REPORT DETAILS

1. Persons Contacted

*R. Karam, Director, Neely Nuclear Research Center (NNRC)
R. Ice, Manager, Office of Radiation Safety (MORS)
E. Jawdeh, Health Physicist
N. Copeland, Hot Cell Supervisor

Other licensee employees contacted during this inspection included operators, technicians, and administrative personnel.

*Attended the exit interview on June 4, 1996.

2. Followup on Previous Noncompliances and Unresolved Items (92701, 92702)

a. Violation 94-02-01 (Closed)

This violation was cited because the licensee had applied an incorrect conversion factor to survey results which resulted in a failure to make a proper evaluation of the extent of radiation present following the neutron radiation survey performed in 1994. The licensee responded to this violation by letter dated October 13, 1994, and outlined their corrective actions.

During this inspection the inspector reviewed the corrective actions specified by the licensee and independently verified that the actions had been completed. This item is considered closed.

b. Violation 95-01-01 (Closed)

This violation was cited because the licensee provided inaccurate and/or incorrect data in the annual reports and because the licensee included incorrect information in the Safety Analysis Report submitted as part of their license renewal package. The licensee responded to this violation by letter dated August 3, 1995, and outlined their corrective actions.

During this inspection the inspector reviewed the corrective actions specified by the licensee and independently verified that the actions had been completed. This item is considered closed.

c. Unresolved Item (URI) 95-01-02 (Closed)

Technical Specification (TS) 4.2.a requires that the channels listed in Table 4.2 shall be calibrated as indicated. Table 4.2 specifies an annual known parameter source calibration.

TS 1.27 specifies that the frequencies of periodic surveillance tests, checks, calibrations, and examinations shall be performed within the specified intervals. These intervals may be adjusted by plus or minus twenty-five percent (± 25%).

This issue involved review of the calibration records of the Geiger-Mueller (GM) Gas monitor and Kanne ionization chamber for annual calibration. During an inspection in 1995, it was noted that the 1994 calibration records for the gas monitor and the Kanne ionization chamber were not available. The last calibration that was documented had been completed in October 20, 1993, and November 19, 1993 for the GM gas monitor and the Kanne ionization chamber respectively. During a teleconference on April 26, 1995, the licensee indicated that the calibrations had been completed on March 20, 1995.

During this inspection, the inspector reviewed the calibration records for the gas monitor and Kanne ionization chamber. It was noted that the instruments had been calibrated on March 3 and March 20, 1995, respectively. The inspector informed the licensee that the previous URI would be closed but that failure to complete the calibrations within the time frame required was an apparent violation of TS 4.2.a (Violation [VIO] 96-02-01).

d. URI 95-01-03 (Closed)

This issue involved review of the set point determination and requirements for the Kanne ionization chamber. During an inspection in 1995, it was noted that Procedure 9010, Kanne Chamber Calibration, Revision 5, dated February 10, 1994, did not provide an adequate basis for establishing the isolation set point for tritium (H-3). Since a limit for H-3 released was not explicitly specified, it was not apparent as to what concentration was used for the H-3 set point. The issue was left as an unresolved item during that inspection.

During this inspection, the inspector reviewed Procedure 9010 and the method for determining the set point or isolation point for H-3 for the Kanne ionization chamber. It was noted that the set point for the Kanne chamber chart recorder for H-3 was a "current equivalent" to 5850 microCuries per second (μCi/sec) argon-41 (Ar-41) equivalent H-3 concentration. This was established using the appropriate effluent concentration limits (ECLs) as specified in 10 CFR 20, Appendix B, i.e.:

$$\text{Ar-41 equivalent H-3} = \frac{(585\ \mu\text{Ci/sec [TS]})\ (1.0\text{E-}7\ \mu\text{Ci/cc - H-3})}{(1.0\text{E-}8\mu\text{Ci/cc - Ar-41})}$$

$$= 5850\ \mu\text{Ci/sec}$$

For the calibration performed on March 20, 1995, the H-3 isolation set point corresponding to 5850 μCi/sec was 3.08 E-3 μCi/cc which corresponds to an electrical current (on the Keithley picoammeter) of ≈6 E-11 amps. The Ar-41 isolation set point corresponding to 585 μCi/sec was 3.08 E-4 μCi/cc which corresponded to an electrical current of ≈8.5 E-11 amps. Procedure 9010, Step 5.3.7.3 specified selection of the lower current output

corresponding to either H-3 or Ar-41. By procedure, the licensee chose the H-3 current reading for the set point/isolation point. This issue is considered closed.

e. Violation 95-01-04 (Closed)

This violation was cited for failure to have a Nuclear Safeguards Committee approved procedure to calibrate and operate the Alpha/Beta Proportional Counter. The licensee responded to this violation by letter dated August 3, 1995, and outlined their corrective actions.

