

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

REGION III

Report No. 50-346/77-33

Docket No. 50-346

License No. NPF-3

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

Facility name: Davis-Besse Nuclear Power Station, Unit 1

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

Inspection conducted: November 21-23, 1977

Inspector: *L. R. Greger* 12/9/77
L. R. Greger

Approved by: *W. L. Fisher* 12/9/77
W. L. Fisher, Chief
Fuel Facility Projects and
Radiation Support Section

Inspection Summary

Inspection on November 21-23, 1977 (Report No. 50-346/77-33)

Areas Inspected: Routine, announced inspection of radiation protection and radwaste activities related to the startup and power ascension program, including: radiation surveys; changes in facilities and procedures; reactor water radiochemistry; respiratory protection; gaseous, liquid, and solid radwaste effluents; and review of license event reports. The inspection involved 25 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were found.

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DETAILS

1. Persons Contacted

W. Alton, Senior Assistant Engineer
*D. Briden, Chemist and Health Physicist
*J. Buck, Quality Assurance Supervisor
*B. Geddes, Assistant Health Physicist
*W. Green, Assistant to Station Superintendent
*K. Mauer, Assistant Quality Assurance Representative
W. Mills, Assistant Chemist
*T. Murray, Station Superintendent
J. Zell, Assistant Engineer

The inspectors also contacted several other licensee employees, including members of the technical and engineering staffs.

*Denotes those present at the exit interview.

**Denotes those contacted by telephone after the onsite exit interview.

2. General

This inspection, which began at 12:30 p.m. on November 21, 1977, was conducted to examine completed and planned radiation protection and radwaste activities related to the startup and power ascension phase of the licensee's operations.

3. Startup Surveys

The inspector reviewed the shield and station survey results through the 40% power surveys. One additional set of data is required at greater than 95% power to complete the surveys specified in procedures TP 800.01 and TP 800.03. No discrepancies from the test procedures were identified; the survey instruments were noted to have been calibrated as required. The survey results will, according to licensee personnel, be evaluated for conformance to the test procedures and the Final Safety Analysis Report upon completion. Radiation levels, especially neutron, appear significantly greater than anticipated. The final survey results and the licensee's evaluation will be examined during a future inspection.

No items of noncompliance or deviations were identified.

4. Neutron Fields

Elevated neutron fields were detected both within and immediately adjacent to the shield building during the startup radiation surveys. The unanticipated neutron fields are apparently due to streaming from the seal ring cavity. Measurements made using a tissue equivalent sphere at 5% power identified numerous areas greater than 100 mrem/hr and some areas greater than 500 mrem/hr within the shield building. The highest level measured outside the shield building was less than 5 mrem/hr (40% power). An evaluation was made by the licensee to estimate the neutron energies and determine an appropriate neutron to gamma ratio for use in conjunction with gamma personal dosimetry devices for estimating personal exposures from the neutron fields. The licensee is also evaluating neutron dosimetry (TLD) and performing dose estimates based on stay time calculations for quantification of personal neutron exposures. A Standing Order has been issued which limits containment entries at greater than 5% power.

Corrective actions to remedy the elevated neutron fields have not been finalized. This matter will be reviewed further during subsequent inspections.

No items of noncompliance or deviations were identified.

5. Radiochemistry Tests

The inspector selectively reviewed the radiochemical test data for the primary and secondary coolant systems. The testing is specified in test procedure TP 500.03. The licensee has not completed the build-up graphs specified in the test procedure. Radioisotope levels remain relatively low; no fuel leakage has been identified. The test data will, according to licensee personnel, be evaluated for conformance to the test procedure upon completion. This evaluation and the buildup graphs will be examined during a future inspection.

No items of noncompliance or deviations were identified.

6. Respiratory Protection

The inspector reviewed a draft procedure (HP 1605.02.0) which defines the conduct of the proposed respiratory protection program. The procedure requires modifications in some areas

to comply with the requirements of 10 CFR 20.103; specific comments were provided to licensee personnel. A medical evaluation of licensee employees has been conducted to identify personnel who are unable to wear respirators. The licensee expects to receive quantitative fit-testing and whole body counting equipment early next year. The inspector cautioned the licensee to ensure that whole body counting data are properly evaluated regarding personal exposures to airborne concentrations of radioactive material. Until the respiratory protection program conforms to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15, credit cannot be allowed for the use of respiratory protection equipment in estimating exposures of individuals to airborne radioactive material.

No items of noncompliance or deviations were identified.

