

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/90002(DRP)

Docket No. 50-346

License No. NPF-3

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

Facility Name: Davis-Besse 1

Inspection At: Oak Harbor, Ohio

Inspection Conducted: January 3 through February 28, 1990

Inspectors: P. M. Byron
D. C. Kosloff
R. K. Walton

Approved By: I. N. Jackiw, Chief
Reactor Projects Section 3A

3-30-90
Date

Inspection Summary

Inspection on January 3 through February 28, 1990 (Report No. 50-346/90002(DRP))

Areas Inspected: A routine unannounced safety inspection by resident inspectors of licensee actions on previous inspection findings, licensee event reports, plant operations, refueling, radiological controls, maintenance/surveillance, emergency preparedness, security, engineering and technical support, and safety assessment/quality verification was performed.

Results: A reactor trip occurred due to an apparent malfunction of test equipment (Paragraph 5). Personnel errors caused six Technical Specification violations (Paragraphs 2q, 3, 5, and 8a). An ice storm caused a major loss of the offsite prompt notification system (Paragraph 9). Based on the results of the inspection, the inspectors noted the following: The licensee's program for improving main steam safety valve performance is considered a strength (Paragraph 4). The material condition of the plant and housekeeping are good for a refueling outage (Paragraph 5d). Weaknesses were identified in procedural compliance during maintenance activities (Paragraph 8). A weakness was identified in implementation of the licensee's program for updating preventive maintenance after a plant modification (Paragraph 8). Systems engineering participation in plant activities is considered a strength (Paragraph 11).

DETAILS

1. Persons Contacted

a. Toledo Edison Company (TEDCo)

- D. Shelton, Vice President, Nuclear
- *G. Gibbs, Quality Assurance Director
- #*L. Storz, Plant Manager
- W. Johnson, Plant Maintenance Manager
- R. Brandt, Plant Operations Manager (Administrative)
- *M. Bezilla, Superintendent, Operations
- *E. Salowitz, Planning and Support Director
- *S. Jain, Engineering Director
- *K. Prasad, Nuclear Engineering Manager (Acting)
- G. Grime, Industrial Security Director
- D. Timms, Systems Engineering Manager
- *D. Lightfoot, Integrated Planning Manager
- *J. Polyak, Radiological Control Manager
- *R. Coad, Radiological Protection Supervisor
- *J. Lash, Independent Safety Engineering Manager
- *H. Stevens, Independent Safety Engineering
- *R. Schrauder, Nuclear Licensing Manager
- *G. Honma, Compliance Supervisor
- *R. Gaston, Licensing Engineer

b. USNRC

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

*Denotes those personnel attending the February 20, 1990, exit meeting.

#Denotes those personnel attending the March 1, 1990, exit meeting.

2. Licensee Action on Previous Inspection Findings (92701, 92702, TI2515/101, TI 2515/104)

- a. (Closed) Open Item (346/86005-01(DRP)): Verification that spray shields are being maintained. The inspectors reviewed the preventive maintenance (PM) requirements the licensee has established and reviewed completed PM and corrective maintenance work orders for spray shield maintenance. The inspectors also observed the current condition of spray shields during plant tours. The licensee's program for maintaining spray shields and its current implementation of that program are adequate. This item is closed.
- b. (Closed) Unresolved Item (346/86005-09(DRP)): The inspectors observed water lines near newly installed control cabinets for the Control Room Emergency Ventilation Systems. The inspectors' further review of this condition revealed that there had been inadequate design control for the Facility Change Request (FCR) that controlled the installation

of the cabinets. This item became an example of Violation 346/86012-01. This item is closed.

- c. (Closed) Open Item (246/86005-10(DRP)): Discrepancy between Facility Change Request (FCR) drawings and the as-built condition. A vendor, Consolidated Controls Corporation (CCC), modified the Safety Features Actuation System (SFAS) power supplies in accordance with FCR 85-0177. CCC performed the changes in accordance with the FCR package it had developed. The licensee determined that another licensee contractor revised one of the required drawings but CCC did not have the revised drawing when it prepared the required changes.

All of the discrepancies identified with this FCR have been corrected.

During its review of this problem, the licensee expanded the scope of its investigation and determined that an interface problem existed with many vendor drawings. The licensee is currently comparing vendor drawings with the as-built condition and reconciling any discrepancies. The licensee expects to complete this program by the end of 1990. New procedures to control vendor drawings have been implemented. In addition, the licensee has assumed the responsibility for revision of vendor drawings. Based on the current program to control vendor drawings, this item is closed.

- d. (Closed) Violation (346/86012-01B(DRP)): The licensee did not consider environmental conditions that would result from a water line break. The licensee installed two seismically qualified Control Room Emergency Ventilation System (CREVS) control cabinets beneath non-seismically supported water lines and did not review the environmental considerations as required by Procedures NFEP-011, "Conceptual-Design" and NFEP-090, "Design Verification." The licensee revised its checklist to include potential environmental conditions and attempted to increase the awareness of its engineers. This item is closed. Part a. of this violation was closed in Inspection Report No. 50-346/88037 and Part c. was closed in Inspection Report No. 50-346/86012.
- e. (Closed) Open Item 346/86012-05(DRP): Followup of licensee Interim Performance Enhancement Program (IPEP) Item 06-1(01). The licensee reviewed its procedures and correlated them with the Updated Safety Analysis Report. The review closes out this commitment.
- f. (Closed) Unresolved Item (346/86016-04(DRP)): The licensee did not require an inspection for asiatic clams or debris in the water following fire protection system flushes. This was a commitment the licensee made to the NRC in its response to Bulletin 81-03. The licensee revised Procedure DB-FP-03012, "Fire Protection System Flush", to include this requirement. The inspectors reviewed the procedure and this item is closed.
- g. (Closed) Unresolved Item (346/86023-03(DRP)): DH 13A and DH 14A failed to operate. The licensee reviewed the cause of failure and

determined that replacement valves were required. A modification was implemented which installed heavier valves in the decay heat system. The inspectors have not observed any additional problems and consider that the modification corrected the problem. This item is closed.

