U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/82-07(DETP)

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 Station, Unit 1

Inspection At: Oak Harbor, OH

Inspection Conducted: January 21-22, 1982

Inspectors: D. L. Robinson 3/11/82

I. N. Jackiw 3/19/82

Approved By: I. N. Jackiw, Chief 3/19/82
Test Program Section

Inspection Summary

Inspection on January 21-22, 1982 (Report No. 50-346/82-07(DETP))
Areas Inspected: Routine, announced inspection of previously identified inspection items and licensee event report. The inspection involved a total of eight inspector-hours onsite by two NRC inspectors including 0 inspector-hours during offshifts.
Results: One item of noncompliance was identified (failure to perform a safety evaluation in accordance with 10 CFR 50.59 - Paragraph 3).

DETAILS

1. Persons Contacted

*B. Werner, Administrative Coordinator
F. Miller, Supervisor, Nuclear Engineering
S. Jain, Nuclear Engineer
*J. Lingenfelter, Technical Engineer
*S. Batch, Staff Engineer
*J. Walzak, Operations QA
J. Byrne, QA Auditor
D. Poage, QA Auditor
J. Lochotzki, QA Auditor
L. Reyes, USNRC Senior Resident Inspector

*Denotes those present during exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 346/79-30-03): Responsibility for station Central File records. The inspector verified that Revision 3 to AD 1848.17 assigns the maintenance of station records to the Office Manager.

(Closed) Unresolved Item (346/79-30-06): Periodic review of procedures. The inspector verified that the licensee has established and is implementing procedures to periodically review station procedures. AD1805.02 "Periodic Review of Station Procedures," specifies by department, the frequency by which procedures are to be reviewed. A computer tracking system is established to track the completion of these reviews.

(Closed) Unresolved Item (346/79-30-07): Review and approval of maintenance procedures. The inspector verified that AD 1844.00.4 delineates controls for maintenance procedures and instructions for nuclear safety related maintenance. Also, the inspector noted that an Administrative Memorandum No. 18-2 "Quality Assurance Review and Approval of Station Procedures" specifies that Quality Assurance will review and approve nuclear safety related procedures.

(Open) Unresolved Item (346/79-30-02): Storage of Quality Assurance records. The inspector found that all station records have now been transferred to a new records storage vault outside the plant perimeter. These records are currently being sorted and will be filed into permanent filing cabinets. This item remains open pending completion of the sorting and filing process.

3. Licensee Event Report Followup

On January 10, 1982, the heat exchanger on the Borated Water Storage Tank (BWST) was placed at full capacity to keep the borated water above its operational limit of 50°F during severe cold weather conditions. In this mode, suction is taken from the bottom of the tank, and the

heated water returned at the top. On January 11, 1982, the containment spray pump was placed in service as part of a routine surveillance test. Operation of the high capacity pump resulted in thorough mixing within the BWST. The BWST temperature, sensed near the bottom of the tank, increased to approximately 125°F shortly after start of the test. The heat exchanger was secured at this point, and the tank started to cool via losses to the ambient. On January 13, 1982, the BWST overtemperature condition was discovered by the Senior Resident Inspector during a routine review of the shift log at 4:00 p.m. (EST). The BWST had cooled to approximately 117°F. The SRI informed the licensee that operation in this mode was outside the range of the plant safety analyses which assume 90°F BWST water for various loss of coolant accidents. After consultation with Babcock and Wilcox, it was determined that continued operation was permissible at 94% rated power with a BWST temperature of 117°F. The licensee commenced reduction in power reaching 94% at 6:00 p.m. (EST) and 90% at 7:00 p.m. (EST). By 2:00 a.m. (EST) on January 14, 1982 the BWST temperature had decreased to 83°F using the Decay Heat Removal System. The plant was returned to rated conditions shortly thereafter.

An ECCS impact study was prepared by Babcock and Wilcox to justify plant operation at 90% power with a BWST temperature of 120°F. An additional study was then done to evaluate plant operation at 100% power with 120°F BWST water and actual core peaking conditions. In the design basis LOCA, the maximum allowable linear heat rate of 18.4Kw/Ft was assumed. However, actual operating data taken on January 12, 1982, indicated that the local power was less than 65% of the allowed LOCA Kw/Ft. The inspectors noted that this low power peaking would be expected at end of life conditions. As the effect of the elevated BWST temperature was small, while the reduced local power effect was large, the consequences of a large break LOCA would be less severe than the original licensing evaluation. For the small break LOCAs considered, the higher BWST temperature would have resulted in a decreased vessel inventory. However, the resultant peak cladding temperatures (PCT) would still have been less than the 2200°F PCT limit imposed by 10 CFR 50.45. Finally, the short-term containment response to a large break LOCA would not be affected by the elevated BWST temperature. The inspectors concluded that the BWST temperature excursion did not constitute an unreviewed safety item. Power operation in ranges outside the scope of the plant safety analyses without prior safety evaluation in accordance with 10 CFR 50.59 is considered an item of noncompliance (50-346/82-07-01).

The inspectors noted that the licensee had proposed changes to the BWST Operating Procedure No. SP1104.66.8 to limit the BWST heat exchanger outlet temperature to 90°F and specify corrective action measures to be taken should the BWST temperature limit be exceeded.

4. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on January 22, 1982, and by telephone on March 1, 1982. The inspectors summarized the purpose, the scope, and the findings of the inspection.