UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report No.: 50-297/96-02

Licensee: North Carolina State University
Raleigh, NC 27695-7909

Docket No.: 50-297 License No.: R-120

Facility Name: North Carolina State University PULSTAR Reactor

Inspection Conducted: May 23-24, 1996

Inspectors: for C Basslts 6/20/96
A. Gooden, Radiation Specialist Date Signed

for C Basslts 6/20/96
E. Testa, Senior Radiation Specialist Date Signed

Approved by: E M McAlpine 6/20/96
E. J. McAlpine, Chief Date Signed
Fuel Facilities Branch
Division of Nuclear Materials Safety

SUMMARY

Scope:

This routine, announced inspection, involved a limited review of selected areas of radiation protection, transportation, environmental monitoring, and emergency planning, to determine if activities were in accordance with regulatory requirements and license commitments. Areas reviewed included radiation protection audit; radiation training, posting, and surveys; environmental protection program; transportation of radioactive material, emergency response training; and emergency response operational readiness (equipment maintenance, audits, and drills). In addition, one followup item from a previous inspection was reviewed.

Results:

The activities of the Radiation Protection Committee and the Reactor Safety Audit Committee were appropriate to monitor the activities of the reactor facility. Training of the staff and radiation workers appeared to be adequate. Personnel exposures were well below established licensee

Enclosure

administrative and regulatory limits. The licensee's environmental monitoring program appeared to be adequate, as did the program for shipping radioactive materials. The emergency response program was maintained in a state of readiness.

Within the areas inspected, one non-cited violation (NCV) was identified for failure to perform tests for solubility as required by 10 CFR 20.2003(a)(1) (Paragraph 5.b); and one inspector followup item (IFI) was noted involving training for the offsite support hospital (Paragraph 7.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*S. Bilyj, Manager, Reactor Operations
*D. Dudziak, Department Head, Nuclear Engineering
*M. Harrison, Radiation Protection Officer
*K. Kincaid, Chief, Reactor Maintenance
*C. Mayo, Director, Nuclear Reactor Program
*W. Morgan, Manager, Radiation Projects
#*P. Perez, Associate Director, Nuclear Reactor Program
*C. Plavney, Chief Reactor Operator
#*G. Wicks, Reactor Health Physicist

Other licensee employees contacted included operators, technicians, and office personnel.

*Attended the exit interview on May 24, 1996.
#Participated in teleconference exit on June 18, 1996

An index of abbreviations used throughout this report will be found in the last paragraph.

2. Audits and Appraisals (40750)

TS 6.2.3 stipulates that the RSAC will be solely responsible for independent appraisals of reactor operations and reporting the results of its investigations to the RPC, the Department Head, and the AD of the reactor facility.

The inspector selectively reviewed the following audits:

a. PULSTAR Radiation Protection and ALARA 1994 Annual Audit dated April 7, 1995

b. NCSU PULSTAR Nuclear Reactor Radiation Protection and ALARA Program 1995 Annual Audit dated March 15, 1996

The audits encompassed a review of the radiation protection and ALARA program.

No violations or deviations were identified.

3. Radiation Protection Training (40750)

10 CFR 19.12 requires the licensee to instruct all individuals working in or frequenting any portion of the restricted area in the health protection problems associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposure, and in the

purpose and functions of protective devices employed, applicable provisions of Commission Regulations, individuals' responsibilities and the availability of radiation exposure reports which workers may request pursuant to 10 CFR 19.13.

The inspector reviewed records of the training given to those individuals needing unescorted access to the PULSTAR reactor and the training given to others who occasionally visit and assist at the facility such as some faculty and the campus RPO HPTs. The inspector verified that the appropriate training was being given to the various groups as required. The training being provided and training records being maintained appeared to be adequate to fulfill the regulatory requirements.

No violations or deviations were identified.

4. Radiation Control (40750)

a. Posting

10 CFR 19.11 requires each licensee to conspicuously post current copies of: 1) 10 CFR Parts 19 and 20, 2) the license, 3) operating procedures, and 4) Form NRC-3, in sufficient places to permit individuals engaged in licensed activities to observe them on the way to and from any licensed activity location. If posting of the documents specified is not practicable, the licensee may post a notice which describes the documents and states where they may be examined.

