

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/92018(DRS)

Docket No. 50-346

License No. NPF-3

Licensee: Centerior Service Company
c/o Toledo Edison Company
300 Madison Avenue
Toledo, OH 43652

Facility Name: Davis-Besse Nuclear Power Station

Inspection At: Oak Harbor, OH 43449

Inspection Conducted: December 7 - 18, 1992

Inspectors:	<u><i>B. Burgess</i></u>	<u>1/12/93</u>
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	B. Burgess, Chief	Date
	Operational Programs Section	

Inspection Summary

Inspection on December 7 - December 18, 1992 (Report No. 50-346/92018(DRS))

Areas Inspected: Routine, announced, safety inspection of design changes, modifications and temporary alterations conducted according to Inspection Module 37700.

Results: No open items, violations or deviations were identified. The reviewed modifications and temporary alterations were performed satisfactorily. Two previous violations were reviewed and both were closed.

Areas of noted strength were:

- The effectiveness of support provided by the system engineers to other plant organizations.
- Training, qualification and initiative of the system engineers in their assigned responsibilities.

REPORT DETAILS

1. Persons Contacted

Toledo Edison Company

S. Jain, Director of Engineering
T. Anderson, Superintendent of Maintenance
J. Arora, Senior Engineer
J. Barron, Supervisor, Test and Engineering
N. Bonner, Manager, Engineering
E. Caba, Manager, Performance Engineering
K. Filar, Licensing Engineer
J. Hartigan, Supervisor, Mechanical Engineering
G. Honma, Supervisor, Compliance
P. Jacobsen, Supervisor, Electrical Design
P. Mainhardt, Acting Supervisor
G. McIntyre, Supervisor, E/C Systems Engineering
M. Mclaughlin, Engineer, Independent Safety Engineering
R. Schrauder, Manager, Nuclear Licensing
R. Simpkins, Supervisor, OPS Training
J. Slivinski, Lead Drafting
V. Sodd, Manager, Independent Safety Engineering
J. Wood, Operations Manager
A. Zarkesh, Supervisor of Safety Analysis

U.S. Nuclear Regulatory Commission

S. Stasek, Senior Resident Inspector

All personnel listed above attended the exit interview held on December 18, 1992. The inspectors contacted other staff members during this inspection.

2. Licensee Actions on Previous Inspection Findings (92701)

(CLOSED) Violation (91-016-01A): Inadequate adherence to quality requirements for implementing safety-related modifications. The licensee revised procedure DBPN-0007 to specify that licensed personnel would not assume licensed functions unless familiar with all implemented modifications. Prior to the returning the modified system or component to normal operation, the revised procedure requires completion of post-modification testing and modification closure form signoff.

(CLOSED) Violation (91-016-01B): Delayed generation of potential condition adverse to quality report (PCAQR). The licensee had determined that the root causes of diesel generator starting failures were faulty switches and relays in the startup circuitry. An independent contractor's

analysis of the failure mode concluded random manufacturing defects. The licensee counseled the staff on the timely generation of PCAQRs. A PCAQR was appropriately issued for the December 6, 1991 failure of the D/G speed switch.

3. Design Changes and Modifications (37700/37828)

For each of the listed modification packages, if feasible, the inspectors reviewed or inspected the following areas:

- Design of the modification,
- 10 CFR 50.59 Safety evaluation,
- Post-modification testing,
- Governing procedures,
- Drawing changes, and
- Plant installation

Unless otherwise noted, the inspectors determined that the modifications were in accordance with programmatic and regulatory requirements. Further, the technical issues were adequately addressed. However, the inspection identified that of 19 modifications reviewed, two had less than adequate engineering reviews performed by the design engineering staff. One case related to not fully evaluating the impact of density changes on instrument accuracy (Paragraph 3.a.(4)), and the second caused inadequate hydrogen flow (Paragraph 3.b.(1)). The two cases did not reflect a programmatic weakness.

a. MODIFICATIONS

- (1) MOD 85-137, Revision A, Decrease Containment Drain Header Isolation Valve Closing Stroke Time

This modification reduced the stroke time of valve RC-1773B, meeting Technical Specifications.

The solenoid valve on the air operator was replaced with a newer style solenoid valve with a larger orifice. The larger orifice allowed the valve to close more rapidly.