- h. (Closed) Open Item (346/86027-01(DRP)): Identification of corrective actions for plant systems problems which did not have to be resolved prior to restart from the 1985-1986 outage. The licensee reviewed problem areas and proposed corrective actions. Most of the corrective actions will be implemented during the sixth (current) refueling outage and the balance are scheduled to be completed during the seventh refueling outage. This was Course of Action Item II.C.7. This item is closed.
- i. (Closed) Open Item (346/86027-03(DRP)): Development of a preventive maintenance (PM) program for the six main steam turbine bypass valves (TBV). The inspectors have reviewed the licensee's PM program for the TBV's and have also witnessed modifications made to the valves which have improved their reliability. This item is closed.
- j. (Closed) Open Item (346/86032-05(DRP)): Written documentation of a deviation from a commitment requiring the Motor Driven Feedwater Pump to be lined up to the Auxiliary Feedwater (AFW) System whenever the plant was above 40% power. The licensee documented this deviation with a letter dated March 10, 1987. The inspectors reviewed the letter. This item is closed.
- k. (Closed) Violation (346/86032-08(DRP)): Three examples of failure to follow procedures: (a) when one AFW system was inoperable, an operator did not note its condition on the status board, did not energize the blue status light for the system, and was not aware the system was inoperable; (b) seven mode changes were made with a containment air cooler incorrectly declared inoperable; and (c) for 9 days the shift supervisors were not informed that the meteorological tower was inoperable. Personnel error was the cause for all three examples of the violation. There were several root causes for the personnel errors: confusing TS requirements, weak procedures, informal control of contractor work, training weaknesses, weakness in the process for control of maintenance and communications deficiencies. The inspectors reviewed the licensee's corrective action described in its April 13, 1987, response to the violation. The licensee's corrective actions are adequate to prevent recurrence. The inspectors' observations of similar licensee activities have not revealed any recurrence of these violations. The licensee's program for clarifying the TS has resulted in several improvements to the TS and is continuing. The specific TS change identified in the licensee's response was submitted to the NRC on August 31, 1987. It has not been approved although it appears that it will be in the future. This item is closed.
- l. (Closed) Open Item (346/86032-12(DRP)): Indiscriminate use of Temporary Mechanical Modifications (TMM). The licensee initiated a concerted effort to reduce the number of TMM's. The inspectors

have observed that the licensee's program has been effective and this item is closed.

- m. (Closed) Open Item (346/87004-06(DRP)): Review of the licensee's evaluation of a main steam safety valve (MSSV) malfunction. After the plant trip on March 13, 1987, one MSSV failed to fully reseal. As a result of other problems with MSSV's following other plant trips, the licensee developed an extensive program to improve MSSV performance. MSSV performance has improved and the licensee has identified several potential failure modes. The inspectors will continue to monitor this ongoing program. This item is closed.
- n. (Closed) Open Item (346/87008-03(DRP)): Low density BISCO firewall pipe penetration seal used in high temperature application. The licensee reviewed all penetration seals with a pipe penetrant and verified that the maximum pipe operating temperatures were within the limits of the seal materials. The licensee identified four penetrations which required rework and issued PCAQR's for each. This item is closed.
- o. (Closed) Unresolved Item (346/87008-11(DRP)): Procedures required by the Nuclear Quality Assurance Manual (NQAM) not issued. The licensee developed a matrix of the required procedures with scheduled implementation dates. The inspectors reviewed the matrix and some of the completed procedures. The inspectors determined that all of the required procedures have been issued and this item is closed.
- p. (Closed) Unresolved Item (346/87026-05(DRP)): Hydrogen monitors tested every 92 days as required by TS but not on a staggered basis. The licensee revised its test schedule and a hydrogen monitor is tested every 46 days with no monitor exceeding its 92 day surveillance requirement. The licensee reviewed its remaining staggered surveillances and determined that all of the others met the staggered requirement as defined by the TS. This appeared to be an isolated case and the licensee's corrective action has been effective. This item is closed.
- q. (Closed) Unresolved Item (346/87026-06(DRP)): Review of licensee corrective action to include 14 snubbers in its safety-related snubber test program. The test program is required by TS Surveillance Requirement 4.7.7. The inspectors reviewed the completed Potential Condition Adverse to Quality Reports (87-581 and 87-584) that documented the problem. The licensee discovered this problem on October 20 and 21, 1987, during a programmatic review of the TS intended to identify errors in the TS and deficiencies in programs established to assure compliance with the TS. The licensee determined by engineering analysis that one of the snubbers was not required. Testing of the remaining snubbers revealed that they were operable. The inspectors reviewed Procedure ST 5044.01 (DB-MM-03627.00, DB-MM-03006), Revision 12, Change 2, "Inspection of Safety-Related Hydraulic Snubbers." The 13 remaining snubbers had been added to ST 5044.01. The 14 snubbers had not been included in the test program earlier because the licensee made an error in 1986 when it

implemented TS Amendment No. 94. This amendment deleted a TS list of snubbers to be inspected and tested and added a requirement to periodically inspect all safety-related snubbers (about 390) listed in ST 5044.01 and to functionally test all safety related snubbers during a 10-year interval. Safety-related snubbers as defined in the basis for TS 3/4.7.7 include snubbers for nonsafety-related piping that could affect safety-related systems if the piping were to fail during a seismic event. When the licensee compiled the list of snubbers in ST 5044.01, the procedure writer and reviewers did not recognize that 14 snubbers for non-safety-related piping needed to be included. The 14 snubbers had not been on the earlier TS list. Failure to include all required snubbers in ST 5044.01 is a violation (346/90002-01(DRP)) of TS Surveillance Requirement 4.7.7. The cause of the violation was personnel error by the individuals who wrote and reviewed ST 5044.01. The root cause determination by the licensee identified the personnel error as the root cause for the failure to include the 14 snubbers in ST 5044.01. No root cause was identified for the personnel error. Due to the age of the error, the minor safety significance of the violation, and the fact that the licensee has a program in place to identify and correct similar errors, the inspectors do not consider further identification of the root cause necessary. The inspectors consider the corrective actions appropriate. The inspectors did not identify any recent events similar to this violation, therefore there were no corrective actions for other events which could reasonably have been expected to prevent this violation. This item is closed.

- r. (Closed) Open Item (346/86027-04(DRP)): The quality of licensee root cause analysis needs to be improved. The licensee developed a root cause training program as a result of the inspectors concerns. All individuals who had to make a root cause analysis were required to attend. The licensee developed two levels of training. One was for engineers and the other was taught by QA and was not quite as detailed as the engineer's program. The inspectors attended the QA training program. The inspectors have observed a significant improvement in root cause analysis and this item is closed.
- s. (Closed) Violation (346/88004-01(DRP)): Procedure AD 1805 was issued without the Quality Assurance Director's approval. NRC letters to Toledo Edison dated October 4, 1988, and December 11, 1989, addressed this violation. This item is closed based on the issuance and content of those letters.
- t. (Closed) Violation (346/88004-02(DRP)): Failure to promptly and effectively take corrective action. NRC letters to Toledo Edison dated October 4, 1988 and December 11, 1989, addressed this violation. This item is closed based on the issuance and content of those letters.
- u. (Closed) Violation (346/88027-01(DRP)): Employment discrimination in the case of a quality control (QC) inspector laid off due to his identification of a safety concern. The inspectors reviewed the corrective actions presented in the licensee's response to the

violation and verified that those actions had been accomplished. The inspectors also verified, prior to the issuance of the violation, that the individual who was responsible for the lay off was no longer employed by the licensee. This item is closed.

