

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/89014(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, Ohio

Inspection Conducted: April 24, 1989 to June 4, 1989

Inspectors: P. M. Byron

D. C. Kosloff

R. K. Walton

Approved By: *Robert W. DeFayette*
Robert W. DeFayette, Chief
Reactor Projects Section 3A

6/22/89
Date

Inspection Summary

Inspection on April 24, 1989 through June 4, 1989 (Report No. 50-346/89014(DRP))

Areas Inspected: A routine unannounced safety inspection of plant operations, radiological controls, maintenance/surveillance, emergency preparedness, security, engineering and technical support, and safety assessment/quality verification was performed.

Results: Operating crews demonstrated excellent response to plant transients but made minor errors in control of plant equipment (Paragraph 2). A reactor trip occurred due to the malfunction of balance of plant equipment (Paragraph 2). A personnel error during a surveillance caused a minor steam leak in the plant (Paragraphs 2 and 4). A broken lubricating oil line was discovered in an Emergency Diesel Generator during maintenance (Paragraph 4). Personnel errors in maintenance caused malfunctions of balance-of-plant equipment (Paragraph 4). QA has taken steps to increase performance based reviews (Paragraph 8.b).

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DETAILS

1. Persons Contacted

a. Toledo Edison Company (TED)

- D. Shelton, Vice President, Nuclear
- L. Ramsett, Quality Assurance Director
- *L. Storz, Plant Manager
- W. Johnson, Plant Maintenance Manager
- *R. Flood, Plant Operations Manager
- E. Salowitz, Planning and Support Director
- *S. Jain, Engineering Director
- G. Grime, Industrial Security Director
- *D. Timms, Systems Engineering Supervisor
- *T. Anderson, Maintenance and Outage Management Manager
- *V. Kumar, Systems Engineering
- *P. Roelant, Systems Engineering
- *L. Harder, Radiological Protection Supervisor
- *C. Hengge, Fire Protection Compliance Supervisor
- R. Schrauder, Nuclear Licensing Manager
- G. Skeel, Nuclear Security Operations Manager
- *B. Shingleton, Licensing Engineer

b. USNRC

- *P. Byron, Senior Resident Inspector
- *D. Kosloff, Resident Inspector
- *R. Walton, Resident Inspector in Training

*Denotes those personnel attending the June 9, 1989, exit meeting.

2. Plant Operations (71707, 71710, 64704, 92702, 93702)

a. Operational Safety Verification

Inspections were routinely performed to ensure that the licensee conducts activities at the facility safely and in conformance with regulatory requirements. The inspections focused on the implementation and overall effectiveness of the licensee's control of operating activities, and on the performance of licensed and non-licensed operators and shift managers. The inspections included direct observation of activities, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions of operation (LCO), and reviews of facility procedures, records, and reports. The following items were considered during these inspections:

- Adequacy of plant staffing and supervision.
- Control room professionalism, including procedure adherence, operator attentiveness, and response to alarms, events, and off-normal conditions.

- Operability of selected safety-related systems, including attendant alarms, instrumentation, and controls.
- Maintenance of quality records and reports.

The inspectors observed that control room shift supervisors, shift managers, and operators were attentive to plant conditions, performed frequent panel walk-downs and were responsive to off-normal alarms and conditions.

The operating crew was cognizant of ongoing work activities. Surveillances and testing activities were appropriately authorized and logged. Licensed operators were generally cognizant of entry into and compliance with LCO action requirements.

On April 24, 1989, control rod 7-7 dropped into the core due to a failed control rod drive motor (CRDM) fuse. The inspectors observed the rod recovery from the control room. Analysis of the failed fuse by its manufacturer revealed that the 10 amp fuse had been subjected to an estimated current of 50 to 60 amps. The licensee has not identified the cause of the apparent current surge. Weekly thermography inspections of the CRDM fuses did not reveal any abnormal heating of the fuses for rod 7-7 before or after the rod drop. The system engineer is investigating possible reasons for an intermittent or one time high current through the fuse. The inspectors will review the results of the licensee's investigation.

