



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

Report No.: 70-1151/93-01

Licensee: Westinghouse Electric Corporation  
Commercial Nuclear Fuel Division  
Columbia, SC 29250

Docket No.: 70-1151

License No.: SNM-1107

Facility Name: Columbia Nuclear Fuel Plant

Inspection Conducted: February 15-19, 1993

Inspector: C Bassett 3/5/93  
C. H. Bassett, Project Inspector Date Signed

Inspector: G L Troup 3/5/93  
G. L. Troup, Project Inspector Date Signed

Approved by: E J McAlpine 3/5/93  
E. J. McAlpine, Chief Date Signed  
Radiation Safety Projects Section  
Nuclear Materials Safety and Safeguards  
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This announced inspection involved followup and review of the nuclear criticality safety weakness and unresolved items identified during the Operational Safety Assessment conducted during the period August 17-28, 1992.

Results:

Within the scope of the inspection, various issues were identified that appeared to be violations of license conditions. These included problems identified during the Operational Safety Assessment as well as problems noted during the current inspection. These issues included:

- Two examples of inadequate procedures (Paragraph 3),
- Various examples of failure to follow procedure with respect to Supplementary Operating Instructions (Paragraph 4),
- Two examples of failure to comply with the license application and with procedural requirements regarding the completion of Regulatory Affairs Review Requests (facility change requests) and the preparation of nuclear criticality safety analyses (Paragraph 5),

- Two examples of failure to comply with the license application related to justifying the use of non-favorable geometry containers, establishing controls for their use, and performing the required criticality safety analyses (Paragraph 6),
- Failure to perform verification of Uranium-235 and free acid content in adjustment tanks prior to transferring solutions to storage tanks (Paragraph 7),
- Various examples of failure to follow procedure for posting criticality signs (Paragraph 8),
- Several examples of failure to follow procedure concerning compliance with criticality postings and "surface density" areas (Paragraph 9), and
- Using an unapproved procedure (Paragraph 10).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*D. Batson, Manager, Plant Systems Engineering
- \*J. Fici, Plant Manager
- \*W. Goodwin, Manager, Regulatory Affairs
- \*J. Heath, Manager, Regulatory Operations
- \*E. Keelen, Manager, Fuel Manufacturing
  - N. Kent, Regulatory Engineer
  - R. Montgomery, Regulatory Engineer
- \*D. Precht, Manager, Materials, Planning & Services
- \*E. Reitler, Manager, Regulatory Engineering
  - C. Sanders, Manager, Nuclear Materials Management & Product Records
- \*D. Williams, Regulatory Engineer
- \*R. Williams, Technical Coordinator, Regulatory Affairs

Other licensee employees contacted during the inspection included engineers, technicians, operators, and office personnel.

\*Attended the exit interview on February 19, 1993

### 2. Purpose of the Inspection (88015, 88020)

During the period of August 17-28, 1992, the NRC conducted an Operational Safety Assessment (OSA) of the licensee's safety programs at the Commercial Nuclear Fuel Plant in Columbia, South Carolina. The results of the OSA were documented in NRC Inspection Report (IR) No. 70-1151/92-04 dated November 25, 1992. The OSA team noted a number of weaknesses and unresolved items which were identified by the designation of "92-04-" plus two more digits. The last two digits indicated the numerical sequence of that issue as it appeared in the OSA report. Several of those items appeared to be violations of the licensee's license requirements. As a result, this inspection was performed to review those items and determine if violations had, in fact, occurred and to initiate appropriate enforcement action.

### 3. Item 92-04-02 - Failure of management to perform adequate reviews of technical documents.

- a. Condition 9 of Special Nuclear Materials License Number 1107 (SNM-1107) requires that licensed material be used in accordance with the statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.6.1.1 of the application states that safety-related procedures and procedural changes shall be issued and distributed by department managers in accordance with written policies, including preparation, review, and applicable approvals. Section 2.6.1.2 states that Radiation Protection Component approvals are required for all safety-related procedures and changes involving the processing, handling, storage, inspection, or movement of special nuclear materials.

Chapter 3, Section 3.1.2.3 of the application states that the Radiation Protection Component shall be specifically responsible for assuring that the applicable license, nuclear criticality safety, radiation protection, and SNM safeguards requirements have been evaluated and communicated to line management to be incorporated into manufacturing equipment and procedures prior to their use for processing licensed material. This same section further states that the specific responsibilities of the Radiation Protection Component shall include review and approval of all site procedures specifically related to radiation protection, nuclear criticality safety, emergency planning, and SNM safeguards.