During tours of the facility, the inspector noted that the required information had been posted at the entrance to the restricted access area of the research reactor control room. Although access to the restricted area could also be gained through another door to the reactor bay, the opening of that door was controlled from the reactor control room and only authorized personnel were allowed to enter by the reactor operators.

b. Surveys

10 CFR 20.1501 requires the licensee to make or cause to be made surveys that:

(1) may be necessary for the licensee to comply with the regulations and,
(2) are reasonable under the circumstances to evaluate:

(a) the extent of radiation levels,
(b) concentrations or quantities of radioactive material, and
(c) the potential radiological hazards that could be present.

HP Procedure 20-14, "Radiation and Contamination Surveys of PULSTAR Bay," Rev. 4, dated January 31, 1994, requires that radiation surveys be conducted while the reactor is at approximately 1 MW at one month intervals not to exceed five weeks from the date of the last previous routine survey. The procedure also requires that measurement of both neutron and beta-gamma radiation be taken. Contamination surveys are required to be completed at intervals not to exceed 10 calendar days.

The inspector reviewed the results of contamination surveys from January 24, 1994 through May 13, 1996. Surveys were conducted in accordance with HPP 20-14 and results generally were within allowable limits. According to documentation, it appeared that on occasion, contamination was detected and actions were taken by survey personnel to decontaminate to allowable limits.

c. External Exposure Review

10 CFR 20.1201(a) requires each licensee to control the occupational dose to individual adults, except for planned special exposures under 10 CFR 20.1206, to the following dose limits:

(a) An annual limit, which is more limiting of: (i) the TEDE being equal to 5 rems: or (ii) the sum of the deep-dose equivalent and the committed dose equivalent to any organ or tissue other than the lens of the eye being equal to 50 rems.

(b) The annual limits to the lens of the eye, to the skin, and to the extremities, which are: (i) an eye dose equivalent of 15 rems; and (ii) a shallow-dose equivalent of 50 rems to the skin or to any extremity.

10 CFR 20.1502(a) requires each licensee to monitor occupational exposure to radiation and to supply and require the use of individual monitoring devices for adults likely to receive an annual dose in excess of 10 percent of the limits in 20.1201(a).

The inspector reviewed the licensee's exposure records for persons working at or visiting the research reactor facility as reported in the NCSU PULSTAR Nuclear Reactor Radiation Protection and ALARA Program 1995 Annual Audit dated March 1996. The highest accumulated whole body exposure for the period was 90 millirem. The maximum reported extremity Shallow Dose Equivalent was 70 millirem.

The inspector also noted that the majority of the recorded exposures were less than the detection limit, approximately 10 millirem, of the vendor provided film badge.

During tours of the facility, the inspector observed that personnel monitoring devices were being worn as required. The licensee used film badges supplied by a NVLAP approved vendor for measuring official dose.

d. Air sampling

10 CFR 20.1204 requires that the licensee take suitable and timely measurements of concentrations of radioactive material in air in work areas or quantities of radionuclides in or excreted from the body to determine compliance with the occupational dose equivalent limits specified in 10 CFR 20.1502.

TS 6.3.a.8 requires that operating procedures pertaining to radiation control be written, updated periodically, and followed.

HPP 20-11, "Analysis of Air Samples," Rev. 4, dated October 17, 1994, details the instructions for the analysis of various air sample media.

The inspector observed the licensee's air sampling of the reactor bay. This was performed by a CAM located on top of the reactor on a platform adjacent to the pool. CAM filters are changed as required and counted for radioactivity. A selected limited review of the licensee's air sampling records from November 1994 through May 1996 indicated that no instances of airborne activity above regulatory limits had occurred.

e. Facility Tours

During tours of the research reactor bay, adjacent areas, and associated laboratory facilities, the inspector noted a high degree of cleanliness and organization of materials and equipment. Selected review of instrumentation in use at various locations throughout the facility verified that portable and fixed radiation survey instruments were within calibration and were being source checked in accordance with approved procedures.

f. Area Posting and Radioactive Material Labeling

10 CFR 20.1902 specifies the requirements for posting radiation areas, high radiation areas, and storage areas, and for labeling containers of radioactive materials.