- w. (Open) Unresolved Item (346/89014-01(DRP)): The sump high water level computer alarm set points for Emergency Core Cooling System (ECCS) Rooms 1 and 2 are lower than the sump pump start set points. 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 sump pumps running is an abnormal condition because the sump level alarm set point is above the sump pump starting set point. The deviation between the alarm set points has caused confusion among operators. Operators have had difficulty remembering that an alarm for Room 3 should be considered valid, whereas the alarms for Rooms 1 and 2 are not valid. The inspectors observed that the licensee has installed permanent plastic engraved information plaques near the pump running lights in the control room. The plaques describe the relationships between the sump pump operation and the level alarm actuation for each ECCS room. The licensee now plans to raise the alarm set points for ECCS Rooms 1 and 2 so that the alarm for all three sumps will be the same. This item remains unresolved pending completion of the inspectors' review of the licensee's corrective actions.
- x. Closed Temporary Instruction (2515/101): Loss of Decay Heat Removal. The inspectors reviewed licensee procedures, reviewed work packages, spoke with operators and reviewed the licensee's training agenda for the mitigation and prevention of a loss of decay heat removal (DHR) capability during reduced reactor coolant system (RCS) inventory conditions. The inspectors found that both licensed and unlicensed operators received classroom training on the loss of decay heat events at other facilities and a plant specific seminar to determine how to better detect and mitigate such incidents. The training program included program enhancements for Generic Letter 88-17 (GL 88-17). The licensee reemphasized this training prior to entering the current refueling outage. Maintenance personnel were not included in this training.

Prior to entering into a reduced RCS inventory condition, procedure prerequisites ensure that containment integrity is in place or has been established should the core uncover due to loss of DHR. Containment closure eliminates uncontrolled release paths to the surrounding buildings and atmosphere. Licensee maintenance work orders also allow for identification of potential openings so containment integrity will not be breached by work in progress during an event.

Plant instrumentation available during reduced RCS conditions include two incore thermocouples on a trend recorder and a tygon tube standpipe and closed circuit camera. All indicators are monitored from the control room. The incore thermocouples only provide indication. A modification to be completed during the sixth refueling

outage will replace the existing RCS level indicating system with three Barton level indicators which will provide RCS level indications and alarms. The licensee has administrative controls in place to prevent RCS perturbations which could cause a loss of DHR. Reduced RCS inventory operating procedures recommend management review of GL 88-17 prior to giving concurrence to equipment status changes.

The licensee has rewritten its loss of DHR abnormal procedure in a columnar format and has provided a flow diagram as an enclosure to aid the operators during a loss of DHR event. This procedure addresses loss of flow path, loss of DHR pump, and a loss of inventory. The loss of inventory actions include the use of various pumps, tanks, and flow paths to provide a reliable source of inventory makeup. The licensee will have systems and procedures in place to prevent or mitigate the loss of DHR during reduced RCS inventory conditions as requested by GL 88-17 prior to any future mid loop operations. This item is closed.

- y. (Closed) Temporary Instruction (2515/104): Fitness for Duty Training. The inspectors observed the licensee's fitness for duty (FFD) training for supervisors and FFD awareness training during General Orientation Training (GOT). In addition, all of the inspectors attended the licensee's FFD escort training. There were several areas in the various training programs which the inspectors believed could be enhanced. The inspectors have discussed their observations with the licensee. The submittal of Appendices A, B, and C of this TI closes this item.
- z. NRC Region III management has reviewed the existing open items for the Davis-Besse Nuclear Power Station and have determined that the following open items will be closed administratively due to their safety significance relative to emerging priority issues and to the age of the item. The licensee is reminded that commitments directly relating to these open items are the responsibility of the licensee and should be met as committed. NRC will review licensee actions by periodically sampling administratively closed items.

Open Item (346/86032-15(DRP))
Unresolved Item (346/87008-05(DRP))
Open Item (346/87008-07(DRP))
Open Item (346/87018-01(DRP))
Open Item (346/88010-03(DRP))

No other violations or deviations were identified in this area.

- 3. Licensee Event Reports Followup (92700): Through direct observation, discussions with licensee personnel, and review of records, the following licensee event reports (LER's) were reviewed to determine that reportability requirements were fulfilled, that immediate corrective actions to prevent recurrence was accomplished in accordance with

Technical Specifications (TS). The LER's listed below are considered closed:

(Closed) LER 85002: Reactor Trip During Zero Power Physics Testing. The reactor trip and plant transient were not significant due to the low power level. During the transient, however, Auxiliary Feedwater Pump No. 1 suction transferred automatically from the Condensate Storage Tank (CST) to the Service Water System. The suction transfer was undesirable because water was still available in the CST. The licensee modified the transfer circuit to minimize the possibility of such spurious transfers. The review of this modification and other corrective actions for this problem were documented in Section 3.j. of Inspection Report No. 50-346/86032(DRP). This LER is closed.

(Closed) LER 86032, Rev 1: Safety Features Actuation System (SFAS) Start of a High Pressure Injection (HPI) Pump. Revision 0 of this LER was closed in Inspection Report No. 50-346/89022(DRP). One corrective action for this event was completion of a facility modification to provide the SFAS with a shutdown bypass feature which would prevent an unintentional start of HPI equipment while the plant was shut down. The licensee decided to cancel this modification so Revision 1 of the LER was submitted to document the change in the commitment to the NRC. Cancellation of this modification has no safety significance. This LER is closed.

(Closed) LER 86039 and Rev. 1: Calibration Error on Rosemount Transmitters for Steam Generator Levels. The error involved incorrect compensation for the static pressure span shift and static pressure zero shift that affects Rosemount transmitters. The error was introduced in 1982 and was discovered by the licensee in 1986 during a programmatic review of instrument calibration procedures. The licensee determined that 22 transmitters needed to be recalibrated prior to restart from the 1985-1986 outage. The licensee found that the eight steam generator (SG) water level transmitters for the four channels of the Steam and Feedwater Line Rupture Control System (SFRCS) had been miscalibrated to the extent that the actual SG low water level trip set points were lower (less conservative) than the TS requirement. Action a. of TS LCO 3.3.2.2 requires that a channel with an instrument set less conservatively than the required set point be declared inoperable. Since the licensee was not aware that the set points were less conservative than required, it did not declare the channels inoperable. This is a violation (346/90002-02(DRP)) of TS LCO 3.3.2.2. The inspectors reviewed Babcock and Wilcox Analysis 32-1159090-01 dated January 25, 1987. A loss of feedwater event was analyzed assuming a less conservative SG low water level set point than was discovered. The analysis showed that the resulting plant conditions would be bounded by the accident analysis summarized in the Updated Safety Analysis Report. Therefore the violation had minor safety significance. The licensee's remedial actions for this LER were reviewed in Inspection Report No. 346/87008. All remedial actions were complete except that Rosemount level transmitters LT 5448A and LT 5448B had not been included in the licensee's program for static pressure effect compensation. The inspectors reviewed Procedure IC 2702.52 (DB-MI-09052), "Performance Test of Rosemount Differential Pressure

