R2/DI-17

Includes observation of EP drill

October 25, 1997

Westinghouse Electric Corporation
ATTN: Mr. J. B. Allen, Manager
Columbia Plant
Commercial Nuclear Fuel Division
Drawer R
Columbia, SC 29250

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/97-05

Dear Mr. Allen:

This refers to the inspection conducted on September 22-26, 1997, at the Columbia Nuclear Fuel Plant. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, violations or deviations were not identified. However, your attention is directed to the three (3) exercise weaknesses identified in Section 6.e of the enclosed Inspection Report. Please advise us within 60 days of the date of this letter, of the corrective actions you have taken or plan to take, showing an estimated date for completion.

In accordance with 10 CFR 2.790, of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

(original signed by
E. J. McAlpine)

Edward J. McAlpine, Chief
Fuel Facilities Branch
Division of Nuclear Materials Safety

Docket No. 70-1151
License No. SNM-1107

Enclosure: (See page 2)

G-16

Enclosure: NRC Inspection Report

cc w/encl:
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/97-05

Licensee: Westinghouse Electric Corporation

Facility Name: Commercial Nuclear Fuel Division

Date: September 22-26, 1997

Inspectors: D. Ayres, Fuel Facility Inspector
A. Gooden, Radiation Specialist
W. Tobin, Senior Safeguards Inspector

Approved by: E. J. McAlpine, Chief
Fuel Facilities Branch
Division of Nuclear Materials Safety

Enclosure

Executive Summary

Commercial Nuclear Fuel Division
NRC Inspection Report 70-1151/97-05

The primary focus of this routine announced inspection was the observation and evaluation of the licensee's biennial emergency preparedness exercise. Additional areas that were reviewed included the fire safety program, and plant operations. The report covered a one week period and included the results of inspection efforts of three regional fuel facility inspectors.

Safety Operations

- Minimization of respirator use during normal operations through the use of engineered controls as specified in a licensee procedure was not evident (Section 2.a).
- Deletion of the procedural prohibition against use of chewing gum, food products and tobacco products in the chemical area was undertaken to avoid NRC violations because corrective actions to prevent such use had been ineffective (Section 2.a).
- Response to loss of the uranium recovery ventilation scrubber system was quick and effective (Section 2.b).
- Fire Safety program was effectively managed (Section 3.c).
- Electronic procedure control system assured that only the proper revision were available to workers (Section 4.a).
- Formal monthly audits were being conducted with sufficient depth to identify operational safety problem areas, and were focused on inherent risks. Corrective action closure documentation, however, was incomplete (Section 4.b).
- Regulatory Compliance Committee was performing its functions in accordance with license requirements, but meetings minutes did not clearly differentiate between staff and committee findings, conclusions, and recommendations (Section 4.c).

Facility Support

- Employee training materials were well produced, and covered all required areas, but inclusion of plant specific examples would improve the level of worker knowledge (Section 5.c).
- Independent external audit of emergency preparedness was ineffective because detailed management expectations had not been provided to the external auditor (Section 6.a).
- Checklist format for emergency procedures and use of a decision flow chart for event classification was effective and user-friendly, but inconsistencies were noted between two emergency procedures and the Site Emergency Plan (Section 6.b).

- Adequacy of the program to provide for staffing the Emergency Response Organization and activating the Emergency Control Center during off-hours remains open from Inspection Report 70-1151/96-03 pending implementation of corrective actions (Section 6.c).

- [redacted]

- [redacted]

Ex. 2

- [redacted]

- [redacted]

Attachment:
Persons Contacted and Exit Interview
List of Items Opened, Closed, and Discussed
List of Acronyms
Scenario Description and Exercise Objectives

Report Details

1. Summary of Plant Status

This report covered a one week period. Special activities scheduled during the reporting period included the biennial emergency exercise involving onsite and offsite organizations. There were no unusual plant operational occurrences during the onsite inspection.

2. Plant Operations (88020) (O3)

a. Conduct of Operations (O3.01)

(1) Inspection Scope

The operation of the contaminated waste incinerator, handling and storage of bulk uranium powder, and UF_6 cylinders were reviewed for verification of adherence to safety requirements.

(2) Observations and Findings

The inspector received a thorough explanation of the operation of the incinerator from the area engineer. The inspector observed the operation of the incinerator fire box, the combustion gas scrubbing system, the scrubbing system water filtration and recirculation loop, the incinerator ash handling system, the incinerator ventilation system including Torit filters, and the incinerator control system electronics.

The inspector observed a drain in the floor of the incinerator room in the area of the scrubbing system water filters and observed a mop and bucket nearby. The inspector found that slightly contaminated spillage due to changing filters or from other leaks could escape into the floor drain. The inspector also observed piping runs that ended at the floor drain opening and liquids dripping from the pipes into the drain. One of these pipes was found to be a bleed line from the scrubber water recirculation system itself. The floor drain was found to be piped to an outdoor low-level waste tank, and so leakage from the replacement of scrub water filters was not a significant safety concern.

The inspector observed the loading of some material into the incinerator. The operator performing this loading donned a half-face respirator with particulate filter cartridges as required by the operating procedure. However, the inspector observed that during the loading operation, there was no temporary exclusion zone established within which respiratory protection was required, and no warning to other personnel that airborne contamination may be present. Although establishment of such an exclusion zone is not required, it would be consistent with the concept of ALARA. Other portions of the incinerator operation also have similar respiratory protection requirements. This is inconsistent with Respiratory Protection Procedure RA-205 which states, "The mandatory routine use of respirators should be kept to a minimum." and "The use of respiratory protection devices as a substitute for [process or engineering] controls is

not acceptable."

The inspector observed the bulk powder blending room, its associated storage bins, and blending equipment. The inspector observed that a semi-permanent respirator zone had been established for an indefinite length of time in one corner of the bulk blending room. This was found to have been established due to high air contamination levels associated with transfer of powder between certain containers. The inspector found one safety posting concerning the use of hearing protection in the area that was outdated. Modifications to the ventilation system had lowered the ambient noise level such that hearing protection was no longer needed. The licensee took steps to remove the posting. The inspector found that other safety postings in the area were adequate and were being followed.