Posting of entrances into restricted areas and the labeling of radioactive material containers within the restricted area were observed during tours of the facility. All postings of areas appeared to be adequate. Labeling of radioactive material appeared to be generally adequate and in compliance with applicable regulations.

g. Calibration of Instruments

10 CFR 20.1501(b) requires the licensee to ensure that instruments and equipment used for quantitative radiation measurements are calibrated periodically for the radiation measured.

The inspector reviewed the 1994 and 1995 calibration records for select area monitors (Control Room, Fuel Pool, and Demineralizer), stack monitors (particulate and gas), VAMP, and CAM instruments used at the reactor facility. The inspector determined that the instruments were being calibrated at the required frequency and in accordance with approved procedures.

No violations or deviations were identified.

5. Environmental Protection Program (40750)

a. Annual Report

TS 6.7.5 requires an annual operating report covering the previous year to be submitted to the NRC Region II Regional Administrator no later than August 31st of each year.

The inspector reviewed the licensee's Annual Report covering the period of July 1, 1994 through June 30, 1995. It was noted that the report had been submitted within the time frame required by the TS.

b. Liquid Effluents

TS 6.7.5.f requires that a summary of the nature and amount of radioactive effluents released or discharged to the environs be included in the report.

The inspector reviewed the licensee's Annual Report for 1994-95 to ascertain whether releases of liquid and gaseous radioactive material to the environment were within regulatory requirements. The quantities of radioactive material released via the liquid effluent pathway are summarized below:

LIQUID EFFLUENTS RELEASED DURING 1994-95

Qtr	Total uCi Released	Total Vol. Released	Diluent Liters	uCi Tritium Released
1st	78	1.10E4	8.50E5	2
2nd	13	9.40E3	2.00E4	16*
3rd	40	1.70E4	1.00E5	38
4th	32	6.80E3	2.00E4	29

*During a discussion with the AD and RHP on June 20, 1996, they informed the inspector that the number of uCi of tritium released during the 2nd quarter was actually 11 not 16. A corrected page for the Annual report will be issued by the end of June to reflect the correct number.

For the 1994-95 reporting period, a total of 163 uCi of all nuclides were released and a total of 85 uCi (the correct total is 80 uCi) of tritium were released. All liquid released, when diluted by campus water (2.80E6 liters per day), resulted in activity less than 1 E-7 uCi/ml (10 CFR 20 limit).

During a discussion with the licensee, the inspector was informed that the liquid effluent discharges failed to include a solubility test as required by 10 CFR 20.2003(a)(1). The licensee recognized this failure and the licensee ceased controlled releases of liquid effluent to the sanitary sewer in December 1995.

The licensee provided the following details: The PULSTAR reactor facility ceased controlled releases of liquid effluent to the sanitary sewer in December 1995. This conscious decision was made when the Associate Director of the Nuclear Reactor Program and the RHP reviewed the requirements of 10 CFR Part 20 with respect to liquid effluent discharges and both staff members realized PULSTAR procedures do not include a test for solubility as required in §20.2003(a)(1). This occurred following the annual TRTR meeting and NRC IN-94-07 "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR 20" could not be located at the PULSTAR facility. Both the RHP and AD recalled receiving the information notice, but could not recall the contents. A copy was requested and received from NRC Region II. Following review of the information notice in mid December 1995 and both the RHP and AD agreed to cease discharges until the solubility criteria could be met. An effort was initiated to design a water purification system which is currently under construction.

The PULSTAR facility liquid effluent discharges prior to December 31, 1995, did not comply with the solubility criteria as specified in 10 CFR 20.2003(a)(1). This oversight was primarily due to two independent factors:

- IN-94-07 was issued in January 24, 1994, which corresponds to a time when PULSTAR staff attention was focused on the early stages of the PULSTAR reactor unaccounted water loss outage.

- Letters of Understanding with the City of Raleigh for discharging to the sanitary sewer created the expectation that applicable regulations were met.