- b. The OSA team reviewed selected safety and operations procedures used by the licensee (refer to NRC IR No. 70-1151/92-04, Paragraph 2.b.(3)). The team identified two instances when management's review of a procedure failed to identify deficiencies in those procedures.
    - 1) In Procedure RO-06-003, "Ambient Environmental Air Monitoring for Radioactivity," Rev. 5, dated July 9, 1992, the self absorption factor in the calculations for alpha activity had been eliminated even though three technical managers had reviewed the change.
    - 2) Procedure COP-814700, "Bulk Handling/Moderation Control," Rev. 12, dated May 21, 1992, was revised and reviewed but a step to perform one of the required confirmatory moisture samples (required by Procedure RA-303, "Control of Moderating Materials for Nuclear Criticality Safety," Rev. 1, dated July 10, 1989) had been deleted.
  - c. The above are examples of inadequate procedures which were being used by the licensee. The apparent cause of the problem was an inadequate review by management. This is an apparent violation of License Condition 9. [93-01-01]
4. Item 92-04-07 - Inadequate control and implementation of the Supplemental Operating Instructions
- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in

Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.6 of the application states that special nuclear material processing shall be conducted in accordance with approved written procedures or instructions.

Procedure TA-005, "S.O.I. and P.I.F. Preparation and Distribution," Rev. 3, dated February 27, 1992, Section 2, Part 1 states that Supplemental Operating Instructions (SOIs) may be prepared for the following situations:

- 1) An SOI may be prepared to issue preliminary operating procedures or to make interim changes to an operating procedure until the procedure can be revised, approved, and issued. Such SOIs are effective until the operating procedure is issued, not to exceed 60 days from SOI issue date.
- 2) An SOI may be prepared to provide contract-specific information necessary for fabrication and/or to comply with applicable process or product requirements.
- 3) A general SOI may be prepared to provide unique supplemental processing data related to contract or design specifications.
- 4) An SOI may be prepared when an operating procedure must be changed for a temporary period of time to meet a unique situation. The SOI should specify the time/quantity limit or expiration date.

Section 7, Part 7.1.1.A.9.B of procedure TA-005 requires that the individual designated to issue the approved SOIs enter the issue date on the SOI and on the Acknowledgement Sheet, as well as the Shift Number, Shift Supervisor, and SOI Number and Revision on each Acknowledgement Sheet.

Form TAF 005-8, Supplementary Operating Instructions Acknowledgement Sheet," Part C., "Supervisor's Instructions," Part 1 states that the supervisor is to complete the SOI acknowledgement process within 5 working days which includes having all the operators read and sign the SOI with the supervisor signing last to indicate that all operators' names are on the sheet.

- b. During the OSA, team members reviewed the implementation of procedures and temporary operating procedures, called SOIs, by the licensee (refer to NRC IR No. 70-1151/92-04, Paragraph 2.g.(3)). The review consisted of interviews with licensee personnel, a review of various records, and field verification of procedural

requirements. The OSA team identified the following problems with respect to SOI implementation:

- 1) In the ADU Conversion Area Control Room, three of the SOIs, (C-142, C-143, and C-144) contained no indication of the date of issue nor the expiration date.
  - 2) Many examples of SOI acknowledgement process not being completed with 5 working days were noted.
  - 3) In the IDR area, various examples of expired copies of SOIs were noted to still be on the floor, one SOI logbook could not be located, and one SOI that was in effect could not be located.
  - 4) Various examples of SOIs that had been effect longer than 60 days were noted.
  - 5) Examples of SOIs were noted that appeared to cover routine operations rather than being written to provide unique supplementary processing data.
- c. The examples identified above are multiple examples of failure to follow approved procedures for control and implementation of the SOI program. This is an apparent violation of License Condition 9. [93-01-02]
5. Item 92-04-14 - Lack of information in the Nuclear Criticality Safety Evaluations (NCSEs) regarding reference drawings, assessment of accident scenarios, independent reviews, and limits and controls.
- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.
- Chapter 2, Section 2.3.1.8 requires that the records of nuclear criticality safety analyses shall include a floor plan of the SNM process and fixed storage areas showing the spacing requirements imposed to control neutron interaction.
- Chapter 2, Section 2.3.1.1 of the application states that written procedures describing general nuclear criticality control requirements shall be maintained in the Regulatory Affairs Procedures Manual by the Radiation Protection Component. This section also states that operations shall be conducted in accordance with these procedures to ensure compliance with NRC regulations and license conditions.

