U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-1151
License No.:	SNM-1107
Report No.:	70-1151/98-10
Licensee:	Westinghouse Electric Corporation
Facility Name:	Commercial Nuclear Fuel Division
Date:	December 7-11, 1998
Inspectors:	A. Gooden, Radiation Specialist C. Hughey, Senior Resident Inspector (BWXT)
Approved by:	E. J. McAlpine, Chief Fuel Facilities Branch Division of Nuclear Materials Safety

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Enclosure 2

Executive Summary

Commercial Nuclear Fuel Division NRC Inspection Report 70-1151/98-10

This routine unannounced inspection involved observation of work activities, a review of selected records, and interviews with plant personnel in the areas of radiation protection and plant operations. The report entails one week of inspection effort by a regional-based radiation specialist, and a site resident inspector.

PLANT OPERATIONS

The proper handling and identification of empty containers (polypacks) normally used to store uranium oxide was observed. A violation was identified for failure to conduct operations involving nuclear material without an approved procedure or proper nuclear criticality safety posting. A violation was identified for failure to follow an operating procedure by not removing cracked pellet sintering boats from service (Paragraph 2.a).

Short term corrective actions to prevent the recurrence of a false criticality alarm in the solvent extraction area were adequate (Paragraph 2.b).

Several examples of poor housekeeping were observed (Paragraph 2.c).

RADIATION PROTECTION

The external exposure control program was adequate for evaluating and monitoring personnel exposures [Paragraph 3.b.(3)].

Mini As Low as is Reasonably Achievable (ALARA) reviews provided licensee management with data for tracking personnel exposures to maintain occupational dose ALARA [Paragraph 3.b.(3)].

The internal exposure control program was adequate for evaluating and monitoring personnel exposures [Paragraph 3.c.(3)].

Administrative dose limits were established and all assigned exposures were well below the regulatory limits [Paragraph 3.c.(3)].

The contamination control program was effectively implemented to identify removable contamination and assure prompt cleanup [Paragraph 3.e.(3)].

The ALARA program was effectively implemented as evidenced by the continued downward trend involving personnel exposure [Paragraph 3.f.(3)].

TRANSPORTATION

A violation was identified for shipping *e* metal drum with a hole in the surface to a disposal facility. The corrective actions implemented by the licensee appear adequate to prevent further recurrence (Paragraph 4.a).

The licensee adequately responded to the discovery of shipping unirradiated fuel in MCC shipping containers that had not been reinspected per the shipping container's Recertification program. The shipping container's Certificate of Compliance (CoC) will be revised by NRC to include the requirements of the Recertification program. (Paragraph 4.b).

Attachment:

Persons Contacted and Exit Interview List of Items Opened, Closed, and Discussed List of Acronyms

REPORT DETAILS

1. Summary of Plant Status

This report covered a one week period. There were no unusual plant operational occurrences. Plants operations were normal with routine maintenance activities.

2. Plant Operations (88020) (O3)

a. Implementation of Process Safety Controls (03.03)

(1) Inspection Scope

The inspector toured the facility and reviewed nuclear criticality control devices and measures in effect to assure that the licensee's program provided a high degree of reliability for the prevention of an inadvertent criticality.

(2) Observations and Findings

General Observations

During facility tours the inspector verified through direct observations and random operator interviews that nuclear criticality safety limits were posted, available, and understandable to operators. Except as discussed below, proper spacing practices and controls, use of storage locations, and identification of special nuclear material were observed. The proper handling and identification of empty containers (polypacks) normally used to store uranium oxide was also observed.

Unauthorized Storage of Sample containers

During the inspection the inspector observed several covered plastic cups containing about 100 gram each of uranium oxide being stored on shelves in a "polypack" storage rack located at a uranium scrap processing operation. Storage of these cups was neither authorized by the nuclear criticality safety (NCS) posting attached to the storage rack (NCS Posting No. CONV01, Rev. 0) nor the operating procedures for the area. Subsequent to the observation the inspector interviewed an operator in the area and verified that storage of the samples cups on the rack was not addressed by any operating procedures.

