U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/87050(DRSS)

Docket No. 50-341 License No. NPF-33

Licensee: Detroit Edison Company
2000 Second Avenue
Detroit, MI 48226

Facility Name: Enrico Fermi Nuclear Power Station, Unit 1

Inspection At: Fermi Site, Monroe, Michigan

Inspection Conducted: December 7-11, 1987

Inspector: R. A. Paul 1/6/88
Date

Approved By: L. R. Greger, Chief 1-6-88
Facilities Radiation Protection Section
Date

Inspection Summary

Inspection during December 7-11, 1987 (Report No. 50-341/87050(DRSS))
Areas Inspected: Routine, unannounced inspection of radiation protection activities including: organization and management control; training and qualification; exposure control; control of radioactive materials and contamination, surveys, and monitoring; facilities and equipment; maintaining occupational exposures ALARA; and licensee's actions on previous inspection findings.
Results: One violation was identified in one area (failure to follow procedural requirements - Section 11).

DETAILS

1. Persons Contacted

R. Anderson, Supervisor, Radiological Engineer
J. Bobba, General Supervisor, Health Physics
*R. Eberhardt, Radiological Controls Engineer
*D. Gipson, Plant Manager
*H. Higgins, Health Physics Supervisor, Operations
*T. Randazzo, Director, Regulatory Affairs

*M. Parker, Resident Inspector

*Denotes those present at the exit meeting. The inspector also contacted several other members of the licensee's staff.

2. General

This inspection, which began on December 7, 1987, was conducted to examine the routine aspects of the radiation protection activities. The inspection included tours of the reactor, turbine, and radwaste buildings; independent surveys; and review of license records and reports. General housekeeping was good.

3. License Action on Previously Identified Open Items

(Closed) Open Item (341/87037-01): Inoperability of the SGTS accident range monitor (AXM) due to an inadequate turnover of the AXM system and inadequate surveillance and test/preventive maintenance procedures. Corrective actions include daily verification of the channel parameters, a request for a Technical Specification change that requires both channels on the SGTS system be operable (currently only one channel is required), revisions of the PRMS surveillance procedures to require verification of necessary channel parameters, revision of the calibration and operating procedures, testing and replacement of the AXM batteries, and requirements for a preventive maintenance program for the AXM monitoring system. These actions appear adequate to prevent recurrence of loss of the AXM monitoring system.

(Open) Open Item (341/86015-01): Extensive use of Tygon tubing to control valve leak-off for contamination control. The licensee has recently issued a plant order to define responsibilities for management of leaks in the plant. Objectives for managing and controlling leaks are defined, and corrective actions are required for those leaks which are defined as "Plant Leaks"; responsibility for classifying leaks is held by the General Supervisor Radwaste. There are currently 20 contaminated/potentially contaminated systems classified as "Plant Leaks" for which maintenance work requests have been issued. The status of the leak reduction program is tracked. In addition to the new plant order, numerous leaks were corrected during a recent outage and the status of the leaks is physically being monitored on a routine basis. Since January 1987, there are about 60 work requests on leaks completed.

(Open) Open Item (341/87037-01): Develop a program which meets the objectives of TI 2500/23 concerning radiological controls for drywell access during spent fuel movement. The licensee is committed to develop this program before the first refueling outage, scheduled for 1989.

(Open) Open Item (341/87018-01): Strengthening of the Radiological Deficiency Reports (RDR's) system to ensure that cognizant management persons are aware of significant incidents and are involved in reviewing incidents. The licensee is in the process of reevaluating the structure of management involvement of the RDR and Deviation Event Reports (DER's); the licensee intends to improve the system.

(Closed) AITS No. F0301585 (50-341/84043): Request from Region III to NRR for guidance concerning the use of an efficiency greater than 99% for the Fermi 2 Control Center carbon adsorbers; the licensee takes credit for use of 99.75% combined adsorber efficiency. Although Region III never received a response from NRR, this item is considered closed based on a memo dated April 10, 1985, from Daniel Muller, NRR, to Thomas Novak, NRR, which states that the use of 99.75% efficiency is acceptable. However, because Region III never received a formal response from NRR, another request for formal guidance will be submitted. (Open Item 50-341/87050-01)

4. Organization and Management Controls (IP 83722)

The inspector reviewed the licensee's organization and management controls for the radiation protection program 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.

With the exception of a recently appointed plant manager, there have been no significant changes in the licensee's organization and management controls program as described in Inspection Report No. 50-341/87018.