Transmitters to Determine Static Zero Shift," Revision 0, Change 3 and found that LT 5448A and B had been entered and crossed out. The inspectors discussion with the Instrument and Control (I&C) Maintenance Engineering Supervisor revealed that the review process for the procedure change that was intended to add LT 5448A and B resulted in removing them from the change because they were not exposed to pressures high enough to require zero shift correction. The licensee's remedial actions are complete. The licensee identified four root causes for the violation: (1) poor interface between engineering and station personnel, (2) failure to input revisions to vendor manuals into document control, (3) poor phrasing among early revisions of Rosemount manuals in regards to the need for correction of static pressure span and zero effects, and (4) personnel error in I&C data package development. The inspectors verified that the licensee has established a systems engineering organization that has improved communications between engineering and station personnel. The licensee formed a Vendor Manual Review Group to ensure that all manuals onsite were systematically reviewed for changes and revisions. The Review Group was disbanded after it had reviewed the existing vendor manuals at the plant. The licensee established a continuing program for vendor manual review governed by Procedures EN-DP-01040, "Engineering Correspondence Control/Vendor Document Processing," and EN-DP-01041, "Vendor Manuals." The review of this program was documented in Inspection Report No. 50-346/88011(DRS). The inspectors verified that this program is still in place. The licensee obtained revisions of Rosemount manuals that provide more detailed discussion of static pressure span and zero effects. The licensee formed an I&C Data Package preparation group to rewrite all data packages and requires all data package revisions to be performed by I&C maintenance engineers. The inspectors consider the corrective actions appropriate. The inspectors did not identify any recent events similar to this violation, therefore there were no corrective actions for other events which could reasonably have been expected to prevent this violation. This violation meets the tests of 10 CFR 2, Appendix C, Section V.G.1 (See Paragraph 14), therefore, an NOV will not be issued and no response is required. This LER is closed.

(Closed) LER 86043: Reactor trip due to feedwater isolation and subsequent overcooling. The event was caused by improper control of testing and poor communication between the operators and the test personnel. The licensee revised its testing instructions and troubleshooting instructions to provide more formal controls and took actions to improve intergroup communications. The inspectors have observed that the licensee's corrective actions have improved performance of similar activities. However, the cause of this event is similar to that of an August 18, 1989, transient. Therefore additional corrective actions and management attention is required. The corrective actions for this LER will be tracked by Unresolved Item (346/89019-01(DRP)) which is being used to track the licensee's more recent activities related to the August 18, 1989 transient. B&W performed an engineering analysis of the overcooling and determined that it had no negative effect on the reactor coolant system. This LER is closed.

(Closed) LER 87004: Unusual Event Declared Due to Inoperability of the Auxiliary Feedwater (AFW) System. At the time of this event TS LCO 3.7.1.2 required the AFW systems to be declared inoperable whenever the SOR pressure switches that controlled the associated AFW pump turbine main steam supply containment isolation valves were inoperable. For 30 minutes the pressure switches for both AFW systems were inoperable. The licensee declared the Unusual Event because both AFW systems were considered inoperable. In reality, the TS was incorrect because an inoperable pressure switch does not render its associated AFW system inoperable. Therefore only one AFW system was inoperable for less than 30 minutes while its associated pressure switches were being tested. The TS was corrected by TS Amendment No. 131 dated April 25, 1989. The root cause described in the LER and the licensee's corrective action were adequate. The licensee's remedial action involved the replacement of the pressure switches with stainless steel diaphragm pressure switches. This improved the service life of the pressure switches but continued engineering review revealed that the diaphragms needed to be seal welded. As a result of this discovery, SOR issued a 10 CFR 21 Report on April 28, 1987. SOR later provided the licensee with seal welded pressure switches. The licensee completed installation of the seal welded pressure switches on October 12, 1989, in accordance with FCR 85-0143, Supplement 14. The pressure switches have not failed since then. This LER is closed.

(Closed) LER 87006: Reactor Trip Due to Accidental Isolation of Feedwater to Steam Generator No. 2. Feedwater (FW) was isolated when a painter accidentally bumped the local switch for FW isolation valve FW 601. The licensee identified three causes for this event: (1) the local switch for FW 601 was vulnerable to accidental bumping because it had no bump cover, (2) movement within the area adjacent to the local switch was difficult due to obstructions, and (3) workers had not been informed of the location of the local switch and its potential for tripping the plant. The inspectors consider the vulnerability of the switch the root cause for this event. The inspectors verified that the licensee installed a bump cover for the local switch and many other local switches that have a potential to trip the plant. The licensee's corrective action was adequate. After the plant trip one main steam safety valve (MSSV) failed to fully reseal. As a result of other problems with MSSVs following other plant trips, the licensee developed an extensive program to improve MSSV performance. MSSV performance has improved and the licensee has identified several potential failure modes. The inspectors will continue to monitor this ongoing program which is considered a strength. This LER is closed.

(Closed) LER 87013: Loss of essential 120 VAC Bus Y2 due to personnel error during troubleshooting. While troubleshooting the Safety Features Actuation System (SFAS) Channel 2, a technician using an inappropriate piece of equipment inadvertently grounded the SFAS Channel No. 3 power supply causing the cabinet's load fuse to open. Due to a previously identified electrical characteristic of the inverter which powers the essential Y2 bus, the inverter input fuse also opened deenergizing the entire bus. The bus was reenergized and the fuses were replaced. The licensee, having identified the design characteristics of inverter fault

protection previously, had generated a Facility Change Request (FCR) 86-0272, to replace the inverter and add automatic static transfer switches. The licensee will replace two inverters and install static transfer switches during the current refueling outage, with project completion due by the end of the seventh refueling outage. In addition, the licensee has developed a training program for all I&C technicians to enhance their skills with measuring and testing equipment. This LER is closed.

(Closed) LER 89010, Rev. 1: Control Room Emergency Ventilation System Inoperable Due to Compressor High Pressure Trips. This revision provided additional information of the cause of the trips and more detailed corrective actions. This LER is closed because the event was discussed in Inspection Report No. 50-346/89016 and was the subject of Violation 346/89016-05. The corrective actions for the LER will be reviewed during the inspectors review of that violation.

(Closed) LER 90001: Procedure Inadequacy Allowed Inoperable Reactor Protection System (RPS) Channel to be Bypassed. During TS required surveillance testing, the licensee unintentionally bypassed an inoperable RPS channel which was required to be tripped. Because the channel was in bypass for only one minute and the other three RPS channels were operable this event had no safety significance. Once an inoperable RPS channel is tripped TS 3.3.1.1 has no provision for placing it in bypass for even the briefest time unless bypassing the channel is required for testing. The testing being performed did not require the channel to be bypassed, therefore placing the channel in bypass was a Violation (346/90002-03(DRP)) of TS 3.3.1.1. The cause of the event was an incorrect schematic drawing in Procedure SP 1105.02 and an inadequate surveillance procedure, DB-MI-03207. During its review of this event the licensee discovered that a similar event had occurred on September 23, 1989, and had not been recognized as a TS violation. Although several licensee organizations were aware of the earlier event, no formal corrective action was taken at that time. The licensee reported the September 23, 1989, event in LER 90001, and on January 20, 1990, the licensee's QA department submitted PCAQR 90-0117 which formally documented the September 23, 1989, event. Adequate corrective action for the September 23, 1989, event would have prevented the January 20, 1990, event. The September 23, 1989, event had no safety significance because the test was being performed to establish operability of the RPS channel after maintenance and the test was successful. As a result of PCAQR 90-0117, the licensee will perform a root cause analysis and identify corrective actions to prevent recurrence of the failure to formally document the September 23, 1989, event. The inspectors consider the corrective actions and planned corrective actions appropriate. The licensee determined that the September 23, 1989, event was not reportable as a separate LER because it was similar to the January 20, 1990, event and was reported in LER 90001. The inspectors did not identify any recent events similar to this violation, therefore there were no corrective actions for other events which could reasonably have been expected to prevent this violation. This violation meets the tests of 10 CFR 2, Appendix C, Section V.G.1 (See Paragraph 14), therefore, an NOV will not be issued and no response is required. This LER is closed.