The inspector reviewed and discussed the nuclear criticality safety analysis for the storage racks with the cognizant nuclear criticality safety engineer and determined that the assumptions used in analysis were very conservative therefore no immediate criticality safety hazards existed. Prior to the end of the inspection the licensee replaced the posting with one that allowed the storage of sample cups on the rack (NCS Posting No. CONV33, Rev. 0) and provided a copy of the posting to the inspector. Since the authorization of sample storage was performed without additional calculations being performed, a more thorough review of the analysis by an NRC Criticality Safety Specialist is warranted to assure that the storage is within the bounds of the original analysis. The performance of that follow-up review by NRC will be tracked as Inspector Followup Item (IFI) 98-10-01.

The safety significance of this inspector identified observation involved the handling and storage of nuclear materials without an approved procedure or NCS posting as required by the License Application, along with the lack of understanding by the operator of this requirement. The failure to conduct operations involving nuclear material without an approved procedure or proper nuclear criticality posting is identified as Violation (VIO) 98-10-02.

Cracked Pellet Sintering Boats

During the inspection the inspectors observed significant cracks in several pellet sintering boats containing uranium oxide pellets. These boats were used to contain these pellets as they were processed through a high temperature sintering furnace.

The Table in Paragraph 6.2.3 of the License Application states that the criticality safety basis for the sintering operation is geometry control. The inspector reviewed the criticality safety analysis for the sintering furnace which stated that a favorable diameter equivalent infinite cylinder of pellets (the boats lined up end to end) travel through the unfavorable geometry heating chamber of the furnace. The analysis also stated that , among other things, since there was no credible source of moderator to the furnace during operations, a nuclear criticality was not credible and double contingency protection was not required. The adequacy of this evaluation was not addressed during this inspection. A more thorough review of this analysis in the future by NRC Criticality Safety Specialists will be followed by IFI 98-10-01, however, based on the conclusions stated in this analysis, no immediate criticality safety hazard existed.

The analysis stated, however, that the boats are inspected regularly for integrity and serviceability. This requirement was implemented through Chemical Operating Procedure (COP)-822522, Rev. 3, Repair of Pellet Sintering Boats. This procedure required, in part, that boats that will not pass through boat measuring gauges or <u>cracked/broken boats</u> be identified and collected for repair. On three different occasions, the inspectors observed several boats with significant cracks along welded areas being used to contain uranium oxide pellets as they were being processed through the furnace. In addition, two operators interviewed on separate occasions indicated that boats with cracks were routinely used.

The safety significance of this inspector identified observation involved the lack of implementation of procedural requirements required by a nuclear criticality safety analysis to ensure a favorable geometry operating configuration. The fact that no immediate criticality safety hazard existed was fortuitous.

The failure to follow COP-822522 by not removing cracked pellet sintering boats from service is identified as VIO 98-10-03.

(3) Conclusions

The proper handling and identification of empty containers (polypacks) normally used to store uranium oxide was observed. A violation was identified for conduct of operations involving nuclear material in a manner not specified in an approved procedure or nuclear criticality safety posting. A violation was identified for failure to follow an operating procedure by not removing cracked pellet sintering boats from service.

b. False Criticality Alarm (03.03)

(1) Inspection Scope

The inspector reviewed the circumstances and corrective actions associated with a false criticality alarm in the solvent extraction area.

(2) Observations and Findings

On September 30, 1998, at 1:28 a.m., a plant evacuation alarm was initiated which resulted in a plant evacuation. The inspector reviewed documentation indicating that the alarm resulted from the detectors at alarm Station No. 9 falling below the LOW failure alarm setpoint of 0.06 millirem per hour. Station No. 9 consisted of two detectors, A and B, in the solvent extraction area. A LOW failure alarm would be required and did occur in both detectors, A and B, in order for the evacuation alarm to be initiated.