The RPM has one management position between himself and the plant manager; however, the RPM also has organizationally an alternate direct reporting line to the plant manager. The RPM and plant manager have direct communications when either person considers it necessary or expedient. The RPM's concerns are given due consideration and plant manager access is utilized when necessary.

With the exception of three permanent technicians and senior contractor technicians reporting to health physics supervisors, all other technicians are ANSI N.18.1-1971 qualified. The licensee continues to maintain low staff turnover and experienced personnel. The licensee is continuing to decrease the size of its contractor health physics staff.

5. Training and Qualifications IP 83723)

The inspector reviewed the training and qualifications aspects of the licensee's radiation protection program, including: changes in

responsibilities, policies, goals, programs, and methods; qualifications of radiation protection personnel; and provisions for appropriate radiation protection training for station personnel. Also reviewed were management techniques used to implement these programs and experience concerning self-identification and correction of program implementation weaknesses.

The current "General Employee Training - Radiation Protection" training program at Fermi is certified by the Institute of Nuclear Power Operations (INPO). Radiation protection technicians are additionally required to complete training in position and task oriented courses. Based on observations of health physics technicians performing surveys, discussion with the technicians concerning training and tasks and a review of radiation survey, air sample, and RWP records, it appears technicians performing routine radiation protection tasks are sufficiently trained; no significant problems were identified.

6. External Exposure Control and Personal Dosimetry (IP 83724)

The inspector reviewed the licensee's external exposure control and personal dosimetry program, including: changes in facilities, equipment, personnel, and procedures, adequacy of the dosimetry program to meet routine needs; and required records, reports, and notifications.

There have been no significant changes in the licensee's external exposure measurement and control program. The inspector selectively reviewed the exposure records for 1987 to date including TLD and self-reader dosimeter results. The records indicate that no persons exceeded regulatory requirements. The occupational external dose total for the station was 14.6 person-rem in 1987 to date.

Discussions with licensee representatives and observations during plant tours indicated the licensee's physical and administrative controls for external exposure are generally adequate. Procedure POM 12.000.062 outline the steps necessary for personnel to gain access to high (0.1 to 1R/hr) and high-high (1-20 R/hr) radiation areas. The licensee requires that prior to entering a high or high-high area individuals must be authorized on a RWP; they are also required to sign a key, utilize an alarming dosimeter, and notify health physics [illegible] entry and egress from these areas. The licensee has not had a significant problem with high radiation area controls.

No violations or deviations were identified.

7. Internal Exposure Control and Assessment (IP 83725)

a. Overview

The inspector reviewed the licensee's internal exposure control and assessment programs, including: changes in facilities, equipment, personnel, and procedures affecting internal exposure control and personal assessments; determination whether engineering controls,

respiratory equipment, and assessment for individual intakes meets regulatory requirements; required records, reports, and notifications; and effectiveness of management techniques used to implement these programs.

The licensee's programs for controlling internal exposures include the use of protection clothing, respirators, and equipment as well as control of surface and airborne radioactivity.

The inspector selectively reviewed the licensee's air sample and smear survey results; it appears that sufficient air samples are collected and analyzed. The inspector also selectively reviewed whole body count results for 1987 to date; it appears no worker has exceeded the 40 MPC-hour control measure.

The inspector selectively reviewed the licensee's relevant whole body count (WBC) procedures, the WBC facility and equipment, and discussed the WBC program with a member of the dosimetry section. In addition, the inspector reviewed the licensee's WBC calibration procedures and the results of calibrations performed on the Nuclear Data and Helgeson whole body counters in August and September 1987, respectively. No significant problems were found.

b. Respiratory Protection

Selected aspects of the licensee's respiratory protection program were reviewed. Workers' authorization cards indicate an expiration date, their qualifications related to respiratory protection which includes their medical evaluation, proof they have received required training, and the type of respirators they are qualified to wear. Each respirator has a numbered tab, and before issuance the radiation protection technician must check the worker's card to ensure accountability. Provisions are made during the issuance and return cycle for MPC-hour accountability. No unreturned respirators were observed in the plant during inspector tours. A cursory check of respirators that were ready for issuance showed that sufficient attention to respirator inspection, storage, and maintenance is given. The inspector visited the respiratory protection cleaning, drying, survey, storage, and distribution facility, and observed the general scope of the respiratory protection program with the health physics supervisor for operations. No significant problems were noted.

No violations or deviations were identified.