The following LERs were reviewed but require further inspection:

(Open) LER 89015, Rev. 1: Reactor Coolant System Flow Transmitter Erroneously Declared Operable. This LER was discussed in Inspection Report No. 50-346/89026 and remains open. The revision made minor changes to the analysis of the event.

(Open) LER 90002: Reactor Trip from 73 Percent Due to Spurious Reactor Coolant Pump Monitor Circuit Signal. This event is discussed in Paragraph 4 of this report. This LER will remain open pending a review of the licensee's root cause determination and corrective action.

No other violations or deviations were identified in this area.

4. TMI Action Items (TI 2515/065)

(Closed) II.B.1.2: Install Reactor Coolant System Vents. The reactor head vent was installed during the fifth refueling outage under Modification FCR 84-0002. The inspectors observed the installation of this modification. In addition NRR issued a Safety Evaluation Report dated February 14, 1990, which accepted the continuous vent line which the licensee installed to meet this requirement.

(Closed) II.B.1.3: Procedures for Reactor Coolant System Vents. The NRC performed an inspection of Emergency Operating Procedures (EOPs) during February 1989. This was subsequent to the installation of the CVL. This inspection which is documented in Inspection Report No. 50-346/89006 closed this item.

(Closed) II.E.1.2.2.C: Auxiliary Feedwater (AFW) Safety Grade Flow Indication. This item has been previously addressed in Inspection Reports No. 50-346/79019, No. 50-346/85022, and No. 50-346/86005. The only item which remained open was the review of a surveillance test to meet the requirements of Technical Specification 4.3.3.6. The inspectors reviewed Procedure DB-MI-03912, Channel Calibration of (Instrumentation) AFW Flow to Steam Generator. The procedure fulfills the requirements of Technical Specification 4.3.3.6. In addition the licensee replaced the non-safety-grade flow indicators with safety grade flow indicators so all four AFW flow indicators are now safety grade. This was accomplished under FCR 87-069. This item is closed.

(Open) II.F.2.4: Installation of Additional Instrumentation for the detection of inadequate core cooling. The licensee has not completed this action and it is committed to submitting its implementation report to NRR by June 1, 1990.

(Closed) II.K.2.9: Failure Mode Effects Analysis on the Integrated Control System (ICS). This item was discussed in Inspection Report No. 50-346/86005(DRP). Six facility modifications were listed which addressed the six recommendations contained in BAW-1564. These modifications are as listed below with their completion dates:

- a. Additional pilot operating relief valve (PORV) and safety valve position indications were provided under FCR 79-410. Closed out 5/2/87.
- b. Electrical circuitry changed so that the PORV and pressurizer spray valve would close upon loss of power under FCR 80-058. Closed out 9/24/86.
- c. Electrical circuitry changed so that pressurizer heaters deenergize upon loss of non-nuclear instrumentation under FCR 80-058. Closed out 9/24/86.
- d. Electrical circuitry changed so that the letdown containment isolation valve would not close upon loss of non-nuclear instrumentation under FCR 80-078. Closed out 8/3/83.
- e. Additional AC and DC power provided to the non-nuclear instrumentation 24VDC Buses under FCR 80-096. Closed out 3/7/86.
- f. Redundant AC power provided to the startup feedwater control valves, main feedwater control valves and the turbine bypass valves under FCR 80-230. Completed 10/8/80.
- g. Redundant power provided to any instrument string which presented a parameter required for cold shutdown that did not have another instrument string presenting the same parameter under FCR 80-100. Closed out 3/7/86.
- h. Change the reactor coolant flow signal providing input into the ICS to an artificial signal under FCR 82-023. Closed out 9/24/86.

The inspectors reviewed the FCR packages including post modification tests. The licensee has completed the modifications which it committed to meet this item and this item is closed.

No violations or deviations were identified in this area.

5. Plant Operations (71707, 71710, 71715, 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 walkdowns and were responsive to off-normal alarms and conditions.

On January 18, the NRC exercised discretionary enforcement relating to an inoperable reactor protection system (RPS) instrument. A flow transmitter that provides input to the RPS Channel 2 flux-delta flux-flow trip module had been declared inoperable because it had drifted high so that it could have contributed to providing a reactor trip signal at about 0.07 percent of full reactor power above the required trip setpoint limit. The licensee had tripped RPS Channel 2 to comply with TS LCO 3.3.1.1. The licensee requested permission to return RPS Channel 2 to normal so that the plant would not be in a condition such that one spurious trip signal on any of the other RPS channels could cause an unnecessary plant trip. The details of this discretionary enforcement action are found in a letter from the NRC to Toledo Edison dated January 24, 1990, "Discretionary Enforcement Relating to an Inoperable Reactor Protection System Instrument."

Increasing vibration of Reactor Coolant Pump (RCP) 2-2 resulted in the licensee reducing power to 72 percent on January 22, 1990, and taking RCP 2-2 out of service.

On January 26, 1990, during a surveillance test of the RPS, an equipment malfunction caused a spurious signal. This signal caused three of four RPS channels to sense the loss of RCP 1-2. The apparent loss of the second RCP caused the RPS to lower the high neutron flux trip to 55 percent from 80.4 percent. The unit was operating at 72% and tripped on a high flux/flow signal. The trip was complicated by letdown valve (MU-2B) failing to open on demand. The licensee determined that the valve motor operator drove the disc into the seat and when the valve was given an opening signal the stem separated from the disc. The licensee's preliminary evaluation indicated that a limit switch failed, however, it is continuing the evaluation.

Due to the trip, the sixth refueling outage (RFO) started on January 26, 1990, rather than the scheduled date of February 1, 1990. The licensee has a great deal of work to be completed during

this outage which is scheduled to be complete on June 5, 1990. The following work items will be completed during this outage:

- Defuel reactor
- Phase II feed and bleed modifications
- Reactor vessel bolt replacement
- Control room annunciator modifications
- Appendix R modifications and repairs
- Integrated chemistry sampling system installation
- Replace two Cyberex inverters
- HPI nozzle thermal sleeve inspection
- RCP seal modifications
- ARIS inspection of the reactor vessel
- Eddy current inspection of steam generators
- Main steam safety and atmosphere vent valve refurbishment
- Overhaul three RCP's
- Pressurizer heater changeout
- Auxiliary feedwater header inspections
- Decay heat removal pump minimum recirculation flow testing
- Rebuild six steam generator snubbers
- Completion of ten year inservice inspection activities
- Refuel reactor
- Modification, repair and testing of motor operated valves

The licensee has contracted with B&W to perform the work associated with the reactor vessel, pressurizer and steam generators (SGs) and with Westinghouse to overhaul three of the four reactor coolant pump motors. The licensee believes all of the planned work can be completed within the schedule.

