

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-288/85-01

Docket No. 50-288

License No. R-112

Licensee: Reed College
Portland, Oregon 97202

Facility Name: Reed Reactor Facility

Inspection at: Portland, Oregon - Reed College

Inspection conducted: March 27-29, 1985 and telephone discussions on April 11 and 22, 1985

Inspector:

M. Cillis

M. Cillis, Radiation Specialist

5/7/85

Date Signed

Approved by:

G. P. Yuhos

G. P. Yuhos, Chief

Facilities Radiological Protection Section

5/9/85

Date Signed

Summary:

Inspection on March 27-29, 1985 and telephone discussions on April 11 and 22, 1985 (Report No. 50-288/85-01):

Areas Inspected: Routine unannounced inspection by a regionally based inspector of facility operations, radiation protection program, environmental monitoring program, emergency preparedness program, review and audits, standard operating procedures, training, surveys, operating logs and records, transportation activities, reactor operator and senior reactor operator requalification program, surveillances, experiments, organization and a tour of the facility. The inspection involved 34 hours of on-site time by one inspector.

Results: Of the fourteen areas inspected, three apparent violations were identified: failure to post notices to workers pursuant to 10 CFR 19.11 (paragraph 9); failure to implement the NRC approved operator requalification program (paragraph 4(a)), and operation of the facility by four individuals who had not been recertified after a four month absence as prescribed in Part 55.31(e), in that they had not performed the functions of a reactor operator for periods of four months or more and were permitted to manipulate the controls of the Reed TRIGA facility without certification or demonstrating to the Commission that their understanding and knowledge of the facility was satisfactory (paragraph 4(b)).

Details

1). Persons Contacted

- Dr. Paul Bragdon, President
- Dr. M. Cronyn, Vice President Provost
- + J. Frewing, Chairman, Radiation Safety Committee
- +,*Dr. M. Kay, Director, Reed Reactor Facility (RRF)
- D. M. Richardson, Senior Reactor Operator
- *Dr. D. Hoffman, Chairman, Reactor Operations Committee
- *Dr. C. R. Keedy, Senior Reactor Operator
- +,*Q. Hanley, Reactor Supervisor
- +,*J. Shohet, Reactor Operator
- + T. M. Mitts, Senior Reactor Operator

*Denotes those individuals attending the exit interview on March 29, 1985.

+Denotes those individuals that were contacted by telephone.

In addition to the individuals noted above, the inspector met with and interviewed other members of the licensee's staff.

2) Organization and Responsibilities

The organizational structure for operation and administration of the Reed College research reactor was reviewed. Additionally, the responsibilities of the staff as described in the licensee's administrative procedures were examined.

The examination disclosed that the administrative procedures have not changed since 1974.

Among the responsibilities assigned to the Director of RRF is the establishment of administrative controls through reactor regulations that are consistent with the NRC regulatory requirements and other state or local governmental regulations. The Director of RRF is also responsible for the direct enforcement of said regulations. Similarly, the Reactor Supervisor, Health Physicist, operators, and the Reactor Operations (ROC) and Radiation Safety Committee's (RSC) responsibilities are described in the licensee's Administrative Procedure.

The inspection disclosed the following:

- ° There were fourteen NRC licensed operators and senior operators. Seven are undergraduate students at Reed College while the remaining seven are from outside organizations. The Reactor Supervisor is an undergraduate student.
- ° The Health Physicist is from an outside organization. The Reactor Supervisor informed the inspector that the Health Physicist has not performed the functions of a health physicist, as defined in the

Administrative Procedure, since he was appointed the position of reactor supervisor (e.g. approximately 2½ years ago). The Supervisor stated that the Health Physicist did attend the RSC and ROC meetings. The Director of RRF confirmed the Reactor Supervisor's observations, stating that he and/or the operators performed most of the health physics functions.

