

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/84-24(DRSS)

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

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

Inspection Conducted: October 1-5, 1984

Inspectors: *Alforddale for*  
N. A. Nicholson

10/30/84

*W B Grant*  
W. B. Grant

10/30/84

Approved By: *Alforddale for*  
D. E. Miller, Chief  
Facilities Radiation  
Protection Section

10/20/84

Inspection Summary

Inspection on October 1-5, 1984 (Report No. 50-346/84-24(DRSS))

Areas Inspected: Routine unannounced inspection of the radiation protection program during refueling and maintenance activities including: internal and external exposure control; contamination control; health physics coverage; ALARA program; contractor health physics technician training; instrument calibration; and selected open items. The inspection involved 58 inspector-hours on site by two NRC inspectors.

Results: No apparent violations were identified.

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## DETAILS

### 1. Persons Contacted

W. Armstrong, Chemistry and Health Physics Foreman  
\*D. W. Briden, Chemist and Health Physicist  
\*J. A. Faris, Administrative Coordinator  
\*B. Geddes, Quality Assurance  
M. Horne, Health Physics Supervisor  
\*W. T. O'Connor, Operations Engineer, Acting Plant Manager  
\*S. Wideman, Nuclear Licensing  
  
\*W. Rogers, NRC Senior Resident Inspector  
\*D. Kosloff, NRC Resident Inspector

\*Attended October 5, 1984 exit meeting.

### 2. General

This inspection, which began at 11:30 a.m. October 1, 1984, was conducted to observe the radiation protection program during outage maintenance operations. Tours of the controlled area were made to observe contamination controls, posting and labelling, and health physics practices during maintenance activities. Measurements made of selected areas with an NRC survey instrument (Xetex 305-B) were in close agreement with current licensee survey data. Housekeeping was good.

### 3. Licensee Actions on Previous Inspection Findings

(Open) Open Item (346/83-22-01): Concerning the improvement of the dosimetry quality assurance program. The licensee is currently trending monthly TLD and pencil dosimeter measurements to establish expected ratios and acceptable error bands. A previous study initiated after the 1983 outage was discontinued because the non-outage doses were not high enough to establish trends. The new study is expected to be completed by January 1985.

(Closed) Open Item (346/83-22-02): Concerning the lack of cross-referencing between Respiratory Protection Permits (RPP) and sample data to determine Radiation Exposure Permit (REP) requirements. RPPs and survey results are now included in the REP folder for reference.

### 4. Organization and Management Control

The inspectors reviewed the licensee's organization and management controls for the radiation protection and radwaste programs including changes in the organizational structure and staffing, effectiveness of procedures and other management techniques used to implement these programs, experience concerning self-identification and correction of program implementation weaknesses, and effectiveness of audits of these programs.

The following staffing changes have been made in the C&HP department this calendar year. Four assistant chemistry and radiation testers with commercial HP nuclear construction plant and navy nuclear program experience have been added to the staff. One individual was promoted from a tester to a senior tester position after successfully completing the requirements.

The following audits of the C&HP department have been conducted by the licensee QA staff this calendar year: No. 1153, Chemistry and Health Physics; No. 1200, Radiation Safety and Chemistry; and No. 1201, Radwaste Management. Minor findings identified by Formal Audits 1153 and 1200 have been closed by appropriate corrective actions; no findings were identified by Audit 1201. The inspectors reviewed the findings of the March 1984 INPO evaluation; the licensee's response and corrective actions appeared to be satisfactory.

The inspectors reviewed weaknesses identified by the licensee's HP violations system; corrective actions were prompt and comprehensive. No trends were noted.

No violations were identified.

#### 5. Training and Qualifications of New Personnel

The inspectors reviewed the education and experience qualifications of new plant and contractor radiation protection and chemistry personnel, and training provided to them. Also reviewed was radiation protection training provided to other contractors.

The licensee has augmented the radiation protection staff with 52 contract technicians for this outage. A special training program was provided for contract technicians consisting of about four hours of Davis-Besse radiation policy and procedures training in addition to General Orientation Training (GOT). The contract technicians also passed a written comprehensive examination and all plant chemical and radiation tester qualification card requirements, including: contamination control; radiation survey; respiratory protection; access control; and radiation exposure permit (REP) procedures.

The inspectors reviewed the contract technicians technical training records and resumes; no problems were identified.

No apparent violations were identified.

#### 6. Maintaining Occupational Exposures ALARA

The inspectors reviewed the licensee's program for maintaining occupational exposures ALARA, including: ALARA considerations for maintenance and refueling outage; worker involvement in the ALARA program; establishment of goals and objectives; and effectiveness in meeting them.