8. Audits

The inspector reviewed a September 1987 three-week offsite audit of the radiation protection program. The extent of the audit was reviewed with the licensee. No poor practices or deficiencies were found; several good practices concerning the ALARA program and the technical engineering group were identified.

9. Facilities and Equipment (IP 83727)

The inspector toured selected radiation protection facilities; there have been no significant changes. It appears that the licensee has sufficient space to adequately conduct operations. Ample storage areas for protective clothing, respirators, and equipment have been provided. Sufficient portal monitors, whole body friskers, and portable friskers are available for use.

The licensee's principle ingress and egress control point to the radiologically controlled area (RCA) is located near the entrance to the auxiliary building from the service building. Personal frisking and equipment surveys performed at the control point can be observed from the radiation control station. The practice of maintaining a single access and egress control point strengthens the contamination control program.

The inspector discussed the operation and calibration procedures for the two gatehouse IRT whole body portal monitors with members of the health physics staff. Calibrations have been performed using a one microcurie cesium-137 source, and the detectors are set to alarm in response to that activity level. The lowest level of each monitor's sensitivity is not known. Because other nuclear facilities have identified hot particles and radioactive material intakes in the nanocurie activity range with portal monitors, the licensee was requested to evaluate the suitability of their portal monitors to detect lower levels of radioactivity. In conjunction with the use of portal monitoring equipment, the inspector noted that the licensee's practice of permitting persons to leave the site after alarming the gatehouse portal monitor if contamination is not detected on a subsequent personal frisk survey, could result in not detecting persons with internal contamination or hidden hot particles unless a whole body count is also performed. These matters were discussed at the exit meeting and will be reviewed further at a future inspection. (Open Item 50-341/87050-02)

10. Control of Radioactive Material and Contamination (IP 83726)

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

To prevent migration of loose contamination during machine work on contaminated materials, the licensee intends to construct a small scale hot machine shop in the radwaste building. In addition, the licensee intends to upgrade the existing machine shop for work on radioactive materials, such that the facility will be isolated from the remainder of the shop and sufficiently ventilated. The facility will be designed to maintain negative pressure within the facility to control contamination even though air patterns outside the enclosure may be unstable.

The licensee has continued to implement the radiological housekeeping and contamination control program as part of the station ALARA program. The General Supervisor-Rad Waste is responsible for the implementation and management of the program. The effectiveness of the licensee's contamination control program is evidenced by the decrease in total plant square footage controlled as contaminated areas, which averaged about 20,000 ft.^{2} in April 1987, and had trended downward to 13,500 ft.^{2} at the end of November 1987.

11. Radiological Control - Hot Tool Crib Room

The inspector reviewed the licensee's radiological control program for tools and equipment which are stored, distributed, and returned to the hot tool crib. In review of the program, the inspector contacted hot tool crib room workers and health physics management and technician personnel. The inspector reviewed Procedure POM 12.000.062 "Radiologically Controlled Area Rules of Practice," routine hot tool crib room survey results, and performed independent direct and indirect surveys of tools and equipment stored in the hot tool crib room.

The tool crib is located on the third floor of the turbine building; a radiologically controlled area. The crib room is not posted or controlled as a contaminated area. Tools and equipment which are used for work on contaminated systems or in contaminated areas, as well as those used in non-contaminated (clean) areas are stored, distributed from, and returned to this room. None of the tools/equipment stored in this room are allowed to be used or transferred to a radiologically uncontrolled area without performing procedurally required surveys. Only tools with fixed contamination and clean tools are permitted in the hot tool crib. Tools/equipment used on contaminated systems or in contaminated areas are required to be surveyed before return to the hot tool crib; those found to have loose contamination are decontaminated, and those found with fixed contamination are tagged. Tools/equipment used in clean areas have no survey requirements before return; neither the fixed contaminated or clean tools are segregated before storage in drawers, bins, and other locations of the crib. Other than procedure POM 12.000.062 which refers to radiological controls for radioactive material, no procedures address tool crib storage, distribution, return, and accountability of tools/equipment.