On April 25, 1989, the sump in ECCS room #3 overflowed when both sump pumps did not start as sump level increased. Equipment operators were draining Decay Heat Removal piping to the sump in preparation for maintenance. At about 7:48 a.m. an equipment operator discovered about three inches of water on the floor of the ECCS room. When the level switch was mechanically agitated by the equipment operator the pumps started and pumped out the sump. The partial flooding of the room did not cause any equipment damage. Investigation of the event revealed that at about 6:11 a.m. a high sump level computer alarm was received in the control room with both sump pumps not running. The control room operators did not respond to this alarm, apparently because they erroneously concluded it was a normal condition due to the draining in progress. The sumps for ECCS rooms #1 and #2 are designed with the sump level alarm setpoint lower than the pump start setpoint. Therefore, for ECCS rooms #1 and #2 an alarm with the pumps off is a normal condition. However, for ECCS room #3, the high sump level alarm with no pumps running is an abnormal condition because the sump level alarm setpoint is above the pump starting setpoint. The inspectors reviewed procedure SP 1104.45 (DB-OP-06272), Revision 11, "Station Drainage and Discharge System", and USAR Subsections 3.6.2.7.1.14 and 6.3.2.12. Procedure SP 1104.45 had no guidance on the operation of the sump pumps and both USAR subsections stated that the relationship between the pump start and alarm setpoints were the same for all three ECCS

rooms. The difference between the USAR and the actual installation is an unresolved item (346/89014-01(DRP)) pending completion of the inspectors' review of the extent of the difference and the licensee's corrective actions.

On May 10, 1989, security was notified at 12:15 a.m. that the assistant shift supervisor was missing his set of security keys. Investigation by the licensee determined that the off-going assistant shift supervisor had forgotten to turn over the keys to his relief and had taken them home. The keys were not out of his control at any time. The off-going assistant shift supervisor returned to the site to turn over the keys to his relief.

Administrative Procedure DB-OP-00100, "Shift Turnover", Section 6.3.7 requires that the on-coming and off-going Assistant Shift Supervisors shall initial their respective blocks in Part III, Key Turnover, of their Turnover Checklist signifying transfer of keys. A review of the Turnover Checklist revealed that their initials acknowledge that the keys have been transferred and the on-coming individual acknowledges he has received the keys. The inspectors reviewed the Turnover Checklist for the time in question and determined that both Assistant Shift Supervisors initiated that the key transfer had taken place.

This is a violation (346/89014-02(DRP)) of Technical Specification 6.8.1 which requires that procedures will be implemented. This violation is of minor safety significance and meets the criteria of 10 CFR 2, Appendix C, Section V.G.1 (October 13, 1988) and no notice of violation will be issued.

The individuals involved were counseled about the need for attention to detail. The licensee needs to emphasize the importance of acknowledging actions after they have actually taken place and not mechanically signing lists or procedures. The inspectors have discussed this with the licensee.

On May 19, 1989, power was lost to Motor Control Center (MCC) E12B. The licensee declared the associated EDG and AFW systems inoperable because support components for those systems are powered from E12B. The inspectors discussed the affected loads with control room personnel and verified that the required additional surveillances were conducted. The inspectors noted that the ventilation fan for Battery Room A is powered from E12B. Licensee personnel informed the inspectors that the USAR did not require the operability of the battery room ventilation fans. The inspectors' later review of USAR Subsections 9.4.2.1.2.1 and 9.4.2.1.3.1 revealed that the USAR did not clearly address all aspects of a loss of battery room ventilation. Discussion with licensee engineering personnel indicated that the affected battery remained capable of performing its safety function. However, written guidance for determining the operability of a battery without ventilation is weak.

On May 19, 1989, while placing Component Cooling Water Pump #3 in an installed spare status in accordance with procedure SP 1104.12 (DB-OP-06262), Revision 16, "Component Cooling Water Operating Procedure," an equipment operator missed Step 12.3.1. When the operator performed Step 12.3.2., safety-related Service Water (SW) System valve SW 1429 failed to its safety position (open), this caused safety-related valve SW 1399 to go to its safety position (closed). Circulating Water system valve CT 2955 then opened to supply water to the Turbine Plant Cooling Water system ending the cooling water transient. The systems were then restored to normal.