The PULSTAR reactor was shutdown in late November 1993 when an unaccountable water loss was detected. It was determined with certainty that the water loss was to the environment from an

underground primary piping network. The focus of the PULSTAR staff during these months was the repair effort and environmental sampling which was required to demonstrate the absence of ground contamination.

The AD receives the NRC INs and disseminates pertinent copies to the RHP and Chief Reactor Operator for routing to the staff. The AD recalls receiving this notice and sharing it with the RHP. The on-going effort with the facility repairs and reporting requirements prevented the RHP and AD from devoting adequate time to review IN-94-07. Subsequently, this IN was misplaced and forgotten.

The City of Raleigh and NCSU established a "Special Compliance Agreement" on September 29, 1994, for liquid discharges to the sanitary sewer. This agreement specifically addresses discharges from the PULSTAR reactor and states:

> "Nuclear Engineering- Burlington Labs - Permit not required, monthly radiation levels will be submitted to [the] City of Raleigh, permit may be required in the future based on monitoring results"

The RHP communicated with the City of Raleigh on a routine basis reporting on our discharge practices and analysis results. A City of Raleigh Waste Water official visited the PULSTAR facility and the RHP discussed with him the facility practices.

This on-going interaction with the City of Raleigh and the quantitative reports provided to the City complied with the City's discharge agreement. As a result, the RHP and AD incorrectly assumed that by meeting the City's discharge agreement all other applicable requirements would be met.

Later, during the November 1995 TRTR meeting, the AD was reminded of the solubility issue and began discussions and reviews with the RHP when he returned from the meeting.

The PULSTAR staff worked with Nuclear Engineering students to design a water clean-up system in the Spring 96 semester. A system has been designed and filtration components meeting the guidance in IN-94-07 have been ordered. The system is expected to be operational in approximately two weeks.

The PULSTAR facility will not discharge to the sanitary sewer until the filtration system is operational and the solubility criteria in 10 CFR 20.2003 and described in the IN 94-07 is met.

The licensee was informed that the failure to perform tests for solubility as required by 10 CFR 20.2003(a)(1) was a violation. However, this violation will not be subject to enforcement action

because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B of the Enforcement Policy.

NCV 50-297/96-002-01: Failure to perform tests for solubility as required by 10 CFR 20.2003(a)(1).

c. Gaseous Effluents

Based on a review of the licensee's records, the inspector determined that the total quantity of radioactive gaseous effluents released during 1994-95 was 1.25 Curies. The yearly average concentration of Ar-41 released from the reactor facility exhaust stack during the 1994-95 reporting period was 1.52E-8 uCi/ml. Through analysis of the stack filters, the licensee found that there was no particulate activity indicated on any filter during the reporting period.

The inspector determined that all radioactive effluent releases were within the federal regulatory limits.

b. Environmental Gamma Exposures

TS 6.7.5.i requires that the licensee provide data in the annual report concerning the results of environmental surveys performed outside of the facility.

The environmental parameter monitored for the PULSTAR reactor facility was that of direct radiation from the facility and from gaseous effluents via a system of five TLDs located on the rooftops of campus buildings along with the air monitoring equipment used for environmental air sampling. Exposures were integrated over a three month period at each of the air monitoring stations with a control station located in the David Clark Laboratories. The data illustrated that the observed exposures are those expected to be produced by background radiations in that specific area of North Carolina.

Based on the results of the analyses of the environmental sampling performed, the licensee concluded that the data obtained during the reporting periods did not show any fission product activities. The licensee determined that the reactor facility was being operated safely and there were no releases of fission products into the environment.

One NCV was identified.

6. Transportation (40750)

10 CFR 71.5 requires that each licensee who transports licensed material outside the confines of its plant or other place of use comply with the applicable requirements of the DOT in 49 CFR Parts 170 through 189.

The inspector verified that the licensee continued to transfer solid waste to the campus RSO for disposal. The transfers are made by means of a Radioactive Material Check Sheet which is filled out by the RHP or the Reactor Safety Specialist. A representative from the campus RSO then signs for the waste and accepts custody of the material. The transfer of waste material to the RSO appeared to be in compliance with procedure.