The inspector observed the storage area for UF_6 cylinders in the controlled area near the vaporizers. Cylinders were stored vertically with safety chains in place. However, the inspector found their usefulness in question when it appeared that the weight of a full or partially filled cylinder, if tipped over, could break the chain. The inspector observed the equipment used to transfer the cylinders to and from the controlled area through an access door. The inspector found no problem with the equipment being used. The inspector reviewed the survey records of empty cylinders leaving the controlled area and found that 20% to 30% of the cylinders had to undergo some decontamination (usually around the valve) before being released from the controlled area. The inspector found that subsequent contamination surveys were adequately performed before actual transfer from the controlled area occurred.

During facility tours, the inspector observed two examples of discarded candy wrappers on the floor in the chemical area and one example of discarded gum in the same vicinity. Actual consumption or chewing was not observed. The inspector was informed by a licensee representative that previous procedural requirements (associated with Regulatory Affairs Procedure RA-203, General HP Rules and Recommendations) which forbid the use of chewing gum, food products and tobacco products in all chemical areas had been deleted. The licensee stated that the radiation worker and general radiation training continue to specify that the use of chewing gum, food products and tobacco products is strictly forbidden in all chemical areas. During the exit meeting, the inspector discussed with licensee representatives the disappointment with the licensee's response to delete the procedural requirement rather than take aggressive and effective management actions to prevent recurrence. The inspector stated that the significance of this matter would be further reviewed with regional management. The licensee acknowledged the inspector's concerns, and also indicated that they did not condone eating and drinking in controlled areas but corrective actions in the past have been unsuccessful and repeat findings of procedural non-compliance by NRC was undesirable.

(3) Conclusions

The operation of the contaminated waste incinerator and the bulk powder blending areas were performed per approved procedures and applicable safety postings. The minimization of respirator use during normal operations through the use of engineered controls as specified in Respiratory Protection Procedure RA-205 was not evident. The handling of UF_6 cylinders is adequate for protection of workers and the environment. The deletion of a procedural requirement as a form of corrective action to prevent a non-compliance reflected a non-aggressive approach to problem solving.

b. Review of Previous Events (O3.07)

(1) Inspection Scope

The inspector reviewed the facts surrounding the recent event involving the leak of contaminated scrubber water on the roof of the Uranium Recovery building.

(2) Observations and Findings

On September 18, 1997, a seal failed on the pump that circulated water through the scrubber serving the Uranium Recovery area ventilation system. The seal failure permitted several liters of slightly contaminated (69 ppm Uranium) scrubber water to leak onto the roof of the building where the scrubber was located. The licensee took swift action to remove the water, clean the area of contamination, and repair the pump. The cleanup effort included the removal and washing of all gravel on the roof in the vicinity of the leak, cleaning the roof membrane, and removal and cleaning of the elevated catwalk grating immediately above the scrubber pump.

The inspector observed the scrubber system on the roof of the Uranium Recovery building on September 24, 1997, and found the system remained shut down. The inspector took independent gamma readings with NRC survey equipment. The inspector found no discernable radioactivity above background on the roof, the catwalk grating, or the repaired pump. The inspector questioned the reportability of the incident since the system had been shut down more than 24 hours due to a contamination event and had not been reported to the NRC Operations Center. Section 3.7.3(c.1) of the License Application states that the NRC Operations Center will be notified within 24 hours of "(a)ny incident for which the work area is unavailable for normal use for an entire day, following a loss of radioactivity contamination control." The work area affected by this incident included the scrap dissolution and solvent extraction areas. The licensee indicated that the decontamination and repairs to the scrubber pump did not take more than an entire day and thus was available for use if the licensee had chosen to use it. Instead, the licensee had chosen to keep the scrubber system down for an extended period in order to facilitate other cleaning and maintenance activities. Since the area was available, but was kept shut down for reasons other than the loss of contamination control, this incident was not

reportable to the NRC Operations Center.

(3) Conclusions

The licensee responded quickly and effectively to the loss of contamination control incident.

c. Follow-up on Previously Identified Issues (O3.08)

(1) Inspection Scope

A review of the progress of corrective actions toward resolving Inspector Follow-up Item (IFI) 97-03-01, Notice Of Violation (NOV) 97-03-02, and IFI 97-03-03 was conducted for possible closure.

(2) Observations and Findings

IFI 97-03-01 involved defense elements identified in the Criticality Safety Evaluation (CSE) for the Ammonium Diuranate (ADU) conversion area dewatering centrifuge. The defense elements are controls of parameters important to criticality safety, and keep the k_{eff} within license limits. One defense identified for the dewatering centrifuge involved maintaining the speed of the centrifuge scroll at approximately 50 Revolutions Per Minute (RPM) greater than that of the centrifuge bowl. The licensee was unable to verify the speed by a direct RPM indicator and attempted to utilize other operating data to verify proper operation of the equipment. The licensee used an indirect method to determine proper scroll rotation by monitoring the oil temperature for the scroll bearings. However, the thermistor that measures this temperature had not been tested to verify its accuracy. Another indirect method used was monitoring the motor amperage. However, the amperage switch had not been properly tested and functionally verified. Thus, the licensee did not have an adequate, reliable method of verifying the speed difference between the scroll and the bowl of the centrifuge.

Even without controlling the speed difference between the scroll and the bowl, the original CSE stated that the k_{eff} of the system would not exceed the allowed limit of 0.95. The inspector found that the licensee had re-evaluated the defenses listed in the CSE for the dewatering centrifuge. Since the differential speed control between the centrifuge scroll and bowl was not necessary for criticality safety, the licensee's corrective action was determined to be revising the CSE to delete the scroll/bowl speed control from the list of defenses to initiating events. This revision was not completed and IFI 97-03-01 remains open.

