U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-346/77-34

Docket No. 50-346 License No. NPF-3

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

Facility Name: Davis-Besse Nuclear Power Plant, Unit 1

Inspection At: Davis-Besse Site, Oak Harbor, OH

Inspection Conducted: November 16-18, 30, and December 1 and 2, 1977

Inspectors: T. N. Tambling R C Knop for 12/10/77

Other Accompanying Personnel: K. Connaughton

Approved by: R. C. Knop, Chief R C Knop 12/10/77
Reactor Projects Section 1

Inspection Summary

Inspection on November 16-18, 30, December 1 and 2, 1977 (Report No. 50-346/77-34)

Areas Inspected: Routine, unannounced inspection of surveillance testing, investigation and followup associated with loss of offsite power on November 29, 1977, followup on unresolved items and independent inspection effort. The inspection involved 52.5 inspection-hours by one NRC inspector.

Results: Of the areas inspected, no apparent items of noncompliance were identified; one deviation was identified in one area.

DETAILS

1. Persons Contacted

*T. Murray, Station Superintendent
*L. Stalter, Technical Engineer
B. Beyer, Maintenance Engineer
*W. Green, Administrative Coordinator
*C. Domeck, Nuclear Project Manager
*J. Lenardson, Manager, Quality Assurance Department
*J. Buck, Operations Quality Assurance Manager
*C. Daft, Quality Control Supervisor
*T. Hart, Quality Control Engineer
*F. Miller, Nuclear System Engineer
*J. Lingerfelter, Nuclear and Performance Engineer

The inspector also talked with an interviewed other licensee employees including members of the technical, engineering and operations staff.

*Denotes these attending exit interviews.

2. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (50-346/77-32): Black oily material dripping from a cable penetration in the cable spreading room. The inspector reviewed the licensee investigation performed to date. Based upon this investigation it appears that this was an isolated case and that the integrity of the seal was intact and within the required design specifications. Samples of the material had been submitted to Dow Chemical Company for analysis. This item will remain open pending results of the analysis.

(Closed) Unresolved Item (50-346/77-32): Failure to keep pressure boundary door between the two auxiliary feedwater rooms closed. The licensee was cited for a deviation of a FSAR commitment. (Paragraph 3)

3. Surveillance Testing

The inspector reviewed the licensee's surveillance testing of components or equipment associated with safety related systems or components to determine if the surveillance program was being conducted as required by the Technical Specification and in accordance with approved procedures. Within this review

selected surveillance procedures were examined for program review and approval, technical content, acceptance criteria, operational checks prior to returning equipment to service and frequency of performance. The performance of selected surveillance tests were witnessed by the inspector. The specific areas covered were:

- Incore Instrument Channel Calibration
- Channel Functional Test of the Reactor Trip Module Logic and Control
- Rod Drive Trip Breaker
- Auxiliary Feedwater Pump
- Reactor Coolant System Leakage
- Containment Spray System
- Diesel Generator

In a discussion with a representative of the licensee concerning calibration of the incore detector it was noted that the licensee was not using the background wire in a detector string to correct the reading of the individual detectors. The description of the incore detectors referenced in the FSAR (B and W topical report BAW-1001) specifically references the use of the background wire to compensate detector readouts for load wire effects. The licensee stated that the design of detector strings used at Davis-Besse had been changed such that background compensation was no longer needed. Documentation and review of these design changes were not immediately available for review. This item is considered unresolved pending the review of the licensee's documentation.

On page 3-34r of the FSAR in the description of Rooms 237 and 238 (Auxiliary Feedwater Pump Rooms). The FSAR states in part, "In order to prevent loss of both auxiliary feed pump turbine units, a wall was constructed between the units with an interconnecting pressure door." During the witnessing of the Auxiliary Feedwater Pump (AFP) surveillance test, the inspector found on entrance to AFP 1-2 room that the interconnecting door was open. During a previous tour of the facility on October 27, 1977, the door was found open also (Inspection Report 50-346/77-32). Failure to keep this door closed is considered to be a deviation from a commitment in the FSAR.

Also as a result of witnessing AFP monthly surveillance tests, the inspector brought to the licensee's attention potential problem areas. The procedure called for a specific vibration monitoring instrument. Two types of instruments are currently used in the plant. It was only after discussion with maintenance personnel that it was determined that both are calibrated to the same standard and are interchangeable. It was also noted there were no base marks on the equipment to insure that vibration measures are taken in the same point. These items were also discussed during the exit interview. The licensee stated that the surveillance procedure would be revised to cover both types of vibration monitoring instrumentation.

4. Organizational Changes

The licensee informed the inspector that effective November 1, 1977, Mr. T. Murray had been appointed to the position of Station Superintendent. Mr. Murray had served in the position as Assistant Station Superintendent. The inspector verified that Mr. Murray meets the qualifications of ANSI N18.1-1971.

