UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Preoperational Radiation Protection and Radwaste Inspection

IE Inspection Report No. 050-346/77-07

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

Davis Besse Nuclear Power Station
Unit 1
Oak Harbor, OH

License No. CPPR-80
Category: B

Type of Licensee: PWR (B&W) 906 MWe

Type of Inspection: Routine, Announced

Dates of Inspection: February 1-3 and March 2-4, 1977

Principal Inspector: L. R. Greger — 3/23/77 (Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: W. L. Fisher, Chief
Fuel Facility Projects and
Radiation Support Section — 3/23/77 (Date)

SUMMARY OF FINDINGS

Inspection Summary

Inspection on February 1-3 and March 2-4, 1977 (Unit 1, 77-07): Reviewed status of radiation protection and radwaste programs for fuel loading, including preoperational testing and equipment calibrations.

Enforcement Items

No items of noncompliance with NRC requirements were identified during this inspection.

Licensee Action on Previously Identified Enforcement Items

None reviewed during this inspection.

Other Significant Findings

A. Systems and Components

Radwaste system construction and turnover is essentially complete. Preoperational testing is underway.

B. Facility Items (Plans and Procedures)

Process monitor calibrations are underway.

C. Managerial Items

Use of respiratory equipment protection factors is not authorized pending revision of the respiratory protection program to conform to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. (Paragraph 7, Report Details)

D. Deviations

None identified.

E. Status of Previously Reported Unresolved Items

None reviewed during this inspection.

Management Interview

A management interview was conducted with Messrs. Alton, Briden, Buck, Evans, and other members of the licensee's staff at the conclusion of the inspection on March 4, 1977. The following items were discussed.

A. The inspector reviewed the scope of the inspection and stated that no items of noncompliance with regulatory requirements had been identified. (Paragraph 2, Report Details)

B. The inspector stated that the previously identified discrepancies in the licensee's General Orientation Training had been corrected and that the inspector had no further questions regarding the matter. (Paragraph 4, Report Details)

C. The inspector noted that the gaseous and solid radwaste release procedures were not completed and that the liquid radwaste release procedure required revision. The licensee stated that the procedures were currently being completed or revised. (Paragraph 5, Report Details)

D. The inspector stated that respiratory equipment protection factors cannot be used until such time as the licensee's respiratory protection program meets the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. Additionally, 10 CFR 20.103 requires that the regional NRC Inspection and Enforcement Office be notified at least thirty days before the date that respiratory protection equipment is first used under the provisions of 10 CFR 20.103. The licensee responded that the respiratory protection program was currently being revised to conform to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. (Paragraph 7, Report Details)

E. The inspector requested that the licensee verify the tank volumes and flow monitor outputs that will be used to quantify gaseous and liquid radioactive effluents. The licensee agreed to do so. (Paragraphs 8 and 9, Report Details)

F. The inspector noted that the vent stack sample line modifications had not been completed. The question regarding isokinetics of the flow splitter had not been resolved, nor had the orientation of the charcoal filter holder been corrected. An additional modification to allow collection of grab samples for tritium and gamma isotopic analyses had not been made. The licensee stated that a request for the modifications had been directed to the corporate engineering organization. (Paragraphs 8 and 12, Report Details)

G. The inspector cautioned the licensee to ensure that the ventilation system preoperational acceptance test procedures contained HEPA and charcoal filter testing verifications. The licensee stated that the affected procedures would be checked and modified, as necessary, to include these verifications. (Paragraph 11, Report Details)

H. The inspector agreed that the licensee's proposed preoperational process monitor calibration program was acceptable, provided that the licensee performs independent calibrations of the effluent monitors, utilizing fluid sources, following the start of power operation. (Paragraph 12, Report Details)

I. The licensee stated that the isokinetic sampling properties of ventilation system particulate samplers would be verified. (Paragraph 12, Report Details)

REPORT DETAILS

1. Persons Contacted

W. Alton, Senior Assistant Engineer
D. Briden, Chemist and Health Physicist
D. Eldred, Test Leader (B&W)
J. Hickey, Training Coordinator
D. Hitchens, Assistant Engineer
J. Humphreys, Instrument and Control Engineer
B. Lindsey, Test Leader (B&W)
C. Miller, Assistant Project Engineer (Bechtel)
R. Scott, Associate Technical Assistant (TECo)
J. Zell, Assistant Engineer

2. General

This inspection was conducted to examine the preoperational status of the licensee's radiation protection and radwaste programs. Areas examined included: the radioactive liquid, gaseous, and solid waste systems; process and effluent monitors; operating, calibration, and preoperational test procedures; certain ventilation systems; and radiation protection organization, training, procedures, and equipment. No discrepancies from regulatory requirements were identified during the inspection.

