

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-156
License No: R-74
Report No: 50-156/96001(DNMS)
Licensee: University of Wisconsin
Facility Name: University of Wisconsin Nuclear Reactor
Location: Madison, Wisconsin
Dates: August 19-23, 1996
Inspectors: T. D. Reidinger
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Approved by: Gary L. Shear, Chief
Fuel Cycle Branch

Executive Summary

University of Wisconsin Nuclear Reactor Report No. 50-156/96001(DNMS)

This routine, announced inspection included aspects of organization; operations and maintenance; procedures; requalification training; surveillance; experiments; radiation controls and environmental protection; design change; audit and review; emergency preparedness; fuel handling activities (IP 40750); transportation activities (86740); periodic and special reports (IP 90713); and one inspectors identified followup item 50-156/94001-01 (IP 92701).

Organization (IP 40750)

- The organizational structure and assignment of responsibilities were as specified in Technical Specifications (TS). (Section 1.0)

Operations and Maintenance (IP 40750)

- The reactor was operated and maintained in accordance with the reactor's license conditions and TS requirements. The licensee's logs and records satisfactorily documented reactor operations and maintenance activities. (Section 2.0)

Procedures (IP 40750)

- The licensee had approved procedures to sufficiently conduct reactor operations, maintenance, experiments, surveillance testing and instrument calibrations in compliance with TS requirements. (Section 3.0)

Licensed Operator Requalification (IP 40750)

- A satisfactory training program was being conducted in accordance with the NRC approved program. Adequate training records were being maintained. (Section 4.0)

Surveillances (IP 40750)

- All reactor surveillance tests had been completed and documented at the required frequencies, and the surveillance test results met TS requirements. Ventilation flow tests for the reactor fume hoods were not scheduled or conducted by the University Safety Office for several years because of inadequate test schedules. Initial flow test records were unavailable for review. (IFI 50-156/96001-03(DNMS)) (Section 5.0)

Experiments (IP 40750)

- All reactor experiments were conducted in accordance with properly reviewed and approved procedures and satisfactorily documented in the reactor operations log. (Section 6.0)

Radiation Control (IP 40750)

- Confusion and disagreements had existed between the reactor staff and the campus radiation safety staff since 1992 regarding responsibility for the reactor radiation safety program. The Radiation Safety Officer (RSO) maintained that his office had no reactor health physics responsibilities except as providing either courtesy T.S. audits or some health physics (HP) service on a case by case request from the reactor laboratory. The Reactor Director (RD) maintained that the campus RSO always had overall health physics oversight responsibility at the reactor. At the exit meeting, the licensee appointed the RSO as having the oversight responsibility for the radiation protection program at the reactor laboratory.

Environmental Protection (IP 40750)

- Airborne and liquid effluent releases were well within the regulatory limits. The licensee installed a filtered liquid waste system to comply with regulations for liquid releases discharged to the sewer system. (Section 8.0)

Audits and Reviews (IP 40750)

- The University Health Physicist (UHP) failed to conduct monthly HP inspections of the reactor laboratory as required by TS. (Vio. No. 50-156/96001-01(DNMS)) (Section 9.0)
- The annual radiation protection audits of the reactor laboratory were not detailed or technically comprehensive partly due to the lack of ownership of the radiation protection program at the reactor laboratory. (IFI No. 50-156/96001-02(DNMS)) (Section 9.0)

Emergency Preparedness (IP 40750)

- Emergency Plan exercises and training were adequate to ensure public safety. The inspectors observed the licensee effectively implement their emergency plan and procedures for a public demonstration. (Section 10.0)

Fuel Handling (IP 40750)

- Procedures for fuel handling were adequate for reactor operations. (Section 11.0)

Periodic and Special Reports (IP 90713)

- Required reports had been submitted to the NRC in accordance with TS requirements although the most significant radiation dose (105 millirem) for the 1995-1996 reporting period was not included due to oversight. (Section 12.0)

Transportation (IP 86740)

- The transfer of irradiated material from the reactor to the broadscope license was conducted per procedure. (Section 13.0)

DETAILS

1.0 Organization

a. Inspection Scope (IP 40750)

The inspectors reviewed Technical Specifications (TS) and the Safety Analysis Report (SAR) related to organization and staffing.

b. Observations and Findings

The inspectors determined that the organizational structure and assignment of responsibilities were as specified in TS 6. The membership of the Reactor Safety Committee (RSC) was in accordance with TS and the SAR.