No violations or deviations were identified.

7. Emergency Preparedness (40750)

a. Emergency Plan

TS 6.3.a.4 requires that operating procedures pertaining to emergency conditions be written, updated periodically, and followed.

Part 10.4.1 of the licensee's Emergency Plan requires a biennial review of the Emergency Plan by the RSAC. Part 10.4.2 requires that emergency response agreements with support organizations be revised and updated at least every two years and incorporated into the biennial revision.

The inspector reviewed the current copy of the licensee's Emergency Plan which was Rev. 3 dated August 1, 1995 (effective date September 15, 1995). According to the RSAC Meeting minutes dated September 11, 1995, conditional approval was granted subject to offsite support agreements being updated. Final review and concurrence for Rev. 3 was granted in a March 1996 meeting. A review of the Emergency Plan indicated that the Letters of Agreement with various city, county, and State agencies had been updated and renewed as required.

The biennial audit of the Plan and emergency procedures was performed by the RSAC during November 1994. According to the auditors' report, included was the Plan, procedures, and drill results. The audit was summarized in a report by the RSAC Chairman dated December 19, 1994.

b. Emergency Response Training

PEP 6, "Training," Rev. 3, dated October 15, 1995, requires training be provided on an annual basis for new members and every two years for those who had initial training.

The inspector reviewed the training records for members of the PEO assigned to the Emergency Call Out List and verified that they had received the required training. The inspector also verified that with one exception, training had been offered or provided to offsite support personnel. These organizations included the

Raleigh Fire Department, NCSU Fire Protection, Raleigh City Police, Wake County Public Safety, North Carolina Division of Radiation Protection, and the campus Public Safety. The exception involved Rex Hospital. The inspector noted that PEP 6 entitled "Training" described the training requirements for the various emergency team members and offsite agencies (including Rex Hospital). The list of offsite agencies requiring training in accordance with Section 10.1.4 of the Plan, however, did not include the Rex Hospital. Licensee representatives were contacted on June 12, 1996, to obtain additional details associated with the status of Rex Hospital training and interface. In response to this matter, the licensee responsible for training informed the inspector as follows: 1) the exclusion of Rex Hospital from training was a fundamental oversight attributed to the inconsistency between the Plan and procedure listing of offsite agencies; 2) the training program for offsite organizations or agencies was based on the commitments in Section 10.1.4 of the Plan rather than PEP 6; 3) the hospital provided in-house training to personnel on February 21, 1994, and participated in a medical drill with the Shearon Harris Nuclear Power Plant on June 7, 1994; and 4) prior to the inspection, the licensee was unaware of the inconsistency between the Plan and PEP 6. The inspector questioned the licensee representative regarding what actions were planned and/or taken in response to this item. The inspector was informed that an attempt was made telephonically to contact the Hospital representative regarding participation in the 1996 drill, and to offer training for hospital personnel as specified in PRP 6. In addition, the Emergency Plan and/or PEP 6 will be revised for consistency based on criteria in RG 2.6, and ANSI 15.16 addressing training for offsite support groups. The licensee anticipated completing corrective actions by October 31, 1996. The inspector informed the licensee contact that corrective actions associated with this item would be tracked as an Inspector Followup Item (IFI) since the regulatory requirements in the Plan had been met.

IFI 50-297/96-02-02: Verify hospital training was offered and corrective actions completed to resolve inconsistency between Plan and procedure.

c. Maintenance of Emergency Equipment

HPP 1-2, "Maintenance of Self-Contained Breathing Apparatus (SCBA)," requires that total system performance checks be accomplished by either the manufacturer or an approved vendor annually, but at intervals not to exceed 15 months.