3. Radiation Protection Organization

The licensee's Chemistry and Health Physics Department organization was unchanged from the previous radiation protection inspection, except for the addition of three chemistry and radiation testor positions. One position remained to be filled. Current plans call for coverage of all shifts by chemistry and radiation protection testors.

4. Training

According to licensee personnel, the radiation protection orientation training (GOT-1) required for unescorted access to non-REP (Radiation Exposure Permit) plant areas has been completed for those individuals currently requiring such access. Selective review of the licensee's GOT-1 training records did not reveal any discrepancies. The inspector attended a GOT-1 presentation. The instructional requirements of 10 CFR 19.12 were adequately covered. The presentation had been modified since the previous radiation

protection inspection to correct the discrepancies noted at that time.[1/] According to licensee personnel, those individuals who had completed GOT-1 before the presentation was modified have been given the additional training during subsequent radiation protection training sessions.

Additional radiation protection training (GOT-2) is given to those individuals who require unescorted access to areas controlled by REP's. According to licensee personnel, GOT-2 training is approximately 95% complete. Selective review of the licensee's GOT-2 training records did not reveal any discrepancies.

Operators, station service personnel, and chemistry and radiation testors receive additional radiation protection training. With the exception of the station service personnel, this training is essentially complete.

The licensee has not finalized the radiation protection retraining requirements. Licensee procedure AD1828.03 currently specifies conduct of annual GOT-1 and GOT-2 retraining. Licensee personnel stated that the extent of the retraining effort was currently being evaluated and may be changed.

5. Procedures

With a few exceptions, the radiation related procedures have been completed and are ready for implementation. The most notable procedures which have not been completed are AD1850.02 (Solid Radioactive Waste Processing and Handling) and AD1850.03 (Radioactive Gaseous Release). Additionally, AD1850.01 (Radioactive Liquid Release) requires revision in order to conform to the proposed technical specification requirements and HP1650.02 (Respiratory Equipment) requires revision in order to conform to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. Selected procedures were reviewed with licensee personnel. Except as noted in this report, no significant discrepancies were identified.

6. Facilities and Equipment

Construction of radiation protection related facilities (e.g. radiochemistry laboratory, counting room, access control and change area, decontamination areas, etc.) and acquisition of radiation protection related instruments and equipment are essentially complete. Implementation of preoperational acceptance test procedures TP360.02 (Personnel Monitor and Survey Instrument Pre-Op)

1/ IE Inspection Rpt No. 050-346/76-21.

and TP360.03 (Laboratory Equipment Pre-Op) is about 95% complete according to licensee personnel. These tests are scheduled for completion before fuel loading.

All but eight area radiation monitors were calibrated. All area radiation monitors are scheduled for calibration before fuel loading. Selective review of the calibration results did not reveal any discrepancies. Corrective actions required as a result of erroneous vendor supplied calibrator information were reviewed.2/3/

7. Respiratory Protection

The licensee was revising the respiratory protection procedure (HP1605.02) in order to conform to the requirements of 10 CFR 20.103 (revised November 29, 1976). Essentially all of the respiratory protection equipment was onsite. However, protection factors are not authorized to be used until the respiratory protection program conforms to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. The required changes to the program are scheduled for completion before initial criticality. The licensee's respiratory protection program will be examined further during a subsequent inspection.

8. Gaseous Radwaste

Although construction and turnover of the gaseous waste system were complete, the preoperational test (TP232.01) had not commenced. Acceptability of the test results requires completion of process monitor calibrations and in-place testing of the HEPA and charcoal filters. The preoperational test is scheduled for completion before fuel loading.

Other than turbine building ventilation exhaust, no unmonitored, potentially contaminated gaseous effluent paths were identified. No discrepancies from the FSAR description of the gaseous radwaste system were identified.

According to licensee personnel, quantification of gaseous radioactivity releases will be performed on a batch basis for waste gas decay tank and containment purge releases and by integration of vent stack monitor output for other releases. Particulate and iodine releases will be quantified by fixed particulate and charcoal filters. The procedures for control and release of gaseous wastes (AD1850.03) had not been completed by the licensee. This procedure will be reviewed during a subsequent inspection.

2/ Ltr, Roe to Keppler, dtd August 27, 1976.
3/ Ltr, Roe to Keppler, dtd February 22, 1977.

The licensee has not resolved the problems identified during an earlier inspection related to orientation of the charcoal filter assembly and the effect on the isokinetics of the sampling system caused by the flow splitter modification.[4/] Further, it is not clear that the present sampling system is amenable to collection of all required vent stack samples (e.g. tritium and gaseous gamma isotopic). The efficacy of the sampling system will be checked by the licensee with an airborne DOP mixture. These data will be reviewed during a subsequent inspection.