Through log reviews, the minimum staffing requirements were verified to have been met during reactor operations and fuel handling or refueling operations. Selected reactor operator logs from May 1994 through July 1996 were reviewed with no concerns identified. The operator logs were well maintained. The operating cycle reports accurately used data from the operator logs to report the number of unscheduled shutdowns. The operators appeared proficient, demonstrated good procedural compliance, and made appropriate log entries for the observed evolutions, i.e., experimental sample protocol.

c. Facility Tour

The control room, pool floor, and the beam port floor areas were adequately illuminated, free of clutter and very clean. Fire extinguishers in these areas and the basement had appropriate pressures and current inspection dates.

d. Conclusions

Compliance with TS requirements, SRC membership and reactor programs was good.

2.0 Operations and Maintenance Activities

a. Inspection Scope (IP 40750)

The inspectors reviewed the reactor operations and maintenance logs and observed reactor operations to determine compliance with Operating License Condition 3.A. and the requirements in TS 2.0 and TS 3.0.

b. Observations and Findings

The licensee operated the reactor from startup to full power and then to shutdown using the applicable procedures. The licensee operated the reactor for experiments, research, training, and irradiation of topaz.

The reactor operations logs and records were in compliance with the reactor's license condition and TS requirements. The licensee had operated the reactor at steady state thermal power levels not in excess of 1.0 megawatt in accordance with Operating License Condition 3.A. The inspectors verified that the reactor safety limits had not been exceeded and were in compliance with TS 2.1.

During the annual shim safety control rod reactivity worth determinations, the reactor shutdown margin and excess reactivity were verified to be within TS limits. The inspectors also verified that all of the required reactor control system instrument channels, safety circuits, and safety interlocks required by the TS were tested and operable. The licensee's logs and records adequately documented reactor operations.

The reactor's maintenance logs and records were found to be in compliance with the TS requirements. Safety-related corrective maintenance performed on the reactor and operations console was properly documented in the reactor's maintenance log.

The replacement of the control element (rod) timer and reactor scram relay modifications and the related safety evaluations were adequate. Meeting minutes indicated that the modifications, associated procedure changes, and safety evaluations were also reviewed by the SRC as required.

c. Conclusions

The reactor was operated and maintained in accordance with the reactor's license conditions, safety limits and limiting conditions for operation, and TS requirements. The licensee's logs and records satisfactorily documented reactor operations and maintenance activities.

3.0 Procedures

a. Inspection Scope (IP 40750)

The inspectors reviewed the licensee's written procedures for operating and maintaining the reactor, performing surveillance activities and reactor instrument calibrations, and conducting experiments to determine compliance with the requirements in TS 6.5.

b. Observations and Findings

The inspectors reviewed changes to UWNR 142, "Procedure for Measuring Fuel Element Bow and Growth, Revision 10." The procedure changes highlighted a digital display modification making the fuel element dimensional reading less prone to operator interpretation or error. Discussions with the staff operators indicated that they were trained on the changes to the new procedure.

UWNR 005, "Procedure Preparation, Modification, Control, and Distribution, Step 11," required that all old copies of procedures in the reactor lab be replaced when approved revisions have been made. On the facility tour, the inspectors reviewed UWNR 109, "Procedure for Liquid Waste Disposal, Revision 17," at the modified liquid release discharge operating station. The review specifically was to determine whether the prescribed valving lineup in the procedure could inadvertently allow, by operator error, a possible bypass of the filters causing a discharge of radionuclide insolubles to the sewer. The inspectors determined that the valves and system lineup did not compare to the installed system. The inspectors determined that UWNR 109, located at the local station had been superseded by Revision 18 on July 26, 1996. Although the procedure was incorrect, no inadvertent discharge could have occurred with the outdated procedure. The licensee immediately replaced it with the latest revision from the master control room copy when notified by the inspectors.

c. Conclusions

The licensee had approved procedures to sufficiently conduct reactor operations, maintenance, experiments, surveillance testing and instrument calibrations in compliance with TS requirements.