On May 22, 1989, an operator error during surveillance testing of main steam system valve MS 611 caused a steam leak from a hose attached to open drain valve MS 610A in the #2 Mechanical Penetration Room (see the maintenance/surveillance section for more details). The control room operators were alerted to the leak by local fire alarms actuated by the steam and a report of a visual sighting of a steam leak in mechanical penetration room #2 (rooms #2 and #4 are interconnected). The control room operators, not yet knowing the source or severity of the leak, quickly pushed the close button for MS 611 to return the plant to normal configuration. As MS 611 closed it isolated the source of steam to MS 610A. Shortly thereafter an equipment operator found steam coming from MS 610A and shut it, stopping the steam leak. The inspectors observed the control room operators during recovery actions shortly after the steam leak.

On May 26-28, 1989, the licensee had a maintenance outage to perform work in containment while maintaining the reactor at approximately five percent power. The inspectors observed power ascension and noted that there were turbine-generator oscillations when steam generator water levels were increased above low level limits. The plant has experienced a variety of perturbations while coming off low level limits. The inspectors have observed many of these perturbations and have discussed their concerns with the licensee. Operations personnel have also voiced concerns and the licensee has formed an engineering task force to address the issues. The inspectors will follow the licensee's actions.

May 30, 1989, at 2:15 p.m. the main turbine tripped on high condenser pressure while at 100 percent power when two circulating water (CW) pumps (2 and 4) tripped on high differential motor current. The reactor then tripped on an anticipatory trip signal. The CW pump motor breakers tripped from differential motor current which was caused by a failed electrical splice. The inspectors observed the trip recovery from the control room and various in-plant locations. All systems performed as expected except as follows. About five minutes after the reactor trip, a 13.8 KV feeder breaker (MBBF4) fed from the same bus (Bus B) as CW pumps 2 and 4 tripped on over current. No other loads on Bus B were lost. Investigation

by the licensee determined that a splice in phase B in the line from the tripped breaker to transformer BF4 had failed. The failed splice was removed and the licensee plans to send it to an independent laboratory for analysis.

The licensee theorizes that as the splice failed it caused the charging and discharging of a surge suppressor resulting in a current imbalance as sensed by the differential protection relays (SA-1) which caused the pump motor breakers to trip. The splice continued to deteriorate to the point where a phase to ground fault occurred which tripped feeder breaker HBBF4 on over-current.

A chemistry technician heard loud noises and smelled a strong odor in the water treatment building (the location of the failed splice) at the same time the reactor tripped. The noises were reported to the control room as an explosion and subsequently reported to the NRC as an unsubstantiated explosion. The inspectors, after learning of the report, inspected the water treatment building and found no evidence of an explosion. The inspectors observed the removing of the splice box cover and noted the carbonized material on the cover.

Main Steam Safety Valve (MSSV) SP17B7 with a 1050 psig set point reseated at a lower pressure (about 980 psig) than expected. This is one of four instrumented MSSV's and all have reduced clearance between the roof vent and the drip pan. The licensee believes the reduced clearance may be insufficient in some cases to accommodate thermal growth and affects the reset pressure. The licensee verified by data review that the MSSV's lifted at the required set point and does not plan to perform set point verification tests.

To prevent rapid cool downs following plant trips the licensee uses a Rapid Feedwater Reduction (RFR) control circuit. This circuit initially positions both Startup Feedwater (SUFW) valves to approximately 20 percent open. SUFW valve No. 2 fully closed following the plant trip, then functioned normally once the level in steam generator No. 2 decreased to its low level limit. The licensee tested the RFR circuit on May 31, 1989, and it functioned normally. Originally the licensee suspected a sticking relay. However, after additional investigation the licensee suspects an intermittent malfunction in the pneumatic or electrical conversion portion of the circuitry.

Reheat Steam Source Valves (RSSV) MS199 and MS314 failed to close when the turbine tripped. The pressure switch (PS 9806) which normally signals these valves to close was jumpered out because it had been found leaking on May 3, 1989. Leakage from PS 9806 can cause the switch contacts to fail due to corrosion. The licensee had installed jumpers to PS 9807 in an unsuccessful attempt to provide automatic closure of MS199 and MS314.

The control room operators observed that the valves were open and shut them manually as specified in Section 4.20 of Procedure DB-OP-06910, "Trip Recovery".

The licensee also noted that the Smart Analog Signal Switch (SASS) System switched four parameters to the alternate transmitters although the normally selected transmitters had not malfunctioned. The licensee is investigating the cause of the unrequired SASS activation.