The licensee's investigation revealed that the alarm was sounded when background levels in the vicinity of the detectors dropped below the LOW alarm setpoints of 0.06 millirem per hour. During the calibration of the detectors, background levels were 0.5 millirem per hour due to radioactive liquids in storage tanks in the area. When the evacuation alarm sounded on September 30, tank levels had been previously reduced to a point where the area background was 0.05 millirem per hour which is below the LOW alarm setpoint. A health physics technician dispatched to the area after the alarm verified the low background reading with a hand held detector. Short term corrective actions by the licensee after the event included recalibration of the detectors with storage tanks in the area at very low levels (lowest possible background). The inspector considered these actions to be effective in preventing a similar recurrence in the solvent extraction area. The cause of the alarm was not due to a failure of the detector system which functioned as designed, but was due to the calibration of the detectors in a high background area. By recalibration with the lowest possible background, the LOW failure alarm would only be initiated during an actual detector failure or power loss. This recalibration would not affect the HIGH alarm setpoint of 15 millirem per hour.

Long term corrective actions discussed by the licensee involved the placement of source caps near all detectors in the plant to provide a minimum background (about 1 millirem per hour) and possibly eliminating alarm initiation when clear indication of detector failure has occurred.

(3) Conclusions

Short term corrective actions to prevent the recurrence of a false criticality alarm due to calibration during times of high background activity in the solvent extraction area were adequate. The longer term corrective actions will prevent similar occurrences in other areas of the facility.

- c. Housekeeping (03.04)
 - (1) Inspection Scope

During several facility tours the inspectors observed general housekeeping practices.

(2) Observations and Findings

During several facility tours the inspector noted numerous examples of poor housekeeping. Examples included respirators not being returned to designated receptacles for used respirators, used gloves and shoe covers not being placed in the appropriate receptacles, and contaminated equipment within the controlled area not being properly contained. In addition, the inspectors noted an unsecured compressed gas cylinder with no cap over exposed valving. The licensee took immediate actions in response to the inspectors observations and comments regarding housekeeping.

(3) Conclusions

Several examples of poor housekeeping were observed. The licensee took immediate actions in response to the inspectors observations and comments.

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3. Radiation Protection (83822) (R.)

- a. Radiation Protection Program Equipment (R1.03)
 - (1) Inspection Scope

The inspector reviewed the operability, calibration, and maintenance of select equipment to determine if the equipment was adequately maintained and reliable to perform the intended safety function.

(2) Observations and Findings

Contamination survey instruments at several step-off pads were observed for current calibration stickers and operability during tours. All instruments responded properly to battery checks and were source checked for operability daily by technicians. In addition, the invivo counting system and fixed air sampling locations used for determination of potential internal exposure were examined and no concerns were identified. Air samplers were found operational, calibrated, and flow rates were within set points. Regarding the invivo counting system, the inspector observed the daily source check performed prior to actual lung counting analysis, and reviewed the results from a recent cross-check performed with a NRC licensee for verification and accuracy of results. No problems were noted. Cross check results indicated good agreement between the licensees.

(3) Conclusions

Based on performance during tours and documentation in support of calibration and daily operability checks, the selected instruments and equipment performed the intended function in a reliable manner. The licensee's administrative controls appeared to provide assurance that instruments were maintained operational and calibrated at the required frequency.

- b. External Exposure Control (R1.04)
 - (1) Inspection Scope

The inspector reviewed radiation protection procedures, and discussed with licensee representatives the personnel monitoring requirements to determine if the licensee's monitoring program was consistent with requirements in 10 CFR Part 20, and if controls were in place to maintain occupational dose ALARA. Personnel exposure data was examined to determine if exposures were below 10 CFR Part 20 limits.

