U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/84-43(DRSS)

Docket No. 50-341 License No. CPPR-87

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

Facility Name: Enrico Fermi Nuclear Power Station, Unit 2

Inspection At: Fermi Site, Monroe, MI

Inspection Conducted: November 5-9, 27-29 and December 4-7, 18, and 28, 1984

Inspectors: L. J. Hueter for 1/11/85
Date

C. F. Gill for 1/11/85
Date

Approved By: L. R. Greger, Chief 1/11/85
Facilities Radiation Protection Section
Date

Inspection Summary

Inspection on November 5-9, 27-29, and December 4-7, 18,and 28, 1984 (Report No. 50-341/84-43(DRSS))
Areas Inspected: Routine, announced inspection of preoperational radiation protection program for Unit 2. The inspection included organization, staffing, training, radiation protection procedures, facilities, instruments, equipment, status of certain NUREG-0737 items, status of certain preoperation system demonstrations and tests, IE Bulletins and Circulars, HEPA/charcoal filter housing drain systems, ANSI Standard N510 acceptance test program for air cleaning systems, drain systems for equipment racks and for valve stem leak-off, open items, and location of area radiation monitors. The inspection involved 219 inspector-hours on site by two NRC inspectors.
Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Detroit Edison Company

R. Baum, Radiation Protection Technician
B. Beal, Starup Test Engineer
R. Beaudry, System Engineer
J. Bobba, Assistant Radiation Protection/Chemical Engineer and General Supervisor-Health Physics
+*L. Bregni, Nuclear Engineer-Licensing
F. Dunn, Nuclear Instrument and Control Engineer
O. Earle, Nuclear Safety/Plant Engineering
*R. Eberhardt, Radiation Protection/Chemical Engineer
+*E. Grif ing, Assistant Manager-Nuclear Operations
P. Harrigan, Systems Engineer
H. Higgins, Health Physics Supervisor-Operations
G. Holtz, Radwaste Supervisor of Shipping
W. Jens, Vice President-Nuclear Operations
E. Kokosky, Radiation Protection Technician-Instrumentation
J. Leman, Maintenance Engineer
R. Lenart, Superintendent-Nuclear Operations
R. Letkiewicz, Startup Test Engineer
W. Lipton, Senior Engineer
A. Lim, Systems Engineer
P. Lovallo, Associate Engineer
E. Madsen, Principal Engineer, Nuclear-RERP Group
M. Mitchell, Startup Test Engineer
T. Mitchell, Startup Test Engineer
G. Montgomery,Startup Test Engineer
G. Overbeck, Assistant Superintendent-Startup
T. Randazzo, Supervisor of Radiological Emergency Response Preparedness
L. Rimnac, Systems Specialist-Dosimentery
*R. Salmon, Lead Startup Test Engineer-I & C
*A. Shoudy, General Supervisor-Nuclear Engineering
F. Sondgeroth, Nuclear Engineering
W. Terrasi, General Supervisor-Chemistry
C. Weber, General Supervisor-Radwaste
A. Wegele, Senior Engineer-Licensing
+*T. Williamson, Chemical Engineer
L. Wooden, Systems Engineer

Contractors

*R. Anderson, Health Physicist-KLM
J. Bross, Startup Assurance Engineer-Stone & Webster
T. Byrd, Radiation Protection Technician Specialist-Rad Services
J. Hale, Respiratory Protection Specialist-Rad Services
M. Haver, Startup Assurance Engineer-Stone & Webster
R. Hearn, Engineer, Atlan-Tech, Inc./Nuclear Technology/Engineering

J. Heins, Chemistry Consultant-Rad Services
W. Knox, Engineer, Atlan-Tech, Inc./Nuclear Technology/Engineering
S. McCann, Technical Specialist-Rad Services
D. Messerli, MEC Inc.
K. Morris, Radiation Protection Technician-Bechtel Power Corporation
R. Nelson, General Supervisor of System Completion Organization-Nuclear Startup Services
R. Newman, Field Engineer-Davcon
G. Quillin, Engineer, Atlan-Tech, Inc./Nuclear Technology/Engineering
E. Scalsky, Technical Advisor-KLM
M. Sierra, Startup Test Engineer-GE
D. Timmons, Licensing Specialist-DCT Inc.
+J. Tozier, Senior Engineer-Impell Corporation
S. Veale, Assistant To Radiation Protection/Chemical Engineer-Bechtel Power Corporation
D. Welch, Health Physics Supervisor-ALARA-KLM

USNRC

P. Byron, NRC Senior Resident Inspector
M. Parker, NRC Resident Inspector

*Denotes those present at the exit meeting on December 18, 1984.
+Denotes those present at the exit meeting on December 28, 1984.

2. General

This preoperational inspection, which began about 8:00 a.m. on November 5, 1984, was conducted to examine certain aspects of the preoperational radiation protection and radwaste programs, certain system demonstrations and tests, filter housing drain systems, drain systems for instruments racks and valve stem leak-off, ANSI N510 acceptance test programs for air cleaning systems, and progress made on certain NUREG-0737 items.