The inspectors are following the licensee's ongoing investigations and corrective actions.

b. Off shift Inspection of Control Rooms

The inspectors performed routine inspections of the control room during off-shift and weekend periods; these included inspections between the hours of 10:00 p.m. and 5:00 a.m. The inspections were conducted to assess overall crew performance and, specifically, control room operator attentiveness during night shifts.

The inspectors determined that both licensed and non-licensed operators were alert and attentive to their duties, and that the administrative controls relating to the conduct of operation were being adhered to.

c. ESF System Walk-down

The operability of selected engineered safety features was confirmed by the inspectors during walk-downs of the accessible portions of several systems. The following items were included: verification that procedures match the plant drawings, that equipment, instrumentation, valve and electrical breaker line-up status is in agreement with procedure checklists, and verification that locks, tags, jumpers, etc., are properly attached and identifiable. The following systems were walked down during this inspection period:

- 480 Volt AC Electrical Distribution System
- Component Cooling Water System
- Emergency Diesel Generator System
- DC Electric Distribution System

d. Plant Material Conditions/Housekeeping

The inspectors performed routine plant tours to assess material conditions within the plant, ongoing quality activities and plant-wide housekeeping.

Plant deficiencies were appropriately tagged for deficiency correction.

(Closed) Violation (346/88015-01(DRP)): The licensee's implementing procedures did not implement the cleanliness requirements of the Nuclear Quality Assurance Manual (NQAM) and ANSI N 45.2.3-1973 in that they did not provide for material accountability. The licensee revised procedure DB-MN-00005, "Housekeeping Control" to establish requirements, guidelines, responsibilities, and implementing instructions. Housekeeping zones have been established. The inspectors have reviewed the revised procedure and have observed improved housekeeping practices. This item is closed.

No other violations or deviations were identified.

3. Radiological Controls (71707)

The licensee's radiological controls and practices were routinely observed by the inspectors during plant tours and during the inspection of selected work activities. The inspection included direct observations of health physics (HP) activities relating to radiological surveys and monitoring, maintenance of radiological control signs and barriers, contamination, and radioactive waste controls. The inspection also included a routine review of the licensee's radiological and water chemistry control records and reports.

Health physics controls and practices were satisfactory. The housekeeping in the radiological controlled areas was noted to have been maintained at a high level. Knowledge and training of personnel were satisfactory.

No violations or deviations were identified.

4. Maintenance/Surveillance (61726, 62702, 62703, 92701, 92702, 93702)

Selected portions of plant surveillance, test and maintenance activities on systems and components important to safety were observed or reviewed to ascertain that the activities were performed in accordance with approved procedures, regulatory guides, industry codes and standards, and the Technical Specifications. The following items were considered during these inspections: limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating work; activities were accomplished using approved procedures and were inspected as applicable; functional testing or calibration was performed prior to returning the components or systems to service; parts and materials used were properly certified; and appropriate fire prevention, radiological, and housekeeping conditions were maintained.

a. Maintenance

The reviewed maintenance activities included:

- Repair of low voltage switchgear room ventilation damper motor operator. The inspectors noted that procedural controls for wires lifted during maintenance appeared weak. This was discussed with QC inspectors and the QA director. The inspectors will follow up on this issue in a future inspection.
- Repair of Component Cooling Water (CCW) room ventilation damper.
- Preventive maintenance on instrument air dryer. The maintenance was inadequate because one of the solenoid valves removed for maintenance was incorrectly installed and another solenoid valve removed for maintenance failed after reinstallation. The incorrect installation was a personnel error and the licensee has not yet determined the cause of the failure of the second valve. The inspectors will follow up on this issue in a future inspection.
- Inspection of internal Emergency Diesel Generator (EDG) lube oil supply lines. Near the end of a planned maintenance outage for EDG 1-2 the licensee found a broken carbon steel lubrication oil supply line for the rocker arm assembly for Cylinder 20. At the beginning of the outage the area where the broken line was found had been inspected with no abnormal conditions noted. The inspectors observed the inspection of the equivalent oil supply lines in EDG 1-1. No other broken oil supply lines were found in EDG 1-1 or 1-2. The inspectors observed that the broken line did not show any signs of being struck by an external object and there appeared to be no deformation in the area of the break. The system engineer discussed the oil line with Power Systems, the EDG vendor. Neither the licensee nor the vendor were aware of any previous failures of this type. The licensee does not know what caused the failure. The inspectors will follow up on this issue in a future inspection.
- Modification to CCW flow indication for EDG cooling.
- Preventive maintenance of EDG.
- Troubleshooting for loss of power to Motor Control Center (MCC) E12B. The inspectors observed the removal of a breaker that was being racked in when the supply breaker to E12B tripped. A small piece of wire was observed that appeared to have fallen on top of the broken stabs as the breaker was being racked in. It appeared that the wire had also made contact with one of the MCC bus bars as both the breaker, the wire and the bus bar had burn marks on them. The wire appeared to be identical to wire that had been used to attach permanent brass