The inspector reviewed the maintenance records associated with SCBA (serial number T186790). Licensee records indicated that quarterly visual and performance checks were being performed by the HP staff as required. Also, the SCBA air bottles were being checked annually by campus Life Safety Services personnel. Total

system performance checks were also being completed annually as required. During the facility tour, the inspector examined the SCBA located inside of an emergency locker. No problems were noted. The cylinder gauge indicated full, and the equipment appeared to have been sanitized, and ready for use. The inspector also verified the operability of survey instruments (battery checks) and air sampling equipment. Based on limited sampling (inventory and operability check), the inspector determined that equipment, supplies, and instrumentation stored inside emergency lockers were not only operational, but there appeared to be sufficient inventories available for response personnel. The result of the facility tour was that emergency equipment was maintained in a state of readiness. As further confirmation regarding equipment operability checks, the inspector reviewed documentation for the annual calibrations performed during calendar year 1994 and 1995 (for area radiation monitors, stack monitors, VAMP, and the CAM).

e. Emergency Drills

TS 6.3.c required that drills on emergency procedures be conducted annually.

Section 10.2 of the Emergency Plan also requires: 1) that drills be conducted annually not to exceed fifteen months, 2) a written scenario be developed for the drill, and 3) a critique be held within one week of completion of the drill.

The inspector reviewed documentation to show since the last inspection of this area, the licensee had conducted an annual drill during 1994 and 1995. On October 1, 1994, the licensee conducted the annual drill which postulated a fuel handling accident with the release of fission products to the reactor pool, reactor bay, and environment. Participants included the NRP Radiation Protection Staff, the NCSU Radiation Protection office, and NCSU Public Safety. The 1995 annual drill was conducted on December 21, 1995. The scenario for the 1995 drill postulated an earthquake resulting in a primary coolant leak, and an uncontrolled release of hazardous materials. Following each drill, a critique was held to discuss what improvements could be made in the drill scenario and in emergency response. The critique brought out various areas for improvement. In addition to the annual drills that were conducted, an off hours notification drill was conducted on December 13, 1994, to demonstrate that the PEO could be staffed in a timely manner. According to documentation, the drill objectives were met. During the review of past drills, the inspector noted that the Rex Hospital staff had not participated in past drills or other training opportunities provided by the licensee. The inspector discussed with the licensee the current agreement with the hospital and the importance of periodic participation during drills to review the interface and coordination during a simulated

rather than actual emergency. The inspector informed the licensee of the Plan commitment to train and or offer training to various organizations in Section 10.1.4 of the Plan and Section 5.1 of PEP 6. The inspector was informed that the last drill participation for hospital personnel was June 1994 with Shearon Harris Plant. In response to the inspector's comments regarding drill participation, the licensee representative indicated that Rex Hospital will be contacted for participation in the 1996 exercise.

Based on the selected review of programmatic aspects of emergency planning, the licensee's program appeared to be maintained in a state of readiness for responding to various types of accidents.

One IFI was identified.

8. Review of Research Reactor Terminated Licenses (40750)

On October 1, 1955, NCSU was licensed to operate a homogeneous reactor up to a power level of 100 watts when the AEC issued License No. R-1. The facility was used for training and related activities. In December of 1962, the licensee wrote a letter to the AEC indicating that it was no longer economically feasible to continue operation of the reactor and that the space was needed for other projects. Subsequently, the AEC issued an Order to Authorize Dismantling of the reactor on August 12, 1963. The reactor was dismantled and component parts, excluding the shielding blocks, some graphite blocks, and the radium-beryllium start-up source, were stored on site until a transfer was arranged to Mississippi State University. A Request for Termination of Facility License No. R-1 was submitted to AEC on August 23, 1965. The licensee indicated that the appropriate air samples, contamination surveys, and radiation surveys were performed during and after the dismantling of the reactor.

A review of this information by ORAU in 1991 indicated that no survey data was available in the docket file concerning the dismantling of this reactor. A search of the available records at the licensee's facility did not reveal further information on this matter. Therefore, it was decided to perform whatever surveys were possible to determine the current status of the site where the reactor had been located; in Room 117 of the Bureau of Mines Building.