4.0 Requalification Training

a. Inspection Scope (IP 40750)

The inspectors reviewed the reactor operator requalification training program to determine compliance with the requirements in 10 CFR 19.12, UWNR 004, "Operator Proficiency Maintenance Program," and 10 CFR 55.59.

b. Observations and Findings

The licensee's Operator Proficiency Maintenance Program conformed to the requirements of 10 CFR Part 55.59. The program had established requirements for ensuring that operators maintain their licenses including attending training, performing the required number of reactivity manipulations, and passing annual written examinations and quarterly operating evaluations, medical qualifications, and remedial training if required.

Requalification training records for selected operators were found to contain all of the documentation required by the approved requalification program. The reactor operator and senior reactor operator requalification written examinations for 1994 and 1995 were reviewed. The annual written examinations continued to be adequately thorough and comprehensive, and the content and scope varied satisfactorily from previous examinations.

Remedial training and successful re-examination had been conducted for one operator. The quarterly operating examinations appeared to have been effective in evaluating licensed operator knowledge, skills, and abilities.

The licensee had developed adequate records to track and document operator requalification requirements. Interviews with reactor staff verified that the requalification training program was being carried out in accordance with the facility's approved program and NRC regulations. The control room logs indicated that most licensed operators had maintained active licenses for 1994-1996 and operators were knowledgeable in their licensed responsibilities. Those who had not maintained an active license were removed from licensed duties and the NRC was properly notified.

c. Conclusions

A satisfactory training program was being conducted in accordance with the NRC approved program. Adequate training records were being maintained.

5.0. Surveillances

a. Inspection Scope (IP 40750)

The inspectors reviewed surveillance test results to determine compliance with the requirements in TS 4.0.

b. Observations and Findings

UWNR TS 6.5, "Operating Procedures," states, in part, that "Written operating procedures shall be adequate to assure the safety of operation of the reactor." UWNR 001, "Administrative Guide, Section 15," states that "The Reactor Laboratory will comply with the current Radiation Safety Regulations (RSR's)." The RSR's Chapter IV, Section C., states that "Fume hoods must have adequate air flow to ensure that restricted areas and hood effluents remain below legally allowed effluent concentrations."

Evaluation of "Fume Hoods Inspection Flowchart" procedure, paragraph II, states, in part, that the minimum air flow is 100 feet per minute. The inspectors noted that records were not available to determine whether air flow testing was conducted when fume hoods were installed. Discussions with the licensee indicated that the University Safety Department employee

responsible for fume hood testing was unaware that the reactor laboratory had fume hoods nor were the fume hoods included in the Safety Department's surveillance schedule for the laboratory fume hoods since at least 1992. It was noted that the licensee conducted flow checks of fume hoods on campus annually.

The licensee promptly conducted a satisfactory air flow test of the fume hoods before the inspection concluded. The inspectors will review the adequacy of the procedure at the next scheduled inspection. (IFI 50-156/96001-03(DNMS))

UWNR 100, "Surveillance Activities," Revision 30 and UWNR 100A, "PM (Preventive Maintenance) Services," Revision 25, listed weekly, monthly, semiannual, and annual surveillance or maintenance activities that were required to be accomplished. Selected schedules for May 1994 through July 1996 verified reactor surveillances had been completed within the required time period. Particular attention was given to the post fuel loading activities in July 1996. Selected surveillance procedures were determined to be adequate to verify the TS requirements.

c. Conclusions

All reactor surveillance tests had been completed and documented at the required frequencies, and the surveillance test results met TS requirements. The absence of the reactor laboratory fume hoods on the testing schedule was an example of the weak university oversight at the reactor laboratory.

6.0 Experiments

a. Inspection Scope (IP 40750)

The inspectors reviewed the licensee's program to control and conduct experiments performed in the reactor to determine compliance with the requirements in TS 3.6, 4.2.5, 6.5, and 6.8.

b. Observations and Findings

The inspectors observed experiment insertion and withdrawal using the whale system, pneumatic transfer system, and grid box facilities. The inspectors also reviewed the documentation of several experimental samples placed into the core area. Experiments were conducted in accordance with written procedures which were approved and properly documented as required by TS.

c. Conclusions

All reactor experiments were conducted in accordance with properly reviewed and approved procedures and satisfactorily documented in the reactor operations log.