The inspector reviewed the corrective actions associated with violation (VIO) 97-03-02 that involved Configuration Control Forms (CCFs) (TAF-500-1 Forms) that erroneously indicated the completion of documentation associated with a facility change. Various drawings, loop sheets, and schematics had not been updated as required by procedure TA-500. Corrective actions included revision of Form TAF-500-1 and Procedure

TA-500 to include the requirement that the responsible project engineer provide a working list of documents and drawings, that have actually been affected by a modification, at project closure. The inspector verified the completion of these corrective actions, and item VIO-97-03-02 is considered closed.

IFI 97-03-03 concerned the licensee not updating the CSE as facility changes were made. The CSE is noted as "essentially a subset of the Integrated Safety Analysis" in the license application and that the Integrated Safety Analysis (ISA) will be maintained in "real-time." Thus, the CSE should have also been maintained as a real-time document as much as practicable. Supplements had been developed for portions of the CSE to correspond with certain process changes, but were not attached to, contained in, nor referenced by the CSE document. The inspector reviewed the licensee's action item tracking system, but no significant progress had been made in including the appropriate supplemental information with the CSE document. IFI 97-03-03 remains open.

(3) Conclusions

Corrective actions associated with VIO 97-03-02 were adequately completed. Corrective actions on IFIs 97-03-01 and 97-03-03, involving updates to CSEs, had not significantly progressed in the four months since they were identified to the licensee.

3. Fire Safety (88055) (04)

a. Fire Prevention, Detection and Suppression

(1) Inspection Scope

This inspection was conducted to review the licensee's program for preventing, detecting and suppressing fires. Specific attention was given to the Incinerator Room in the Radiation Controlled Area (RCA). Chapter 8 of the License, "Fire Safety," was the primary inspection requirement and, as such, was the standard of this inspection. Other criteria included the NRC Branch Technical Position (BTP) on Fire Protection for Fuel Facilities, published in the Federal Register dated August 10, 1992. Additionally, NRC Generic Letter No. 95-01, "NRC Staff Technical Position on Fire Protection for Fuel Cycle Facilities," and the licensee's response of February 25, 1995, were also utilized.

(2) Observations and Findings

(a) Fire Prevention

The licensee's Safety Committee is currently the Regulatory Compliance Committee (RCC) and is further discussed in section 4.c. The RCC is responsible for the completion of the ongoing ISA. The inspector reviewed the ISA and noted that a

fire hazard analysis had been completed for the ventilation system. Chapter 5.4 of the analysis, considered the accident sequence, fire potential and control elements, along with such issues as fire loads, risks, mitigating systems, and manual/automatic suppression techniques. The inspector reviewed Procedure RA-102, "Regulatory Compliance Inspections," Revision (Rev.) 9, dated May 29, 1997. This Procedure calls for monthly inspections by area and plant managers for criticality, safeguards, industrial, and fire safety. As a result of such inspections, Regulatory Affairs Inspection Reports have addressed leaking pipes, overhead extension cords, and an inoperative emergency exit door (which was fixed immediately).

The licensee's Pre-Fire Plan (PFP) was an extension of the Fire Hazard Analysis and provided further details of each building and work area involved in licensed activity. Outlying support facilities were not addressed. The PFP explained what production occurs inside the areas, what fire hazards exist therein, and what special precautions need to be exercised. The inspector determined that the PFP was in need of revision due to recent reorganizations and retirements. The licensee stated its intention to further provide in the PFP details of fire detection and suppression equipment, the location of vents, doors and dampers, as well as electrical control boxes. The inspector was advised that the PFP has been provided to the local fire department. The licensee's effort to revise the PFP will be tracked as an IFI to be closed by mid-1998 (IFI 97-05-01).

The licensee's fire safety program is managed by a Regulatory Engineer who also performs industrial and nuclear safety functions. Maintenance technicians assist in the testing and repair of equipment. His procedures include Cutting/Welding (No. 207), Housekeeping (No. 300), Storage of Zirconium (No. 301), Fire Extinguisher Inspection (No. 303), Fire Watch Safety (No. 305) and Fire System Impairment Reporting (No. 306).

The inspector toured the nuclear and non-nuclear areas of the facility. Storage containers for flammable liquids were observed as were flame curtains, gas shut-off valves, lightning protection cables, and welding watches. Housekeeping was strictly enforced outside the buildings and inside the manufacturing area. Storage of unused material was minimal, fire loads were low, and "lay down" pads were well organized. Special attention was afforded the presence of zirconium.

The inspector reviewed the last two audits performed by the fire insurer which included reviews of the fire brigade training, offsite emergency notification, use of plastic ducts, maintenance of the systems, and protection of the roof filter houses. The licensee

was still studying the one recommendation relative to an automatic sprinkler system along the north side of the UF_6 Bay.

(b) Fire Detection

The inspector toured the nuclear and non-nuclear areas of this facility and noted the presence of either heat or smoke detectors throughout the facility. Heat detectors were observed to be inside air ducts. The detector alarms annunciate in both the security receptionist office and the Production Control Room. Pull boxes also alarm at these locations. Once authorized by the Production Shift Supervisor, the security officer informs the Columbia Fire Department by telephone of a request for response. The inspector positioned himself inside the Production Control Room similar to the Shift Supervisor who was seated at the operations monitor board at the time of a test of the fire annunciator panel. The visual feature of the panel could not be seen from that position, however, the audio feature attracted the supervisor's attention. The inspector noted that the security officer routinely telephones the Shift Supervisor to ask for guidance upon the annunciation of an alarm. At the security desk the alarm also annunciated audio-visually as well as printing out a hard copy record. All alarms are followed with a public address announcement from the security desk. At the entrances to the RCA the licensee has installed blue lights and a panel which informs responders of the specific type of alarm (fire, criticality, smoke, water flow etc.).