During this inspection the inspector reviewed the corrective actions specified by the licensee and independently verified that the actions had been completed. This item is considered closed.

f. Violation 95-02-01 (Closed)

This violation was cited for failure to submit a DOE/NRC Form 742 to the appropriate parties within 30 days of the end of the reporting period. The licensee responded to this violation by letter dated June 19, 1995, and outlined their corrective actions. One of these corrective actions indicated that Procedure 3600, Special Nuclear Material Inventory, would be revised to require that a Material Status Report would be issued within 30 days after March 31 and September 30 of each year to the appropriate federal agencies.

During this inspection the inspector reviewed the corrective actions specified by the licensee and independently verified that all the actions except one had been completed. The action not completed involved the revision of Procedure 3600 and the submission of the revised procedure to the Nuclear Safeguards Committee by July 20, 1995. During the inspection, the licensee was made aware of the apparent problem and indicated that the revisions would be made and the revised procedure would be presented to the Nuclear Safeguards Committee for approval. As of June 4, 1996, the licensee had revised the procedure but the Nuclear Safeguards Committee had not met to review and approve the changes made to the procedure.

The licensee was informed that failure to revise Procedure 3600 and submit it to the Nuclear Safeguards Committee by July 20, 1995, was an apparent deviation to comply with a written commitment made to the NRC (Deviation [DEV] 96-02-02).

One violation and one deviation were identified.

3. Transportation of Radioactive Material (86740)

10 CFR 71.5 requires each licensee who transports licensed material outside the confines of its plant or other place of use to comply with

the applicable requirements of the Department of Transportation (DOT) in 49 CFR Parts 170 through 189.

49 CFR 172.704(a) specifies the general awareness, function specific, and safety training requirements for hazmat employees.

49 CFR 172.704(c) specifies that a hazmat employee employed after July 2, 1993 shall be initially trained prior to October 1, 1993 and at least once every two years thereafter.

49 CFR 172.704(d)(4) requires certification that the hazmat employee has been trained and tested as required by this subpart.

49 CFR 171.8 defines a hazmat employee as an individual employed by a hazmat employer who, during the course of employment, loads or unloads or handles hazardous materials; prepares hazardous material for transportation; is responsible for safety of transporting hazardous materials; or tests, reconditions, modifies, marks, or otherwise represents containers, drums, or packagings as qualified for use in the transportation of hazardous materials.

49 CFR 172.702(d) requires each hazmat employer to ensure that each hazmat employee is tested by appropriate means on the training subjects covered in 49 CFR 172.704.

The inspector reviewed the shipping paperwork and records for selected radioactive shipments made since August 1994. All shipment records were completed as required and the records were also being maintained as required. The inspector also reviewed the records of personnel involved with preparing radioactive material for shipment and with representing the containers and/or packagings as qualified for use in the transportation of radioactive materials.

It was noted that, in December 1995, one employee had been trained on the safety portions of the requirements of 49 CFR 172. The licensee was informed that not providing training required by 49 CFR 172.704 for all employees involved in handling or preparing radioactive material for shipment was an apparent violation of 10 CFR 71.5 (VIO 96-02-03).

One violation was identified.

4. Radiation Protection Program (80745, 83743)

a. Posting

10 CFR 19.11 requires each licensee to post current copies of: (1) 10 CFR Parts 19 and 20; (2) the license and amendments thereto, (3) operating procedures; and (4) any notice of violation involving radiological working conditions, proposed imposition of civil penalty or order issued pursuant to subpart B of Part 2. The licensee is also required to prominently post NRC Form 3, "Notice to

Employees" in sufficient places to permit individuals engaged in licensed activity to observe them on the way to and from any licensed activity location to which the document applies.