7.0 Radiation Control

a. Inspection Scope (IP 40750)

The inspectors reviewed the radiation protection program to determine compliance with the requirements in 10 CFR Part 20 and TS 3.4, 3.5, 3.6, 4.2.3, 4.2.4, 4.2.5, 5.4, 6.2, and 6.6.

b. Observations and Findings

The inspectors reviewed personnel exposure records from the last inspection to the present. The records indicated that badged reactor personnel had not exceeded 10 CFR 20.1201 regulatory limits. The inspectors noted that for June 1996, one individual had a total yearly accumulated dose of 20 millirem but the previous month (May) the total yearly accumulated dose was recorded as 60 millirem for 1996.

Discussion with the UHP revealed that approximately every other month administrative errors by the dosimeter vendor resulted in exposure discrepancies. The UHP further explained that the vendor's administrative calculation errors were primarily the root cause of the exposure errors, and why badges not exposed to radiation indicated various amounts of exposure. Consequently, it was learned that the vendor did not subtract the background reading from the recorded exposures. The dosimeter vendor subsequently issued corrected exposure records once informed by the UHP.

The inspectors reviewed the reactor laboratory's HP documentation associated with the reactor fuel elements transfer to the pool pit, draining of the pool and welding of the reactor pool aluminum liner. The RD enlisted the aid of a qualified campus welder to assist in the welding of the crack in the pool liner. Generally the HP contamination control practices appeared to be adequate.

In an interview with the campus pool welder, the inspectors noted that his 10 CFR 19.12 radiation protection training was appropriately conducted by the RD for the pool liner weld repair. The inspectors reviewed the visitor's log entry and noted that the welder was issued an electronic dosimeter during the pool liner repair and received a dose of 105 millirem. However, the inspectors also determined that the welder's official dose was not included on the annual NRC report although it was the highest dose for the reporting period at the reactor laboratory. The licensee subsequently resubmitted the appropriate information to the NRC after the exit.

Review of the reactor laboratory procedures and the campus RSR's and discussions with the university RSO and RD indicated a conflict over the responsibility and administration of the reactor radiation protection program.

The RSO indicated that the radiation protection program at the reactor laboratory was not his responsibility because he had no authority over the reactor license. The RSO pointed out that the RSR make no reference to the reactor laboratory whatsoever. The RSO did not consider the reactor laboratory as a radionuclide facility but a operating reactor.

UWNR 001, "Standing Operating Instructions," Step 15, states, in part, that the RD will comply with the RSR and the RD is responsible for enforcing this policy.

The RSR "Health Physics Inspections and Enforcement of University Radiation Safety Committee Regulation," Step A, states, in part, that the Radiation Safety Office will inspect all radionuclide facilities at least once a year. Step B, states, that the Radiation Safety Office will inspect for compliance with university policies, State and Federal regulations. It also states that the reactor laboratory is a radionuclide facility.

The RSO presented a copy of a 1992 licensee amendment sent to the NRC, that provided an update on his status as the new RSO manager and the applicable NRC licenses of responsibility and oversight. In addition, he indicated that the letter sent to the NRC did not list the reactor licensee as his responsibility. He further explained that he considered the RD the RSO for the reactor laboratory. The RSO assumed that the reactor radiation protection program was administered by the RD. However, the RD stated that his understanding was that the RSO always had oversight responsibility for the reactor radiation protection program because the TS organization chart outlined the university campus (health physics) radiation protection office as having structure over the reactor laboratory.

In addition, the inspectors noted that the university's ALARA program that established the ALARA policy procedures and instructions to foster the ALARA concept did not include the reactor laboratory. During the exit meeting, the licensee appointed the RSO responsible for oversight of the radiation protection program at the reactor. In addition, the RSR's and the ALARA Program will be revised accordingly to provide structure for the radiation program oversight at the reactor laboratory. This will be reviewed during the next inspection.
(IFI No. 50-156/96001-04(DNMS))

Postings, labeling, and surveys met regulatory requirements as observed on the tour of the reactor laboratory. Operators were observed using adequate, although sometimes inconsistent, contamination control techniques; i.e., using plastic bags to prevent the spread of possible contamination but without rubber gloves during water sampling; using proper personal protective

equipment and monitoring for personal contamination after removing samples or experiments from the reactor pool without hand protection. In general, the staff appeared to be adequately trained and aware of the radiological conditions in their work areas.