9. Liquid Radwaste

Construction and turnover of the clean and miscellaneous liquid radwaste systems were complete. The clean radwaste preoperational test (TP230) had been started (about 25% complete); the miscellaneous radwaste preoperational test (TP231) had not been started. Acceptability of the test results require completion of process monitor calibrations. The preoperational tests are scheduled for completion, with a few equipment exceptions, before fuel loading.

No unmonitored, potentially contaminated liquid effluent paths were identified. All liquid effluents pass through either the storm sewer monitor (RE8442) or the collection box monitor (RE8432). No discrepancies from the FSAR descriptions of the liquid radwaste systems were identified.

The licensee's procedure for control and release of liquid wastes (AD1850.01) was reviewed. Several discrepancies from the proposed technical specifications were noted in the procedure. Liquid radioactivity releases will be quantified on a batch basis.

10. Solid Radwaste

Construction of the solid radwaste system is essentially complete. The system has not been turned over, nor has the preoperational acceptance test (TP233) commenced. The preoperational test is scheduled for completion before initial power operation. No discrepancies from the FSAR description of the solid radwaste system were identified. The licensee's procedure for control and processing of solid wastes (AD1850.02) had not been completed. This procedure will be reviewed during a subsequent inspection.

11. Ventilation Systems

With the exception of portions of the control room ventilation system, construction and turnover of the ventilation systems were

4/ IE Inspection Rpt No. 050-346/76-21.

complete. The preoperational acceptance tests (TP110, TP160, TP161, and TP170) had been started and were in varying states of completion. Acceptability of the test results requires completion of process monitor calibrations and in-place testing of HEPA and charcoal filters. The preoperational tests are scheduled for completion, with certain specified exceptions, before fuel loading.[5/][6/]

According to licensee personnel, the in-place HEPA and charcoal filter preoperational acceptance test procedure has been eliminated and the specific system preoperational acceptance test procedures revised to incorporate the filter testing requirements. Selective review of the ventilation systems preoperational acceptance test procedures identified two procedures (TP160.02 and TP170.01) which did not incorporate the filter testing requirements. Procedure TP160.02 was revised during the inspection to correct this omission.

Results of laboratory testing of the impregnated activated carbon, conducted during 1975, were reviewed. The tests, conducted under 90% relative humidity and 25°C conditions, yielded methyl iodide removal efficiencies of 92.01-95.31 percent for a two-inch thickness and 99.67-99.89 percent for a four-inch thickness. Additional laboratory testing was in progress. The results of the most recent tests will be reviewed during a subsequent inspection.

12. Process Monitors

Construction and turnover of process monitors was essentially complete. The preoperational acceptance test (TP360.01) had been started. Approximately 10% of the monitors had been calibrated. The licensee will calibrate specified monitors before fuel loading.[7/][8/] The remainder of the process monitors are due to be calibrated before initial criticality. Approximately 50% of the process monitors specified for fuel loading had been calibrated. A selective review of the completed calibrations did not reveal any discrepancies.

Questions raised during a previous inspection regarding adequacy of vendor supplied calibration data for process monitors have not been totally resolved.[9/] Linearity and calibration curves were apparently derived by the vendor for specific types of monitors (e.g. detector and ratemeter combination) but not for individual monitors. The licensee intends to perform fluid calibrations of the effluent monitors following plant startup (upon generation of radioactive wastes). These calibrations will be reviewed during a subsequent inspection.

5/ Ltr, Roe to Stolz, dtd March 2, 1977 (ser. #233).
6/ Ltr, Roe to Stolz, dtd February 22, 1977.
7/ Ltr, Roe to Stolz, dtd March 2, 1977 (ser. #233).
8/ Ltr, Roe to Stolz, dtd March 2, 1977 (ser. #234).
9/ IE Inspection Rpt No. 050-346/76-09.

The effect of the vent stack monitor (RE2025) modification on the isokinetic flow properites of the sampling system was reviewed by the licensee as a result of questions raised during a previous inspection.[10/] The licensee intends to modify the sampling system to provide for isokinetic splitting of the sample flow. Modification of the charcoal filter holder associated with RE2025 had not been completed.[11/]

Selective examination of particulate monitor sample lines did not reveal any discrepancies regarding bend radii. The licensee had not completed verification of the isokinetic properties of the ventilation sampling probes. This item will be reviewed further during a subsequent inspection.

10/ IE Inspection Rpt No. 050-346/76-21.
11/ Ibid.