- ° The Director of RRF has other major responsibilities. They are: Reed College Radiation Safety Officer, Chairman of the Reed College Isotopes Committee, Ex-officio member of the ROC and RSC, Reed College Instructor, and Implementation of the RRF Emergency Plan and reactor operators/senior reactor operators training and requalification programs.

The review disclosed that the Director of RRF, Reactor Health Physicist, Reactor Supervisor and Reactor Operators were not adequately administering their responsibilities in accordance with the Administrative Procedure. This observation was discussed with the President of Reed College and at the exit interview. The inspector cited the findings in this and subsequent paragraphs of this report as examples in which the responsibilities of the staff were not being effectively administered. This item will be examined on a subsequent inspection (85-01-01).

No violations or deviations were identified.

3) Logs and Records

The inspector examined the following facility logs and operational records for the period of 1982 through 1984:

- ° Console Log
- ° Environmental Log
- ° Startup Check List
- ° Shutdown Checklists
- ° Procedure Change Notices
- ° Reactor Operator's Records
- ° Weekly, Monthly, Bi Monthly, Semi-Annual and Annual Checklists. These check lists are used for verifying that the Technical Specification surveillances have been performed (e.g. yearly calibrations, semi-annual rod drop times, weekly pool water analysis, etc).
- ° Health Physics Survey Records
- ° Operator Requalification Program Training Records
- ° Maintenance Log

The following observations were made:

- ° Approximately 20% of the check lists contained omissions. In most instances the Reactor Supervisor's and Reactor Director's reviews (certified by their signature) of the checklists were made anywhere from two to seven months after the check list items were completed.
- ° None of the check lists clearly distinguish Technical Specification requirements.
- ° The supply of "typed" copies of the bi-monthly check list was depleted in January 1984. The form, which contains 8 line items that must be verified every two months, has been hand written since January 1984. The licensee's staff still includes the need for performing the portable monitor calibrations on this form even though the calibration frequency had been changed to every six months.
- ° Verification of Technical Specification, Section D.2 (e.g. weekly sampling of pool water) might be found on any one of three different records.
- ° The Environmental Monitoring Log book for 1985 did not indicate that environmental samples were taken in January of 1985. The reactor supervisor informed the inspector that the January 1985 sampling was conducted but not documented.
- ° The July 1984 environmental soil sample results had not been documented in either the Health Physics or Environmental Log even though the sample analysis had been completed in the latter part of 1984.
- ° Dates and times were not included in Reactor Operator's Records.
- ° Numerous log entries were unsigned.
- ° Log entries are written in pencil and are illegible in some cases.
- ° Reactor Operator's Records are not being maintained as required by a policy that was established by the Reactor Director. Specifically some operators are not recording reactivity manipulations.
- ° The "procedures review" verifications are not being recorded by operators as required by a unwritten policy that was established by the Reactor Director.
- ° There were several occasions where samples were placed in the core and removed from the core where no log book entries were made as required by SOP-51 "Running Rabbits".
- ° SOP 10 "Writing in Log Books" requires that any entry of consequence should be signed by the person marking that entry. The inspector noted that most entries (>50%) are initialed rather than signed.

A review of licensee audit reports identified similar observations to that made by the inspector. The inspector's observations were brought to the licensee's attention at the exit interview. The inspector emphasized the importance for maintaining accurate, legible and meaningful logs as is also stressed in SOP-10. This item will be examined during a subsequent inspection (85-01-02).

No violations or deviations were identified.

4) Reactor Operations

a) Operator Requalification Program

The NRC approved Reed Reactor Facility (RRF) Operator Requalification Program was examined. The program was initially approved on March 12, 1974 and was last revised on November 27, 1980. The program is designed to meet the requirements as set forth in 10 CFR Part 50.54(i), "Conditions of License" and 10 CFR Part 55, Appendix A, "Requalification Programs for Licensed Operators of Production and Utilization Facilities."

Reactor operators and senior reactor operators training records, reactor console logs, reactor operator licenses and other documents related to this topic were reviewed.