As a result, the inspector and a licensee representative visited the Bureau of Mines Building on December 6, 1995 and May 24, 1996, to perform radiation and contamination surveys of Room 117 and the surrounding areas. The licensee performed the radiation measurements using a Ludlum Micro-R meter, Model 19, and a Ludlum RM-14 with a 210-T probe. It was noted that the background was 5 uR/hr and 20 cpm. The survey was initiated after entering the front door of the building. The front hallway was surveyed, as well as Room 117, surrounding offices,

and the areas directly under and to each side of Room 117 in the "basement." The readings were in the range of 5-7 uR/hr as indicated below:

Area Surveyed	Survey Results in uR/hr		Contact Results in cpm
Front hallway of building	5.0 - 7.0[1]	5[2]	20[3]
Rm 117 - located against back wall	5.0 - 6.0	5	20
Areas on each side of Room 117	5.5 - 6.5	5	20
Area below Rm 117 - basement	5.5 - 6.0	5	20
Areas on each side of Rm 117 - basement	5.0 - 6.0	5	20

Note:
1. Measured on December 6, 1995 Ludlum Micro R meter calibrated June 14, 1995
2. Measured on May 24, 1996 Ludlum Micro R meter SN 21561 calibrated Decemberr 13, 1995
3. Measured on May 24, 1996 RM 14 HP210T probe SN 8795 calibrated January 3, 1996

No violations or deviations were identified.

9. Action on Previous Inspection Finding

(Closed) VIO 50-297/94-01-03: Failure to comply with TS 6.3.a.8 which requires changing out the CAM filters weekly and for analyzing the filters a second time.

The inspector reviewed the corrective steps outlined in the licensee REPLY TO NOTICE OF VIOLATION dated August 15, 1994. A limited selective sample of results using Procedural Rev. 4 to HP 20-11 indicated satisfactory adherence to the requirements (see Paragraph 4(d) for additional details).

10. Exit Interview

The inspection scope and results were summarized on May 24, 1996, with those persons indicated in Paragraph 1. On June 18, 1996, the RHP was informed via a teleconference exit that following further management review of training for offsite medical support agency, no violation occurred. However, the corrective actions taken in response to this matter will be tracked as an IFI. The licensee's emergency preparedness program was maintained in a state of readiness. Training of the facility staff and other radiation workers appeared to be adequate. The inspector noted that the external exposures received by facility personnel were well within the established administrative and federal

limits. The high degree of cleanliness and organization of facility equipment and materials was noted. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection.

On June 20, 1996, the AD and RHP informed the NRC of an error in the Liquid Effluents portion of the Annual Report. A corrected page will be issued by the licensee.

Item Number	Status	Description and Reference
50-297/96-02-01	Closed	NCV - Failure to perform tests for solubility as required by 10 CFR 20.2003(a)(1) (Paragraph 5(b).
50-297/96-02-02	Open	IFI - Verify hospital training was offered and corrective actions completed to resolve inconsistency between Plan and procedure (Paragraph 7.b).
50-297/94-01-03	Closed	VIO - Failure to comply with TS 6.3.a.8 which requires changing out the CAM filters weekly and for analyzing the filters a second time (Paragraph 9).

11. Index of Abbreviations Used In This Report

AD	Associate Director
AEC	Atomic Energy Commission
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
Ar-41	Argon-41
CAM	Continuous Air Monitor
CFR	Code of Federal Regulation
CPM	Counts Per Minute
DOT	Department of Transportation
EHS	Environmental Health and Safety
HPP	Health Physics Procedure
HPT	Health Physics Technician
IFI	Inspector Followup Item
IN	Information Notice
IR	Inspection Report
MW	Megawatt
NCSU	North Carolina State University
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
NRP	Nuclear Reactor Program
NVLAP	National Voluntary Laboratory Accreditation Program

PEO	PULSTAR Emergency Organization
PEP	PULSTAR Emergency Procedure
RG	Regulatory Guide
RHP	Reactor Health Physicist
RPC	Radiation Protection Committee
RPO	Radiation Protection Officer
RSAC	Reactor Safety and Audit Committee
RSAG	Reactor Safeguards Advisory Group
RSO	Radiation Safety Officer
REV	Revision
SCBA	Self Contained Breathing Apparatus
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminscent Dosimeter
TRTR	Test Research and Training Reactor
TS	Technical Specification
uCi	microCurie
uCi/ml	microCurie per milliliter
uR/hr	microRoentgen per hour
VAMP	Victoreen Area Monitor Packet
VIO	Violation