The licensee has been afflicted by a series of personnel errors since the beginning of the outage. None of the events have been significant but collectively the inspectors consider them to be significant. The inspectors increased their coverage of licensee activities.

On February 7, 1990, the licensee had completed a SG tube leak (bubble) test and was attempting to increase SG No. 1 feedwater level from 8 to 540 inches in preparation for recirculation and wet layup. The bubble test was performed in accordance with Procedure DB-MM-04002, "Once Through SG tube leak Test," dated 2/2/90. Section 6.2.1 requires that the procedure user ensure that the feedwater side of the SG being tested is at or above the level required for the test in accordance with DB-OP-06230, "SG Secondary Side Fill, Drain and Layup." Restoration in Step 8.1.34 requires the shift supervisor to be notified so that operations may place the SG in whatever condition is required for outage work. DB-OP-06230, Section 9 is the applicable procedure for SG feedwater level control during tube leak testing. Section 9.2.2 requires that a valve lineup checklist be performed which requires Valve AF 608 to be locked open. Section 9.3.4 directs that the SG be restored to wet layup according to Section 6 or Section 8. Section 8 is used to refill with demineralized water and does not shut AF 608. The

licensee also added ammonia and hydrazine in preparation for wet layup.

About eighty minutes into the refilling evolution a firewatch reported smelling ammonia in Mechanical Penetration Room No. 1. Subsequent investigation revealed that AF 608 was shut and the relief valve for the positive displacement pump used to add hydrazine had lifted. The chemistry technician who started the hydrazine addition pump had left the area after starting the pump. Approximately 960 gallons of demineralized water should have been added which equates to a 23 inch increase in SG level, yet the control room operators did not observe that the SG level indication had not increased.

The inspectors reviewed DB-MM-04002 and noted that the test procedure does not address an initial condition valve lineup. It does state that restoration should be under the direction of the shift supervisor (Step 8.1.34). The inspectors determined that the initial valve lineup was done in accordance with Attachment 1 of Procedure DB-OP-00016, "Removal and Restoration of Station Equipment." There were no instructions for restoration. The inspectors have concluded that there was sufficient guidance in the procedures to open AF 608 but the procedures could have been more specific. However, the operators should have recognized that the plant was not in a normal condition and been more attentive.

On February 11, 1990, the licensee entered Mode 6 (refueling) when it started detensioning the reactor vessel head bolts. There was no operable source range audible indication at the time detensioning commenced.

The licensee signed off the Mode 6 checklist (DB-PN-06900, Attachment 1). Item 25 of Attachment 1 "TS 3.9.2, Refueling Operations Instrumentation" is required to be completed prior to entering Mode 6. Item 25 requires the performance of ST 5091.01, "Source Range Functional Test," ST 5099.01, "Miscellaneous Instrument Shift Check," and DB-PF-03292, "Core Alteration Prerequisites and Periodic Checks." On February 10, 1990, the licensee issued change C-2, which removed all requirements for audible indications from ST 5091.01. Before the change, Section 3.9.2 of the procedure had required that there be audible indication in containment and the control room with the reactor head unbolted. Change C-2 was made in support of FCR 84-0116 which controlled the installation of new excor source range (SR) neutron flux monitors (Gammametrics). The Gammametrics system is a permanent replacement for the temporary (Nim-Bin) system that the licensee had used in previous refueling outages. Procedures DB-MI-03455 and DB-MI-03456, the channel functional tests for the Gammametrics, were made effective February 8, 1990. The Mode 6 check list does not reference Procedure DB-MI-03455 or DB-MI-03456. The Gammametric systems were not declared operable until February 17, 1990.

Review of this event highlighted several problems. The operators signed off the checklist without performing all requirements for Mode 6. The checklist includes requirements which are not required for Mode 6 entry but are requirements for core alterations. This aided the operators in making a poor decision. In addition the licensee did not review the mode checklists prior to the outage. The licensee believed that it was not important to review Procedure DB-PN-06900 as it had been previously performed. Technical Specification (TS) Limiting Condition for Operation (LCO) 3.9.2 requires that at least two source range neutron flux monitors shall be operable, each with continuous indication in the control room and one with audible indication in the containment and control room. TS LCO 3.9.2 is applicable for Mode 6. TS 3.0.4 requires that entry into an operational mode shall not be made unless conditions of the applicable TS LCO's are met without reliance on provisions contained in the action statements. The entry into Mode 6 without audible source range indication is a violation (346/90002-04(DRP)) of Technical Specification 3.0.4. this violation meets the criteria of 10 CFR 2, Appendix C, Section V.G.1, therefore, an NOV will not be issued and no response is required.

On February 17, 1990, the licensee moved a fuel assembly in the spent fuel pool (SFP) with both SFP emergency ventilation systems (EVS) inoperable. This is a violation of Technical Specification 3.9.12.b (346/90002-05(DRP)) which requires that all operations involving movement of fuel within the SFP be suspended until at least one system is restored to operable status. Both EVS were considered inoperable because of existing maintenance work orders (MWO) which allowed work on SFP EVS boundary doors. In addition, the containment equipment hatch was open and the containment purge system was operating. The licensee had previously performed a safety evaluation which concluded that with the equipment hatch open and containment purge operating the SFP EVS was inoperable.

Review by the inspectors revealed that an engineer requested the fuel assembly be moved in anticipation of defueling. A senior reactor operator and a reactor operator in the control room at-the-controls area (ATCA) assumed that the engineer had reviewed all the prerequisites and directed the fuel be moved. Another reactor operator recognized the error when he returned to the ATCA after the fuel movement had been completed. The inspectors later observed that the status boards in the control room and the shift supervisor's office listed the SFP EVS as inoperable with the appropriate action statements. The inspectors discussed the event with the reactor operator who participated in the decision that allowed the TS violation. He stated that he was aware of the status board entry, but did not look at it while the decision was being made. He stated that the only reason he could think of for making the error was that he did not connect fuel movement in the auxiliary building with EVS operability. However, the reactor operator who had been briefly away from the ATCA immediately made the connection. This event was documented in PCAQR 90-0113. This violation meets the criteria of 10 CFR 2, Appendix C, Section V.G.1, therefore, an NOV will not be issued and no response is required.

The inspectors attribute most of these events to inattention to detail. The inspectors discussed their concerns with the licensee. The licensee has taken various corrective actions including providing increased management overview on shift and supplementing the shifts with senior experienced SROs. The corrective actions appear to have had some effect as the number of operator errors has been significantly reduced, as demonstrated by the following.