10 CFR Part 50.54 "Conditions of the License", Subparagraph (i-1) states in part:

"Holders of operating licenses in effect on September 17, 1973 shall implement an operator requalification program which, as a minimum, meets the requirements of Appendix A of Part 55 of this chapter which was submitted for approval by the Atomic Energy Commission."

10 CFR Part 55, Appendix A, Section 7 states in part:

The licensee's approved program pursuant to 10 CFR Part 55, Appendix A, Section 7 states in part:

- ...1) "Each Reactor Operator (RO) and Senior Reactor Operator (SRO) will be required to take a requalification examination once every year."
- ...2) "Each SRO and RO will be responsible for making at least 10 reactivity control manipulations per year."
- ...3) "Once every six months a meeting of all reactor operators and senior reactor operators will be held to make them aware of recent changes in the Reed College Reactor License, Facility design changes, recent abnormal occurrences, and changes in emergency procedures."

Section II, Part 2.2 of the RRF Administrative Procedure (AP) assigns the reactor supervisor the responsibility for directing the activities of reactor operators. Section III of the Administrative

Procedure requires that at least two persons must be present within the Reactor facility whenever the reactor is not shutdown. Additional policies established by the Director are:

- ° Each RO and SRO are required to maintain their own personal "Reactor Operator's Records" current, describing the dates, times and number of reactivity control manipulations they perform.
- ° To sign the procedure change log, as an acknowledgement that they have reviewed all procedures that were changed since they last performed reactivity control manipulations of the RRF.
- ° To acknowledge in the control console log that they have reviewed all entries in the log since they last performed reactivity control manipulations.

The examination, which included a review of records and discussions with the Director of RRF, Reactor Supervisor and Operators, disclosed irregularities with the licensee's reactor operators requalification program. The following observations were noted:

- ° The inspector noted that at least nine of the currently licensed RO's and SRO's had special conditions stipulated in their respective operators licenses. The conditions required the use of corrective lenses whenever the involved individuals manipulated the controls of the facility. One of the nine also had a license condition requiring that another individual be present when he was assigned to manipulate the facility controls. This requirement was added to the individuals SRO license because of a medical problem.

Neither the reactor director or reactor supervisor were aware of the licensed conditions that were stipulated in the licenses issued to the RRF staff. The reactor director was confident that the license conditions were being met because of the policies established in the RRF administrative procedures; however, there was no way for verifying this because the name of the second (or backup person) individual in attendance at the reactor facility is not normally documented in the licensee records. Nor is the second individual made aware of any special conditions that may be included in an operator's license.

- ° The reactor supervisor stated he found it extremely difficult trying to schedule reactor operations in a manner that would assure that the qualifications and/or recertification of the RO's and SRO's were maintained in accordance with 10 CFR Part 55.31. The reactor supervisor stated he was no longer attempting to schedule the activities of RO's and SRO's that are from outside organizations.
- ° Only a few of the RO's and SRO's maintain the "Reactor Operator's Records" current.

- ° Only a few of the RO's and SRO's verify they have reviewed all procedure changes that were issued since they last operated the reactor.
- ° Only a few of the RO's and SRO's verified that they have reviewed the entries in "reactor console log" since they last operated the reactor.
- ° At least one SRO (Docket No. 55-9442) has not taken a yearly SRO examination since May 1983.
- ° Two operators did not maintain their reactor operator license (Docket Nos. 55-9444 and 55-7797) current. RO, Docket No. 55-9444, did not perform reactor control manipulations since receiving his license on September 6, 1983 while SRO, Docket No. 55-7797, did not operate the reactor since May 14, 1984. The Reactor Director did not become aware of this problem until January of 1985, at which time he felt they were no longer qualified as operators. One of the individuals decided not to renew his license while the other is in the process of requalifying.
- ° The inspector found portions of at least two requalification examinations that were not graded. This same observation was made in Inspection Report 50-288/83-01.
- ° Semi-annual (once every six months) meetings of the RO's and SRO's were not held between the period of November 1984 through January 1985. The reactor supervisor informed the inspector that he has never attended a meeting in which there was 100% attendance by the facilities licensed RO's and SRO's. One SRO informed the inspector that he had never attended any meetings during a two year period that he was a licensed operator.
- ° At least two reactor operators (Docket Nos. 55-7177 in 1983, 55-9442 in 1984) did not perform at least 10 reactivity control manipulations per year. Docket No. 55-7177 made only mode 3 reactivity control manipulations in 1983 and 55-9442 only made 5 reactivity control manipulations in 1984. Both individuals made the required amount of reactivity changes in the preceeding and subsequent years.
- ° There was no indication that an overview (audit) of the reactor operator requalification program was performed by either the Reactor Operations Committee or Radiation Safety Committee.

