

September 22, 2000

Dr. John C. Lee, Interim Director
Phoenix Memorial Laboratory
Ford Nuclear Reactor
University of Michigan
2301 Bonisteel Boulevard
Ann Arbor, Michigan 48109-2100

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-02/2000202

Dear Dr. Lee:

This refers to the inspection conducted on August 21-25, 2000 at the Ford Nuclear Reactor. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress.

Based on the results of this inspection, no safety concern or noncompliance to NRC requirements was identified. No response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/NRC/ADAMS/index.html>.

Should you have any questions concerning this inspection, please contact Mr. Thomas Dragoun at 610-337-5373.

Sincerely,

/RA/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-02
License No. R-28

Enclosure: NRC Inspection Report No. 50-02/2000202
cc w/enclosure: See next page

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University of Michigan

Docket No. 50-02

cc:

Special Assistant to the Governor
Office of the Governor
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U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-02

License No: R-28

Report No: 50-02/2000202

Licensee: University of Michigan

Facility: Ford Nuclear Reactor

Location: Ann Arbor, Michigan

Dates: August 21-25, 2000

Inspector: Thomas F. Dragoun

Approved by: Ledyard B. Marsh, Director
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included onsite review of selected aspects of the shipment of spent fuel, special nuclear material control and accountability program, and the radiation protection program, since the last NRC inspection of this program.

The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

SPENT FUEL SHIPMENT

The transportation activities were in compliance with applicable NRC and DOT transport regulations.

SNM CONTROL AND ACCOUNTABILITY

The program to account for and control SNM was adequate.

RADIATION PROTECTION

The radiation protection program satisfied NRC requirements.

Report Details

Summary of Plant Status

During the inspection, a BMI-1 cask, loaded with spent fuel, was prepared for shipment. Representatives from the Michigan Department of Environmental Quality, Michigan State Police, and Ohio Public Utilities Commission observed the preparations and conducted independent radiation surveys of the vehicle. The reactor was restarted and operated at 2 MW after the load departed.

1. TRANSPORTATION ACTIVITIES

a. Scope (IP 86740)

The inspector reviewed selected aspects of:

- use of the BMI-1 package
- radiation surveys
- markings, labels, and placarding
- notifications
- audits
- driver briefing
- record keeping

b. Observations and Findings

The licensee is a registered user of the cask. The Certificate of Conformance, supporting drawings, and documentation were available on site. Licensee procedure MP-603 detailed the use of the cask and was satisfactorily used. Radiation surveys were properly conducted and recorded. Radiation and contamination levels were well below DOT limits. Package markings and labels and vehicle placards were appropriate. Required notifications to the NRC and State governors were made in a timely manner. Escorts were arranged as required. The route was approved by the NRC. In-transit security and communications were provided by DOE.

The NRC approved the licensee's Quality Assurance program for packaging. The audit required by this program was conducted during this shipment by a qualified person from a nearby nuclear power plant (Fermi-2). Performing an audit in this manner is effective and constitutes a program strength.

Training and qualification status of the drivers was verified to be current by the licensee. The verbal briefing and shipping paper documentation provided to the drivers satisfied DOT requirements for the exclusive-use shipment.

Records for recent spent fuel shipments were complete and satisfactory.

c. Conclusions

The transportation activities were in compliance with applicable NRC and DOT transport regulations.

2. SNM Material Control and Accounting

a. Scope (IP 85102)

The inspector reviewed selected aspects of:

- receipt and shipment transaction reports
- burn-up calculations
- biannual material balance reports
- annual physical inventory

b. Observations and Findings

All material was accounted for and records were well kept. The Assistant Manager - Reactor Operations is responsible for the program.

The inspector noted that 13 fission chambers were not accounted for in the reports to the Nuclear Materials Management and Safeguards System (NMMSS) but were in an inventory maintained by the Nuclear Reactor Laboratory Manager. It was unclear which of the several licenses for the campus was used to account for this material. The licensee stated that this matter will be resolved before year end. This will be reviewed in a future inspection (Inspector Follow up Item 50-02/2000202-01)

c. Conclusions

The program to account for and control SNM was adequate.

3. RADIATION PROTECTION

a. Scope (IP 83743)

The inspector reviewed selected aspects of:

- the Radiation Protection Program
- audits
- organization and staffing
- procedures
- radiological signs and posting
- routine surveys and monitoring
- dosimetry records
- maintenance and calibration of radiation monitoring equipment
- As Low As Reasonably Achievable program

b, Observations and Findings

The licensee does not use a campus-wide document to describe the university's radiation protection program requirements but relies on the policies and procedures of each campus facility for program documentation. Annual reviews of the HP program at the reactor are conducted as required by 10 CFR 20.1101.

The HP organization and staffing was as described in the TS. The reactor HP technician position, vacant due to a promotion, was to be refilled. During the interim, assistance was available from the campus HP office.

The HP procedures were updated in 1998 and are satisfactory.

NRC Form 3, "Notice to Employees," was posted in accordance with 10 CFR 19.11. Caution signs, postings and controls to radiation areas were as required in 10 CFR 20, Subpart J. Licensee personnel observed the indicated precautions for access to the radiation areas.

Use of dosimeters and exit frisking practices were in accordance with radiation protection requirements. The licensee used a National Voluntary Laboratory Accreditation Program (NVLAP)-accredited vendor to process dosimetry. Radiological exposure records showed that occupational doses were within 10 CFR Part 20 limitations. Training records showed that personnel were acceptably trained in radiation protection practices.

Radiation monitoring and survey activities were as required. Equipment used for these activities were maintained, calibrated and used acceptably.

Periodic checks of the effluent air monitors and the sampling and analysis of reactor pool water were in accordance with licensee procedures.

The licensee detected neptunium 239 in a geochronology sample that was irradiated for another university. The sample was not shipped since the customer's license did not authorize possession of neptunium. Other universities using this service were notified and encouraged to amend their licenses in order to continue using the service. This event demonstrated good attention to regulatory requirements.

ALARA reviews were acceptably performed in accordance with the licensee's ALARA program.

c. Conclusions

The radiation protection program satisfied NRC requirements.

4. EXIT INTERVIEW

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on August 25, 2000. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Becker, Nuclear Reactor Laboratory Manager
H. Downey, Health Physicist
M. Driscoll, Director, Radiation Safety
B. DuChamp, Assistant Manager, Reactor Operations
J. King, Chairman, Safety Review Committee
J. Lee, Director, Michigan Memorial Phoenix Project
J. Martin, Member, Safety Review Committee
P. Simpson, Assistant Manager, Research
D. Wehe, Assistant Director, Michigan Memorial Phoenix Project

INSPECTION PROCEDURES USED

IP 83743	CLASS I NON-POWER REACTORS RADIATION PROTECTION
IP 85102	MATERIAL CONTROL AND ACCOUNTING - REACTORS
IP 86740	INSPECTION OF TRANSPORTATION ACTIVITIES

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-02/2000202-01	IFI	Establish accountability for fission chambers
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Closed

None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
DOT	US Department of Transportation
HP	Health Physics
IFI	Inspector Followup Item
IP	Inspection procedure
NMMSS	Nuclear Materials Management and Safeguards System
NRC	Nuclear Regulatory Commission
SNM	Special Nuclear Material
TS	Technical Specifications