The inspector reviewed several plant drawings titled "Plant Utilities/ Fire Protection System," No. 510F01EL03 and randomly chose a pullbox to be tested by the licensee during the weekly test of the system. The alarm annunciated successfully and all indicators/lights/announcements were effective in alerting the three inspectors located throughout the facility. The inspector reviewed several records of the various maintenance and routine tests of the detection system (weekly, monthly, quarterly and annually).

(c) Fire Suppression

The inspector observed the presence of fire extinguishers of various types, hose houses, position indicator valves, standpipes, deluge guns, dampers and fire hoses appropriately located throughout the facility. This was also true of the Incinerator Room which was provided with automatically closing doors and dampers, sprinklers, fire barrier walls, extinguishers, detectors and pull boxes. The suppression system consisted of two tanks of water which provided 450,000 gallons via pumps that were provided with emergency power. The inspector conducted a valve lineup walkdown of the water supply from the tanks through the pipes, pumps and risers to the sprinklers, and drain lines for Risers A and B.

Two vehicles provided the Fire Brigade with hoses, axes, air

supplies, wrenches, protective clothing, lights and spill kits. The inspector verified the ignition keys were readily available and identified inside the nearby guard house.

Moderation controlled areas were well marked to preclude the use of water. These areas were also identified in the PFP. The inspector verified the presence of dry sprinklers inside the roof air handling unit over the Integrated Fuel Burner Absorber facility. The licensee no longer used halon but did have a supply of Inergen (nitrogen/ argon/ carbon dioxide) under the floor of the telephone room, the computer room, and the quality control (QC) vault which starves out a fire.

There were 80 members on the Fire Brigade. On back shifts, six members are routinely present. There were 24 managers, supervisors, and salaried employees on the Brigade. The inspector reviewed the training schedule for 1997 which included four days at the State Training Academy. Site specific training addressed the moderation control areas, RCA hazards, and manual operation of the fire suppression pumps. Additional training occurs with the South Carolina Department of Health and Environmental Control (SCDHEC). The inspector randomly chose the training records of six brigade members and found them to be current.

The Memorandum of Understanding with the Columbia Fire Department was dated May 15, 1997, and referenced onsite visits and response capabilities.

(3) Conclusion

Based upon observations, interviews, testing, walkdown, and records review, the inspector concluded that the licensee's Fire Safety program was well managed and effective. Housekeeping was strictly enforced. Equipment was maintained. Fire Brigade training and deployment is a strength. The PFP was in need of revision (IFI 97-05-01). There were no violations identified.

4. Management Organization and Controls (88005)(O5)

a. Procedure Controls (O5.02)

(1) Inspection Scope

The licensee's system for approving and controlling procedure changes was reviewed for adequacy and compliance with license requirements.

(2) Observations and Findings

The inspector received a thorough introduction to the licensee's Electronic Procedure System (EPS) from the Document Control Technician. The inspector observed how procedure changes were initiated, and revisions were drafted by the Document Control Technician and placed into the EPS. The draft revision was electronically sent to each reviewer simultaneously, and comments and approvals/disapprovals were electronically sent back to the Document Control Technician. The inspector observed the approval pages for a sampling of each procedure category and found them to be in accordance with the requirements in the license application. The inspector also observed that the EPS electronically provided only the current revision of each procedure to the users such that outdated revisions could not be mistakenly used.

(3) Conclusions

The licensee's procedure control system met the license requirements, and assured that only the proper revision were available to workers.

b. Internal Reviews and Audits (O5.03)

(1) Inspection Scope

Monthly licensee internal audits were reviewed to verify adequacy of scope and depth of the audits, technical capability of auditors, and documentation of findings and corrective actions. Operations "Redbook" items of operational upsets and the items included in the Health Physics (HP) reports were also reviewed.

(2) Observations and Findings

The inspector reviewed files containing monthly audits for 1997. The inspector found the audits to be conducted by staff familiar with process operations and safety significant issues. The inspector found that audits were conducted in each area of the plant at least twice per year, and audits were performed in the chemical conversion area every month. This focus on the chemical conversion area was consistent with the inherent safety risks associated with the chemical process. The monthly audits routinely identified seven to ten items for corrective actions and were documented on corrective action forms. The inspector found that corrective actions were usually completed within a few days, but that

some (10%-20%) involved longer-term actions such as procedure revisions and design changes. The inspector also found that documentation of completed longer-term corrective actions was not always included in the monthly audit file. In other instances, documentation of completed corrective actions was no more than a self-adhesive note attached to the corrective action form. The inspector observed that the corrective action form included sections for auditors to complete concerning information on the problem found, the immediate or short-term corrective actions taken, and any long-term actions to be taken. The inspector found no provision on the form to document completion of corrective actions. The inspector informed the licensee that documenting the completion of corrective actions on the corrective action form would facilitate closure of the audit findings.

The inspector reviewed the licensee's "Redbook" items of operational events for responses to process upsets and equipment failures. The inspector found that no significant issues were reported that did not already have corrective actions in place. The inspector also reviewed the file containing the licensee's HP findings, with again no significant items that were not already being addressed with corrective actions. The inspector reviewed the purpose of the two sets of information files with licensee management and questioned why they did not appear to be congruent. The inspector found that the two systems covered process events from two directions, the "Redbook" system from an operational viewpoint, and the HP records from a (normally radiological) safety viewpoint. Both sets of information, when combined, gave a thorough picture of the process upsets and anomalies that occur in the facility. Items in the "Redbook" system may not appear in the HP records if they are not considered safety significant. Conversely, items in the HP records may not appear in the "Redbook" system if they are not considered a significant process upset. Each set of information was sent to the Manager of Regulatory Affairs for condensing before being presented to the Plant Manager. The inspector found no conflicting information between the two systems.