(2) Observations and Findings

Based on procedural reviews, and interviews with plant personnel observed inside radiation control areas, the licensee's monitoring program was consistent with requirements in 10 CFR Part 20. Procedures contained action limits and ALARA dose goals. The inspector reviewed the 1997 ALARA Report, thermoluminescent dosimeter (TLD) data, and discussed with a licensee representative personnel exposures for calendar years (CY) 1997 and 1998. The licensee indicated that based on exposure historical data and associated work area averages, the CY 98 maximum assigned external whole body dose (DDE) was considered an anomaly. An investigation was unsuccessful in determining the cause and the assigned exposure was attributed to a potentially contaminated TLD badge. Table 1 displays the maximum assigned exposure data and work area for CY 97 and projected data for CY 98 as of November. TLD results for the last quarter of 1998 were not available at the time of the inspection.

Year	Deep Dose Equivalent (DDE)	Maximum Dose Extremity (MDE)	Maximum Total Effective Dose Equivalent (TEDE)	Collective TEDE	Committed Effective Dose Equivalent (CEDE)
1997	0.60 rem	16.8 rem	2.95 rem	188	2.73 rem
Actual	(Maintenance)	(Pellet)	(Conversion)	person-rem	(Conversion)
1998	1.66 rem	16 rem	2.48 rem	196	1.90 rem
Projected	(Pellet)	(Pellet)	(Conversion)	person-rem	(Conversion)

Table 1. Annual Exposures

(3) Conclusions

Based on the records review and interviews, the inspector concluded that the licensee's external exposure control program was adequate for evaluating and monitoring personnel exposures. The exposure controls were in place to maintain exposures less than 10 CFR Part 20 limits. When administrative action limits were exceeded, an investigation into the causal factor(s) was initiated. Mini ALARA reviews provided licensee management data for tracking personnel exposures to maintain occupational dose ALARA.

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C. Internal Exposure Control (R1.05)

(1)Inspection Scope

> The inspector reviewed licensee procedures for assessing internal exposure to determine if controls were in place to monitor occupational doses, and verify that the administrative limits were established to control occupational dose ALARA. Exposure data based on air sampling results for CY 97 and the period ending November 1998 were reviewed to determine if exposures were in compliance with 10 CFR Part 20 limits.

(2)Observations and Findings

> Mini ALARA reviews were performed on a monthly and quarterly basis for trending personnel exposures and the identification of administrative action limits exceeded. Procedures contained action limits which were set below federal limits to ensure personnel exposures did not exceed limits in 10 CFR Part 20. Table 1 above presents the maximum assigned exposure data for CY 97 and projected data for CY 98 based on data through November 1998. The maximum assigned CEDE during the last wo calendar years has continued to decrease. When compared to the CY 96 maximum assigned CEDE of 3.09 rem, the projected maximum exposure for CY 98 (1.90 rem) represents a 38.5 percent reduction. The collective CEDE for CY 98 based on 398 monitored individuals was 128.3 rem compared to 159.1 rem in CY 97.

(3)Conclusions

> Based on the interviews and exposure records reviewed, the inspector determined that the licensee's internal exposure control program was adequate for evaluating and monitoring personnel exposures. The licensee was effectively tracking and trending occupational exposures. Administrative dose limits were established and all assigned exposures were well below the regulatory limits. The licensee's actions were effective in reducing airborne activity. Previous concerns expressed by the inspector associated with the operability of the invivo counting system were resolved and are discussed in Section 3.a.(3).

d. Respiratory Protection (R1.06)

(1) Inspection Scope

> The issuance of respiratory protection equipment and training verification was examined for adequacy in assuring that equipment was being obtained by certified users only.

(2) Observations and Findings

During frequent tours of the chemical conversion area, the inspector interviewed personnel observed performing maintenance and/or other activity requiring the use of respiratory protection. Interviewees were cognizant of respiratory protection training, medical requirements and the frequency for completing the training. When questioned regarding verification that training was current, the interviewees referred the inspector to the December 1998 qualified list of respirator users located throughout the control area on each respirator equipment storage rack. The inspector verified that training was current for each interviewee via the qualified user's list. No inconsistencies were noted.

(3) Conclusions

Based on interviews and observations of maintenance activities in progress, the inspector determined that no unauthorized users were donning respiratory equipment during the period of observation.