The inspector discussed the above observations with the Reed College President and the Reactor Director and at the exit interview. The inspector informed the licensee that failure to 1). provide the yearly reactor operators requalification examinations, (2) failure of reactor operators to perform at least 10 reactivity control manipulations, and (3) failure to hold RO's and SRO meeting at least once every six months was considered to be a violation of 10 CFR Part 50.54 (i-1) (85-01-03).

b) Conditions of Licenses

10 CFR Part 50.54, "Conditions of the License," Subparagraph (i) states in part:

"(i) Except as provided in § 55.9 of this chapter, the licensee shall not permit the manipulation of the controls of any facility by anyone who is not a licensed operator or senior operator as provided in Part 55 of this chapter."

Additionally, 10 CFR Part 55.31 states in part:

"(e) If a licensee has not been actively performing the functions of an operator or senior operator for a period of four months or longer, he shall, prior to resuming activities licensed pursuant to this part, demonstrate to the Commission that the knowledge and understanding of facility operation and administration are satisfactory. The Commission may accept as evidence, a certification by an authorized representative of the facility licensee by which the licensee has been employed."

An examination of the reactor console logs and reactor operator's records was conducted by the inspector for the purpose of verifying compliance with 10 CFR Part 50.54(i) and 10 CFR Part 55.31(e). The results of the examination were confirmed by the RRF Director and in discussions held with the licensee's operations staff. Additional inspector observations related to this topic are discussed in paragraph 4(a) above.

The examination disclosed the following:

- ° Four individuals, identified as Docket Nos. 55-8696, 55-9442, 55-7177, and 55-7180 were allowed to perform reactivity control manipulations of the Reed Reactor Facility even though they had not performed the functions of a reactor operator for a period of four months or greater. None of the individuals were recertified by an authorized licensee representative nor did they demonstrate to the Commission that their understanding and knowledge of facility operations were satisfactory. The individuals and respective dates involved are as follows:

<u>Operator</u>	<u>Dates</u>
1). Docket No. 55-8696	April 26, 1983 through September 29, 1983
2). Docket No. 55-9442	January 12, 1984 through June 26, 1984 and June 26, 1984 through January 14, 1985
3). Docket No. 55-7177	May 16, 1984 through October 12, 1984

4) Docket No. 55-7180

August 25, 1983 through
March 23, 1984 and June 5, 1984
through February 15, 1985

The reactor director informed the inspector that he had left it up to the individual operators to maintain their qualifications current. The inspector informed the Reactor Director of the 10 CFR Part 50.54(i) requirement which assigns the licensee the responsibility for disallowing the manipulations of the controls of the facility by anyone who is not qualified or considered to be licensed. The inspector also reminded the Reactor Director of the responsibility assigned to him by the licensee's Administrative Procedures. The Administrative Procedure states that the Reactor Director is responsible for enforcing NRC and other governmental agency regulations.

The above observation was discussed with the President of Reed College, the RRF Director and at the exit interview. The inspector informed the licensee that failure to disallow the manipulation of facility controls by individuals who had not performed that function for a period of four months or greater was an apparent violation of 10 CFR Part 50.54(i) (85-01-04).

c) Experiments

The licensee's reactor experiment program has remained essentially unchanged since the previous inspection. No new or special experiments had been performed since the previous inspection. Selected records were examined and were found to be consistent with approved experiment procedures by cognizant licensee personnel.