identification tags to conduit that enters the top of the MCC. This wire is used in similar applications throughout the plant. Observation of the top of MCC revealed a quarter inch gap between cover plates on the top of the MCC and the raised conduit entry section on the top of the MCC. The licensee considers the wire to be the proximate cause of the loss of power to E12B.

- Cleaning and inspection of MCC E12B. The electricians cleaned the burned bus bar with non-abrasive cleaner. The cover plates on the top of E12B were removed to inspect the area immediately below the cover plates. Insulating plates form a shelf about six inches below the cover plates. A nail about two inches long was observed resting on that shelf. A layer of dust coated the shelf and the nail. The licensee cleaned the shelf, removing the nail. The plates were then reinstalled. By the end of the inspection period the licensee had not decided how to close the gap (see troubleshooting item above) on the top of E12B. The inspectors will follow up this item during a future inspection.
- Replacement of trip throttle valve actuating rod for auxiliary feedwater pump turbine #2.
- Temporary modification to remove pressure switch PS 9806 from service. On May 4, 1989, the inspectors observed that the housing for PS 9806 was partially filled with water and no maintenance information tag was apparent. Although PS 9806 is not safety related it is intended to automatically close main steam valves MS 199 and MS 314 to help control primary cooldown following a reactor trip. Therefore the inspectors discussed the status of PS 9806 with the maintenance planner responsible for its repair. PS 9806 had been identified as requiring maintenance, the planner had prepared a Maintenance Work Order, but work had not started because of concern for the effects of the work on the plant while the plant was at power. A formal action plan was later developed to identify the best method of repairing PS 9806. In accordance with the action plan a temporary modification (TM) rewired PS 9806 and PS 9807 so that PS 9807 would control MS 199 and MS 314. However, when the plant tripped on May 30, 1989, the license found that the temporary modification had failed because MS 199 and MS 314 did not close. The licensee found that there was a wire for PS 9806 that was not shown on the drawing used for the TM. The licensee is investigating why the wire was not identified when the TM was performed.
- Station air compressors setpoint modifications.

b. Surveillance

The reviewed surveillances included:

<u>Procedure No.</u>	<u>Activity</u>
DB-SP-03357	RCS Water Inventory Balance
DB-SP-03218	HPI Pump Number 1 Quarterly Pump and Valve Test
DB-SC-04186	Quarterly Functional Test of RE5328A, B, and C, Control Room EVS Fan 2 Discharge Radiation Monitor
DB-MI-04030	ARTS Bistable Test
DB-MI-03801	Accessible Detector Channel Functional and Supervisory Circuit Checks
DB-SS-03042	Control Room Emergency Ventilation System Train 2 Monthly Test
ST 5080.01	Offsite AC Power Available
DB-PF-03811	Miscellaneous Valves Quarterly Test. This test requires that MS 611, a normally closed valve, be opened and closed from the control room. Prerequisite Step 4.1.1.j. of DB-PF-03811, Revision 00, requires that the operator ensure that the piping downstream of MS 611 is filled with water before stroking MS 611. The operator filled the downstream piping with demineralized water using a hose connected from demineralized water system valve DW 130 to MS 610A in accordance with Section 8 of Procedure SP 1106.24 (DB-OP-06201), Revision 09, "Main Steam System Operating Procedure". Step 8.6 of SP 1106.24 requires that DW 130 and MS 610A be opened to allow fill flow and requires that MS 610 be opened so pressure in the line can be monitored. Step 8.8 requires the operator to close DW 130 and MS 610A. The operator closed MS 610 instead of MS 610A. There is no independent verification of Step 8.8. When Step 8.8 was thought to be complete valve MS 611 was opened from the control room allowing steam to enter the hose connecting MS 610A to DW 130. The hose was overpressurized and ruptured allowing a steam leak of about one half inch diameter through the hose coupling

into mechanical penetration room #4 in the auxiliary building. The leak was quickly isolated by closing MS 611 from the control room and closing MS 610A locally.