Area radiation monitors and portable instruments were calibrated as required.

c. Conclusions

All badged reactor personnel exposures were significantly below 10 CFR 20.1201 limits. Training of the staff and radiation workers appeared to be adequate. Confusion regarding the radiation protection program authority at the reactor laboratory resulted in a lack of ownership in providing an active or dynamic oversight of health physics aspects related to reactor operations.

8.0 Environmental Protection

a. Inspection Scope (IP 40750)

The inspectors reviewed the licensee's program for the discharge or removal of radioactive liquid, gases, and solids from the reactor laboratory.

b. Observations and Findings

From May 1995 to June 1996, several planned liquid releases had occurred. A modification of the waste disposal system had been installed to ensure no radionuclide insolubles could be discharged. All sewer discharges were within regulatory limits. The inspectors evaluated the new waste pump and filter installation and determined that the new modification was satisfactory.

Airborne effluent monitoring records for 1994-1995 indicated that the releases were well within the regulatory limits. Several analysis records were reviewed and no deficiencies were noted.

The inspectors reviewed the COMPLY code input data for radionuclide emissions from the reactor laboratory and no deficiencies were noted.

The licensee had not transported any solid radioactive waste since the last inspection. The inspectors determined that the solid radioactive waste was properly stored and posted as required.

c. Conclusions

Both airborne and liquid effluent releases were well within the regulatory limits.

9.0 Audit and Reviews

a. Inspection Scope (IP 40750)

The inspectors reviewed the meetings, audits and reviews conducted by the Reactor Safety Committee (RSC) to determine compliance with the requirements in TS 6.1 and 6.2.

b. Observations and Findings

Technical Specifications 6.1.c. required, in part, that a University Health Physicist (UHP) conduct an inspection of the reactor at least monthly to assure compliance with the regulations of 10 CFR 20.

The inspectors identified, through review of the monthly audit records, that the licensee failed to conduct the required monthly or quarterly audits on multiple occasions in 1995 and 1996. For example, the monthly reactor operations audits relating to health physic compliance for September, October, November and December 1995 and February, March, April, and May 1996.

Discussions with the University RSO and the UHP were held after they were notified of the identified problems. The RSO stated that he was assigned the responsibility of the campus radiation safety office in 1992 and that since that time he was unaware of any monthly audit requirements related to the reactor laboratory. The RSO and UHP both indicated that they did not have a copy of the reactor's TS and were never aware of the TS requirement to conduct monthly HP audits of reactor operations. They also stated that they were never informed of the TS requirement or their commitment to conduct reactor operations audits. In addition, they indicated that their monthly audits were normally conducted as a "courtesy" for the reactor laboratory, not as a result of a regulatory requirement. The licensee committed to immediately implement corrective actions to comply with the requirement. Failure to conduct monthly reactor operation health physics audits is a violation of TS 6.1. (Vio. No. 50-156/96001-01(DNMS))

The inspectors reviewed the annual yearly radiation protection audits of the reactor laboratory and determined that they were not detailed or technically comprehensive partly due to lack of ownership of the radiation protection program at the reactor laboratory.

The annual audits generally consisted of reviewing the TS monthly reactor operations audits over the past 12 months to ensure that the reactor operation forms were correctly completed. The monthly TS audit (noted to be conducted sporadically) guidance was designed by the RD for use by the UHP and it covered generally a documentation review of reactor activities. Independent assessments of other HP related activities at the reactor laboratory were never instituted by the RSO. For example, the reactor laboratory underwent a major evolution in draining the

pool, removing fuel elements from the core, and welding on a potentially activated aluminum pool liner over a one month period without any UHP involvement. Discussions with the UHP indicated that the radiation safety office were unaware of this repair activity at the reactor laboratory.

In general, the health physics program audits appeared weak because they failed to cover a broad spectrum of program areas. The audit findings appeared to be superficial as they either lacked adequate detail or appeared to lack recommendations or solutions. The licensee agreed to review this area for improvement. This will be reviewed during the next inspection. (IFI No. 50-156/96001-02(DNMS))

c. Conclusions

RSC meetings were conducted as required. Communications between the RSO and reactor staff failed to address the implementation of the monthly reactor operations audits as required by TS. Annual audits were weak in scope and depth.