7. Radioactive Waste

Gaseous and liquid radwaste releases to date have contained relatively low quantities of radioactive material. The licensee has identified Xe-133, H-3, and some iodines in the gaseous releases and mainly corrosion products (Co-58, Co-60, Mn-54, and Fe-59) in the liquid releases. Selective review of the licensee's release records through October did not reveal any discrepancies from the technical specification release requirements.

No solid radwaste shipments have been made by the licensee. Processed liners (urea formaldehyde) are drained of free water after processing. The inspector discussed the requirements of 10 CFR 71 regarding shipment of Low Specific Activity (LSA) material in greater than Type A quantities and noted that the limited amount of available onsite storage, especially for high level wastes, may present a problem in the future.

No items of noncompliance or deviations were identified.

8. Review of Nonroutine Events

The inspector reviewed the radiological aspects of the following licensee event reports. No items of noncompliance or deviations were identified during review of the licensee event reports. The licensee had identified and initiated appropriate corrective actions regarding two technical specification requirements.

LER NP-33-77-4 Inoperable Containment Radiation Monitor
(5/6/77)

LER NP-32-77-4 Inoperable Containment Radiation Monitor
(6/1/77)

LER NP-33-77-11 Inoperable Containment Radiation Monitor
(6/13/77)

LER NP-09-77-2 Station Vent Sampler Failure (8/30/77)

LER NP-32-77-16 Primary System Depressurization (9/24/77)

The information contained in the LER's was not complete in all cases. The inspector admonished the licensee to ensure that future LER's contained sufficient information to allow the inspector to evaluate the significance of the event.

Further information regarding LER NP-09-77-2 and LER NP-32-77-16 are contained in paragraphs 9 and 10.

9. Station Vent Sampler Failure (LER NP-09-77-2)

Although redundant station vent monitors are provided, only one monitor is equipped with the iodine and particulate samplers necessary to meet the technical specification surveillance requirements. One inoperable sample pump can therefore cause an omission of the particulate and iodine release samples. The licensee has taken temporary measures to estimate iodine and particulate releases in cases where the required sampling system is inoperable. According to licensee personnel, the second monitor will be modified to provide the capability to collect iodine and particulate samples also.

No items of noncompliance or deviations were identified.

10. Primary System Depressurization (LER NP-32-77-16)

The inspector reviewed the licensee's evaluation of the radiological aspects of the September 24, 1977 incident. Primary coolant radiochemistry did not indicate that fuel leakage had occurred; airborne samples within containment did not identify any significant radioactive concentrations; contamination levels were less than 100,000 dpm/100 cm² and typically less than 10,000 dpm/100 cm². The condensed steam was processed by the miscellaneous waste system and released. The liquid releases complied with the technical specification requirements. No airborne activity was released as a result of the incident.

No items of noncompliance or deviations were identified.

11. Facilities

The following items were noted during inspection of the radiation protection and radwaste related facilities:

- a. Radiation sources were not readily available to check portable survey instrument operability.
- b. Waste receptacles at step-off-pads were not identified as containing potentially radioactive materials.
- c. Numerous area radiation monitors read less than the downscale trip point and therefore were in the "fail" alarm condition. According to licensee personnel, the "failed" monitors are checked for operability with a radiation source each shift.

No items of noncompliance or deviations were identified.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 23, 1977, and further discussed the inspection findings with Mr. Murray by telephone on December 5, 1977. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

- a. Stated that a procedure concerning evaluation of whole body counting data would be written. (Paragraph 6)
- b. Acknowledged the inspector's comments concerning shipments of LSA material and solid radwaste storage facilities. (Paragraph 7)
- c. Acknowledged the inspector's remarks concerning completeness of LER's. (Paragraph 8)
- d. Stated that modification of the station vent monitor to provide redundant iodine and particulate sampling capabilities was scheduled for completion by February 1977. (Paragraph 9)
- e. Stated that check sources would be made available for use with portable survey instruments. (Paragraph 11)
- f. Stated that the Region III NRC Office would be notified within 24 hours by telephone, telegraph, or facsimile in

the event that an Environmental Technical Specification (ETS) limiting condition for operation is exceeded.

Such notification is in addition to the ten day written report required by ETS 5.4.2.A. The technical specifications which are included in the reporting requirement of ETS 5.4.2.A, and the 24-hour notification, are ETS 2.4.1 and 2.4.3 and the "Specifications" portion of ETS 2.1.1, 2.3.1, 2.3.2, and 2.3.3.