• DB-MI-05253 RPS Power Range Calibration

Personnel performing maintenance or surveillances used correct procedures and proper work control documents. Work authorization had been obtained for the jobs performed. Prerequisites for performing the job, such as worker protection and tagging had been performed. Surveillance continues to be an area where only an occasional minor problem arises.

(Closed) LER 86011-1L: Inadequate Seismic Qualification of Equipment. The corrective actions for this LER were reviewed in closing violation 346/86023-01 (see below).

(Closed) Violation 346/86023-01: Failure to promptly identify and correct deficiencies. The violation was divided into two parts. Item 1A identified four examples of deficiencies not promptly identified (potentiometers not locked, spray shields not installed and two examples of door bolts not installed) and Item 1B identified two examples of not promptly correcting items identified in 1A (potentiometers not locked and one example of door bolts not installed). The licensee sealed the potentiometers, installed bolts in the doors of the EDG and Cyberex cabinets and isolated the domestic water line over the station battery chargers. Later the bolts in the Cyberex cabinets were replaced with latches. Maintenance Procedures MP1410.70, "Cyberex 104VA Inverter Inspection and Maintenance" and MP1416.71, "Battery Charger and Regulated Rectifier Maintenance" were revised to ensure the potentiometers are sealed and the doors secured after maintenance. The inspectors reviewed the procedures and regularly inspect the cabinets to verify that the doors are secured. This item is closed.

(Closed) Information Notice (IN 85-49) Relay Calibration Problem:

The notice informed the licensee that Agastat E-7000 timing relays had to be mounted and calibrated vertically for the performance specifications and calibration to be valid. The licensee verified that all Agastat 7000 series timing relays were mounted vertically. The licensee also revised vendor manual procedure VM 6100.56, "Agastat Timing Relays - 7000 Series", to direct that the relays are to be calibrated while installed or in the vertical position if bench calibrated. This item is closed.

(Closed) Open Item (346/85-03-05), Inoperable NIMBIN System Due to Failure of the Rate Meter Module: On November 20, 1984, the licensee noted that the installed NIMBIN (audible/visual neutron detection system used during refueling) system had failed. Core alterations were suspended and the licensee replaced the failed module with

one from a spare NIMBIN unit as immediate correction action. In addition, the licensee modified the surveillance test for this system to provide a functional test of the NIMBIN. Long term corrective action was to replace the leased NIMBIN system with a licensee operated and maintained neutron detection system that meets the requirements of Technical Specification 4.9.2. The licensee has issued and completed most of the work required by Facility Change Request (FCR) 84-116. The inspectors have visually inspected the system installation and the licensee will have the system fully tested prior to the start of the next refueling outage. This item is closed.

No violations or deviations were identified.

5. Emergency Preparedness (71707, 82301)

An inspection of emergency preparedness activities was performed to assess the licensee's implementation of the emergency plan and implementing procedures. The inspection included monthly observation of emergency facilities and equipment, interviews with licensee staff, and a review of selected emergency implementing procedures. The inspectors observed activities in the control room, the emergency operations facility, and the operations support facility during an emergency preparedness drill.

No violations or deviations were identified.

6. Security (71707, 81700, 94600)

The licensee's security activities were observed by the inspectors during routine facility tours and during the inspectors' site arrivals and departures. Observations included the security personnel's performance associated with access control, security checks, and surveillance activities, and focused on the adequacy of security staffing, the security response (compensatory measures), and the security staff's attentiveness and thoroughness.

The security personnel were observed to be alert at their posts. Appropriate compensatory measures were established in a timely manner. Vehicles entering the protected area were thoroughly searched.

No violations or deviations were identified.