5. Reactor-Turbine Trip With Loss of Offsite Power

The inspector reviewed the circumstances, consequences, and corrective action taken for the reactor and turbine trip that occurred November 29, 1977, at 2224 hours. The licensee notified the inspector that the event was being reported under the requirements of the Technical Specifications and a followup report would be made.

The reactor was at 40% power prior to the event. The first indication of a problem was indication of a drop rod in group 7 with the rest of the group driving out. The reactor tripped on high nuclear power (The set point was at 50% power because the unit was in power ascension testing at the 40% power plateau). Following the emergency procedures for a reactor and turbine trip, the operator manually tripped the output breakers for the main generator when they apparently did not automatic trip. This resulted in loss of AC power to the 13.8 kv A and B buses. On loss of AC power to A and B buses, the four reactor coolant pumps tripped and the diesel generators start. After starting, one diesel generator tripped on overspeed.

During the inspection, the licensee's investigation revealed that:

a. The power spike that caused the reactor trip was due to a short in the patch panel for the reactimeter. The short

fed a false signal into the Integrated Control System calling for increased power. The short also gave indication of a dropped rod. In the exit interview the licensee stated that they were initiating action to check out all future patch panels prior to insertion into logging system. The licensee also confirmed that all safety related signals are buffered by isolation amplifiers.

b. The loss of offsite power was due in part to a procedure inadequacy and operator error. A procedure modification to the emergency procedure has been made and operating personnel made aware of the delay time in the main generator reverse power and antimotoring protective circuits. Had the operator waited, there would have been an automatic switching of AC power to the 13.8 kv buses.

c. The cause for the overspeed trip of the diesel generator could not be specifically identified by the licensee. However, several actions were taken to reduce the probability of recurrence. The trip set point was move to the top range of the scale. The governor was turned to increase the response time to limit the speed overshoot on startup. The licensee stated that the same corrective active would be taken on the other diesel generator.

d. The thermal-pressure transient associated with the event were reviewed. In the exit interview the inspector stated that the thermal-pressure transient must be reviewed to show that it was bounded by a previously analyzed transient before continuing operation. On the inspector's return to the office, the licensee called December 2, 1977, to state that B&W had completed their analysis of the transient and concluded that even though the actual transient varied some from the transients analyzed for loss of offsite power and/or loss of reactor coolant pumps, it was adequately bounded by these transients. A review of the data also indicated that the pressure-temperature cooldown limits of the Technical Specifications were not exceeded.

6. SFAS Analog Amplifier and Biatable Grounding Deficiency

The inspector verified that final drawing revisions were received onsite to close out the licensee's 10 CFR Part 50.55(e) report along with previously reviewed corrective action. (Closed)

7. Locked Valves and Equipment

The inspector informed the licensee of NRC's interpretation concerning locking devices required to meet Technical Specification

requirements or FSAR commitments. The licensee currently uses chain and padlocks and metal cables to lock valves. In the exit interview the inspector stated the metal cable locking device is not considered to be "tamper proof". The licensee stated that they would provide a sealing device that would meet the interpretation.

8. Procedure Changes

The licensee's administrative control for changes to facility procedures is described in AD 1805.00. The inspector noted that this procedure does not specifically address the documentation required for change to procedures referenced in the FSAR as required by Paragraph 50.59 of 10 CFR 50. This was discussed in the exit interview. The licensee stated that they would revise the procedure to clarify the intent.

9. Unresolved Item

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. One unresolved item discovered during the inspection is discussed in Paragraph 3.

10. Part 21 Report

The licensee issued a Part 21 report on the closure of the governor valve for the turbine to the auxiliary feedwater pump.[1/] The valve drifted closed due to vibration from the adjusting startup feedwater valve. The inspector reviewed the modification made to the linkage between the turbine governor and the governor valve to prevent recurrence. The licensee stated that a supplemental Part 21 report was being written to describe this modification. (Closed)

11. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on November 18 and December 2, 1977, to summarize the findings of the inspection. The licensee representatives made the following remarks in response to the items discussed by the inspector.

November 18, 1977

Acknowledged the statement of the inspector with respect to the apparent deviation of a FSAR change report. (Paragraph 3)

Stated that a sample of the oily material found in cable penetration load been sent to Dow Chemical Company and that they were waiting the results of the analysis. (Paragraph 2)

Acknowledge the inspector's observations during the witnessing of the AFP monthly surveillance test. (Paragraph 3)

Stated that they would provide the inspector with additional information on the incore detectors during a future inspection. (Paragraph 3)

Acknowledged the inspector's comments concerning locked valves and equipment. (Paragraph 7)

Acknowledged the inspector's comments concerning changes to procedures referenced in the FSAR. (Paragraph 8)

December 2, 1977

The inspector reviewed the events, evaluation and corrective actions taken by the licensee concerning the November 29, 1977 event. The licensee acknowledged that the return to operation was predicated upon the bounding the associated pressure - temperature transient to previously analyzed transient. (Paragraph 3)