The inspector observed that NRC Form 3, dated January 1996, was posted on the bulletin board in the hallway on the main entrance to the building. A notice was also posted that explained where 10 CFR Parts 19 and 20, the license, and the operating procedures could be viewed and reviewed if necessary. The inspector also observed that a copy of the NRC Inspection Report of the most recent inspection was posted on the bulletin board for review.

b. Training

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 discussed the training program for new employees and/or radiation workers with the Manager of the Office of Radiation Safety (MORS). The MORS indicated that new employees and radiation workers are given training which includes the topics covered by 10 CFR Part 19. Principle Investigators (PIs) are also required to train the students that help them in their work and inform the students of their rights as radiation workers. The inspector also reviewed a lesson outline used for training new employees and/or radiation workers, as well as the Radiation Safety Manual for the Georgia Institute of Technology produced by the Office of Radiation Safety and dated March 17, 1994. The inspector also reviewed a copy of the quizzes given to the new employees used to demonstrate that the persons have completed and understood the training. The inspector reviewed Procedure 0155, Training Requirements for Unescorted Access to the Reactor Control Zone, Revision 0, dated June 30, 1989. The inspector determined that the training program, including training given by the MORS and the various PIs, and the training materials and procedures used were adequate.

c. Corrective Action Program

The inspector reviewed the licensee's corrective action program for issues identified as problems by the licensee staff. The program consists of a documented system using informal memos. The memos are typically generated by the MORS and are sent to the

Director, Neely Nuclear Research Center (NNRC) so that management is kept informed of ongoing issues. Another method used to document issues or problems at the facility is to note such on work order forms. The work order forms are the vehicle used by the licensee to schedule and perform routine and recurring surveys, surveillances, and maintenance operations. If a problem is encountered during the performance of a survey, surveillance, or maintenance operation, the issue is documented on the work order form. This provides a means of tracking the issue and alerting the person performing the task during the next scheduled operation that a problem had been noted.

The inspector reviewed memos from the MORS to the Director NNRC concerning such issues as problems with the Kanne ionization chamber, proposed changes in the NRC limits for dose to members of the public, drop of fluid in one of the Hot Cell windows, and radiation levels on top of the reactor. Completed work orders and survey forms and Daily Checklists were also reviewed which documented problems with equipment and problems from build-up of radon and radon daughters in the containment building.

The inspector interviewed Health Physics (HP) personnel and reactor operations personnel to inquire about the documentation of problems or issues noted and the corrective actions that might be taken. The HP personnel indicated that, if they noted a problem, they would correct it if possible and report the problem to the MORS. The reactor operations personnel indicated that, if they noted a problem, they would take immediate actions if possible to correct the problem, and then they would report the problem to the Director, NNRC. HP and operations personnel indicated that they did not keep a log book of such events other than the reactor operations log book.

The inspector did not find any instances which indicated that a problem had been found and no corrective actions had been taken. Although the corrective action program used by the licensee could be more formalized, the inspector determined that it appeared to be adequate. It was also noted that there is no license or Technical Specification requirement for the licensee to have such a program.

d. Reactor Containment Building Contamination Event

The inspector reviewed the contamination event outlined above which occurred during the March 18-29, 1996 time frame and the related documentation which consisted of a Daily Survey Checklist, survey maps, and the results of isotopic analyses.

On March 18, during a routine masslinn survey of the reactor containment building, contamination was noted. Each masslinn wipe, which covered an area of approximately one hundred square feet, was found to be reading about 400 counts per minute (cpm)

above background using a portable GM detector. A sample masslinn was then counted on the Germanium-Lithium (GeLi) detector which indicated that the contamination was mainly due to naturally occurring radon and radon daughters. The ventilation system had been shut off since March 14 because the roughing filters in the filter bank needed to be changed. The reactor containment building was posted with a sign indicating that Health Physics personnel needed to be contacted before anyone could enter the containment building.

On March 22, the filters in the filter bank were replaced and the ventilation system was restarted. On March 23 a power failure occurred which caused the ventilation system to shut down. The ventilation system was restarted on March 25 and a complete masslinn survey of the reactor containment building on March 26 indicated no contamination. A smear survey of the containment building on March 29 also indicated that no contamination was present above the licensee's action levels. (The licensee's action level for alpha activity is 20 disintegrations per minute per one hundred square centimeters [20 dpm/100 cm^2] and the action level for beta activity is 100 dpm/100 cm^2.)