Several new or otherwise significant ALARA related matters were noted by the inspectors, including:

- . Steam generator mock-ups used for training and testing.
- . Use of wheeled stands draped with lead blankets to lower background from the reactor head and control rod drives.
- . Reactor core barrel mockups used at the Babcock and Wilcox, Lynchburg, facility to test tools, equipment and procedures prior to underwater inspection and replacement of core barrel bolts.

The above actions indicated good ALARA planning. Good management and worker support for this program were indicated. No problems were noted.

No apparent violations were identified.

#### 7. External Exposure Control and Personal Dosimetry

The inspectors reviewed the licensee's external exposure control and personal dosimetry programs, including: changes in facilities, equipment, personnel, and procedures; adequacy of the dosimetry program to meet routine and emergency needs; planning and preparation for maintenance and refueling tasks including ALARA consideration; required records, reports, and notifications; effectiveness of management techniques used to implement these programs and experience concerning self-identification and correction of program implementation weaknesses.

The inspectors reviewed whole body and extremity TLD results for the period of November 1983 to August 1984. Exposures remain low; no regulatory limits were exceeded. Selected NRC Form-4's reviewed were completed in accordance with 10 CFR 20.102.

The licensee has implemented the following administrative controls to assure assigned limits are not exceeded:

- . A listing of personnel approaching administrative limits is maintained at access control in accordance with HP 1601.01, "Guides and Limits for Exposure to Radiation." This list is based on accumulated monthly TLD results and SRD results for each Radiological Access Controlled Area (RACA) entry on Radiation Exposure Permit (REP) cards.
- . A weekly exposure update and REP cards are reviewed by C&HP personnel.

The licensee continues to research a program comparing SRD and TLD results as discussed in Section 3. The licensee plans to implement this program during the first quarter of 1985. The inspectors noted a new shipment of approximately 400 SRDs were being calibrated and prepared for distribution to augment additional outage needs.

No apparent violations were noted.

#### 8. Internal Exposure Control

The inspectors reviewed the licensee's internal exposure control and assessment programs, including: changes to procedures affecting internal

exposure control and personal exposure assessment; determination whether engineering controls, respiratory equipment, and assessment of individual intakes meet regulatory requirements; planning and preparation for maintenance and refueling tasks including ALARA considerations; and required records, reports and notifications.

Review of whole body count data showed no indication of exposures approaching the 40 MPC-hour control measure. Whole body count data was reviewed for about 1200 counts conducted between October 1983 and September 1984 of licensee and contractor personnel. Several followup counts were performed on persons who showed elevated initial counts. Followup counting was adequate to verify that the 40 MPC-hour control measure was not exceeded.

The respiratory protection program was reviewed. Records indicated personnel are medically tested annually in accordance with 10 CFR 20.103(c)(2). The inspectors observed that masks are appropriately stored to minimize distortion. Cleaning and sanitizing operations are satisfactory; smear surveys of masks are conducted to verify decontamination levels are met.

The NaCl quantitative fit test booth has been inoperable for the past two years according to licensee representatives. Respirator wearers are qualitatively fit tested (isoamyl acetate) just before entering the work area. During a containment tour, the inspectors observed that qualitative tests were conducted appropriately. Although no regulatory requirement for quantitatively fit testing workers exists, such testing, conducted periodically, is desirable. Although a new fit test chamber is budgeted for FY 1985, licensee representatives are currently trying to expedite its procurement in response to the inspectors' and INPO representatives' comments. This matter was discussed at the exit meeting and will be reviewed during a future inspection (346/84-24-01).

The inspectors reviewed the licensee's respiratory equipment with respect to the following IE Information Notices:

- 83-67      Emergency-Use Respirator Material Defect Causes Production of Noxious Gases. The licensee does not have the BioPak 60-P identified in this Notice.
- 83-68      Respirator User Warning: Defective Self-Contained Breathing Apparatus Air Cylinder. None of the licensee's Scott cylinders were identified as defective by this Notice.

No apparent violations were identified.

## 9. Control of Radioactive Materials and Contamination

The inspectors reviewed the licensee's program for control of radioactive materials and contamination, including: adequacy of supply, maintenance, and calibration of contamination survey and monitoring equipment; effectiveness of survey methods, practices, equipment, and procedures; adequacy,

review and dissemination of survey data; and effectiveness of methods of control of radioactive and contaminated materials.

The inspectors selectively reviewed records of direct radiation, contamination, and airborne radioactivity surveys conducted to meet surveillance requirements and to determine REP requirements. The inspectors verified the survey data received appropriate management review. Also reviewed were Respiratory Protection Permits (RPP) issued when airborne radioactivity concentrations required the use of respiratory protection. Copies of RPPs and air sample data needed to support REP requirements are attached to the REP for quick referencing.