Procedure RA-104, "Regulatory Affairs Review Requests," Rev. 6., dated March 3, 1992, requires the originator of the change request to provide sufficient information including accurate red-lined drawings to adequately describe the change. The procedure also requires Regulatory Engineering to review proposed changes, to determine applicable radiological and nuclear criticality safety requirements, which generally entails performing criticality safety analyses, and to complete RA-104-1, Section II.

Procedure RA-300, "Nuclear Criticality Safety Design and Review Criteria," Rev. 1 dated January 1990, requires that all management assure that all plant modifications or changes involving SNM are reviewed in accordance with this procedure and approved in accordance with Regulatory Affairs Procedure RA-104 prior to implementation. The procedure requires that an independent review and verification be documented for each evaluation.

- b. A review of selected Regulatory Affairs Review Requests for Change (facility change requests) by the Operational Safety Assessment team during the period August 17-28, 1992 (refer to NRC IR No. 70-1151/92-04, Paragraph 3.g.(2)), and a review of such records during the inspection the week of February 15-19, 1993, indicated that some of the change requests did not contain all the information required by procedure.

Specifically, documentation of the nuclear safety analysis for RA-104-1-754 did not indicate who performed the analysis or who did the second party review, i.e., there were no signatures. Also, there were no equipment drawings or literature describing the equipment involved and, thus, there was no way to assure that the dimensions used in the analysis were correct. Further, the accident or upset conditions used in the analysis were not identified. Also, the documentation concerning the nuclear safety analysis for RA-104-1-783 did not indicate who performed the original analysis and there were no drawings of equipment or layout drawings accompanying the package.

- c. The above discussion illustrates two examples of failure of the licensee to comply with the license application and with procedural requirements regarding the preparation of nuclear criticality safety analyses. This is an apparent violation of License Condition 9. [93-01-03]
- 6. Item 92-04-15 - Failure to maintain a complete NCSE file regarding the uranyl nitrate tank farm sump and Item 92-04-20 - Inadequate control of non-favorable geometry containers throughout the plant
    - a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.3.1.10 of the application states that where practicable, reliance will be placed on equipment design in which dimensions are limited rather than on administrative controls for nuclear criticality safety. When non-favorable geometry is used, Westinghouse shall justify the proposed use of non-favorable geometry and establish appropriate administrative controls. After justifying the need for non-favorable geometry equipment, the analysis must take into consideration identified contributing causes of criticality accidents, demonstrate that such causes will be subject to administrative controls, and demonstrate compliance with the double contingency principle. Contributing causes to be addressed will include process upsets.

- b. Through reviews of various nuclear criticality safety analyses conducted during the OSA (refer to NRC IR No. 70-1151/92-04, Paragraph 3.g.(2) and 4.c) and during this followup inspection, it was determined that:
- 1) A non-favorable geometry sump was added to the diked or curbed area underneath uranyl nitrate storage tanks at some point in time during or after installation/construction of the tanks and no nuclear criticality safety analysis was performed to justify the need for the sump and to establish appropriate administrative controls.
  - 2) Attachment RA-301-1, "Floor Storage Plan," of Procedure RA-301, "Nuclear Criticality Control Criteria," Rev. 6, dated January 10, 1990, allowed generic authorization for the use of non-favorable geometry containers (i.e. 55-gallon drums) without requiring justifications for the containers and without criticality safety analyses of the various applications of the containers which included process upsets. Consequently, numerous non-favorable geometry containers (including 55-gallon drums and other large volume containers) were used throughout the chemical area of the plant without justifications for the specific uses, without documentation of appropriate administrative controls, and without criticality safety analyses of process upset conditions such that one failure (i.e., a pipe break or leak) could potentially have caused a criticality safety incident.
- c. The problems identified above are examples of the failure to comply with the license application related to the use of non-favorable geometry containers. This is an apparent violation of License Condition 9. [93-01-04]
- d. Following the OSA, the licensee formed a multi-disciplined team to review the non-favorable geometry container issue and formulate recommendations to resolve the problem. As a result of the OSA and telephone conversations between the licensee and the NRC, the licensee began providing bi-weekly status reports on the progress