On May 23, 1996, the inspector performed a smear survey of the reactor containment building. Twelve smears were collected in areas which were not in the main traffic areas and would have been more likely to indicate contamination if any were present. None of the smears, when counted with a portable GM detector, indicated any activity greater than 100 counts per minute (cpm) above background. A gross alpha and beta analysis of the smears, using a low background proportional counter and analyzing the smears over a period of 30 minutes, indicated a maximum of approximately 1 cpm/100 cm^2 alpha and approximately 41 cpm/100 cm^2 beta on any one smear. These levels are below the limits established for free release of an item from a radiologically controlled area.

e High Bay Roof Cupola Survey

Because irradiated reactor fuel had recently been processed in the Hot Cell area, the inspector performed a survey of the cupola on the High Bay roof. This was done because, as indicated in the facility Safety Analysis Report for the 5 MW Georgia Tech Research Reactor, Technical Report No. GT-NE-7, dated December 1967, all exhausts from the High Bay area (hoods, junior cave, and hot cells) are ducted individually through the ceiling of the area and released at a common point within a cupola on the roof. On May 29, 1996, the inspector took a smear survey of the cupola and performed direct scans of the cupola and the area of the roof surrounding the cupola. Neither the smears nor the direct scans indicated radioactivity exceeding 100 cpm above background. A gross alpha and beta analysis of the smears, analyzed using a low background proportional counter for a period of 60 minutes, indicated a maximum of approximately 2 cpm alpha and approximately

7 cpm beta on any one smear. These levels are below the limits established for free release of an item from a radiologically controlled area.

f. Airborne Effluents

The inspector questioned the MORS on whether trace quantities of plutonium or strontium-90 (Sr-90) were ever emitted in the airborne effluents from the reactor containment building ventilation system through the stack. The MORS indicated that during the past three years, neither plutonium nor Sr-90 had been detected in emissions from the stack. The MORS indicated that naturally occurring radon had been detected.

The inspector reviewed the sampling that was performed to analyze emissions from the stack. A charcoal filter was mounted in the air stream from the containment building and the filter was analyzed for iodine-131. A pre-filter, which was mounted in front of the charcoal filter, was routinely analyzed for gross alpha and beta activity. A review of the charcoal filter and the pre-filter sample analyses for the period from March 31, 1995 through April 4, 1996, indicated no gross alpha or beta activity, although interference from radon during the analyses was noted. The licensee's procedure, Procedure 9308, Airborne Radioactive Surveys, Revision 2, dated February 10, 1994, specified that interference from radon-222 should be recognized and taken into account during analysis. The inspector noted that the licensee does not routinely decay correct for the particulate radioactivity. The licensee indicated that unless there is a fuel problem, alpha radioactivity should not result from Georgia Tech Research Reactor (GTRR) operations.

g. Soil Samples

During a previous inspection, documented in Inspection Report (IR) No. 96-01, dated April 19, 1996, the inspector obtained soil samples from the crawl space area located under the first floor of the administration building adjacent to the hot cell between column lines A and C and column lines 1 and 5. The cobalt-60 (Co-60) storage pool is located in this area between column lines B and midway between column lines A-B and column lines 2 and 4 as well. The inspector also took smears of the Co-60 storage pool walls in the crawl space area in an effort to determine whether or not any contamination had seeped through the walls or whether or not any contamination was present on the walls. The results of the analyses of the soil samples and the smears were not available when IR No. 96-01 was issued. During this inspection the results were available but, because the results were inconclusive, the inspector obtained more soil samples in the crawl space mentioned above. Soil samples were also gathered from various locations around the outside facility as well to determine whether or not any spread of contamination had occurred as a result of reactor

operations or leakage from the Co-60 storage pool. The results of the analyses of the soil samples were not available for publication when this report was finalized. The results will be attached to a subsequent report. This is an Inspector Followup Item 50-160/96-02-04).

h. Floor Fuel Storage Water Analysis

The inspector reviewed Procedure 7204, Floor Fuel Storage Water Analysis, Revision 0, dated June 25, 1992. It required that quarterly radionuclide analyses be made of the water in the floor fuel storage area to determine possible fuel cladding failure. The procedure also required a quarterly check of the conductivity of the water. The inspector also reviewed the records associated with this procedure and the analyses performed. The records indicated that an isotopic analysis had been performed during February 1993 and then quarterly thereafter until February of 1994. After that time no analyses were performed until July 1995.