On February 26, 1990, the operators were making preparations for core alterations and noted during the capped valve verification that the makeup crossover line had been cut. The line had recently been cut for modification work. Failure to have noted this condition would have resulted in core alterations without containment integrity. As a result of the number of personnel errors the inspectors initiated expanded shift coverage. The expanded coverage will continue until defueling is complete.

While removing the incore neutron detectors in preparation for defueling, the licensee had one detector sever in the guide tube approximately seven inches below the bottom of the incore tank. At the close of the inspection period the licensee and B&W were preparing an action plan for the removal of the stuck incore detector. The fuel assembly containing the detector will be the last assembly taken from the vessel. Defueling commenced on February 27, 1990.

The operating crews were generally 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.

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 Walkdown

The operability of selected engineered safety features was confirmed by the inspectors during walkdowns 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 lineup 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. Prior to the outage, the material condition of the plant was very good. Housekeeping has deteriorated since the beginning of the outage but is considered good for an outage.

Plant deficiencies were appropriately tagged for deficiency correction.

No other violations or deviations were identified.

6. Refueling (60705, 60710, 86700)

The licensee received new fuel for the sixth refueling outage. The inspectors observed the receipt inspection, handling, and storage of two fuel shipments. The transfer of new fuel assemblies from the dry storage area to the spent fuel pool (SFP) was also observed by the inspectors. They also observed security, radiological controls and housekeeping in the SFP area. The inspectors also reviewed refueling procedures and noted that they include the requirements of NRC Bulletin 89-03.

7. 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.

Since the refueling outage began the licensee has experienced higher dose rates than anticipated. It originally estimated that the total exposure for the outage would be 180 man-rem. The revised estimate is 500-600 man-rem. The licensee attributes the increase to the relatively long high power run followed by the January 26, 1990, plant trip and the lack of plant cleanup following the trip due to the failure of makeup Valve MU 2B. The lower exposure estimate was based on radiation levels experienced during past outages.

The licensee has attempted to reduce exposure by installing additional shielding and by improving control of work in radiation areas. The

licensee is also trying to reduce exposure by better planning of work at the implementation level. This is an area in which the licensee's performance can be improved. The inspectors will monitor the licensee's performance.

On February 13, 1990, a radiological controls (RC) supervisor observed a contractor inside a posted high radiation area without an alarming dosimeter and unaccompanied by an RC technician. This violation of Technical Specification 6.12.1. was documented in Inspection Report No. 50-346/90004.

Health physics controls and practices were satisfactory. Knowledge and training of personnel were satisfactory.

No violations or deviations were identified.

8. Maintenance/Surveillance (37701, 37828, 61726, 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:

- o Control room annunciator panel modification.
- o Preventive maintenance on Emergency Diesel Generator (EDG) No. 1.

On January 9, 1990 the inspectors observed the EDG system engineer remove a pocket comb from the EDG. The licensee examined the comb and determined that there were no missing pieces. The source of the comb is unknown. The licensee concluded that the comb could not have caused the EDG to become inoperable if it had not been found. The licensee determined that a root cause analysis and corrective action to prevent recurrence was not required because this was the first time foreign material had been found at this location and because personnel purposely avoid entry into this location. The inspectors reviewed licensee records and determined that a later inspection of EDG 2 disclosed no foreign material. Section 6.2.4 of procedure DB-MN-00005, "Housekeeping Controls", requires that items such as

pens, pencils and small tools should be removed from pockets whenever working in the vicinity of open system components. Discovery of the comb reveals that there was a violation of this procedure which is an example of a violation (346/90002-07a(DRP) of TS 6.8.1. The inspectors consider the root cause of this violation to be inattention to detail which caused the personnel error of entering the vicinity of an open system with a small object in a pocket.

- ° PM 0723 of lubrication oil pumps for EDG No. 1.

The EDG system engineer was monitoring the performance of this PM. In June 1988 upon completion of FCR 81-062 the EDG had three lubrication oil pumps instead of two. On January 9, 1990, the continuation sheet for the PM MWO required an inspection of the flexible coupling on two lubricating oil pumps. The "Danger Do Not Operate" (DNO) tags for the PM provided tags for only two pumps. The system engineer informed the maintenance technicians that the intent of the PM MWO was to inspect the flexible coupling on the three existing EDG lubrication oil pumps. Two of the pumps had electrical power isolated with DNO tags, the motor driven circulating lubrication oil pump had no tag. The system engineer asked an operator to deenergize the motor driven circulating lubrication oil pump and the maintenance technician performed the inspection. No tag was hung and no change was made to the PM MWO. The inspection requires the maintenance technicians to move the flexible coupling by hand, if a pump were to start during such an inspection personnel injury could result. Section 4.2 of procedure DB-OP-00015, Rev. 0, "Safety Tagging", dated June 26, 1989, states that DNO tags are installed to prevent operation of and to isolate equipment from all sources of energy for the protection of personnel and equipment. Working on the motor driven circulating lubrication oil pump without a DNO tag is an example of a violation (346/90002-07b(DRP) of TS 6.8.1., failure to implement a required procedure. The licensee provides a PM feedback report with each PM which is intended to provide information on improvements to PM's. Since the EDG lubricating oil pump PM is a six month PM which had been performed before, it appears that the PM feedback program is not always effective. The plant modification program also requires that procedures and PM's be updated when modifications or FCR's are completed. Although the inspectors found that the EDG procedures had been updated, the failure to update the PM was a weakness in the modification program.

- ° Installation of fire damper access panels in Control Room Emergency Ventilation Systems No. 1 and No. 2 ducts.
- ° Troubleshooting overspeed trip of EDG No. 2. The licensee determined that the cause of the trip was a limit switch which required adjustment.

- Adjustment of EDG No. 2 overspeed trip limit switch.
- Replacement of electronic control box for EDG No. 2.
- Temporary modification to supply power to DC busses during replacement of essential inverter YV4.
- Preventive maintenance of Control Room Ventilation System humidifiers. Although the humidifiers do not perform a safety related function, they form part of the negative pressure boundary to the safety-related Control Room Emergency Ventilation System (CREVS). The inspectors observed that maintenance and operations personnel had deenergized and tagged out both humidifiers at the same time despite specific steps in the PM MWO which directed that only one humidifier was to be deenergized at any time during the PM. The inspectors discussed this error with the Shift Supervisor and cognizant system engineer and determined that it had no effect on safety related equipment. The inspectors also informed the Plant Maintenance Manager of this maintenance practice weakness. The inspectors noted that this PM temporarily removes parts of each humidifier, leaving a small hole in the CREVS boundary. The inspectors observed that the hole was left uncovered while the work was in progress. During earlier discussions with the inspectors, the system engineer and the Maintenance Planning General Supervisor had agreed that it would be prudent to install temporary covers for such holes made during maintenance activities, even though such small holes normally would not render the CREVS inoperable. Following the inspectors observations the system engineer informed the inspectors that a planned change to the PM had not been completed. The system engineer later informed the inspectors that the PM had been split into two PM's, one for each humidifier and the instruction for covering the opening had been included.

b. Surveillance

The reviewed surveillances included:

<u>Procedure No.</u>	<u>Activity</u>
◦ DB-MI-03124	Channel Calibration of 79A-ISR2007 Containment Radiation Monitor Safety Features Actuation System Channel 4.
◦ DB-MI-03912	Channel Calibration of 50-ISF4631 Auxiliary Feedwater Flow to Steam Generator 2.
◦ DB-MI-04294	String Check of 50A-ISS815, Auxiliary Feedpump Turbine 1-1 Speed.