(3) Conclusions

The licensee's monthly formal audits were being conducted with sufficient depth to identify operational safety problem areas, and were focused on inherent risks. Corrective action closure documentation was incomplete. The combination of "Redbook" and HP unusual incident reports provided a complete picture of identified operational and safety concerns.

c. Safety Committees (O5.04)

(1) Inspection Scope

The RCC functions were reviewed to verify proper membership, attendance, frequency and scope of meetings, and actions taken.

(2) Findings and Observations

The inspector reviewed the RCC meeting minutes for 1996 and 1997, and determined that the committee's membership, attendance at meetings and meeting frequency met the applicable license requirements. RCC meetings were being held monthly instead of the required quarterly minimum frequency. The inspector reviewed the topics covered in the several most recent meetings and found that a wide range of safety and regulatory issues were covered. The inspector observed that the RCC meeting minutes included a synopsis of each topic covered, and contained attachments of informational materials presented to the committee for their review.

The minutes reports for one meeting that was reviewed in depth included information on a project for a new groundwater monitoring system. The inspector reviewed the project with the environmental engineering staff and compared it with the information contained in the RCC meeting minutes. The inspector verified through the discussions with the staff that the project was solely for monitoring of chemical constituents not regulated by NRC, and did not include monitoring for uranium concentrations in areas of known present or past soil contamination (i.e. soil around waste treatment areas) that are monitored with other systems. Thus, the information provided in the RCC meeting minutes was found to be consistent with the project scope.

The inspector observed that the License Application includes a requirement that the RCC's findings, conclusions, and recommendations will be formally documented. However, the inspector found that it was difficult to determine whether the information in the meeting minutes included the committee's findings, conclusions, and recommendations; or if all of the information in the minutes was that which was presented to the committee from other sources. The inspector discussed this situation with the scribe for the RCC who indicated that the committee's output was indeed imbedded within the minutes. The inspector found that even though the committee's findings, conclusions, and recommendations were a part of the meeting minutes, that the minutes needed to more

clearly identify which items were inputs to the committee and which items were outputs from the committee. This need for clearer identification of the committee's outputs in the meeting minutes will be tracked as IFI 97-05-02.

(3) Conclusions

The licensee's RCC was performing its functions within the prescribed requirements of the License Application. The minutes of RCC meetings do not clearly differentiate between staff and committee findings, conclusions, and recommendations.

5. TRAINING (88010) (F2)

a. Inspection Scope

The licensee's training program [10 CFR 19.12 Training (F2.01), General Nuclear Criticality Safety Training (F2.02), General Radiological Safety Training (F2.03), and General Emergency Training (F2.04)] was reviewed to determine whether it was adequate to promote safety and in compliance with regulatory requirements and license conditions.

b. Observations and Findings

The inspector observed the training materials used for initial training and biennial retraining of radiation workers. These training materials included the Regulatory Training Manuals for the Chemical Area and the Mechanical Area (October 1996 versions), plus the videotaped instruction on general regulatory issues. The inspector observed that sections in the training manuals were dedicated to ALARA, radiation exposure, HP, nuclear criticality safety, safeguards, industrial safety/hygiene and fire protection, emergency response, and information from selected NRC regulatory guides. Additionally, the inspector observed that guidance for area-specific requirements were provided for the HP and criticality safety sections.

The inspector observed that some portions of the training materials lacked some simple examples that would be helpful in illustrating certain topics. One of these topics involved a discussion of the difference between transportable and non-transportable forms of uranium in the body, but the training materials did not mention which forms found at the licensee's facility were in the two categories. Additional information may also be warranted in the chemical hazards section such that specific effects of exposure to chemicals used or produced at the facility is included.

c. Conclusions

The training materials were well produced, and covered all required areas, but inclusion of plant specific examples would improve the level of worker knowledge.

6. EMERGENCY PREPAREDNESS (88050)(F3)

a. Review of Program Changes (F3.01)

(1) Inspection Scope

Changes to the licensee's Site Emergency Plan (SEP), procedures, organization, facilities, and equipment were reviewed to assess the impact on the effectiveness of the program; and to verify that changes met commitments, license conditions, and were provided to NRC in accordance with 10 CFR 70.32(i). Examine the adequacy of the emergency preparedness independent audit program.

(2) Observations and Findings

Since the September 1996 inspection, organizational changes were made as were Plan and procedural changes. Regarding the organizational changes, changes involved both onsite and offsite personnel and were as follows:

- During July 1997, a new Plant Manager was appointed to replace the previous Plant Manager who was selected to the position of Division General Manager. The appointments stemmed from the retirement of the previous Division General Manager. The individual filling the Plant Manager's position in the normal organization is also assigned primary responsibility as the Emergency Director (ED) for implementing the emergency procedures and directing the emergency response organization (ERO). During the biennial exercise discussed in Section 6.e, no performance problems were noted with the newly assigned Plant Manager's response as the ED.

- Regarding offsite changes, the day-to-day contact at the offsite medical support facility on emergency preparedness matters changed; however, no changes were made to the Hospital Administrator position or the Letter of Agreement between the licensee and the hospital. Consequently, the aforementioned change had no impact on the state of preparedness.

- Since the last inspection, revisions dated February 19, 1997, were made to Sections III (Rev. 9), V (Rev. 7), and VII (Rev. 8) of the Plan. Changes in Section III resulted from a previous inspection finding documented as an IFI (NRC Inspection Report No. 70-1151/96-03) involving the revised emergency action levels (EALs) reducing the effectiveness of the Plan. Section V change was strictly an editorial update. Regarding Section VII, the change removed the requirement to perform drills biennially on each shift in the years in which exercises are not required. As revised, the Plan commitment remains to perform drills biennially in the years in which exercises are not required; however, drills will not be performed on each shift. The inspector discussed with the licensee that although the changes were approved by NRC and no requirement exist for biennial drills be held on each shift, the

change potentially reduces the effectiveness of the ERO training program in that team concept training for each shift is removed. The inspector further stated that the shift (team) training approach for emergency response provides a more realistic portrait of what response capability or state of readiness exist on each shift, rather than the state of readiness by individual components. A change was also made to Section VII to reflect NRC guidance associated with the scenario submittal to NRC in advance of the exercise date for consistency with Regulatory Guide 3.67. Changes were made to the emergency procedures which implement the Plan and are discussed below in Section 6.b. The aforementioned Plan revisions were reviewed and approved by NRC via letter dated May 15, 1997.