7. Engineering and Technical Support (62703, 64704, 71707, 92701, 93702)

An inspection of engineering and technical support activities was performed to assess the adequacy of support functions associated with operations, maintenance/modifications, surveillance and testing activities. The inspection focused on routine engineering involvement in plant operations and response to plant problems. The

inspection included direct observation of engineering support activities and discussions with engineering, operations, and maintenance personnel.

The inspectors have observed a continuing engineering presence in the plant relating to maintenance work and in response to plant problems.

a. Inspection of Previously Identified Items

(Closed) Violation 346/85030-02E: Failure to design the steam and feedwater line rupture control system (SFRCS) in accordance with IEEE 279 which requires that no single failure prevent SFRCS from performing its protective function. This is the only remaining outstanding item on violation 346/85030-02. The single failure of an auxiliary feedwater containment isolation valve to reopen in response to a main steam line break accident which initially depressurizes both steam generators below the SFRCS set point, would prevent both trains of auxiliary feedwater (AFW) from feeding the unaffected steam generator. The licensee's short term corrective action modified the SFRCS logic to prevent isolation of AFW flow to the unaffected steam generator. This modification was completed prior to plant restart in December of 1986. The licensee also analyzed a main steam line break accident upstream of the main steam isolation valve using a one second closure time for the turbine stop valves instead of the six second closure time used in the then existing Updated Safety Analysis Report (USAR). The latest analysis indicates that the earlier analysis was overly conservative because the pressure in the unaffected steam generator would remain above the 600 psig SFRCS trip set point if all the turbine stop valves fully closed within one second of the main steam line low pressure trip condition. The inspectors reviewed past test results for the turbine stop valves and determined that the closure time assumption is conservative. The licensee submitted a request to change the Technical Specification limit for the turbine stop valve closure time to one second. A Technical Specification amendment was approved by the NRC on December 12, 1988. This item is closed.

(Closed) Unresolved Item (346/86016-02): Failure to properly test eleven containment penetrations. This item is closed based on a review of the licensee actions as described below for LER 86-24.

(Closed) Unresolved Item (346/88021-05): The installation drawings for the Anticipatory Reactor Trip System and the Safety Features Actuation System did not accurately capture the intended design of the systems. This item is closed based on a review of the licensee actions as described below for LER 88-20.

b. Inspection of Licensee Event Reports (LER's)

(Closed) LER 86-24, Inadequate Testing of Eleven Containment Isolation Valve Flanges. The licensee discovered that eleven containment penetrations in the containment vessel vacuum breaker system were not subjected to design accident pressure during performance of the Local Leak Rate Tests (LLRT). These same flanges, however, were tested satisfactorily by the Integrated Leak Rate Tests. The licensee's LLRT procedure (ST 5061.02) was revised to include a test of the valve flanges between the valve and containment. The eleven flanges were tested satisfactorily on July 13, 1986. The inspectors reviewed the licensee's LLRT procedure and found that the procedure adequately tests the 11 flanges. This item is closed.

(Closed) LER 88-20, Monthly Test of Anticipatory Reactor Trip System (ARTS) and Safety Features Actuation System (SFAS) used some inactive logic gates. The licensee found that the ARTS circuitry was not as designed due to a drawing error. Because of the error monthly surveillance testing of ARTS did not test all "AND" gates. The licensee determined that a similar problem existed in the SFAS circuitry. The licensee has corrected the logic circuit wiring to allow testing and demonstrated the operability of all "AND" gates in ARTS and SFAS. Maintenance and testing was completed on SFAS on October 6, 1988 and ARTS on October 10, 1988. The inspectors have reviewed maintenance documents and drawing changes. The licensee has in existence procedures to review vendor drawings and continues to train engineering personnel on these procedure requirements. These items are closed.

No violations or deviations were identified.

8. Safety Assessment/Quality Verification (30703, 35702, 40500, 92702, 92709, 92710, 93702, 94703)

An inspection of the licensee's quality programs was performed to assess the implementation and effectiveness of programs associated with management control, verification, and oversight activities. The inspectors considered areas indicative of overall management involvement in quality matters, self-improvement programs, response to regulatory and industry initiatives, the frequency of management plant tours and control room observations, and management personnel's participation in technical and planning meetings. The inspectors reviewed Potential Condition Adverse to Quality Reports (PCAQR), Station Review Board (SRB) and Company Nuclear Review Board meeting minutes, event critiques, and related documents; focusing on the licensee's root cause determinations and corrective actions. The inspection also included a review of quality records and selected quality assurance audit and surveillance activities. Performance in this area included the following major items:

a. Systematic Appraisal of Licensee Performance Meetings

On May 2, 1989, senior licensee management met with senior Region III management at Region III. The recently issued Systematic Appraisal of Licensee Performance (SALP) report and other items of interest were discussed.