During a visit to the hot tool crib room and a review of survey records, the inspector noted the following: (1) A hand held frisker was located at the window of the crib for discretionary use by crib room workers. According to the licensee, the frisker was issued because crib room workers expressed concerns about the possibility of unsurveyed and potentially contaminated tools/equipment being returned to the hot tool crib room. Workers using the frisker received instructions on its use for personal surveying during radiation worker training; however, no specific instructions were given on how to use the instrument for equipment/materials surveys, on how to determine detectable contamination, or on how to determine the difference between fixed and loose contamination. (2) Routine weekly surveys of the area are performed on schedule. About five to ten direct and indirect surveys are performed in the area each week;

survey records of floors, horizontal surfaces, tools and equipment indicate no loose contamination was found. The inspector also reviewed the results of a special survey conducted by the licensee of a gauge leaking water onto a cart. The cart was located inside the hot tool crib room and contained several gauges, all of which were labeled with internal contamination tags. Although the results of this survey were not recorded, the health physics technician who performed the survey told the inspector that neither the leaking gauge or the water was contaminated.

Extensive surveys of the tool crib area including tools/equipment, floors, storage bins, and horizontal surfaces were performed by the inspector; two untagged equipment slings with fixed contamination levels ranging from 1,000 to 8,000 dpm/17cm^2 were found. Failure to tag fixed contaminated material stored outside of a posted contaminated area is a violation of procedure POM 12.000.062 requirements. As a result of this finding, the licensee was requested to review the adequacy of the routine survey program of the area. (Violation 50-341/87050-03). (3) All equipment and gauges which had been used on lines or systems containing potentially contaminated water, and which had the potential for loose internal contamination were labeled with internal contamination stickers and were taped on open ends to prevent leakage.

As a result of the inspector's review of the radiological controls for the hot tool crib, some apparent weaknesses were noted; they include: (1) No procedure or specific instructions are given tool crib room personnel on issuance accountability, distribution, and return of tools/equipment. Nor are specific instructions given on the proper use of the hand held frisker to determine what, if any, loose radioactivity may be on the returned tools/equipment; and (2) Open ends of potentially internally contaminated tools/equipment or gauges are sealed with only a piece of tape rather than using a more secure method of capping to prevent leakage. These matters were discussed at the exit interview and will be reviewed at a future inspection. (Open Item 50-341/87050-04)

One violation was identified.

12. Receipt of Material

On November 4, 1987, the licensee identified and informed Region III that they failed to survey an incoming package of radioactive material within three hours of receipt in accordance with 10 CFR 20.205 requirements. The package was received on November 3, 1987, and contained one liquid source with 54 microcuries of strontium-89, had shipping papers, and was properly labeled in accordance with 49 CFR requirements.

The licensee identified their failure to comply with the requirements of 10 CFR 20.205 on November 4, 1987, when a health physics technician questioned chemistry personnel about the status of a package that he observed in their possession. As a result, it was learned that neither of the chemistry technicians knew where the package containing the liquid source had come from, or whether it had yet been surveyed. The licensee then initiated an investigation and found that the package had been

delivered to an unauthorized location of the station and improperly transferred to chemistry personnel, the department to whom the package was addressed. The package had not been opened was subsequently surveyed; no removable contamination was detected, and radiation levels were within procedure acceptance criteria.

The inspector reviewed the licensee's investigation and actions related to the failure to comply with 10 CFR 20 requirements. The results of the review indicated the licensee initiated a Deviation Event Report (DER) which received appropriate management attention and identified several weaknesses in the licensee's receipt of material program. Also, actions to prevent recurrence were taken, including strengthening the relevant material receipt procedures, review of previous 1987 radioactive materials orders to ensure there were no previous unidentified occurrences, review of training program for persons involved in package receipt, and implementation of a program to ensure health physics personnel have greater responsibility for receipt and control of packages containing radioactive material received at the site.

Since this matter was licensee identified and corrected in accordance with the criteria described in 10 CFR 2, Appendix C, a Notice of Violation will not be issued. No additional regulatory concerns were noted during review of this matter. This matter was discussed at the exit meeting.

13. Surveillance; Plant Tours

During several tours of the plant, the inspector observed the following: (1) No persons were observed violating procedural requirements; this includes observation of workers performing activities under the requirements of several different RWPs. (2) Radiation postings and controls were in accordance with requirements. (3) Friskers were operable, and calibrated radiation detection equipment was used by HP personnel.

14. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on December 11, 1987. The inspector summarized the scope and findings of the inspection. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary. In response to certain items discussed by the inspector, the licensee:

a. Acknowledged the apparent violation (Section 11).

b. Stated that the weaknesses identified in the radiological controls for the hot tool crib room will be addressed (Section 11).

c. Acknowledged the inspector's comments concerning self-identified problems found in the receipt of radioactive material programs (Section 12).

d. Stated that actions will be taken to prevent persons from leaving the site with possible internal contamination and hidden hot particles (Section 9).