3. Licensee Actions on Previously Identified Open Items, Bulletins, and Circulars

a. (Closed) No. 341/83-03-01: Relocate certain area radiation monitors. The inspectors verified during a plant tour that components of three area radiation monitoring systems had been relocated to optimize performance of their design function, in accordance with Engineering Design Package (EDP)1311, as described in Inspection Report 50-341/84-27. This included: relocation of the detector for area radiation monitor (ARM) N-109 located in the northwest corner room in the sub-basement of the reactor building; relocation of the beacon for ARM N-112 located in the tip room on the first floor of the reactor building; and relocation of both the detector and beacon for ARM N-132 located near the blow-out panels on the first floor of the auxiliary building. This item is considered closed.

b. (Closed) No. 341/83-26-02: Update FSAR to reflect recent changes in the radiation protection/chemistry facilities. The licensee has completed an amendment application for Section 12 of EF-2 FSAR to reflect recent changes in the radiation protection/chemistry facilities. This application will be a part of FSAR Amendment No. 60 which is scheduled to be docketed on December 17, 1984. This item is considered closed.

c. (Closed) No. 341/84-05-01: Complete radiation protection technician qualification program, respirator fit testing, training, and medical evaluations, and baseline whole body counts. A review of records verified the completion of the radiation protection technician qualification program and issuance of qualification cards to 19 technicians. A respiratory protection program, including respirator fit testing, training, and medical evaluations, was reviewed by the inspectors; the inspectors concur that the program is ready for implementation. The licensee, by letter dated November 8, 1984, notified the Commission in writing in accordance with 10 CFR 20.103(g) that their respiratory protection program would be implemented 30 days from that date. The base line whole body count program for both DECO and contractor personnel, who have been trained for unescorted access to radiologically controlled areas, has now been fully implemented. This item is considered closed.

d. (Closed) No. 341/84-05-02: Complete six radiation protection procedures, and completion of NRR's final review of the Offsite Dose Calculation Manual (ODCM). The six remaining radiation protection procedures considered necessary for fuel load, as described in Inspection Report 50-341/84-27, have now been completed, reviewed, approved and implemented. By letter dated October 31, 1984, the licensee was notified by NRR of the completion of their review and acceptance of the ODCM (as revised in the attachment to licensee letter dated October 11, 1984) submitted to NRR. This item is considered closed.

e. (Closed) No. 341/84-05-03: Complete installation and operability of portal monitors and complete both personal and equipment decontamination facilities. Portal monitors at various locations, described in Inspection Report 50-341/84-27, are now installed and operable. The installed and operable monitors were physically observed by the inspectors at the primary and secondary security accesses and at the health physics control point. Electrical hookup for some machines and additional furnishings have been provided to complete the equipment decontamination facility. A sink has been installed to complete the personal decontamination facility. Inspector verification of completion of both facilities was made during a plant tour. This item is considered closed.

f. (Closed) No. 341/83-24-07: Complete calibration of Containment High Range Radiation Monitors (CHRRM), calibration of all other process monitors, and calibration of the AMS-III air monitors in the EOF and TSC. The AMS-III air monitors in both the EOF and TSC have been replaced by Ludlum Model 377 Iodine Monitoring Carts, which have been calibrated and alarm set points established. The CHRRM monitors are also tracked under Open Item No. 341/84-05-06 and process monitors are also tracked under Open Item No. 341/84-05-04; additional concerns with these systems are addressed under those items. For the purposes of tracking, this item is considered closed.

g. (Closed) No. 341/84-05-04: Complete initial source calibration of process and radwaste effluent monitors, fluid (gas and liquid) calibration/linearity checks of monitors during startup, measurement of noble gas holdup time provided by off-gas system charcoal beds, establishment of setpoints for monitors, and installation and in-place testing of HEPA and charcoal filters in various filter trains. The licensee has 23 process and radwaste effluent monitors (many with multiple detectors) supplied by General Electric, Gulf (General Atomics), and Eberline. The types of detectors for liquids, gases, and steam (main line steam) are briefly described in Inspection Report 50-16/84-01; 50-341/84-05. Calibration of all the above monitors has been completed and calibration procedures, techniques, and records selectively review by the inspectors for the various manufacturers and types of monitors. Calibrations were performed using NBS traceable gases and liquids (or epoxied resin sources representing liquids), except for certain liquid detectors where in situ calibration with liquids was impracticable due to pipe geometry; computer models for spectrum calculation, for model checks, and for three dimensional geometric corrections to calculate response were used. At the time of the calibrations, solid sources were used for both linearity checks and for transfer calibrations to like monitors and for subsequent source calibrations. Set points have been established where appropriate. The licensee has completed, before fuel load, the detailed calibration and linearity check of all monitors orginially planned to be performed during startup; the licensee plans to followup with a calibration check using plant generated sources of both gases and liquids as these sources become available after plant startup. The licensee successfully conducted the measurement of noble gas holdup time provided by the off-gas system charcoal beds as described in Inspection Report 50-341/84-27. The holdup time was determined to be essentially as designed. Installation and in-place testing of HEPA and charcoal filters has not begun, pending completion of other HVAC system testing and construction activities which could be detrimental to the charcoal. Required completion of installation and in-place testing of various filter trains will be governed by license conditions and/or associated technical specifications. This item is considered closed.

h. (Closed) No. 341/81-10-17: Containment high-range radiation monitor installation per NUREG-0737 Item II.F.1, Attachment 3. Installation of this system is also being tracked under Open Item No. 341/84-05-06; additional concerns with this system are addressed under that item. For purposes of tracking, this item in considered closed.

i. (Closed) No. 341/84-05-06: Resolution of inspector concerns associated with NUREG-0737 Item II.F.1.3, Containment High Range Radiation Monitors. The licensee has satisfactorily addressed these concerns as follows: (1) in a letter from the licensee to NRR dated November 1, 1984, and December 13, 1984, variances to several NUREG-0737 clarification items were requested including the specifics of the Containment High Range Radiation Monitor (CHRRM) certification calibrations and a request for delaying evaluation of the CHRRMs' as-built geometry instrument response factors and making necessary emergency preparedness procedural modifications prior to exceeding five percent power; (2) in situ source calibration, vendor primary calibration, and monitor linearity were reviewed by the inspectors and found to be acceptable; and (3) preoperational testing of the high range containment monitor system was completed as part of ARM preoperation test D-2100.001 Revision 1, which was discussed in Section 9.a of Inspection Report No. 50-16/84-01; 50-341/84-05. For the purpose of tracking, pending NRR resolution of the variance requests, this item is considered closed.