- e. Surveys (R1.08)
 - (1) Inspection Scope

The contamination control survey program was reviewed to determine if surveys were effective in the identification of removable contamination from drinking water fountains located inside the control area.

(2) Observations and Findings

Documentation was reviewed to show all water fountains were included in the periodic surveys for controlling contamination. Results showed that on occasion, smear results exceeded action levels requiring decontamination. During facility tours, the inspector collected smears from four (4) different locations with in the control area for analysis. No action levels were met or exceeded.

(3) Conclusions

Based on smear results, and the periodic surveys performed by the licensee, the contamination or ntrol program was effectively implemented to identify removable contamination and assure prompt cleanup.

f. Implementation of ALARA Program (R1.10)

(1) Inspection Scope

The licensee's ALARA program was reviewed to determine if the program and ALARA goals were being developed and implemented on an annual

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basis. In addition, the program for reinforcing ALARA concept among employees was assessed.

(2) Observations and Findings

Based on employee interviews, and a review of Section 1.0 of the rad worker training manual, the inspector determined that the annual training for radiation workers discussed in detail the definition, concept, and policy on ALARA. The rad worker videotape presentation required improvements and additional details to ensure management commitment and philosophy regarding ALARA is properly communicated consistent with the training manual. In addition, the videotape lacked any discussion regarding the employee's role in ALARA. The licensee indicated that the entire videotape was under review for updating and improvements.

On a quarterly basis, the licensee held mini ALARA meetings that were effective in reviewing and trending data to identify undesirable trends.

(3) Conclusions

Based on employee interviews, and a review of the rad worker training manual, the licensee's role in ensuring ALARA practices in all aspects of plant operations was clearly communicated. The ALARA program was effectively implemented as evidenced by the continued downward trend involving personnel exposure.

g. Followup on Previously Identified Issues (R1.12)

(1) Inspection Scope

F

The inspector reviewed actions taken by the licensee to correct previous issues to verify that the corrective actions were adequate and had been completed.

- (2) Observations and Findings
 - a. (Open) IFI 98-05-01: Verify corrective actions to resolve procedural non-compliances associated with TLD issuance, collection, and storage.

Corrective actions resulted in noted improvements in the TLD tracking and accountability reports. However, isolated problems were still apparent involving TLD storage and proper wearing. Consequently, this item remains open for additional corrective actions planned by the licensee in response to isolated problems noted during an internal audit and observations by the inspector during a facility tour.

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(b) (Closed) IFI 98-05-02: Review in-vivo counting system crosscheck results for accuracy and efficiency.

The inspector observed the daily source check performed prior to actual lung counting analysis, and reviewed the results from a recent cross-check performed with a NRC licensee for verification and accuracy of results. No problems were noted. Cross check results indicated good agreement between the licensees. Actions taken were consistent with the licensee's commitment.

(3) Conclusions

With the exception of IFI 98-05-01, the corrective actions taken were adequate for closure of previous issues. Additional corrective actions for IFI 98-05-01 had been identified but not fully implemented. Consequently, the item remains open for completion of additional actions.

4. Transportation (86740) (R4)

a. Preparation of Packages for Shipment (R4.01)

(1) Inspection Scope

The inspector reviewed the circumstances involving the shipment of a 55 gallon metal drum containing radioactive materials that was discovered to have a hole after arrival at the Barnwell Waste Management Low Level Radioactive Waste (LLRW) Disposal Facility.

(2) Observations and Findings

On October 14, 1998, the licensee notified NRC Region II that a 55 gallon drum of contaminated aluminum filter wastes that had been part of a shipment to the Barnwell LLRW facility was discovered to have a hole on the surface of the drum, with folds and crevices in the package. This drum was part of a larger shipment (L.S.A, n.o.s). This discovery was made by South Carolina Department of Health and Environmental Control (DHEC) personnel at the Barnwell facility on October 15, 1998 (Radioactive Waste Shipment No. 1098-8638).