Section 7.8 of the SEP required an annual independent audit of the emergency preparedness program including the SEP and implementing procedures, training activities, emergency facilities, equipment, supplies, records, etc. The inspector was particularly focused on the licensee's audit program in light of a violation identified during the last inspection of this area (see Section 7.b below). Accordingly, this area was reviewed to determine if the licensee had performed the independent review or audit, and verify that the licensee had evaluated any significant changes on the emergency preparedness program. The inspector reviewed audit documentation and interviewed the Auditor for the Calendar Year (CY) 96 audit conducted on December 13, 1996. The inspector determined that the audit lacked depth and thoroughness based on the following: lack of guidance (detailed audit checklist or protocol) was provided to the auditor to ensure the audit adequately addressed areas identified in Section 7.8 of the SEP; duration of the audit (approximately five hours); and the auditor's knowledge of the licensee's program (SEP, emergency procedures). In addition, the independent review or audit did not include an evaluation of the Plan or procedure changes on the emergency preparedness program. Consequently, the inspector discussed as an IFI, the development of an audit checklist and audit plan detailing the areas of the audit and the acceptance criteria for area(s) audited (IFI 97-05-03).

(3) Conclusions

Based on the review of records and interviews, the inspector determined that the changes to the licensee's SEP and organization met commitments, license conditions, and NRC requirements. The revision to the licensee's drill program for the years in which exercises are not required, presents a challenge to the program for maintaining emergency response proficiency on all shifts. The independent external audit of emergency preparedness was ineffective because detailed management expectations had not been provided to the external auditor. The licensee was distributing the SEP changes to onsite and offsite copy holders, and inserting changes into control documents in a timely manner in accordance with 10 CFR 70.32(i) and Regulatory Affairs Procedure RA-100-A. Copies of the SEP were checked at select locations and determined to be current revisions.

b. Plan and Implementing Procedures (F3.02)

(1) Inspection Scope

Selected implementing procedures were reviewed for adequacy in the implementation of the SEP.

(2) Observations and Findings

Four procedures (A-04 "classification;" A-03 "Evacuation, Accountability, and General Response;" A-07 "Equipment and Supplies;" and Emergency Guide G-02 "Classification Logic Flow") were reviewed for applicability and adequacy in implementing the SEP. Two items were noted as follows:

- Procedure A-04 classification Logic Flow Chart (Rev. 2, dated August 25, 1997) did not include in a decision box the bomb threat EAL as an Alert condition consistent with Section 3.1.2 of the SEP and/or Section 7.12 of Procedure A-04.

- Emergency Guide G-02 "Classification Logic Flow (Rev. 0, dated July 10, 1996) contained EALs for fire, hazardous material release, and UF_6 release that were inconsistent with the wording of EALs in Procedure A-04 Classification Logic Flow Chart. Emergency Guide G-02 had not been revised to reinstate the EALs containing conditions for the emergency as a function of time. For example, A-04 indicates that a fire which cannot be extinguished within approximately 15 minutes should be declared an Alert. Emergency Guide G-02 indicates a fire which can not be extinguished quickly and threat of further escalation.

In response to the above inconsistencies, the licensee issued Commitment Tracking System (CTS) No.564 and assigned the corrective action for completion by March 31, 1998. The inspector reviewed the assigned corrective actions and will review the licensee's implementation of the corrective actions during a subsequent inspection.

Controlled copies of the SEP and procedures were examined in the Conversion Control Room, Guard Shack, fire brigade truck, and all verified as current and up to date. The inspector also verified that an emergency telephone listing was available and maintained current and up to date.

(3) Conclusions

Two procedures selected for review contained EALs that were inconsistent with details contained in the SEP. The procedure checklist format and use of a decision flow chart for event classification appeared to be effective and user-friendly.

c. Training and Staffing of Emergency Organization (F3.03)

(1) Inspection Scope

Emergency response training was reviewed to determine if the licensee had provided training to response personnel in accordance with Section 7.2 of the Plan.

(2) Observations and Findings

The inspector reviewed training for those individuals participating in the biennial exercise and assigned to the ERO as the ED or alternate ED. It was also noted that an emergency telephone directory contained a listing of individuals assigned to key ERO positions. The inspector verified that selected individuals from the directory had been trained during the calendar year. According to documentation, ED training was attended by appropriate individuals during August 1997.

Regarding offsite support training, the inspector noted that the following training was conducted:

- On December 30, 1996, State (SCDHEC and Emergency Preparedness Division) and local (Columbia Fire Department, Richland County Emergency Planning, and Richland County Emergency Services) personnel were provided training. Training included a discussion of the changes to the Plan and procedures; CY 96 emergency events; the toxic and radiological effects of probable accidents at the Columbia site; a site tour including a review of the fuel fabrication process; and participation in a hazardous material drill during CY 97.

- By letter, personnel from the offsite support groups were invited to attend CY 97 training conducted on August 28, 1997. Included in the training were changes to the Plan and procedures; discussions regarding the biennial exercise planned for September 1997; personnel exposure guidelines; personnel monitoring devices and basic contamination control principles.

Regarding ERO staffing and activation of the Emergency Control Center (ECC), the inspector discussed with the licensee results from recent drills demonstrating that minimum staffing levels fo ECC activation could be achieved in a timely manner. The discussion disclosed that the drill procedure was inadequate for providing an assessment due to: (1) licensee had not identified what positions (minimum staffing) would be required for activating the ECC; and (2) the notification procedure for contacting personnel to obtain an estimated time of arrival was limited to telephone contact only and did not include pager notification in the event contact was not available via telephone. The licensee's program for staffing the ERO and activating the ECC during off-hours was previously discussed and identified as an IFI (see IR 70-1151/96-03). The licensee on this matter indicated that a misunderstanding during the initial discussion of this item contributed to the inadequacy, but base on the additional details, the appropriate actions would be take to resolve this matter. The inspector informed the licensee tha the results of the additional actions will be reviewed during a

subsequent inspection. Therefore IFI 96-03-06 remains open.