they were making in identifying the non-favorable geometry containers that were present in the Chemical Area and eliminating those containers that were not needed. Four bi-weekly status reports were issued concerning the licensee's actions regarding this issue. These reports were dated September 4, 1992, September 18, 1992, October 2, 1992, and October 16, 1992. An NRC followup inspection was conducted during October 28 and 29, 1992, which revealed that the licensee had made sufficient progress in correcting the problem that further bi-weekly status reports were not necessary.

In addition to the above, the licensee re-organized the Regulatory Affairs department and placed the criticality engineers in another section. This was done to allow more emphasis by one supervisor on criticality safety and by another supervisor on emergency preparedness, industrial hygiene, and chemical safety.

7. Item 92-04-16 - Transfers were being made from favorable geometry containers to non-favorable geometry containers solely on the basis of chemistry analysis results that were transmitted orally by telephone and were not verified.

- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.2.15.3 of the application requires that the following control shall be provided as part of the dissolver systems - supervisor or chief operator verification of Uranium-235 concentration and free acid content in adjustment tanks prior to transfer.

- b. During the Operational Safety Assessment, the OSA team determined that the supervisors and chief operators were not complying with this requirement (refer to NRC IR No. 70-1151/92-04, Paragraph 3.h.(1)). Following sampling of the adjustment tanks by an operator, one sample was sent to the Chemistry Lab for free acid analysis and the other sample was sent to the Health Physics (HP) Lab for Uranium-235 concentration analysis. Subsequently, the results of these analyses were transmitted by telephone to the operator who had taken the samples. The operator then recorded the analysis results on the proper form.

The supervisor or chief operator verification consisted of looking at the numbers that the operator had written down and determining that they were within the limits set for Uranium-235 concentration and free acid content. The supervisor or chief operator did not verify by independent means that the numbers transcribed were correct and that the sample results corresponded to the tank that was actually sampled.

- c. This issue was identified as a failure to follow the license application stipulating verification of Uranium-235 concentration and free acid content in the adjustment tanks prior to transferring solutions from those tanks to the uranyl nitrate storage tanks in that no action was undertaken by supervision to confirm the truth or accuracy of the transcribed analytical results. This is an apparent violation of License Condition 9. [93-01-05]
8. Item 92-04-18 - Inappropriate, contradictory or unclear postings regarding criticality controls.
- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.
- Chapter 2, Section 2.3.1.1 of the application states that written procedures describing general nuclear criticality control requirements shall be maintained in the Regulatory Affairs Procedures Manual by the Radiation Protection Component. This section also states that operations shall be conducted in accordance with these procedures to ensure compliance with NRC regulations and license conditions.
- Procedure RA-302, "Criticality Signs," Rev. 5, dated April 21, 1989, states in the Policy section that criticality signs identifying applicable criticality control parameters and instructions shall be conspicuously posted on equipment or in areas where SNM is present as required by Regulatory Engineering. In the Responsibilities section, Part 1, states that Area supervision is responsible to ensure compliance with criticality control parameters and instructions on criticality signs. In the Procedure section, Part 3.1 states that Area supervision shall post criticality signs in an area that is visible to operations personnel and maintain the criticality signs.
- b. Following a review of the above procedure and tours of the facility, the Operational Safety Assessment team concluded that the licensee was not following this procedure (refer to NRC IR No. 70-1151/92-04, Paragraph 4.a). One instance was noted where a criticality sign should have been posted but was not. The Rod Reclamation Hood (Reject Rod Unloading Station) was in use but no criticality sign was posted. Other instances were noted where work stations were posted with criticality signs located on the back or sides and the signs were not available for reference by workers when required.
- c. These conditions identified by the OSA team are multiple examples of failure to follow approved procedures for posting criticality signs. This is an apparent violation of License Condition 9.

[93-01-06]

9. Item 92-04-19 - Inconsistent application and use of the licensee's yellow painted exclusion zones in the production area and Item 92-04-21 - Lack of engineering controls or inadequate engineering controls for the storage of Special Nuclear Material (SNM)

- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.3.1.1 of the application states that written procedures describing general nuclear criticality control requirements shall be maintained in the Regulatory Affairs Procedures Manual by the Radiation Protection Component. This section also states that operations shall be conducted in accordance with these procedures to ensure compliance with NRC regulations and license conditions.