j. (Closed) No. 341/83-24-02: Complete installation, development of procedures, and training on use of post-accident primary coolant sampling system. Completion of this item is also being tracked under Open Item No. 341/84-05-07; additional concerns are addressed under that item. For the purpose of tracking, this item is considered closed.

k. (Closed) No. 341/83-24-03: Complete installation, development of procedures, and training on use of post-accident containment atmosphere sampling system. Completion of this item is also being tracked under Open Item No. 341/84-05-07; additional concerns are addressed under that item. For the purpose of tracking, this item is considered closed.

l. (Closed) No. 341/84-05-07: Resolution of inspector concerns associated with NUREG-0737 Item II.B.3, Post-Accident Sampling system. The licensee has satisfactorily addressed these concerns as follows: (1) in a letter from the licensee to NRR dated November 1, 1984, variances to several NUREG-0737 clarification items were requested including the possible need for additional sample line heat tracing and determination of sample line loss correction factors for iodines and particulates for the Post-Accident Sampling System (PASS) containment atmosphere sample line to aid in ensuring representative samples; (2) all General Electric directed modifications are complete; (3) the discussion of PASS preoperational

test status is presented in Section 3.m; (4) final development of procedures and personnel training are expected to begin in January 1985 after the PASS has successfully completed the preoperational test; (5) the liquid sample dilution system has been successfully calibrated; (6) an apparently adequate procedural revision has been developed by the licensee to accommodate cooler primary-secondary leakage evaluation into the reactor coolant sample analysis methodology; (7) licensee representatives stated that it has been determined that any airborne contaminants released from the small volume liquid sample vial vent will be drawn away from the operator and into the secondary containment by the PASS room ventilation system; (8) all concerns expressed in SFR No. 3249 appear to have been adequately resolved; (9) a detailed time and motion dose study indicates that it is possible to collect, transport, and analyze reactor coolant and containment atmosphere samples without radiation exposures to any individual exceeding the GDC-19 dose criteria (5 rem whole body and 75 rem extremity); and (10) an NRC letter to Detroit Edison dated November 27, 1984, contained Fermi-2 draft License Condition C(12) which states "DECo shall have installed and have operational in the Fermi-2 facility, its post-accident sampling system prior to operating the facility at power levels greater than five percent of full power". For purposes of tracking, pending NRR resolution of the variance requests and final disposition of draft License Condition C(12), this item is considered closed.

m. (Closed) No. 341/84-05-08: Complete preoperational testing/demonstration of process and effluent monitors in the liquid, gaseous, and solid waste processing and effluent systems. The inspectors reviewed the following system demonstrations and tests, all of which had been completed, reviewed, and approved, except the first one listed which was in the final stages of review:

D-1100.001	Process Monitors-GE
D-1110.001	Process Monitors-Gulf (General Atomic)
D-1110.002	Process Monitors-Eberline
P-3320.001	Plant Process Sampling System (Reactor Building)
P-3321.001	Plant Process Sampling System (Turbine Building)
P-3322.001	Plant Process Sampling System (Liquid and Solid Radwaste)

Problems remaining open which were identified during testing/demonstration were verified to be on a tracking system utilized by the licensee; none of these remaining items appear to be of particular significance. Several preoperational tests involving radwaste, off-gas, and the post-accident sampling systems have not been completed. By letter to NRR dated December 12, 1984, the licensee has proposed

conditioning the operating license for completion of these preoperational tests as follows:

(1) Before initial criticality:
G1120.001 Waste collection
G1125.001 Floor drain collection

(2) Before completion of warranty run:
G1135.001 Liquid and Solid Radwaste

(3) Before heatup:
N6200.001 Off-gas

(4) Before exceeding 5% power
P3323.001 Post-accident Sampling

For the purpose of tracking, pending NRR's final disposition of appropriate sections of draft attachment to the license, this item is considered closed.

m. (Closed) No. 341/84-05-09: Complete installation of monitors on the station air system near interfaces with contaminated systems or establish an interim proceduralized sampling program for sampling near these interfaces and also establish procedures for sampling the demineralized water, auxiliary steam, RHR service water, and sanitary sewer systems. As documented in Inspection Report 50-341/84-27, procedures have been established for routine sampling of the latter four systems. Completion of monitor installation or a proceduralized sampling program for the station air system is also being tracked under Open Item No. 341/80-10-BB; additional concerns with this system are addressed under that open item. For the purposes of tracking, this item is considered closed.

o. (Closed) No. 341/80-10-BB: Complete installation of monitors on the station air system near interfaces with contaminated systems or establish an interim proceduralized sampling program for sampling near these interfaces. Procedure 71.000.03, Revision 2, "Sampling and Analysis Schedule," now provides for routine monthly sampling of the station air system near its two interfaces with contaminated systems, the reactor water clean up system and the radwaste system. The licensee plans to utilize monitors at a later date. For the purposes of tracking, this item is considered closed.

p. (Closed) No. 341/83-24-04: Complete installation, development of procedures, and training on use of post-accident SPING system. Completion of these post-accident effluent monitoring items is also being tracked under Open Item No. 84-05-10; additional concerns with post-accident effluent monitoring are addressed under that open item. For the purpose of tracking, this item is considered closed.