- ° DB-MI-04558 String Check of 79A-ISR8431 Control Cabinet Room Radiation Monitor.
- ° DB-MI-05141 RPS Channel 1 Flux/Delta Flux/Flow Trip and Trip Bistable Set Point Adjustment
- ° B-SC-04141 Diesel Generator 2, Overspeed Trip Test.
- ° DB-SP-03160 Auxiliary Feed Pump No. 2 Quarterly Test.
- ° DB-SP-03177 CF-28 Check Valve Functional Test.
- ° DB-SP-03357 RCS Water Inventory Balance.
- ° IC 2005.03 Process Radiation Monitor (Gaseous) calibration.
- ° ST 5030.02 RPS Monthly Functional Test.
- ° ST 5099.01 Miscellaneous Instrument Shift Checks.

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.

- c. The inspectors reviewed the licensee's emergency diesel generator (EDG) preventive maintenance (PM) program and determined that it meets the guidelines of NUREG/CR-5078, "A Reliability Program for Emergency Diesel Generators at Nuclear Power Plants."

No other violations or deviations were identified.

9. Emergency Preparedness (71707, 82701)

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 (EOF), and the operations support center (OSC) during an emergency preparedness drill.

On the evening of February 14, 1990, freezing rain fell on the plant and a significant portion of the ten-mile EPZ. Ice damage to electrical distribution facilities caused widespread power outages. The power outages and ice buildup temporarily reduced the licensee's emergency response capabilities. The three main offsite power supplies to the plant were not affected. However the offsite electric power supply for the Davis-Besse Administration Building (DBAB) and the Personnel-Shop Facility

(adjacent to the turbine building) was lost at about 9:30 pm. The DBAB houses the licensee's EOF and the DBAB backup power supplies were available if needed. The inspectors observed that normal lighting and power was lost for the Operations Support Center (OSC) and the Radiologically Controlled Area Entrance/Exit Area. Normal lighting and power was restored to these areas the following evening. The licensee has a system for remotely checking the status of all sirens in the prompt notification system. On February 15 a status check found that four of the fifty four sirens would not respond. At about 9:15 am on February 16 the licensee found that twenty eight of fifty four sirens would not respond. The inspector's review of licensee records showed that the licensee had notified Lucas County, Ottawa County and the State of Ohio of siren status by about 9:45 am. Fourteen sirens would not respond to a status check at about 9:55 am. At about 10:06 am the shift supervisor determined that the condition of the prompt notification system constituted a major loss of the the offsite notification system. At about 10:37 am the licensee reported this condition to the NRC via the Emergency Notification System as a one hour non-emergency report (10 CFR 50.72(b)(v)). The licensee periodically checked siren status and began efforts to restore power to sirens that were without power. All but one siren responded to a status check at about 10:52 pm on February 18. At about 6:13 am on February 19 all sirens responded to a status check and the Shift Supervisor was notified at about 8:00 am that all sirens were restored to service.

On February 15, 1990, the licensee found that the wind speed indicators on the meteorological tower were inoperable due to ice buildup. The wind speed indicators were restored to service on February 16, 1990.

At 4:15 pm, on February 24, 1990, the Ottawa County Sheriff notified the licensee that all roads in the county were closed to all but emergency vehicles. The area had experienced snow which melted on warm road surfaces accompanied by high winds and dropping temperatures. This resulted in ice covered roads and "white-outs". The licensee implemented Procedure HS-EP-02870, "Station Isolation", held the last shift over, set up emergency facilities on site and made the proper modifications. The inspectors observed that the The licensee terminated the emergency at 5:38 am on February 25, 1990, after receiving notification from the sheriff.

No violations or deviations were identified.

10. Security (71707, 81070, 93702)

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.

11. Engineering and Technical Support (37701, 37828, 42700, 62703, 71707, 83727 92701)

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.

The licensee had a policy of revising critical control room drawings, P&IDs and electrical drawings within 48 hours of the completion of a facility change. The as-built drawing change notice (DCN) was attached to the drawing at the time of the completion of the facility change. The licensee had previously committed to revising all drawings when there were five DCN's for a given drawing. This was in response to NRC concerns identified in Inspection Report No. 50-346/83001(DRP). The licensee recently reviewed its drawing policy and determined that it would extend the revision time for critical control room drawings from 48 hours to five days. It proposed that infrequently used drawings would be revised with ten DCN's or five years and all other drawings would be revised with five DCN's or annually. The licensee discussed its program several times with the inspectors. The inspectors suggested to the licensee that it might want to consider revising all drawings after five DCN's. The inspectors pointed out that a drawing could not be considered to be infrequently used if it had ten DCN's. They also suggested to the licensee that it might want to consider revising control room drawings with complex DCN's at the completion of the facility modifications rather than attach the DCN's to the drawing.

The licensee reviewed the inspectors' suggestions and incorporated them into its drawing policy. The licensee now will revise all control room drawings within five days of attaching a DCN with the exception of those with complex DCNs which will be revised immediately. All other drawings will be revised after the issuance of five DCN's or annually and infrequently used drawings will extend to five years. All drawings will be reviewed and assigned a prioritization category.

No violations or deviations were identified.

12. Safety Assessment/Quality Verification (30703, 40500, 92702, 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.

No violations or deviations were identified.

13. Management Meeting (30702)

On February 7, 1990, the Vice President - Nuclear and members of his staff met with senior Region III and NRR management and members of their respective staffs at Rockville, Maryland, for a quarterly management meeting. The licensee discussed work scheduled for the current refueling outage, plant issues, and the progress of the ongoing management audit.

14. Violations for Which a "Notice of Violation" Will Not Be Issued

The NRC uses the Notice of Violation (NOV) as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensees' initiatives for self-identification and correction of problems, the NRC will not generally issue a NOV for a violation that meets the tests of 10 CFR 2, Appendix C, Section V.G.1. These tests are: (1) the violation was identified by the licensee; (2) the violation would be categorized as Severity Level IV or V; (3) the violation was reported to the NRC, if required; (4) the violation will be corrected, including measures to prevent recurrence, within a reasonable time period; and (5) it was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation. Violations of a regulatory requirement identified during the inspection for which a NOV will not be issued are discussed in Paragraphs 2 and 3.

15. 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. After discussions with the licensee, the inspectors have determined there is no proprietary data contained in this inspection report.