By letter dated November, 4, 1998, DHEC notified the licensee that requirements of 49CFR part 173, South Carolina Radioactive Material License No. 97, and South Carolina Regulation 61-83 had been violated. This letter was a warning communication with no response required from the licensee, but directing an investigation and corrective measures. The licensee did, however, voluntarily respond by letter dated November 16, 1998. The requirements in 10 CFR part 71 state that the licensee shall comply with requirements in 49 CFR parts 170 through 189. In turn, 49 CFR Part 173.475 (b) states that before each shipment of Class 7 (radioactive) materials package, the offeror must ensure, by examination or appropriate tests, that packaging is in unimpaired physical condition, expect for superficial marks. The shipment of this drum containing a hole did not meet the requirements of this part and is identified as VIO 98-10-04.

The inspector reviewed the results of the licensee's investigation into the cause of the punctured shipping drum and the corrective actions implemented to prevent a future recurrence. The investigation included a review of shipping practices and a trip to the burial site by key licensee personnel involved in these type shipments. The licensee concluded that the drum was most likely punctured during final loading operations into the transport truck. The corrective actions included the following:

- Study all handling and loading techniques.
- Visiting the burial site for observations.
- Modification of shipping check sheet CF-83-134 to include an additional inspection of the containers after they are loaded onto the truck.
- Re-instructing all affected operators on proper handling techniques.
- Instructing health physics technicians to be observant for shipping container deficiencies during final surveying activities (surveys are required by CF-83-134).
- 6. Raising visual standards of acceptable shipping containers.

The inspector discussed the above corrective actions with cognizant licensee personnel and selectively verified that these corrective actions had been completed including revision of CF-83-134 to include the additional inspection requirements. The corrective actions appear adequate to prevent future recurrence.

(3) Conclusions

A violation was identified for shipping a metal drum with a hole in the surface to a disposal facility. The corrective actions implemented by the licensee appear adequate to prevent further recurrence.

<u>Certificates of Compliance (R4.04)</u>

(1) Inspection Scope

The Inspector reviewed circumstances involving the failure to complete required five year inspections on MCC shipping containers used for unirradiated fuel shipments.

(2) Observations and Findings

By their letter dated September 11, 1998, the licensee informed the Director of the Office of Nuclear Material Safety and Safeguards that five Model MCC shipping containers had not received a required periodic five year inspection of gadolinium absorber plates within the containers within the allotted time. This visual inspection was required by Chapter 8, (Acceptance Tests, Maintenance Program and Recertification Program) of the supplement to CoC No. 9239. This 30-day report was required per 10 CFR part 71.95.

Specifically, five MCC shipping containers that had not received a detailed visual inspection of gadolinium absorber plates within the five year period as required by the Recertification Program, were used for unirradiated fuel shipments as follows:

Container No.	Shipment Date	
134	06/04/98 and 08/05/98	
160	06/16/98	
233	06/01/98 and 06/18/98	
267	01/19/98	
290	01/12/98 and 04/16/98	

Upon further review of the inspection history concerning this issue, the inspector found that this was similar to a previously issued violation. On March 6, 1997, NRC issued a Severity Level IV Notice of Violation after two Model MCC fuel shipping containers were used to ship unirradiated fuel and the container had not been reinspected within the past five years in accordance with Maintenance program in force at that time (See NRC Inspection Report 70-1151/97-01). This inspection requirement included a visual examination of gadolinium absorber plates.

In the licensee's reply to a Notice of Violation dated March 27, 1997, the corrective actions to prevent further unauthorized shipments were specified and included the re-institution of the absorber plate inspection program that had been erroneously discontinued by the licensee. The Reply specifically stated, "The periodic re-inspection program was re-instituted for all applicable shipping containers. These actions have been effective in preventing any further unauthorized shipments."