Procedure RA-301, "Nuclear Criticality Control Criteria," Rev. 6, dated January 10, 1990, Part 1.2 states that a minimum of one foot spacing shall be maintained between containers, racks, carts, and equipment containing SNM under moderation control. Part 1.3 states that greater separation distances may be required in areas containing interacting SNM which have "surface density" areas (yellow exclusion areas) assigned to them.

Procedure RA-302, "Criticality Signs," Rev. 5, dated April 21, 1989, states in the Policy section that criticality signs identifying applicable criticality control parameters and instructions shall be conspicuously posted on equipment or in areas where SNM is present as required by Regulatory Engineering. In the Responsibilities section, Part 1, states that Area supervision is responsible to ensure compliance with criticality control parameters and instructions on criticality signs. In the Procedure section, Part 3.1 states that Area supervision shall post criticality signs in an area that is visible to operations personnel and maintain the criticality signs.

- b. During the Operational Safety Assessment conducted during the period from August 17-28, 1992, the team noted that Procedure RA-301 was not being followed (refer to NRC IR No. 70-1151/92-04, Paragraph 4.b). In the Conversion Area of the plant, a work table used for the repair and cleaning of pumps and other pieces of equipment was noted to be adjacent to a vertical safe geometry tank. The "surface density" area or yellow exclusion area for this tank extended under the table. No restrictions or guidance were given for placement of SNM on the portion of the table that was above the exclusion area nor upon placing SNM on the shelf of the table located about six inches above the exclusion area.

The OSA team also noted various instances where criticality signs were posted but were not followed as required by Procedure RA-302 (refer to NRC IR No. 70-1151/92-04, Paragraph 4.e). Specifically, 9.5 inch diameter polypacks containing 3.8 percent enriched uranium "hardscrap" were stored on a rack in the Rotary Blender Area which was limited, according to the posted sign, to 3.7 percent enriched "hardscrap". Other problems were noted in the area of spacing between containers of SNM. The team found instances where the twelve-inch spacing between special nuclear material (SNM) on storage racks and in an array of drums containing SNM standards was not maintained as required by postings. A storage rack in the Rod Loading Area contained trays of fuel pellets with a posting limiting the tray to a slab thickness of 4 inches. Several instances were noted where the 4 inch slab thickness was exceeded by approximately one-half inch.

- c. The above conditions are multiple examples of failure to follow approved procedures concerning compliance with criticality postings and "surface density" areas (yellow exclusion areas). This is an apparent violation of License Condition 9. [93-01-07]

#### 10. New Item Noted During the Followup Inspection

- a. Condition 9 of Special Nuclear Material License Number 1107 (SNM-1107) requires that licensed material be used in accordance with statements, representations, and conditions contained in Chapters 2, 3, and 4 of the application dated March 26, 1984, and supplements thereto.

Chapter 2, Section 2.3.1.1 of the application states that written procedures describing general nuclear criticality control requirements shall be maintained in the Regulatory Affairs Procedures Manual by the Radiation Protection Component. This section also states that operations shall be conducted in accordance with these procedures to ensure compliance with NRC regulations and license conditions.

Chapter 2, Section 2.6 of the application states that special nuclear material processing shall be conducted in accordance with approved written procedures or instructions.

Procedure RA-104, "Regulatory Affairs Review Requests," Rev. 6., dated March 3, 1992, requires in Part 2.3 that Regulatory Engineering complete RA-104-1, Section II.

Review Request RA-104-1-782, "IDR Vaporization Process, Liquid Level Probe/Gravity Drain," Section II, which was completed by Regulatory Engineering, required in Step 11 that the test engineer document the initial interlock verification using test data sheets in Regulatory Affairs Procedure RA-109. In Step 14, the test personnel were required to document and qualify Programmable Logic Controller changes in accordance with QA-007.

QA-007 for MAP-IDR Vaporization, Part 7, which required verification of the test plan per Procedure RA-109, had been signed off as being complete.