No violations or deviations were identified.

d) Standard Operating Procedures (SOP's)

Written procedures required for the operation of the RRF pursuant to Technical Specifications, Section I.5, were examined. The inspector found that approved copies of SOP's were available at the reactor control console. All of the procedures, with the exception of those required for emergency and abnormal conditions were last revised on May 14, 1981.

Discussions with the Director of RRF and the Reactor Supervisor disclosed that new emergency procedures were being developed. The Director of RRF did not expect that these procedures would be approved by May 1985 as previously committed to NRC Region V staff on November 11, 1984.

The Reactor Supervisor expressed some concern with the review and approval process of SOP's. The Reactor Supervisor stated that seven procedure revisions made in early 1984 were submitted to the Reactor Operations Committee in July 1984 and still had not been approved at the time of this inspection. The reactor supervisor stated that

such delays were not unusual because of the infrequent meetings of ROC.

The inspector noted there were inconsistencies in some procedures and that the licensee's staff was not following procedures. Examples of these observations are discussed in other sections of this report (e.g. paragraphs 3, 4, 7 and 11).

Some SOP's reviewed failed to provide specific instructions regarding the frequency for performing certain actions and where to record the data. An example is SOP-20, "Environmental Monitoring". The procedure fails to identify the frequency for obtaining soil and water samples and where to record the sample analysis results. Discussions with the Reactor Director and Reactor Supervisor indicated that water samples are normally obtained in January of each year while soil samples are obtained in July of each year. The fact that the samples are taken is recorded in the Environmental Log book; however, the sample analysis results are recorded in the Health Physics Log book.

An SOP for the calibration of portable instruments is not yet available even though the licensee's staff agreed such a procedure was necessary in 1982 and again in 1984. Discussions related to this topic are provided in Region V Inspection Report 50-288/82-02 and the Reactor Operations Committee meeting minutes of November 15, 1984.

The inspectors observations were brought to the attention of the President of Reed College and the licensee's staff attending the exit interview. The inspector emphasized the need for (1) developing emergency plan procedures, (2) procedure compliance (3) developing consistent procedures, and (4) expediting the procedure review and approval process.

This item will be examined during a subsequent inspection (85-01-05).

No violations or deviations were identified.

5) Review and Audit

The inspector reviewed the minutes of the Reactor Operations Committee (ROC) and Radiation Safety Committee (RSC) meetings held since April of 1983. The charters of the two committees, which are described in Part II of the RRF Administrative Procedures, were also reviewed. Additionally, discussions related to this topic were held with the Chairmen of the two committees, the Reactor Director, and the Reactor Supervisor.

The following observations were identified:

- ° The Chairman of the ROC resigned approximately two weeks prior to this inspection. A new Chairman, from the Reed Faculty staff was appointed during this inspection.

- ° Both the Reactor Director and Reactor Supervisor are non voting ex-officio members of both committees.
- ° The only Reed member having voting privileges on either committee is the Chairman of the ROC. Remaining members of both committee's are from outside organizations. The Reactor Supervisor stated that the ROC makeup has resulted in delays in review and approval of facility business.
- ° Neither committee charter describes what, if any, audit function they are responsible for performing.
- ° The ROC's charter references 10 CFR Part 20 as the governing regulatory requirement for performing reviews/evaluations of any problems that may be constituted as an unreviewed safety question. 10 CFR 50.59 is the correct regulatory reference.
- ° Neither committee tracks the status of audit findings.
- ° Both committees have, over the past two years, been attempting to redefine their responsibilities. As a result, the committee's surveillance and audit activities have become less frequent and affairs requiring immediate attention have suffered, e.g. such as approval of the revised Emergency Plan.
- ° The inspector noted that several ROC meeting minutes held over the past two years failed to indicate who was present.