q. (Closed) No. 341/84-05-10: Resolution of inspector concerns associated with NUREG-0737 Items II.F.1.1 and 2; Noble Gas, Iodine, and Particulate Monitors/Samplers. The licensee has satisfactorily addressed these concerns as follows: (1) in letters from the licensee to NRR dated November 1, 1984, and December 13, 1984, variances were requested to several NUREG-0737 clarification items including that NUREG-0737 Items II.F.1.1 and 2 be applicable only to the capability for post-accident sampling and analysis of the SGTS effluent pathway, a request to delay developing a test scope for empirically determining sample line losses prior to March 31, 1985, a commitment to incorporate calculated sample line loss correction factors into related procedures (this matter is further discussed in Section 9), a permanent wavier from the concentration display specifics of NUREG-0737 Item II.F.1.1, and a request to delay completing heat tracing of the SGTS sample lines until prior to exceeding five percent power (this matter is further discussed in Section 10); (2) calibration of the noble gas effluent monitors is being tracked as part of Open Item No. 341/84-05-04; (3) preoperational testing of noble gas, iodine and particulate monitoring/sampling systems is being tracked as part of Open Item No. 341/84-05-08; (4) proposed procedural revisions seem adequate to facilitate an accurate reading of the flow meters on the Eberline AXM Units; (5) the licensee has demonstrative documents which indicate that all reasonable effort will be made to overcome potential problems in obtaining representative samples; (6) potential post-accident effluent monitoring system design feature problem areas appear to have been adequately addressed and resolved; (7) a detailed time and motion dose study indicates that it is possible to collect, transport, and analyze the AXM-1 sample without exceeding the GDC-19 dose criteria (5 rem whole body and 75 rem extremity); (8) station procedures and personnel training are completed with the exceptions of specific inspector concerns on procedural adequacy (this matter is further discussed in Sections 12, 13, and 15); and (9) the licensee has completed technical evaluations which indicate the adequacy of the system purchased to sample the post-accident SGTS effluent with the exceptions of fabricating and installing a collimater on the post-accident analysis instrumentation, preparing proper post-accident monitor response correction curves per II.F.1.1 Clarification (4)(b) specifications, and demonstrating detector assembly range overlap (these matters are further discussed in Sections 11, 12, and 14, respectively). For purposes of tracking, pending NRR resolution of the variance requests, this item is considered closed.

r. (Closed) No. 341/77-14-CC: "Separation of Contaminated Water Systems from Noncontaminated Plant Systems." As noted in Inspection Report 50-341/84-27, the inspectors identified a potential source of contamination of the sanitary sewer system not identified by the

licensee's review. The fire protection deluge system for the charcoal filters in the HEPA/Charcoal filter train in the HVAC system for the Technical Support Center (TSC) drains, without monitoring or control features, directly to the sanitary sewer system. Based on this finding, NRR was contacted and has indicated their position is that the present design of the TSC emergency makeup air system filter housing drain discharge routing is adequate because this is not an identified liquid effluent pathway in the event of an accident, as is addressed in the Standard Review Plan. Further, NRR noted that this position is supported by the very low probability of a LOCA, the limited amount of activity on the filter following a LOCA, the very low probability of a fire in the charcoal during or following a LOCA and the very low probability of an inadvertant activation of the deluge system during or following a LOCA. This item is considered closed.

s. (Closed) No. 341/84-27-01: Potential problems with installed HVAC filter housing drain systems involving filter bypass and water discharge. The licensee has satisfactorily addressed these concerns as follows: (1) administrative procedural control of the TSC emergency makeup air and SGTS filter housing drain line manual isolation valves appears adequate to preclude potential filter bypass; (2) NRR has indicated to the inspectors their position that the present design of the TSC emergency makeup air system filter housing drain discharge routing is adequate because this is not an identified liquid effluent pathway in the event of an accident, as is addressed in the Standard Review Plan; (3) memorandum SU-84-1717, dated November 1, 1984, documents that the TSC filter housing deluge system runoff solenoid operated check valves have properly adjusted activation setpoints; (4) the licensee presently plans to revise the Control Center (CC) emergency makeup and recirculation system filter housing deluge system operation procedures to alter the valve line-up to reduce the probability of inadvertently leaking water into the housing (with the stipulation that concurrence be obtained from NRC Region III fire protection inspectors); (5) the licensee also plans to revise the procedures to describe the proper method of draining the deluge water from the CC filter housings; (6) Sargent & Lundy letter SLM-2688, dated November 7, 1984, documents the visual inspection conducted of the air filter units at the Fermi-2 site to determine which units had a possibility of air bypass via drains; (7) the licensee provided the inspectors with documentation for review which indicates that the findings of the Sargent & Lundy visual inspection were adequately resolved; (8) air leak tightness confirmation of all drain line valves is reportedly an integral part of the ANSI/ASME N510 acceptance test program; (9) loop seal water level control systems are apparently not needed because the licensee has indicated that filter housing drain line manual isolation valves are under adequate administrative procedural control; and (10) the relocation of the CC filter housing manual deluge control valve appears not to be necessary because the licensee reported that members of the fire brigade would wear heavily insulated gloves when manipulating the valve. This item is considered closed.