The licensee also restructured the supplement to the CoC as a result of the March 1997 Notice of Violation, such that the five year inspection requirement was no longer contained in the Maintenance Program, but was moved to a new Recertification Program section. This revised supplement was approved by the NRC with Revision 5 of the CoC dated March 31, 1997. The specific requirements in the CoC indicate that packages be maintained in accordance with the Maintenance Program. Thus, the five year inspection of the gadolinium absorber plates was no longer a specific CoC requirement.

The NRC's intent for approving the changes in Revision 5 of the CoC was reflected in the Approval Record that accompanied the issuance of CoC 9239, Revision 5. The Approval Record described the change to the shipping container maintenance program as a change in the way inspections were to be performed. Specifically, it described that the change was such that only one side of the absorber plates was to be inspected instead of the entire gadolinium oxide coating. This change was supported by revised criticality safety calculations, and understood and approved by NRC. However, the Approval Record does not reflect the fact that these inspections were approved to be removed from the Maintenance Program and placed into a new Recertification Program section of the CoC supplement. This effectively removed the absorber plate inspections from the CoC requirements and was not the intent of the NRC's approval of the licensee's CoC supplement dated March 24. 1997. The CoC will be reissued to reinstate the absorber plate inspection as a requirement of the CoC.

(3) Conclusions

The licensee adequately responded to the discovery of shipping unirradiated fuel in MCC shipping containers that had not been reinspected per the shipping container's Recertification program. The corresponding CoC will be reissued to reflect the NRC's intentions regarding the shipping container Maintenance and Recertification programs.

5. <u>Exit Interview</u>

The inspection scope and results were summarized on December 11, 1998, with those persons indicated in the Attachment. The inspectors described the areas inspected and discussed in detail the inspection results below. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes has been deleted from this report. Dissenting comments were not received from the licensee.

ATTACHMENT

1. PERSONS CONTACTED

Licensee Personnel

- *J. Allen, Plant Manager
- *R. Byrd, Manager, Maintenance Instrument
- *R. Fischer, Senior Engineer, Regulatory Engineering and Operations
- *S. Gantt, Senior Regulatory Engineer
- *D. Goldbach, Manager, Chemical Operations
- "W. Goodwin, Manager, Regulatory Affairs
- *J. Heath, Manager, Regulatory Engineering and Operations
- R. Irving, Senior Engineer
- *A. Kaminsky, Manager, Human Resources
- *E. Keelen, Manager, Product Assurance
- *N. Kent, Engineer
- *R. Likes, Senior Regulatory Engineer
- *S. McDonald, Manager, Technical Services
- *C. Perkins, Manager, Maintenance
- *E. Reitler, Fellow Engineer
- *T. Shannon, Regulatory Technician
- *D. Williams, Engineer
- *R. Williams, Advisory Engineer

Other licensee employees contacted included engineers, technicians, production staff, security, and office personnel.

*Denotes those present at the exit meeting on December 11, 1998.

2. INSPECTION PROCEDURES USED

IP 8	8020	Plant Operations
IP 8	3822	Radiation Protection
IP 8	6740	Transportation

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Description
70-1151/98-10-01	Open	IFI - Review of NCS analyses by ONMSS.
70-1151/98-10-02	Open	VIO - Storage of material without approved procedure or posting.
70-1151/98-10-03	Open	VIO - Failure to remove cracked sintering boats from service.
70-1151/98-10-04	Open	VIO - Shipment of damage drum to burial site.
70-1151/98-05-01	Open	IFI - Verify corrective actions to resolve procedural non-compliances associated with TLD issuance, collection, and storage.

70-1151/98-05-02 Closed

IFI - Review in-vivo counting system cross-check results for accuracy and efficiency.

4. LIST OF ACRONYMS

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As Low as is Reasonably Achievable Committed Effective Dose Equivalent Certificate of Compliance Chemical Operating Procedure
Calendar Year
Deep Dose Equivalent
South Carolina Department of Health and Environmental Control Inspector Follow-up Item Inspection Report
Low Level Radioactive Wastes
Nuclear Criticality Safety
Not otherwise specified Nuclear Regulatory Commission
Total Effective Dose Equivalent Thermoluminescent Dosimeter Violation