- (2) MOD 86-0128, Post Accident Sampling System (PASS) Sample Cooling and Ventilation

This modification encompassed three separate changes. First, it changed the cooling water supply from demineralized water to component cooling water (CCW). Second, it installed a shield wall to reduce radiation. Third, it installed emergency lighting for greater visibility of the area. The inspectors verified that the changes did not adversely affect the safety-related functions of CCW.

- (3) MOD 86-0175, Replacement of Springs in Valcor Solenoid Operated Valves

This modification was in response to an industry report on coil springs fracturing due to hydrogen embrittlement. New springs of a different material were available from the valve manufacturer. The licensee had 17 valves with these springs both installed and in storage. They planned to work and replace the springs as needed.

- (4) MOD 86-0303, Reactor Coolant System Dual Level Range Monitor

This modification installed two trains of level instruments to monitor the reactor vessel water level during outages. The level monitors provided control room level indications and alarms (low and low-low) when water level was lowered to mid-nozzle range.

The inspectors questioned the effect of density changes due to instrument leg temperatures on instrument accuracy. The licensee had not adequately evaluated the potential impact of water density changes. The staff did a calculation showing that for the expected temperature ranges at mid-loop levels, a negligible error of no safety significance was introduced by density changes. However, the inspectors considered this as an example of a weakness in the design review. This issue was discussed with the licensee at the exit interview.

(5) MOD 87-1273, Replacement of Auxiliary Feedwater Turbine Steam Valves

Scheduled for installation during the next outage, this modification will replace auxiliary feedwater turbine steam admission valves with valves of a different design and manufacturer. The new valves had performance specifications matching the existing valves meeting Technical Specifications actuation times. The pipe stress calculations were being reviewed by design engineering.

(6) MOD 89-0003, Replacement of Relief Valve DH 1508

This modification replaced one of the two relief valves in the residual heat removal system. The existing valves were no longer being manufactured and spare parts were difficult to obtain. The remaining valve will be replaced during the next outage.

(7) MOD 89-0123, Prevent Linkage in Air Operated Valves from Slipping

This modification was a redesign of the operator linkage slide fastener which enhanced its holding ability. System engineers identified a recurring problem with the valve operator linkage on a particular model air valve. Slippage in an adjustable slide misaligned the operator and prevented the valve from repositioning. This modification affected five valves.

(8) MOD 90-0066, Main Feedwater Nozzle Replacement

This modification will replace the eroded feedwater sparger nozzles in the steam generators. The contractor work is scheduled to be implemented during the next outage.

The inspectors identified two concerns with this modification. The licensee had no procedure verifying proper operability of the nozzles after completion of the modification. Although the work will be done under the contractor's QA program, the licensee had no procedure to verify whether nozzles were plugged, misoriented, or impaired during installation. The second concern raised by the inspectors was the licensee had not established any criteria to verify acceptable flow through the nozzles. The inspectors conveyed these concerns to the licensee. The licensee's

position was that other B&W plants had no difficulty in their installations, and that minor flow deviations would be appropriately compensated by the feedwater control system.

(9) MOD 91-53, Modifying Hydrogen Supply System Piping

This modification made three changes in the hydrogen supply system piping and its connection to the RCS makeup tank system. This modification involved reversing the position of solenoid valve MU-54, removing the outside drain line, and relocating the H2 supply system and piping. These changes eliminated back leakage of RCS water to the environment and assured appropriate hydrogen flow into the RCS makeup tank.

The inspectors identified a concern that an inadequate design review allowed installation of a misoriented valve that could not perform its function. Although the valve stopped the RCS back leakage, it significantly reduced hydrogen flow during pressurization of the makeup tank when the valve was opened. The licensee was aware of the deficiency and had taken appropriate measures to preclude a recurrence.

(10) MOD 92-0004, Repair of Reactor Head Vent Line

This modification repaired corrosion damage to the once through steam generator 1-2 inspection manway sealing surface. This mod also added cladding to the repaired areas.