t. (Closed) No. 341/84-27-02: Evaluation of provisions for draining instrument racks and valve stem leak-off. The licensee has satisfactorily addressed these concerns as follows: (1) memorandum HP-84-079 dated October 19, 1984, documents an agreement between Instrumentation and Control representatives and the ALARA Committee to develop a procedure pertaining to venting and draining of contaminated systems; (2) the same memorandum states that Health Physics will assist in developing this procedure and that informal training sessions pertaining to proper radiological techniques will be provided by Health Physics; (3) the licensee plans to have this procedure written and the associated training completed by January 15, 1984, (This matter is further discussed in Section 8); (4) licensee representatives stated that valve stem leakoff drain plugs, caps and debris blockage have been removed from the 25 effected "E" system valves; (5) letter EF2-104,410 requested that the insulation be removed from around four "E" system valve stem leak-off drain lines (licensee representatives stated that this work has been completed); and (6) verification that the valve stem leak-off pathways are unplugged for the balance of plant valves will be accomplished as part of the valve maintenance program by the third refueling outage. Additional concerns associated with "E" valve stem leak-off drains are part of the leakage reduction program, FSAR Section H.III.D.1.1, and Technical Specification 6.8.4.a. These additional concerns are addressed under Open Item No. 341/81-10-06. NRR has indicated to the inspectors that the licensee has agreed to submit leakage data to that organization for review as soon as each portion of the program is completed. For the purposes of tracking, this item is considered closed.

u. (Closed) No. 341/83-24-10: Complete procedures and complete training in use of the procedures for the collection of liquid effluent samples. The following procedures dealing with liquid effluent sampling (as well as other liquid samples) have been written, approved, and implemented where applicable:

71.000.03	Sampling and Analysis Schedule
78.000.16	Process Sampling System-Operational
JIT RC-77.001	General Grab Sampling Techniques

These procedures specify sample location, valving, type of analysis, frequency, technical specification references, and lower limit of detection (LLD) for the laboratory analysis. The procedures provide for sampling the circulating water decant line which would include any liquid effluent radwaste releases before release to Lake Erie. Records reviewed showed that fourteen chemistry technicians were trained in use of these sampling procedures in October 1984. This item is considered closed.

4. Organizational Changes

In response to a review and recommendations by a consultant, some changes in the Rad/Chem organization were formalized on December 1, 1984, in the interest of improved functioning and continuity. A new supervisory position, Assistant Rad/Chem Engineer, was created. This position was filled by John Bobba, the plant RPM who still holds the group position of General Supervisor of Health Physics. Reporting to the Assistant Rad/Chem Engineer will be the heads of various groups in the Rad/Chem organization of Nuclear Production, i.e., radwaste, chemistry, health physics, radiological health (dosimetry and whole body counting), and a new group, radiological engineering, supervised by Ralph Anderson (contractor health physicist). The plant operational ALARA program will be a major function of this new radiological engineering group. The current five member staff of the new radiological engineering group at the plant was provided in part by transfer of engineers from the Nuclear Engineering group, a group which formerly included the position of Corporate Health Physicist, (a position which has been eliminated with the organizational changes). However, Richard Beaudry, Radiation Protection Engineer, will remain in Nuclear Engineering where he will provide shield design and plant design ALARA reviews.

5. ALARA

The inspectors reviewed the ALARA concerns of another NRC inspector as identified in Inspection Report 50-341/84-39. The concern involved the potential hazard due to lack of permanent platforms, catwalks, and ladders for gaining access to valves important to safety. Although, the inspector noted that a large number of valves will require a means of access to operate, inspect, and maintain, three overhead valves in the reactor water cleanup system were singled out for particular concern. The inspectors reviewed this particular ALARA concern as a part of the ALARA program in general.

Although there has been no overall comprehensive ALARA design review by a single independent contractor, there have been at least eight ALARA reviews (some rather extensive) of Fermi-2 Design and Programs from about 1980-1984, some conducted inhouse and some conducted by contractor individuals or groups. Some of the more significant reviews included: (1) a GE study which resulted in a remodeling of the control rod drive repair facility; (2) an NUS Corporation study of the liquid and solid radwaste systems which resulted in an extensive redesign and rebuilding of the solid radwaste system; (3) a Commonwealth Associates, Inc. study regarding operability and maintainability of radwaste systems; and (4) a Plant Serviceability Engineering Group serviceability evaluation of over twenty plant systems. The two volume serviceability studies were performed by walking down each system and examining them component by component for many of the following items as applicable: accessibility for operation, lubrication, packing or seal replacement and ISI or preventive maintenance; clearances for component assembly/disassembly; anticipated

radiation field in the vicinity; consequences of packing or seal leakage; feasibility of radiation shielding; and rigging facilities. The serviceability report describes each problem in detail and suggests a disposition for each problem. The report provides a means for a cost benefit analysis and prioritization of problem resolutions.

The need for numerous platforms was identified by the licensee during the serviceability study and plans are underway to provide permanent platforms. The licensee has as a goal to provide permanent platforms for the reference overhead valves on the reactor water cleanup system, as well as other platforms needed in potential high radiation areas, by commercial operation. The licensee plans to provide other platforms on a lower priority basis.

Regarding an "operating" plant ALARA program, the licensee has a responsive management policy and commitment which are reflected in administrative procedures. Responsibilities and authority for implementing the ALARA program are designated in procedure NOP-116, Revision 0, "ALARA Program", which is to be revised to reflect the recent organizational changes as described in Section 4, involving the ALARA program. The licensee's ALARA program appears to be adequate.