The inspector observed that the ROC has not been fully utilized as an effective tool in assuring that the RRF operations are performed in accordance with the appropriate regulatory requirements and facility policies. The inspector observed that the effectiveness of the RSC was also in need of improvement.

The above observations were discussed at the exit interview.

No violations or deviations were identified.

6) IE Information Notices (IN)

Discussions with the Reactor Supervisor disclosed that he had evaluated IN 84-21 "Inadequate Shutdown Margin". The evaluation, which was made for the purpose of determining its applicability to RRF activities, was completed on May 6, 1984.

The Supervisor stated that he had concluded that the concerns described in the IN applied to the RRF. The Supervisor's evaluation and recommendations were provided to the Radiation Safety Committee in July 1984 for resolution. The Radiation Safety Committee assigned another member of the Committee and Director of the RRF to resolve the Supervisor's evaluation.

A discussion was held with the Director of the RRF for the purpose of determining the status of the recommendations made by the Reactor

Supervisor with respect to the IN. The Director stated that he was not sure whether he agreed with the Reactor Supervisor's evaluation of this IN; however, neither he or the other committee member had completed their actions for resolving this matter.

The above observation was brought to the attention of the licensee at the exit interview. The inspector emphasized the purpose and importance for evaluating IN's in a timely manner.

No violations or deviations were identified.

7) Transportation Activities

Radioactive materials produced by the Reed Reactor Facility are possessed under the licensee's by-product materials license issued by the State of Oregon. All transfers and/or shipments of radioactive material other than spent fuel are made under the state license. The licensee has not made any shipments under the NRC license since the previous inspection.

No violations or deviations were identified.

8) Emergency Preparedness

Discussions were held with the licensee's staff for the purpose of determining the status of their emergency plan which was submitted to the NRC November 1, 1983 for approval pursuant to 10 CFR Part 50.54(r). Similar discussions were held with the licensee on November 11, 1984. An NRC letter sent to the licensee on June 22, 1984 advised the licensee to revise the plan to include the required information identified by the NRC's Emergency Plan Review. The June 22, 1984 letter requested the licensee to submit their revisions to the NRC within 60 days of June 22, 1984.

During the November 11, 1984 meeting with Region V representatives the Director of RRF agreed to:

- a). Respond to the NRC June 22, 1984 letter by January 7, 1985.
- b). Implement emergency plan procedures for approval by May 1985.

As of this inspection, the examination disclosed that the licensee had not responded to the NRC's June 22, 1984 letter. Nor, had any progress been made toward the preparation of emergency procedures as agreed to during the November 11, 1984 meeting.

Discussions with the Director of the RRF revealed that he was unaware that the Reactor Supervisor had prepared a reply to the NRC's June 22, 1984 letter.

Discussions held with the Chairman of the RSC revealed that the on several occasions RSC had assigned the Director of RRF to resolve the information requested by the NRC's June 22, 1984 letter. The RSC chairman added that the Director of RRF response to the RSC pursuant to the assignment has been delinquent for quite some time.

A review was conducted for the purpose of determining if the licensee implemented their existing emergency plan pending the approval of their plan that was submitted on November 1, 1983. Based on this review it appears that the licensee met the minimum requirements of their current plan.

The above observations were brought to the attention of the President of Reed College, Chairman of the ROC and RSC, Director of RRF and at the exit interview. The inspector emphasized the importance of resolving the NRC questions, establishing procedures and training the staff. This matter will be examined during a subsequent inspection (85-01-06).

No violations or deviations were identified.

9) Facility Tour

The inspector toured the facility and conducted independent radiation surveys with an Eberline, Model RO-2 ion chamber radiation detection instrument, S/N 837, calibrated on February 25, 1985.

During the tour the inspector noted that the licensee's posting and labeling practices appeared to be consistent with 10 CFR Part 20.203, "Caution signs, labels, signals and controls" and 10 CFR Part 20.204, "Same: Exceptions".