On May 30, 1989, the Regional Administrator with members of his staff met with Senior Corporate and licensee management and members of their staff at Davis-Besse to present a summary of SALP VII. SALP VII is documented in Inspection Report No. 50-346/89001. State and local officials as well as members of the press were in attendance.

b. Quality Assurance Activities

The inspectors review of licensee audits and surveillances revealed an apparent need to perform fire protection audits and surveillances and increase the number of audits and surveillance in operations. This observation was discussed with the licensee. During a recent discussion with QA personnel the inspectors were informed that the licensee was forming a team to perform a fire protection audit. QA personnel also stated that since they now had QA auditors with operator licenses they would perform more audits and surveillances of plant operations. The licensee stated that it intends to conduct more performance-based audits and is in the process of obtaining training in this area.

c. Preparations for Strikes

The licensee's contract with the International Brotherhood of Electrical Workers (IBEW) Local 245 was scheduled to expire on May 31, 1989. Local 245 membership consists of all Toledo Edison union employees (including licensed reactor operators) except clerical staff and the guard force. The inspectors reviewed the corporate emergency operating procedure (EOP) which is the licensee's procedure for dealing with strikes. The 1989 EOP was less detailed than the 1986 EOP but satisfactorily addressed contingencies. The inspectors did not review training as an agreement was reached with the Local 245. On May 9, 1989, the members of Local 245 ratified a new three-year contract. The labor contracts for the security force and the clerical staff will be negotiated during this calendar year. On May 26, 1989, the licensee announced that a tentative agreement had been reached between the licensee and the Office and Professional Employees International Union, Local 19 (clerical staff). The membership will vote on the matter on June 6, 1989.

d. Hydrogen Storage

On May 5, 1989, an inspection of the licensee's onsite hydrogen storage onsite was conducted. The licensee was informed that a hydrogen tank farm had been found on the roof of the control room of another facility. The licensee has two storage locations for

hydrogen. One storage area, about 250 feet north of the turbine building, includes a primary volume of 44,200 Standard Cubic Feet (SCF) of gaseous hydrogen at 2,400 psig and a reserve volume of 20,000 SCF of gaseous hydrogen at 1,250 psig.

The second storage area is in a concrete bunker about 50 feet west of the auxiliary building, about 10 feet from the primary water storage tank, and about 30 feet from the borated water storage tank. Eighteen 2,000 psig cylinders are installed in the bunker with a total volume of about 4,880 SCF.

Hydrogen is not stored on the roof of any building at the facility. Hydrogen storage areas are not close to any ventilation supply ducts. A temporary modification is being performed that will allow in-use storage of one 2,500 psig cylinder in the auxiliary building.

- e. (Closed) Open Item (346/86005-12(DRP)), Resolution of Items From the Management Analysis Company (MAC) Training Diagnostic: The inspectors reviewed each finding of the MAC diagnostic and the licensee's item by item response. The licensee expanded and improved its training program to achieve INPO accreditation. Final accreditation for all 10 programs was received on December 9, 1987. Actions taken to achieve accreditation addressed most of the diagnostic findings. Several of the findings appeared to be subjective and without merit. The inspectors reviewed each of the findings and the licensee's corrective actions or justification for not addressing the finding. The inspectors concluded on the basis of this review and their knowledge of the program that the licensee has met its commitment. This item is closed.

No violations or deviations were identified.

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 2.

10. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection and summarized the scope and findings of the inspection activities. The licensee acknowledged the findings. The inspectors discussed the effect that a failed freeze seal could have on plant equipment using the recent failure of a freeze seal at another facility as an example. The inspectors had also discussed the freeze seal failure event individually with licensee personnel earlier in the inspection period. After discussions with the licensee, the inspectors have determined there is no proprietary data contained in this inspection report.