(3) Conclusions

Based on documentation reviews, and an interview with licensee personnel, the inspector determined that training provided sufficient information to assist responders in their roles and responsibilities to the ERO. An area requiring licensee attention is the program for ensuring that the appropriate staffing level is available, and can be notified and activated i a timely manner to augment the ERO during off hours.

d. Offsite Support (F3.04)

(1) Inspection Scope

Licensee activity in the areas of training, agreements, and exercises, was reviewed to determine if the licensee was properly coordinating with offsite authorities.

(2) Observations and Findings

Discussions were held with a member of the licensee's staff regarding the coordination of emergency planning with offsite support agencies. Section 7.6 of the Plan required the licensee to annually offer training to offsite groups. The inspector discussed with an offsite contact hazardous materials training provided by the licensee during CY 97, and reviewed documentatio to show that training was offered to personnel from State and local organizations on December 30, 1996 and August 28, 1997 (discussed above in Section 6.c). According to documentation an discussions with the licensee, the offsite support groups were also invited to participate in the biennial exercise held on September 25, 1997. During the exercise evaluation discussed below, the inspector noted the arrival of the offsite fire support agency and emergency medical services as exercise participants.

All agreement letters were reviewed and renewed in accordance with Section 4.4 of the SEP and Regulatory Guide 3.67.

(3) Conclusions

Based on the licensee's contact with offsite support agencies to provide training and a review of the agreement letters, the inspector concluded that the licensee was maintaining the interface in accordance with the SEP commitments. All changes to the SEP were transmitted to State and local copy holders in a timely manner as reflected by transmittal documentation.

e. Drills and Exercises (F3.05)

Ex. 2

3pgs
Withheld in
entirety
Ex. 2

Ex, 2

f. Emergency Equipment and Facilities (F3.06)

(1) Inspection Scope

Facilities and equipment were inspected to determine whether the licensee's ECC, emergency response equipment, instrumentation, and supplies were maintained in a state of operational readiness.

(2) Observations and Findings

During the exercise, the inspector observed equipment operations at the location of the simulated accident. No problems were noted. In addition to equipment utilized in response to the simulated accident, the inspector also during a facility tour checked the operability of an air sampler and radiation survey instruments at the South Gate Guard Shack, verified the usability of self-contained breathing apparatus units at three different locations (Guard Shack, chemical area main step off pad, and Conversion Control Room), and a spot check was made of the SEP and emergency procedures to ensure current versions were maintained at key locations. No problems were noted, all equipment was properly maintained and current copies of the SEP, procedures, and the emergency telephone directory were available. One aspect of the licensee's equipment requiring followup was the audibility of the Criticality Warning System (CWS) inside the respiratory protection facility. During the weekly test of the CWS, the inspector evaluated the operability and audibility of the CWS/fire alarm (referred to as the Voice Communication System or VCS) from the respiratory facility. The inspector noted that the VCS announcement and the fire alarm signal was operable and audible; however, no CWS signal was audible within the facility. Consequently, the inspector discussed the test results with licensee and NRC personnel who were positioned in other areas of the plant to observe and evaluate the test. According to personnel at other locations, no problems were noted with operability (see above Section 3.a.(2)(b)). A member of the licensee's staff indicated that the CWS was audible albeit faint in the vicinity outside the respiratory facility. In response to the inaudibility

results, the licensee expressed plans to review this matter for taking the appropriate actions. The inspector informed the licensee that the corrective actions taken to ensure the audibility of CWS alarms within the respiratory facility was would be reviewed during a future inspection (IFI 97-05-10).

The inspector reviewed documentation covering the period October 1996 to September 1997, to confirm the periodic testing and surveillance performed on emergency equipment and supplies stored in health physics emergency cabinets (main office building and south assembly point), and the cellular phone located at the main guard station used for backup communications in the event of a loss of line communications.

(3) Conclusions

The emergency equipment was adequately maintained and appeared to be operationally ready for responding to various types of accidents. The licensee's onsite capability for obtaining meteorological data is archaic and possibly inadequate based on the design and its' capability to withstand certain environmental influence (e.g. high winds). The inspector discussed this matter with the licensee as an area for review to ensure the operability and accuracy in the event of sever weather conditions. The audibility of the CWS inside the respiratory facility will be reviewed during a future inspection.

7. Followup on Previously Identified Items

a. Inspection Scope

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

b. Observations and Findings

(1) (Closed) IFI 70-1151/95-06-01: Failure to promptly make an Alert declaration in accordance with the SEP and CSEP-0019.

The inspector observed the licensee's performance in event recognition and emergency declaration during the biennial exercise conducted on September 25, 1997 (See Section 6.e). The Alert declaration by the ED in response to the postulated accident was both correct and timely. Within 10 minutes of the initial details provided to the Control Room, an Alert was recommended to the ED by the EC.

(2) (Closed) VIO 70-1151/96-03-04: Failure to conduct an independent audit in accordance with Section 7.8 of the SEP.

The inspector reviewed the licensee's response to the NOV dated November 27, 1996, and reviewed the licensee's corrective actions taken in response to the NOV. The licensee's actions taken were consistent with those actions committed to in the NOV response. All actions were completed as discussed. However, the adequacy of the audit could not be determined due to lack of an audit acceptance or rejection criteria. Further, the auditor when contacted informed the inspector as to the duration of the audit and the lack of detailed guidance provided for performing the audit (see above discussion in Section 6.a). Corrective actions were taken by the licensee as stated in the NOV response. Therefore, the NOV was closed, but the adequacy of the audit was considered an IFI (see above Section 6.a).