This problem was discussed with the Facility Director. The Facility Director indicated that this problem, noted by the inspector, had also been identified during the last audit performed by the Nuclear Safeguards Committee (NSC). In response to the finding by the NSC, the licensee had determined that the requirement to perform this analysis (a work order) had erroneously been deleted from the system used to track such issues because it was thought that the analysis was duplicated in another work order. When this problem was noted during the NSC audit, the licensee reinstated the requirement to perform the analysis. The inspector reviewed the results of the analyses that had been performed during July 28, 1995 and October 27, 1995. The results were normal in that activation products were present in the water but no fission products were noted. The inspector also determined that no analysis had been performed in 1996 because the fuel elements that had been stored in that location had been removed and shipped off site. The inspector had no further questions.

i. Exposure of a Student in 1994

During a review of the minutes of the NSC meeting on December 8, 1995, the inspector noted that there was a discussion of an older X-ray diffraction unit which malfunctioned and a student may have been exposed on December 6, 1994. The inspector reviewed this incident with the MORS. (The inspector also noted that the incident had been made known to the NRC and that the problem had been forwarded to State of Georgia, Department of Natural Resources for review and resolution as necessary.) The MORS indicated that, as a result of the problem, the X-ray unit had been shutdown and the dose to the student had been reviewed. The licensee determined that the student was not contaminated during this event but did receive some exposure. The exposure, however, according to the licensee, was below State of Georgia regulatory

limits.

In order determine the cause of the problem, the MORS had decided to check out the equipment that had malfunctioned. The inspector noted that the wording of the minutes of the NSC meeting seemed to indicate that the MORS had to "ask permission" of the NSC to investigate the incident. The inspector determined that the MORS asked for "authorization to restart the equipment". The MORS indicated that through his position he already had the authority to investigate the incident. The MORS and the PI received the permission to restart the equipment and began an investigation of the cause of the malfunction. They found that the shutter on the device was not functioning properly due to a bad spring. As a corrective action, they replaced the old spring on the X-ray unit and rigged the old spring on a model so that other PIs and students could see how the spring had caused the X-ray unit to malfunction. It is now required that all PIs and students receive training on the model. With those clarifications of the incident, the inspector had no further questions.

No violations or deviations were identified.

5. Previous Issues (61745, 83743)

a. Cobalt-60 Storage Pool

In the past the licensee determined that under certain conditions, the water in the storage pool could siphon back through the piping and into the waste storage tanks. The water in the pool is the tertiary source of emergency cooling water for the reactor. The inspector discussed this issue with licensee representatives. The licensee indicated that there was no drain in the bottom of the Co-60 storage pool. The line used to drain the pool, should draining be required, was located in the southeast corner of the pool and extended from the bottom of the pool up and over the wall around the pool. The line was then connected to piping and valves that lead to the waste storage tanks. The inspector reviewed the facility drawings of the storage pool and the drain line. The drawings indicated a siphon break in the drain line located about a foot down from the top of the water level. The inspector and a reactor operator inspected the drain line and located the siphon break, a ¼-inch hole drilled in the drain line. The siphon break was located at a level about three inches down from the top surface of the water in the pool.

Another siphon path had been observed in the past. This consisted of the water siphoning back through the line used to recirculate the water in the Co-60 storage pool. This was only possible when approximately three valves were left open or partially open. These valves are typically maintained closed and are checked by operators following any operations involving the waste storage tanks. The inspector reviewed the facility drawings of the

storage pool, and the recirculation line, and the valves in the liquid waste discharge system. The drawings indicated that the recirculation line is located two feet below the surface of the water. The inspector and a reactor operator observed the recirculation line in the pool and the liquid waste discharge system valves, located on a lower level of the building, used to maintain the siphon pathway closed. The inspector also reviewed the procedure used to release liquid effluents from the waste storage tanks, Procedure 3800, Liquid Waste Disposal, Revision 2, dated July 20, 1995. The procedure appeared to be adequate and to contain procedural controls that, when implemented properly, would prevent siphoning of the water from the storage pool by requiring the valves to be closed after a discharge of liquid effluents.