6. NUREG-0737 III.D.3.3-In-Plant Iodine Sampling

Inspection Report Nos. 50-341/84-05 and 50-341/84-27 describe monitors, samplers, cartridges, and analytical equipment on hand to be used for in-plant iodine sampling and analysis under post accident conditions. It was also noted that the licensee had initiated purchase orders for two Ludlum samplers on hand carts for the TSC and EOF. A total of seven Ludlum Mo-377 Iodine monitors have been obtained. Three of the monitors now serve as backup units while the other 4 monitors are located in the TSC, EOF, PASS station and the Chemistry Laboratory (counting facility). The monitors provide a particulate filter followed by a silver zeolite cartridge which is viewed by a NaI detector with two single channel analyzers. While one of the analyzers looks at the I-131 peak, the other analyzer is used for subtractions of interference from Xenon-135 that may also be present. Procedures have been written for both operation and calibration of the Ludlum Mo-377 Iodine monitors, Procedures 64.000.198 and 64.000.199, respectively. The monitors have been calibrated and technicians were trained in their operation on November 12 and 13, 1984. It is noted that the licensee intends to use these monitors primarily as trend indicators. Set-points are established near background levels such that at a concentration of 1 MPC of I-131 the alarm would activate in less than one minute. In the event of an alarm, actual airborne concentrations are to be determined by using low volume air samplers with silver zeolite cartridges for analysis on a GeLi system. For tracking purposes, this item is considered closed. (341/84-43-01)

7. ANSI/ASME N510 Acceptance Test Program

The inspectors reviewed the licensee's acceptance test program for air cleaning systems. The licensee committed to conduct these tests per Regulatory Guides 1.52 and 1.140 and ANSI/ASME Standard N510 with specific exceptions delineated in Appendix A to the FSAR. The following types of documents were reviewed: (1) acceptance test inspector qualification records; (2) licensee quality assurance vendor audits; (3) filter qualification documents; (4) station acceptance criteria for ANSI/ASME N510 acceptance tests; and (5) acceptance test reports.

a. Acceptance Test Inspector Qualification Records

The inspectors reviewed the qualification records of the personnel who have or have been authorized to perform testing associated with the ANSI/ASME N510 acceptance test program. Included was a review of the FSAR commitments to Regulatory Guide 1.58, station certification program procedures, individual certification records, and ANSI/ASME N510 acceptance test report dates of testing and signatures. The reviewed records indicate that the personnel who were assigned to conduct ANSI/ASME N510 acceptance tests were qualified in accordance with the certification program procedures, the program procedures appear to be in compliance with the commitments made to Regulatory Guide 1.58 in Appendix A to the FSAR, and properly certified personnel have performed and supervised ANSI/ASME N510 acceptance tests.

b. License Quality Assurance Vendor Audits

Nearly all the activated carbon adsorber, HEPA filters, and package filter housings were purchased from Cryogenic Technology, Inc. (CTI), CVI Corporation, or American Air Filter Company (AAF). The inspectors reviewed the licensee's quality assurance program audits and product inspection point (source inspection) audits of these companies. The findings and observations of the audits appeared to be adequately resolved and documented.

c. Filter Qualification Documents

The inspectors reviewed the following filter qualification documents: (1) purchasing records; (2) activated carbon adsorber and HEPA filter qualification certifications; and (3) activated carbon adsorber methyl iodide laboratory retest records. Purchasing records indicate the activated carbon adsorbers and HEPA filters received by the licensee, which the licensee plans to use for nuclear air cleaning applications, were those filters for which the licensee has vendor certification records. Filter certification documentation was reviewed, in detail, for the Standby Gas Treatment System (SGTS), Control Center (CC) Emergency Air Makeup and Recirculation

System, and Technical Support Center (TSC) Emergency Air Makeup and Recirculation System. HEPA filters for these systems passed vendor certification tests; however, the licensee rejected the HEPA filters for the CC system because the vendor certification tests were not conducted as specified in the purchase order. Replacement HEPA filters, which have qualification certifications corresponding to the purchase order specifications, have been obtained from another vendor.

Because the originally purchased activated carbon adsorber material for the CC and SGTS were qualification tested many years ago, the licensee recently had batch samples methyl iodide laboratory retested to demonstrate that this "spinster" carbon had not significantly degraded. The SGTS carbon failed the retest and the CC carbon passed the retest. Consideration of having the SGTS carbon retested again was abandoned because upon review of batch traceability it was discovered that batch designation tags were missing on most of the stored barrels of carbon adsorber. The licensee does not presently plan to use spinster carbon purchased for either system for nuclear air cleaning applications. The SGTS carbon may not be used as originally intended, even if a retest is passed, because of the lack of batch traceability. The CC carbon may not be used because of vendor adsorber certification shortcomings. During the exit meeting, the licensee agreed to notify NRR prior to attempting requalification of spinster carbon orginially purchased for use in the Control Center and Standby Gas Treatment Systems.

The licensee plans to purchase replacement batches of carbon adsorber for the SGTS units after the proposed vendor has fully satisfied quality assurance requirements including applicable program and source inspection audits. New carbon adsorber was purchased for the CC and TSC systems from an apparently quality assurance qualified vendor with proper adsorber qualification certification. Because some of this adsorber material was originally certified nearly three years ago, it may have significantly degraded. During the exit meeting, the licensee agreed to demonstrate prior to the systems being declared functional that the Control Center and Technical Support Center carbon adsorber has not significantly degraded by laboratory testing batch samples with methyl iodide to Regulatory Guide 1.52, Table 2 acceptance criteria and to replace the carbon if it fails the prescribed test. (Open Item 341/84-43-02).

