of Violation if the requirements set forth in 10 CFR Part 2, Appendix C, Section VII.B.1 or VII.B.2 are met. Violations of regulatory requirements identified during the inspection for which a Notice of Violation will not be issued are discussed in paragraphs 2.d and 3.a.

10. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) throughout the inspection period and at the conclusion of the inspection on March 2, 1994, and summarized the scope and findings of the inspection activities. The licensee acknowledged the findings.

After discussions with the licensee, the inspectors determined there was no proprietary information contained in this inspection report.