The inspector concluded that the ¼-inch siphon break in the drain line and the administrative controls to prevent siphoning by maintaining various valves closed were adequate.

b. Shim Blade Problems in 1970

The inspector reviewed documentation concerning a problem noted in 1970. In a memo dated August 20, 1970, an Atomic Energy Commission (AEC) inspector noted that the GTRR reactor supervisor called and reported that there had been a problem with the shim safety blade (SSB) drives. The Number (No.) 4 SSB had failed to scram earlier that month and the SSB drives had been overhauled and tested as a result. The supervisor indicated that there was evidence of some wear and misalignment in the Number (No.) 4 SSB drive mechanism but no specific condition was identified that could be specified as the cause of the failure. The memo also documented that the No. 2 SSB mechanism had been overhauled in February 1970 due to a similar failure. The licensee also indicated that they would contact another research reactor to determine if that facility had experienced similar problems.

On September 17, 1970, the licensee sent the AEC a letter formally documenting the problem with the No. 4 SSB. In the letter the licensee indicated that it was their belief that the wear and misalignment found in the drive assembly could lead to binding of the mechanism. The letter also outlined the licensee's corrective actions including the overhaul and functional testing of the SSB drive mechanisms following repairs. The letter indicated that the licensee believed that the problem had been resolved.

On September 23, 1970, in a memo to file, an AEC inspector noted that he had contacted the GTRR reactor supervisor to determine whether or not the other research reactor had been contacted concerning the failure of the SSB to scram on August 12, 1970. The supervisor indicated that the other facility had been contacted but that they had not experienced such a problem.

On October 20, 1970, in a memo to file, an AEC inspector documented a telephone conversation with the GTRR reactor supervisor. The supervisor indicated that further contacts with other research reactors had not been helpful in identifying the cause of the problem with the No. 4 SSB. However, a conversation with the manufacturer of the ball nuts and screws used on the shim blades at GTRR indicated that the manufacturer was not surprised that there were failures after five years of service.

On November 4, 1970, the licensee sent the AEC a letter formally documenting a recurrence of the problem with the No. 4 SSB. In the letter the licensee indicated that disassembly of the drive mechanism did not reveal any readily apparent mechanical defect. The letter also mentioned that some small metal chips were found on the ball-nut screw. In the letter the licensee indicated that the failure of the No. 4 SSB was caused by a malfunction in the ball-nut mechanism. The licensee had ordered replacement ball-nuts for all four drive mechanisms and were going to install a flexible boot on each drive to prevent any particulate matter from reaching the ball-nuts.

The inspector reviewed AEC Inspection Report (IR) No. 72-01. In paragraph 5.a of the report the inspector reported on the three instances of failure of the SSB to drop into the core following a scram. The IR also mentioned the licensee corrective actions and that these had been verified by the inspector. The IR indicated further that the surveillance of the drive system for evidence of wear was increased and that no problems had been noted since the corrective actions had been taken.

On February 1, 1973, the licensee sent the AEC a letter formally documenting that on January 19 and 22, 1973, regulating (reg) rod did not respond to a drive signal. The reactor was shut down and the drive mechanism was disassembled. The problem was determined to be a binding of the ball-nut mechanism caused by insufficient lubrication. In the letter the licensee indicated that the ball-nut portion of the mechanism for the reg rod was contained in the lower top shield plug. The mechanism had not been inspected since 1964. As a result the licensee indicated that they would initiate an annual inspection and lubrication of this portion of the reg rod drive mechanism.

On September 17, 1973, the licensee sent the AEC a letter formally documenting that they had changed their preventive maintenance schedule to include an annual inspection and lubrication of the ball-nut mechanism of the reg rod assembly.

The inspector reviewed AEC Inspection Report (IR) No. 74-01. In paragraph IV. of the Summary Of Findings, the inspector reported that maintenance procedures had been revised to require annual preventive maintenance of the reg rod ball-nut mechanism.