d. Station Acceptance Criteria for ANSI/ASME N510 Acceptance Tests

Licensee memorandum EF2072707, Rev. 1, dated November 30, 1984, contains the Engineering recommendation to the Startup Director that ANSI/ASME N509 and N510 be used as guides in conducting the air cleaning pre-op test program to the extent practical. Attached to

that memorandum was the detailed acceptance criteria which was released for incorporation into the pre-op test program. Upon review of the acceptance criteria, the inspectors noted that mounting frame pressure leak tests were not to be performed and that the duct heater performance test acceptance criteria were based on power output rather than the specifics of the ANSI standards. Licensee representatives stated that the mounting frame integrity will be proven by the successful completion of the initial inplace leak test and any subsequent leak test. Documentation was made available to the inspectors for review which indicates that the specific acceptance criteria power output values for the duct heater performance tests are adequate to demonstrate that the heaters are capable of performing their intended function. Licensee representatives also demonstrated to the inspectors that other duct heater functionality concerns were addressed by pre-existing pre-op test procedures. The NRR/METB reviewer indicated to the inspectors that the acceptance criteria seemed acceptable to that NRC organization. Licensee representatives stated that the acceptance criteria attached in the memorandum dated November 30, 1984, was used informally for ANSI N510 acceptance tests performed before that date. In summary, the portions of the acceptance criteria documentation reviewed by the inspectors appear appropriate and adequate for the intended purpose.

e. Acceptance Test Reports

The inspectors reviewed the following documents to ascertain the adequacy of the acceptance test reports: (1) licensee prepared ANSI/ASME N510 commitment analysis; (2) acceptance test procedures; and (3) acceptance test reports.

The inspectors reviewed with licensee representatives a line-by-line ANSI/ASME N510 commitment analysis to determine compliance; the analysis made reference to specific acceptance test procedures. Based on inspector review of the commitment analysis and licensee representatives' statements, it appears that the licensee has procedures to adequately conduct the full spectrum of ANSI/ASME N510 acceptance tests. However, a number of inspector concerns with procedural details are discussed below.

The inspectors reviewed a selected sampling of the acceptance test procedures and expressed to licensee representatives several concerns, including: (1) lack of procedural discussion of the correctable deficiency reporting and resolution methodology; (2) lack of a procedural requirement for visual inspection lighting requirements; and (3) not all visual inspection checklist items from ANSI N510 were being used in station procedural visual inspection checklists. The licensee was able to satisfy these inspector concerns by revising the procedural visual inspection checklist. The portions of the acceptance test procedures reviewed by the inspectors appear adequate for the intended purpose.

The inspectors reviewed a selected sample of the acceptance test reports and expressed to licensee representatives several concerns, including: (1) contrary to the specifications in ANSI N510, duct and housing leak test reports did not contain the location and disposition of leaks; (2) the ANSI/ASME N509 duct and housing leakage acceptance criteria for the Control Center was apparently not followed; (3) contrary to the specifications of Regulatory Guides 1.52 and 1.140, silicone sealants were use to seal leaks found during duct and housing leakage acceptance tests; (4) contrary to the specifications of Regulatory Guide 1.140, the radwaste main exhaust filtration system is designed for greater than 30,000 cfm; and (5) contrary to the specifications of Standard Review Plan 6.4, Control Center duct and housing acceptance criteria analysis assumes an effective combined emergency make-up and recirculation carbon adsorber iodine removal efficiency greater than .99 (.9975). The status of these concerns is as follows: (1) location and disposition of leaks found during previously conducted duct and housing leakage acceptance tests have been added to the test report files and licensee representatives have assured the inspectors that any duct and housing tests conducted in the future will have appropriate descriptive statements; (2) licensee representatives assured the inspectors that the failure to use ANSI/ASME N509 acceptance criteria for allowable Control Center duct and housing leakage was inadvertent and that the proper ANSI/ASME N509 acceptance criteria will be re-evaluated and correctly applied; (3) NRR and the licensee are resolving the acceptance criteria for the use of silicone sealants on ducts and housings; (4) the NRR/METB reviewer has indicated to the inspectors that NRR finds the radwaste main exhaust filtration system flowrate to be acceptable; and (5) a final NRC decision has not been made on the acceptability of allowing credit for a combined efficiency for the Control Center carbon adsorber greater than .99. For the purposes of tracking, pending NRC resolution of certain issues, this matter is not considered an open item.

8. Venting and Draining Contaminated Systems

Adequate procedures apparently have not been developed to ensure that personnel will use proper radiological techniques while venting and draining contaminated systems. During the exit meeting, the licensee agreed to develop a procedure pertaining to the draining and venting of contaminated systems and to have that procedure written and approved and the associated training completed by January 15, 1985. (Open Item 341/84-43-03).

9. Standby Gas Treatment System (SGTS) Sample Line Loss Correction Factor Procedures

In a letter to NRR dated December 13, 1984, the licensee committed to incorporate calculated SGTS effluent sample line loss correction factors into related procedures. During the exit meeting, the licensee stated that the procedures would be revised and approved by January 6, 1985. (Open Item 341/84-43-04).

10. Heat Tracing of Standby Gas Treatment System (SGTS) Sample Lines

The SGTS sample lines will be heat traced to enhance the post-accident sampling capabilities of the equipment. In a letter to NRR dated December 13, 1984, the licensee committed to complete installation of this heat tracing prior to exceeding five percent power. This matter will be reviewed during a future inspection. (Open Item 341/84-43-05).

11. Post-Accident Sample Analysis Capability

Licensee representatives indicated that it may be necessary to use a specially designed collimator to effectively increase the range of the station's intrinsic Germanium detector system to accommodate NUREG-0737 post-accident samples. During the exit meeting, the licensee stated that the collimator would be fabricated and installed prior to exceeding five percent power. This matter will be reviewed during a future inspection. (Open Item 341/84-43-06).