(11) MOD 92-021, Replacement of Safety Features Actuation System (SFAS) Containment Pressure Transmitters

In this modification, four containment pressure transmitters will be replaced with environmentally qualified transmitters at the next outage. Currently two pressure transmitters are temporarily modified with thermal insulation (TM-92-0008) to address revised high energy line break accident considerations. Environmentally qualified transmitters will not require thermal insulation.

b. TEMPORARY MODIFICATIONS

- (1) TM-91-0044, Modifying the Makeup Tank System to Prevent Leakage Flow into the Environment

This modification installed a manual isolation valve, a hydrogen bottle rack, and reversed MU54 valve position. During system draining, the valves stopped the RCS leakage flow from the makeup tank system to the outside environment.

The inspectors reviewed the modification for MU54 and determined that it did not receive sufficient design engineering review. Installation of this design resulted in a unique system configuration. Although leakage flow was terminated, the system would not function as originally intended. These changes were not safety-related. This issue was also discussed with the licensee at the exit interview.

- (2) TM-91-0045, Connecting Data Acquisition and Analysis System (DAAS) to Monitor Diesel Generator Speed Switch

This temporary modification verified proper operation of the #2 diesel generator speed switch. The speed switch of the emergency diesel generator (EDG) was connected to the DAAS, monitoring the speed of the diesel generator.

- (3) TM-91-0047, Isolate Monitoring Equipment for EDG Speed Switch

This temporary modification provided electrical isolation for installing equipment to electronically monitor the performance of an EDG speed switch. This satisfied the requirement that nonsafety-related equipment connected to a safety-related circuit must be electrically isolated to prevent a potential failure from impacting the safety function.

- (4) TM-92-0004, Rewiring a SFAS Cabinet Door Relay Contacts

This temporary modification rewired relay contacts for the cabinet door alarm logic for the Safety Features Actuation System, channel 1, from one set

of parallel contacts to another. The first set of contacts produced noise (radio frequency interference from chattering contacts) when the door closed which caused the indicated neutron level to read higher than actual on the source range nuclear instruments.

- (5) TM-92-0007, Providing Electrical Isolation for Controls of the Auxiliary Feed Pumps

This temporary modification provided electrical isolation of the local controls for the auxiliary feed water pump steam supply valves and their local indicating lights. This isolation was needed to prevent a potential failure of respective EQ equipment during a postulated high energy line break.

- (6) TM-92-0008, Adding Thermal Insulation to Pressure Transmitters

This temporary modification added thermal insulation to two safety features actuation system (SFAS) containment pressure transmitters. The insulation was required to prevent potential transmitter failure during a postulated high energy line break condition.

- (7) TM-92-0013, Install a Relay to Set Closed Limit for CF2A

Inoperable containment isolation valve CF2A was used to allow the sampling of the core flood tanks. The samples were required by Technical Specifications. The valve was inoperable because, its torque switch prevented full closure. The temporary modification reviewed Technical Specifications requirements for inoperable containment isolation valves and implemented administrative controls to ensure compliance. This included monitoring the valve motor to verify valve closure and hanging of appropriate tags on the valve controls.

- (8) TM-92-0014, Installation of Sample Line Connections

This temporary modification installed sample line connections to several portable iron monitors for

corrosion product sampling. This provided sampling from the deaerator storage tanks and the condensate polisher common outlet during the performance of the alternate amines test program.

4. Technical Staff and Engineering Support (37700)

The inspectors interviewed system engineers and plant staff regarding the engineers support functions. Prompt and high quality engineering support was noted by system engineers on most technical issues. For example, a problem with several unrelated SFAS annunciator alarms was identified and repaired on the same day. Operations, maintenance, and other plant staff interviewed by the inspectors, considered system engineering support to be excellent.

System engineers monitored their systems for adverse trends. As an example, the seismic monitoring system batteries required replacement every two years instead of the scheduled five years. The system engineer corrected the problem by revising the procedure for the correct battery charging voltage. Other initiatives by system engineers were noted including modification 89-0123.

Management actively promoted increased involvement by design engineers in plant activities. The performance of design engineers in site activities involving modifications was good. In inspectors' interviews with plant management and staff, actions to increase involvement were described. Walkdowns were procedurally required as part of the design process and after installation. Engineers were assigned to work in maintenance shops and other areas during outages.

5. Exit Meeting

The inspectors met with licensee representatives at the conclusion of the inspection on December 18, 1992. The inspectors summarized the purpose, scope, and findings of the inspection report. The licensee acknowledged the information and did not identify any information as proprietary.