10.0 **Emergency Preparedness**

a. Inspection Scope (IP 40750)

The inspectors reviewed the emergency plan for the reactor laboratory to determine compliance with the requirements in 10 CFR 50.54(q) and (r). The inspectors also followed up on a licensee identified weakness in the campus police and security alarm response system.

b. Observations and Findings

The emergency plan procedures were sufficiently detailed. The RSC review of the audit of the emergency plan and procedures was appropriately documented in the RSC meeting minutes and met the requirements in TS 6.2.

The inspectors reviewed documentation related to the emergency drills held on November 6, 1995 and October 31, 1994. The emergency plan did not require any written objectives, critiques or evaluations related to the drill that could help identify any emergency drill weaknesses or suggest corrective actions. The Reactor Supervisor stated that they had not identified any weaknesses requiring corrective action during the drills. Subsequent discussions with various reactor personnel confirmed that these activities were conducted successfully. Documentation indicated that the licensee's staff had been trained in the emergency plan and procedures and had participated in the drill. Records reflected that operators were retrained annually and examined on emergency procedures as part of the operator requalification program.

The emergency equipment locker was maintained at a strategic location and included monitoring equipment and contamination control supplies. Emergency equipment had been inventoried annually as required.

The letter of agreement between the University of Wisconsin Nuclear Reactor and the University Hospital was current. Other services have been mandated or had not required written agreements was confirmed by the inspectors through police and security interviews.

The inspectors conducted discussions with the campus police and security and determined that they had an adequate understanding of their roles in emergencies at the reactor laboratory. The inspectors also discussed a licensee identified weakness regarding the potential for the campus police dispatcher to make a computer code entry error responding to reactor laboratory alarms. The incorrect code could potentially misdirect the responders to the wrong location, incorrect procedures, etc. The police dispatcher had knowledge of the problem and was capable of demonstrating adequate ability to respond to the reactor laboratory alarms. Campus police and security have future computer software changes planned that will eliminate the potential for error.

The inspectors identified errors in the several incorrect emergency notification telephone numbers for the reactor staff on the police computer data base. Although the police had the updated numbers, they stated that updating the computer data base was delayed because of a staffing shortage but the updates were expected to be added shortly. The inspectors advised the reactor staff of these concerns.

The licensee and campus police implemented their procedures for public demonstrations planned for August 22, 1996. The inspectors determined that the police were strategically positioned and prepared to safeguard the reactor laboratory. The reactor laboratory staff had reviewed the appropriate emergency procedures for the anticipated event. The demonstrators did not arrive at the reactor laboratory as originally planned.

No significant changes in the Emergency Response Organization were noted.

c. Conclusions

Review of emergency equipment and supplies, changes to the emergency plan, and documentation relating to emergency drills as well as interviews and observations indicated that the licensee's emergency program was maintained in a state of operational readiness. (Closed Followup item 50-156/94001-01)

11.0 Fuel Handling

a. Inspection Scope (IP 40750)

The inspectors reviewed the fuel handling procedures at the reactor laboratory to determine compliance with TS 6.

b. Observations and Findings

The facility fuel handling program review included the verification of procedures for fuel handling and the technical adequacy in the areas of criticality safety and TS. Records review and discussions with personnel indicated that fuel handling operations had been carried out in conformance with procedures. Log entries and fuel location maps for fuel handling activities were appropriately documented.

c. Conclusions

Procedures for fuel handling were technically adequate for reactor operations.

12.0 Review of Periodic and Special Reports

a. Inspection Scope (IP 90713)

The inspectors reviewed the licensee's submittal of reports and notifications to the NRC to determine compliance with the requirements in TS 6.7.

b. Observations and Findings

The 1995 annual report had been submitted in a timely manner and contained the information required by TS. No special reports had been issued to the NRC since the last NRC inspection of the reactor laboratory in May 1994.

The 1996 annual report was reviewed and the inspectors determined that the highest whole body dose declared in the annual report was less than the dose determined for the worker discussed in Section 7.0. The licensee attributed the error to an oversight by the campus Radiation Safety Office. The licensee submitted a correction on September 3, 1996.

c. Conclusions

Required reports had been submitted to the NRC in accordance with TS requirements although the highest radiation dose for the 1996 report was not included.