12. SGTS Noble Gas Release and Dose Rate Calculational Procedure

NUREG-0737 Item II.F.1, Attachment 1, Clarification (4)(b) states that procedures or calculational methods are to be used for converting noble gas effluent monitoring instrument readings to release rates per unit time, based on exhaust air flow and considering radionuclide spectrum distribution as a function of time after shutdown. Station procedure EP-540, Attachment 2 presents a methodology for calculating off-site release rates and dose rates due to SGTS effluents as a function of time post-LOCA. The SGTS exhaust is monitored by a SPING-3 for the lower ranges and an AXM-1 system for higher ranges. The applicable noble gas detector assemblies are designated by Eberline as SA-13, 14, and 15. However, the monitor calibration correction factor as a function of time post-shutdown presented in EP-540 is for an SA-9 detector assembly (which is part of a SPING-4 monitoring system). The amount of error introduced into the off-site dose rate calculational procedures by using a calibration curve for the wrong type of detector assembly is unknown because Clarification (4)(b) correction factor curves have not been developed for the correct detector assemblies. The use of improper correction curves has the potential of greatly overestimating or underestimating off-site dose consequences and the need for protective

action. During the exit meeting, the licensee agreed to correct Emergency Plan Implementing Procedure EP-540, "Manual Off-Site Radiological Dose Assessment Calculational Procedure-Airborne Releases-Overview," to reflect the correct SGTS effluent monitoring system, to comply with the specifications of NUREG-0737 Item II.F.1, Attachment 1, Clarification (4)(b), and to complete all associated training by January 10, 1985. (Open Item 341/84-43-07).

13. SGTS Iodine and Particulate Release and Dose Rate Calculational Procedure

NUREG-0737 Item II.F.1, Attachment 2, Table II.F.1-2 states that the purpose of sampling and analysis of high-range radioiodine particulate effluents in gaseous effluent streams is to determine quantitative release of radioiodines and particulates for dose calculation and assessment. Licensee representatives indicated that a procedure had not been prepared to address these specific aspects of NUREG-0737. During the exit meeting, the licensee agreed to develop a procedure to determine quantitative release of radioiodines and particulates for dose calculation and assessment for the SGTS effluent monitoring system per the specifications of NUREG-0737 Item II.F.1, Attachment 2, Table II.F.1-2 and complete all associated training by January 10, 1985. (Open Item 341/84-43-08).

14. SGTS Noble Gas Detector Assembly Range Overlap

NUREG-0737 Item II.F.1, Attachment 1, Clarification (4) states that instrumentation ranges shall overlap to cover the entire range of effluents from normal (ALARA) through accident conditions. Licensee representatives stated that this analysis has not been performed for the noble gas detector assemblies which monitor the SGTS effluent. The range overlap analysis between detector channels should take into account the radionuclide spectrum distribution as a function of time after shutdown as indicated in NUREG-0737 Item II.F.1, Attachment 1, Clarification (4)(b). During the exit meeting, the licensee agreed to have the range overlap analysis completed by January 10, 1985. (Open Item 341/84-43-09).

15. Accident Radioactive Release Quantification Program

A number of inspector concerns with the licensee's accident radioactive release quantification program were discussed with licensee representatives. Some of these concerns are described in Section 9 of Inspection Report No. 50-341/84-27 and Sections 9, 12, 13, and 14 of this report. The number and significance of inspector identified problem areas appear to represent programmatic deficiencies in the licensee's radiological accident procedural development process. During the exit meeting, the licensee stated that, besides the specific procedural corrections which are scheduled to be completed by January 10, 1985 (see Sections 12, 13, and 14 above), a comprehensive review of technical adequacy and commitment compliance would be completed, necessary corrective action taken, final procedures approved, and all associated training completed prior to exceeding five percent power. (Open Item 341/84-43-10).

16. Exit Meeting

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection by telephone on December 18 and 28, 1984. In response to certain items discussed by the inspectors, the licensee:

a. Agreed to notify NRR prior to attempting requalification of spinster carbon originally purchased for use in the Control Center and Standby Gas Treatment Systems. (Section 7).

b. Agreed to demonstrate prior to the systems being declared functional that the Control Center and Technical Support Center carbon adsorber has not significantly degraded by laboratory testing batch samples with methyl iodide to Regulatory Guide 1.52, Table 2, acceptance criteria and to replace the carbon if it fails the prescribed test. (Section 7).

c. Agreed to develop a procedure pertaining to the draining and venting of contaminated systems and to have that procedure written and approved and the associated training completed by January 15, 1985. (Section 8).

d. Stated that calculated sample line loss correction factors for the SGTS sample lines would be incorporated into related procedures and agreed to have this completed by January 6, 1985. (Section 9).

e. Stated that the collimator for the post-accident intrinsic Germanium detector would be fabricated and installed before exceeding five percent power. (Section 11).

f. Agreed to correct Emergency Plan Implementing Procedure EP-540, "Manual Off-Site Radiological Dose Assessment Calculational Procedure-Airborne Releases-Overview," to reflect the correct SGTS effluent monitoring system, to comply with the specifications of NUREG-0737 Item II.F.1, Attachment 1, Clarification (4)(b), and to complete all associated training by January 10, 1985. (Section 12).

g. Agreed to develop a procedure to determine quantitative release of radioiodines and particulates for dose calculation and assessment for the SGTS effluent monitoring system per the specifications of NUREG-0737 Item II.F.1, Attachment 2, Table II.F.1-2 and complete all associated training by January 10, 1985. (Section 13).

h. Agreed to complete the SGTS Noble gas detector assembly range overlap analysis by January 10, 1985. (Section 14).

i. Agreed to complete a comprehensive review of the accident radioactive release quantification program's technical adequacy and commitment compliance, take necessary corrective action, approve final procedures, and complete all associated training prior to exceeding five percent power. (Section 15).