The inspector noted that copies of Form NRC-3 were posted throughout the facility; however, information related to the locations of the documents specified in 10 CFR Part 19.11(a), "Posting of Notices to Workers" were not posted as required by 10 CFR Part 10.11(b) and/or 10 CFR Part 19.11(d). This observation was brought to the attention of the Director of the Reed Reactor Facility and at the exit interview. The inspector informed the licensee that failure to post pursuant to 10 CFR Part 19.11 was considered to be an apparent violation (85-01-07). The Director of RRF informed the inspector that the locations of the required documents would be immediately posted pursuant to 10 CFR Part 19.11.

10) Radiation Protection Program

a) Surveys

As part of the Daily Shutdown Check List the licensee performs a radiation survey. Procedure SOP-2, "Wipe Tests: How and When", 5/14/81, requires that a contamination (swipe) survey be conducted every two weeks.

The inspector reviewed radiation and contamination surveys taken between the period of January 1984 and March 1985. The following observations were made:

- ° Contamination surveys were obtained at frequencies ranging from every two weeks to intervals of up to six weeks.
- ° Only five swipes are normally taken. In a few exceptions as many as seven swipes may be taken and in most instances

(greater than 96%) the swipes are taken in the same locations. No contamination surveys are performed during special evolutions such as fuel inspection or control rod inspections. Nor are contamination surveys taken at the rabbit hood or in the counting room, e.g. during the handling of irradiated samples.

- ° The swipes are analyzed on a instrument (GM-counter) that is calibrated with a known standard at no set frequency (approximately once per year). The inspector noted that a performance check of the counting system is not performed prior to counting the swipes to confirm that the instrument response has not drifted from its initial calibration parameters. ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration", paragraph 4.7.3 recommends that source checks be made prior to each use, during intermitted use and at least several times a day during continuous use.
- ° The inspector noted that the licensee's contamination surveys were recorded in units (e.g. counts per minute) that are not consistent with that prescribed in 10 CFR Part 20.401(b), "Records of Surveys, Radiation Monitoring, and Disposal" or as defined in 10 CFR Part 20.5, "Units of Radioactivity".
- ° In several instances, the inspector noted that the radiation levels recorded for the Ion Exchange Tank read lower upon reactor shutdown than it did at reactor startup. The Director of RRF and Reactor Supervisor, who are responsible for reviewing the data, stated the readings on the tank should always read higher at shutdown. They had not identified the apparent inconsistency in their review process.
- ° Procedure SOP-18, "The Health Physics of High Radiation Areas", 5/14/81, requires that only the Director of the RRF or Health Physicist are the individuals authorized to work in a high radiation area. The inspector noted that work performed at the rabbit area on November 19, 1984, having radiation levels of 150 millirem/hour, was performed by an unauthorized individual. The Director of the RRF was not aware of the occurrence until it was brought to his attention by the inspector.

The above observations were brought to the licensee's attention at the exit interview. The need for improving their survey techniques and being more observant in review of records was emphasized.

No violations or deviations were identified.

b) Gaseous and Liquid Effluent Releases

The inspector held discussions with the licensee's staff and reviewed RRF records related to gaseous and liquid effluent releases. The examination disclosed that no liquid releases were made since the previous inspection and Argon-41 releases were well below the levels permitted by 10 CFR Part 20, Appendix B.

No violations or deviations were identified.

c) Personnel Radiation Dosimetry

Inspection Reports 50-288/82-02, paragraph 2(b) and 50-288/83-01, paragraph 2(b) described the licensee's personnel radiation dosimetry program. No significant changes were identified during this inspection, with the exception that the licensee was in the process of developing an in house testing and calibration program for pocket ionization chambers.

The inspector reviewed personnel dosimetry records for the period of January 1984 through March 1985. The doses recorded for whole body, extremities, and skin of the whole body were below the regulatory limits specified in 10 CFR Part 20.101(a) and Part 20.104.

No items of noncompliance were identified.

d) General Employee's Training (GET)

The inspector examined the licensee's GET program for the purpose of verifying compliance with 10 CFR Part 19.12, "Instructions to Workers". GET program lesson plans and attendance records were reviewed. The inspector concluded that the GET program, as described in Region V Inspection Report 50-288/82-02, continues to meet the requirements prescribed in 10 CFR Part 19.12.