During this inspection, the inspector reviewed what surveillances are performed by the licensee. Currently, monthly checks of SSB drop times and monthly reg rod and SSB drive times are performed. The licensee also performs annual maintenance of the reg rod and the SSBs. The inspector reviewed the monthly checks of the SSBs and the reg rod. The inspector also reviewed the annual maintenance records of the SSBs and the reg rod for the period from 1989 through 1995. No problems were identified. The inspector also interviewed a Senior Reactor Operator (SRO). According to the SRO, no problems had been noted with the SSBs or the reg rod since the SRO had been working at the facility, during the past three years of operation. The inspector concluded that the previous problems involving the ball-nuts and the drive mechanisms of the SSBs and the reg rod have apparently been corrected.

c. Reactor Coolant Level Sensing Line Leak Problem in 1972

The inspector reviewed documentation concerning a problem noted in 1972. On June 20, 1972, the licensee sent the AEC a letter to document a problem involving a leak in the D_2O primary coolant system at the GTRR. The letter indicated that on February 23, 1972, a small pinhole leak was found at a weld on the primary coolant system. The weld was the seal between the reactor coolant outlet line and a ¾-inch level sensing line that penetrates the reactor outlet line. The letter went on to document the interim measures taken by the licensee (peening the weld to stop the leak then eventually installing a "collection cone" to detect and collect any leakage) until the conversion of the plant to 5MW operation could be completed. The scheduled repair of the leak was to be scheduled when the fuel had been unloaded from the core and the vessel and lines were drained.

Following completion of the modifications required for operations of the reactor at 5MW, the AEC performed an inspection (IR 74-01) which was issued on June 27, 1974. In that report the inspector verified that the required modifications had been completed as authorized by Construction Permit No. CPPR-116. It was noted that these modifications included the installation of a new heat exchanger, a primary coolant pump, an emergency coolant storage tank, and associated process piping. The primary coolant system was then hydrostatically tested on March 15, 1974. A review of the test data by the inspector disclosed that a test pressure of 118 pounds per square inch (psi) was maintained over a period of one hour and 45 minutes. Based upon the results of the inspection, Region II recommended that License No. R-97 be amended to permit 5MW operation.

During this inspection, the inspector noted that, although IR 74-01 did not mention specifically that the leak in the weld between the reactor coolant outlet line and a ¾-inch level sensing line had been repaired, the fact that the system was

hydrostatically tested was indication that it must have been for the test to be successful. Also during this inspection, the inspector discussed this problem with an SRO and asked whether or not there was a current problem with a leak in the weld at the ¾-inch level sensing line. The SRO indicated that there was not a leak at that weld currently. The SRO and the inspector went and observed the location of the reactor coolant outlet line and the ¾-inch level sensing line. No problems were noted. The inspector concluded that the previous problem with a leak in the weld had apparently been corrected. The inspector had no other questions.

6. Exit Interview

The inspection scope and results were summarized on June 4, 1996, with the licensee representatives indicated in Paragraph 1 above. The inspector discussed the findings for each area reviewed. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection.

Type	Item Number	Status	Description and Reference
VIO	50-160/96-02-01	Open	Failure to complete the calibrations of the gas monitor and the Kanne ionization chamber within the required time frame (Paragraph 2.c).
DEV	50-160/96-02-02	Open	Failure to revise Procedure 3600 and submit it to the Nuclear Safeguards Committee by July 20, 1995, as committed (Paragraph 2.f).
VIO	50-160/96-02-03	Open	Failure to provide training required by 49 CFR 172.704 for all employees involved in handling or preparing radioactive material for shipment (Paragraph 3).
IFI	50-160/96-02-04	Open	Inspector Followup Item - Include soil sample results in the next inspection report (Paragraph 4.g).
VIO	50-160/94-02-01	Closed	Failure of the licensee to make a proper evaluation of the extent of the radiation present following the neutron radiation survey performed in 1994.

Type (cont'd)	Item Number	Status	Description and Reference
VIO	50-160/95-01-01	Closed	Failure to report: (1) some of the required data and/or reporting inaccurate data in annual reports to the NRC and (2) accurate information to the NRC concerning continuous, automatic measurement and recording of meteorological data.
URI	50-160/95-01-02	Closed	Review the calibration records of the GM gas monitor and Kanne ionization chamber to determine whether completion of the calibrations was within the specified surveillance interval plus or minus 25 percent.
URI	50-160/95-01-03	Closed	Review Kanne ionization chamber setpoint determinations and requirements for tritium.
VIO	50-160/95-01-04	Closed	Failure to have a Nuclear Safeguards Committee approved procedure to calibrate and operate the alpha/beta proportional counter.
VIO	50-160/95-02-01	Closed	Failure to submit material status reports within 30 days for the inventory periods of 4/1/93 - 9/30/93; 10/1/93 - 3/31/94; and 10/1/94 - 3/31/95.