- b. During the followup inspection conducted during the period of February 15-19, 1993, the inspector noted that the licensee was using a procedure that had not been approved or issued. As noted above, QA-007 for MAP-IDR Vaporization, Part 7, indicated that verification of the test plan implemented by the licensee had been completed using Procedure RA-109. Procedure RA-109, "Safety Significant Interlock Test Documentation," had not been approved and issued although the tests mentioned above were completed and the Review Request, RA-104-1-782, was signed off on September 2, 1992.
  - c. The licensee was informed that using an unapproved procedure was an apparent violation of License Condition 9. [93-01-08]
11. Item 92-04-12 - Followup on the licensee's evaluation of all Data Packs

This Inspector Followup Item dealt with the licensee's inability to locate Data Pack 92-10 during the period of the Operational Safety Assessment. During this followup inspection, licensee representatives informed the inspector that the subject Data Pack had been located and returned to the files. The inspector reviewed the contents and discussed the subject with the licensee. The inspector had no further questions.

The licensee was informed that IFI 70-1151/92-04-12 would be considered closed.

12. Item 92-04-17 - Failure to consider the upset condition of a tank overflow in one of the Raschig ring filled tanks.

Certain non-favorable geometry tanks at the facility are filled with Raschig rings as a nuclear criticality control. The issue raised during the OSA was whether raising the level of solution in one such tank to an overflow condition would create a non-favorable slab in the top of the tank.

The tank in question has a 21 inch (inside diameter) manway installed on the outside edge of the tank. Due to the curvature of the tank head, the manway flange is approximately 10 inches above the lowest point on the head. The overflow pipe is a one-half inch pipe which exits the side of the tank and then runs vertically and makes a loop approximately a foot above the top of the tank.

In August 1992, during the annual inspection of the tanks filled with Raschig rings, the ring level was measured from the top of the manway flange down the sleeve. The lowest ring level of the three tanks was 9 inches below the manway flange. In January 1993, the tank manways were removed for the addition of more Raschig rings to fill the manway

sleeve. Photographs taken at the time do not show the bottom of the sleeve where it intersects the tank head. If the rings were not smoothed out fully into the tank, a gap at the top of the tank of approximately 3 to 4 inches could exist. The tanks were filled to approximately the ninety-nine percent level. Flooding the tank to the vent would result in a "slab" in the tank above the rings which is within the licensee's criteria for solution slab thickness.

Inputs to the tanks pass through an in-line uranium monitor (although the inputs are sequenced, not continuously monitored). The alarm point for this monitor is 24 parts per million Uranium (ppm U). The design basis for the tanks was 200 grams Uranium per liter (gU/l) or about 200,000 ppm U. Each tank also has a level controller which controls normal operations at twenty to sixty percent and alarms at eighty percent.

The licensee concluded that an unsafe slab would not accumulate in the top of the tank for the above reasons. After reviewing the conditions and system installation, the inspector agreed with the licensee's conclusion.

The licensee was informed that URI 70-1151/92-04-17 would be considered closed.

### 13. Exit

The scope and results of this followup inspection were summarized on February 19, 1993, with those persons indicated in Paragraph 1 above. The inspector described the issues reviewed and discussed in detail the inspection results and observations. No dissenting comments were received from the licensee. Although proprietary material was reviewed and discussed during this inspection, proprietary information is not contained in this report.

<u>Item Number</u>	<u>Description and Reference</u>
70-1151/93-01-01	VIO - Inadequate procedures caused by an inadequate review by management (Paragraph 3).
70-1151/93-01-02	VIO - Failure to follow procedure for control and implementation of the SOI program (Paragraph 4).
70-1151/93-01-03	VIO - Failure to comply with the license application and with procedural requirements regarding the preparation of nuclear criticality safety analyses (Paragraph 5).
70-1151/93-01-04	VIO - Failure to comply with the license application related to the use of non-favorable geometry containers (Paragraph 6).

- 70-1151/93-01-05      VIO - Failure to follow the licensee application stipulating verification of Uranium-235 concentration and free acid content prior to transferring solutions from the adjustment tanks to the uranyl nitrate storage tanks (Paragraph 7).
- 70-1151/91-03-06      VIO - Failure to follow procedures for posting criticality signs (Paragraph 8).
- 70-1151/91-03-07      VIO - Failure to follow procedures concerning compliance with posted criticality signs and "surface density" areas (Paragraph 9).
- 70-1151/91-03-08      VIO - Using an unapproved procedure (Paragraph 10).