No violations or deviations were identified.

e) Environmental Monitoring

The inspection disclosed that the licensee has implemented an environmental monitoring program. The program consists of a soil, sediment and water sampling program. The Director of RRF stated that the environmental monitoring program gave no evidence of changes in the environs due to reactor operations. Records pertaining to the program were examined by the inspector. Additional observations related to this topic are discussed in paragraphs 3, 4(d), and 5 of this report.

No violations or deviations were identified.

11) Instrument Calibration

a) Portable Instruments

10 CFR Part 20.201 "Surveys" requires that the licensee perform evaluations of the radiation hazard that may be present. Further, it requires that when appropriate such evaluations include measurements of the levels of radiation. Additionally, although not specifically required, good practices suggest that instruments used for radiation measurements be calibrated. ANSI N323-1978, "Radiation Protection Instruments Test and Calibrations" provides recommendations for a calibration program.

The inspector examined the licensee's Portable Monitor's Log used for documenting the calibration of portable radiation detection survey instruments. Also reviewed were the licensee's bimonthly check-list for the period of January 12, 1981 through January 6, 1985. Discussions were also held with licensee representatives for the purpose of determining if a standard operating procedure (SOP) for performing the calibrations was established as described in Region V Inspection Report 50-288/82-02, paragraph 2(d).

The examination disclosed the following:

- ° An SOP for calibration of portable survey instruments has not been established. The calibration methods described in the Monitor Log book were not performed in a consistent manner. Nor were the calibrations performed at a level that is commensurate with the recommendations provided in ANSI N323-1978.
- ° The licensee does not calibrate any instrument for measuring non-penetrating radiation.

The above observations were brought to the licensee's attention at the exit interview.

No violations or deviations were identified.

b) Fixed Instrumentation

Technical Specifications, Section G, "Radiation Monitoring" requires that an area radiation monitor (ARM) and a continuous air monitor (CAM) shall be operable in the reactor room when the reactor is operating. Section G of the Technical Specifications requires that the monitors be calibrated once each year. Section I.5.(a) requires that written instructions be in effect for checkout and calibration of the ARM's and air particulate monitors.

An examination of the applicable calibration procedure and the ARM and CAM log book was conducted. The inspector verified that the yearly calibrations of the monitors were accomplished. A visual inspection of the ARM's and CAM's was also conducted.

The inspector noted that two separate CAM's were available. Each is capable of isolating the ventilation system on a high air particulate channel alarm. One system monitors the stack releases while the other monitors the reactor high bay area. The Director of RRF stated that each CAM served as a backup to the other when one was inoperable. The CAM monitoring the stack is capable of monitoring gaseous and particulate activity whereas the reactor bay CAM only monitors for air particulate activity. It was noted that both CAM's were essentially the same except for the differences noted.

The examination disclosed that the procedures used for performing the calibrations required by the Technical Specifications were

significantly different from one another even though the monitors were essentially the same. The differences, as provided in SOP-30, "Calibration of the CAM" and SOP-32, "Particulate Stack Monitor" were brought to the attention of the Director of the RRF, Reactor Supervisor and were discussed at the exit interview. The licensee's staff stated the inspectors observations would be examined.

No violations or deviations were identified.

12) Exit Interview

The inspector met with the licensee's representatives (denoted in paragraph 1) at the conclusion of the inspection on March 29, 1985. The inspector summarized the scope and findings of the inspection. The licensee was informed of the violations described in paragraphs 4(a), 4(b) and 9.

The Director of RRF informed the Region V staff that all reactor operators who have not met the conditions of their license would be removed from licensed duties until the conditions of their licenses were met.

The inspector informed the licensee that the violations and other findings identified during the inspection indicate an apparent lack of management overview of reactor operations. The need for management support and involvement of the RRF was emphasized.