(3) (Closed) IFI 70-1151/96-03-05: Verify that EAL changes meet guidance in Regulatory Guide 3.67 and are approved by the Office of Nuclear Material Safety and Safeguards (ONMSS).

The inspector reviewed Section 3.1 of the SEP entitled Emergency Classification, dated February 19, 1997 and noted that the examples of initiating conditions for the Alert classification were consistent with examples of the Alert classification found in Appendix A to Regulatory Guide 3.67 "Standard Format And Content For Emergency Plans For Fuel Cycle And Materials Facilities." In addition, the inspector reviewed the NRC letter granting the approval for changes dated May 15, 1997, from ONMSS. As a result this item is considered closed.

(4) (Open) IFI 70-1151/96-03-06: Verify the actions to ensure timely activation and staffing of the ECC.

The inspector discussed with the licensee contact assigned responsibility for this item and reviewed documentation resulting from the drill. The inspector noted that a drill requesting estimated time of arrival to the site was performed but the procedure in which the drill was conducted was inadequate for assessing the effectiveness of the administrative and physical mechanism for ensuring timely activation and staffing. In addition, the licensee had not identified what minimum staffing would be required for activating the ECC during off hours. Consequently, this item remains open for additional actions by the licensee.

c. Conclusions

With the exception of IFI 96-03-06, the corrective actions were adequate for closure of previous issues.

8. Exit Interview

The inspection scope and results were summarized on September 26, 1997, with those persons indicated in the Attachment. The inspector described the areas inspected and discussed the inspection results including the repeat issue involving the presence of candy wrappers and discarded chewing gum in the chemical area, and the likely informational content of the inspection report with regard to documents and/or processes reviewed during the inspection. 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. Potential violations were discussed during the exit, but based on a detailed review of the information and requirements specific to the issues, the licensee was contacted following the inspection and informed that no violations resulted. Dissenting comments were not received from the licensee.

ATTACHMENT

1. PERSONS CONTACTED

Licensee Personnel

*J. Allen, Plant Manager
*C. Alstadt, Manager, Maintenance
*J. Bush, Manager, Manufacturing
*S. Gantt, Engineer, Regulatory Engineering and Operations
*D. Goldbach, Manager, Chemical Operations
*W. Goodwin, Manager, Regulatory Affairs
*J. Heath, Manager, Regulatory Engineering and Operations
*J. Hooper, Senior Regulatory Engineer
*A. Kaminsky, Manager, Human Resources
*E. Keelen, Manager, Product Assurance
*S. McDonald, Manager, Technical Services
*D. Precht, Materials Manager
*E. Reitler, Fellow Engineer
*T. Shannon, Regulatory Affairs Technician
*P. Stroud, Manager, Security and Services
N. Stevenson, Team Manager, Chemical Conversion
R. Jacobs, Team Manager, Chemical Conversion
*R. Williams, Regulatory Affairs Advisory Engineer
*M. Ruhl, Team Manager, Maintenance

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

*Denotes those present at the exit meeting on September 26, 1997.

Other Personnel

W. Corley, South Carolina Department of Health and Environmental Control

2. INSPECTION PROCEDURES USED

IP 88020	Plant Operations
IP 88055	Fire Safety
IP 88005	Management Organization and Controls
IP 88010	Training
IP 88050	Emergency Preparedness

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Description
70-1151/95-06-01	Closed	IFI - Failure to promptly make an Alert declaration in accordance with the SEP and CSEP-0019.

70-1151/96-03-04	Closed	VIO - Failure to conduct an independent audit in accordance with Section 7.8 of the SEP.
70-1151/96-03-05	Closed	IFI - Verify that EAL changes meet guidance in Regulatory Guide 3.67 and are approved by ONMSS.
70-1151/96-03-06	Open	IFI - Verify the actions to ensure timely activation and staffing of the ECC.
70-1151/97-03-01	Open	IFI - Follow-up on testing of the centrifuge instrumentation.
70-1151/97-03-02	Closed	NOV - Failure to update the drawings, loop sheets, and schematics listed on various CCFs as required by Procedure TA-500.
70-1151/97-03-03	Open	IFI - Follow-up on the licensee's actions to include the appropriate supplemental information with the appropriate CSE documents.
70-1151/97-05-01	Open	IFI - Revise the PFP by mid-1998.
70-1151/97-05-02	Open	IFI - Provide clearer identification of the Regulatory Compliance Committee's outputs in the meeting minutes.
70-1151/97-05-03	Open	IFI - Develop an audit checklist and audit plan detailing the areas of the audit and the acceptance criteria.

Ex. 2

Ex. 2

4. LIST OF ACRONYMS

ADU	Ammonium Diuranate
BTP	Branch Technical Position
CAA	Controlled Access Area
CCF	Configuration Control Form
CFR	Code of Federal Regulation
CSE	Critical Safety Evaluation
CTS	Commitment Tracking System
CWS	Criticality Warning System
CY	Calendar Year
EAL	Emergency Action Level
ECC	Emergency Control Center
ED	Emergency Director
EPS	Emergency Procedure System
ERO	Emergency Response Organization
EW	Exercise Weakness
HP	Health Physics
HPC	Health Physics Coordinator
IFI	Inspector Follow-up Item
IR	Inspection Report
ISA	Integrated Safety Analysis
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
ONMSS	Office of Nuclear Material Safety and Safeguards
PFP	Pre-Fire Plan
PSP	Physical Security Plan
QC	Quality Control
RCA	Radiation Controlled Area
RCC	Regulatory Compliance Committee
Rev.	Revision
RPM	Revolutions Per Minute
SCDHEC	South Carolina Department of Health and Environmental Control
SEP	Site Emergency Plan
SNM	Special Nuclear Material
UF_6	Uranium Hexafluoride
VCS	Voice Communication System
VIO	Violation