13.0 Transportation of Radioactive Materials

a. Inspection Scope (IP 86740)

The inspectors reviewed the licensee's radioactive materials shipping program for compliance with the requirements in Department of Transportation (DOT) and NRC regulations, 49 CFR Parts 172 & 173 and 10 CFR Part 71, respectively.

b. Observations and Findings

● Reactor License

The reactor laboratory transferred reactor irradiated material from the reactor license to the university byproduct material license. Radwaste would also be transferred to the university broad scope license for packaging and disposal when the need arose.

● Broadscope License

Inspection findings indicated that DOT regulations may not have been followed in several instances following the transfer of irradiated material from the reactor license to users authorized by the university byproduct material license. These findings will be reviewed during the next broadscope inspection.

c. Conclusions

The transfer of reactor irradiated material was per procedure.

14.0 Followup Action on Inspectors Identified Items (IP 92701)

a. (Closed) Open Item No. 50-156/94001-01(DRSS):

The inspectors reviewed the documentation of emergency drill evaluations and determined that they had met the licensee's program requirements. This item is closed.

15.0 Followup on Licensee reported events (IP 92700)

- a. The inspectors reviewed all the activities to repair the reactor pool leak and found that the licensee's actions had been in accordance with procedures to unload and reload the core and drain and refill the pool. The post repair tests indicated the leak had been satisfactorily repaired.

16.0 Persons Contacted

University of Wisconsin

M. Corradini*	UW College of Engineering	Associate Dean
Gilbert A. Emmert*	University of Wisconsin	Department Chair
Kathy Irwin*	UW Legal Services	Senior UW Counsel
R.J. Cashwell*	UW Reactor Laboratory	Reactor Director
S. Matusewicz*	UW Reactor Laboratory	Reactor Supervisor
Ronald Bresell*	UW Safety Department	Assistant Director

Additional technical, operational, and administrative personnel were contacted by the inspectors during the course of the inspection.

* Denotes those attending the exit meeting on August 23, 1996.

17.0 Exit Interview (IP 30703)

The inspectors presented the inspection results to members of the licensee management at an exit meeting on August 23, 1996. The licensee acknowledged the findings that were presented. They also requested additional time to review the issues to provide additional information if available. That request was taken into consideration by the inspectors while preparing this report. The inspectors asked the licensee whether any material examined during the inspection should be considered proprietary. No proprietary information was identified.

Inspection Procedures Used

IP 40750	Class II Nonpower Reactors
IP 86740	Inspection of Transportation Activities
IP 90713	Review of Periodic and Special Reports
IP 92701	Followup on Inspectors Identified Problems

Items Opened and Closed

Opened

50-156/96001-01	VIO	Failure to conduct monthly audits of the radiation protection program
50-156/96001-02	IFI	Annual radiation protection audits were weak
50-156/96001-03	IFI	Surveillance of fume hoods was not performed
50-156/96001-04	IFI	The Reactor inclusion into the University's and ALARA radiation protection programs

Closed

50-156/94001-01	IFI	Documentation of Emergency Plan, exercises
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List of Documents Reviewed

Safety Analysis Report
Safety Evaluation Report
Reactor Operating License
Technical Specifications
Administrative Procedures
Operating Procedures
Maintenance Procedures
Surveillance Procedures
Maintenance and Surveillance Records
Emergency procedures
Training Program
Emergency Plan
Dosimetry Records
Training Records
Various Reports
University Radiation Safety Regulations

List of Acronyms Used

ALARA	As Low as Reasonably Achievable
CFR	Code of Federal Regulations
CORD	Central Office for Receiving and Distributing
DNMS	Division of Nuclear Materials and Safeguards
DOT	Department of Transportation
HP	Health Physics
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PM	Preventive Maintenance
RSC	Reactor Safety Committee
RSO	Radiation Safety Officer
SAR	Safety Analysis Report
SPGHG	Shipping Paper and Declaration of Hazardous Goods
TLD	Thermal Luminescent Detector
TS	Technical Specifications
UHP	University Health Physicist
URSR	University Radiation Safety Regulations
UWNR	University of Wisconsin Nuclear Reactor