During tours of the controlled area, the inspectors noted friskers were operable and generally located in low background areas. Posting and labeling were adequate. Independent surveys made with an NRC instrument (Xetex 305-B) were in general agreement with licensee survey data.

The inspectors observed a C&HP tester calibrate a portable ion chamber survey instrument (Eberline Model RO-2). This instrument was calibrated in accordance with procedure LI 4763.01.0, "Ion Chamber Model RO-2 (Calibration)," using a multi-source dose calibrator. Good health physics practices were used during the calibration to minimize personal exposures. Calibration sources are stored in shields in the locked calibration room; adequate key control is maintained. Selected calibration records reviewed indicated portable survey instruments were calibrated according to procedures and responded within the specified tolerance range. A minimal reserve supply of available calibrated survey instruments was noted; the C&HP tester indicated a large number of instruments were out for repair. C&HP management stated an I&C technician would be detailed to provide repair services.

No apparent violations were noted.

#### 10. Radiation Protection Procedures

The inspectors selectively reviewed the following recently revised procedures for compliance with regulatory requirements and good health physics practices. No significant problems were identified.

HP 1601.01, Rev. 9	Guides and Limits for Exposure to Radiation
HP 1601.03, Rev. 8	Radiation Exposure Permits
HP 1601.04, Rev. 11	Radiation, Contamination and Airborne Radioactivity Areas
HP 1601.05, Rev. 5	ALARA
HP 1602.01, Rev. 17	External Personnel Radiation Exposure Monitoring
HP 1603.00, Rev. 1	Containment Entry
HP 1605.01, Rev. 4	Protective Clothing
HP 1605.02, Rev. 11	Respiratory Equipment
HP 1605.03, Rev. 3	Canberra Whole Body Counting System
HP 1605.04, Rev. 4	Respiratory Fit Testing
HP 1605.05, Rev. 6	Spirometer Test
HP 1607.01, Rev. 9	Shipping Radioactive Material

HP 1607.02, Rev. 5  
HP 1608.00, Rev. 1

Receiving Radioactive Material  
High Pressure Steam/Hot Water Decontamination  
Machine (HOTSYS-620)

No apparent violations were identified.

11. Nuclear Diving Activities

The inspectors observed a dive into the transfer canal to hook up a cable to the upender transfer mechanism on October 4, 1984. Before the dive, the licensee reviewed IE Information Notice No. 32-31, "Overexposure of Diver During Work in Fuel Storage Pool," and implemented those recommendations for this dive. The dive was conducted in accordance with the licensee's Health Physics Instruction (HPI) 004, "Radiological Requirements for Divers." Good practices observed included: extensive preparation and HP coverage; underwater survey of the dive area; ALARA briefing with the diver and support personnel; multiple-site dosimetry badging; and communications hookup between the diver, maintenance, and HP personnel. The diver had previously conducted similar dives at this facility.

No apparent violations were identified.

12. Population Dose Commitments Due to Radioactive Releases from Nuclear Power Plant Sites in 1980 NUREG-CR-2850

This NUREG report and licensee concerns over the methods used in calculating the population dose commitments were discussed with the licensee. In a letter dated July 20, 1984, from T. Murray, DBNPS, to C. Willis, NRC, the licensee questioned the use of the possible overly conservative population doses calculated in NUREG-CR-2850 for the station's liquid release pathway. The conservatism results from using generic data for dilutions and exposed population via the drinking water and fish consumption pathways. In order to assist the NRC in presenting a more accurate determination of the potential population dose commitment for DBNPS, site specific data on fish consumption and dilution afforded by the receiving water body were included with the letter. This data was based on compilations and analyses that were performed by the Toledo Edison Company in demonstrating compliance with the regulatory requirements of 10 CFR 50.34a and 10 CFR 50, Appendix I. The July 20 letter also noted that a greater reduction in the population dose commitment would result by using the total dilution water for the year, rather than using only the dilution water discharged during each release. No standard method for reporting dilution flow is prescribed by NRC; many licensees report total dilution flow, thereby resulting in lower calculated dose commitments. This matter will be reviewed further during a future inspection (346/84-24-02).

No apparent violations were identified.

13. Exit Meeting

The inspectors met with licensee representatives (Section 1) October 5, 1984 to discuss the scope and findings of the inspection. In response to the inspectors' comments, the licensee:

- a. Stated attempts would be made to expedite the procurement of an operable respirator fit test chamber (Section 8).
- b. Acknowledged the inspectors' comments regarding population dose calculations (Section 12).