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FACILITY STATUS REPORT
FOR THE
WESTINGHOUSE ELECTRIC CORPORATION
COMMERCIAL NUCLEAR FUEL DIVISION
COLUMBIA, SC FACILITY

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BACKGROUND INFORMATION
ON
WESTINGHOUSE ELECTRIC CORPORATION

PART 1 - FACILITY DESCRIPTION, STATUS, AND GENERAL PERSPECTIVE

1.1 Background Information

Facility:	Westinghouse Electric Corporation
Location:	South of Columbia, South Carolina
Docket Number:	70-1151
License Number:	SNM-1107 Last Renewal: May 1985
Type of Facility:	Low-enriched Fuel Fabrication for LWRs
Operational Date:	1969

1.2 Location and Site Description

The Westinghouse site is located on South Carolina Highway #48 (Bluff Road) in Richland County approximately 10 miles southeast of Columbia, South Carolina. The site is situated approximately 1,800 feet from the highway on a semirural plot of about 1,156 acres. The facility is on a knoll some 40 feet above the water level of the nearby Congaree River.

1.3 Plant Fabrication/ Recovery Overview

The plant fabricates nuclear fuel assemblies containing low-enriched (<5% U-235) uranium oxide fuel for use in commercial light-water nuclear-powered reactors. The fabrication process involves the chemical conversion of uranium hexafluoride (UF_6) to uranium dioxide (UO_2) using the ammonium diuranate process and the direct conversion process. Conversion is followed by milling, pressing, sintering, and machining of the uranium to form fuel pellets approximately one-quarter inch in diameter and one-half inch in length. These pellets are loaded and encapsulated into fuel rods approximately 12 fee long and the rods are stacked into fuel assembly hardware fixture frames for eventual use in nuclear reactors.

Various recovery operations including thermal oxidation, dissolution of scrap material with nitric acid, chemical precipitation, wet mechanical separation, washing operations, and solvent extraction are carried out to support the conversion process in the recycle of material. Incineration is conducted to decrease the volume of low-level waste and to economically recover uranium contained in combustible waste.

1.4 Workforce

Approximately 1,000 people are employed at the facility,

including a contract security guard force.

1.5 Site Management Personnel

R. H. Koga, Plant Manager
E. E. Keelan, Manager, Manufacturing
S. G. McDonald, Manager, Technical Services
W. L. Goodwin, Manager, Regulatory Affairs
J. R. Bush, Manager, Product Assurance
S. G. Deller, Manager, Human Resources
D. M. McCarthy, Controller
J. A. Fici, Manager, Materials, Planning and Control
E. K. Reitler, Manager, Regulatory Engineering
C. F. Sanders, Manager, Nuclear Materials Management & Production Records

PART 2 - ENFORCEMENT HISTORY, INVESTIGATIONS, AND ALLEGATIONS

2.1 Escalated Enforcement Actions Since 1987

There have been no escalated enforcement actions since 1987 at this facility.

2.2 Investigations

There are no pending investigations at this facility.

2.3 Allegations

There are no allegations pending with the NRC.

There was one allegation in December 1986 concerning the removal from the plant of personal tools which were contaminated above the release limits. The State of South Carolina (an Agreement State) handled the case. The allegation resulted in a civil law suit between the alleger and the licensee for several million dollars. The judge in the case dismissed certain of the complaints and a jury found in favor of the licensee on all remaining counts. The case was closed.

PART 3 - CURRENT ISSUES

3.1 License Renewal

The facility license expired in May 1990, but operations have continued under "timely renewal." The licensee submitted an

application for renewal of their license by letter dated April 30, 1990. The renewal application is currently being reviewed by ONMSS.

3.2 Radiation Protection

During the period from 1989 through the present, Region II has performed 6 HP inspections. Various violations were noted in the following areas: 1) failure to make adequate breathing zone surveys, 2) failure to follow procedures for the use of full face respiratory protection, 3) failure to prepare and/or follow procedures concerning routine urinalysis with the required frequencies and concerning external exposure evaluations not being performed with approved procedures, 4) failure to perform an adequate evaluation of extremity dose to personnel handling unclad uranium material, 5) failure to provide and require the use of extremity dosimetry for personnel likely to exceed 25 percent of the 10 CFR 2.101(a) limits, and 6) transferring material/items out of the controlled area without an adequate survey.

These were all Severity Level IV violations and the licensee has taken or is taking corrective actions in all cases. The adequacy of some of these corrective actions has yet to be determined. Even though, the licensee's own audit program was in place during this period and did identify violations in the area of radiation protection, the audits were not effective in identifying the problems the NRC noted. This is an area the licensee needs to improve upon.

3.3 Criticality Safety

During the period from 1989 through the present, Region II has performed 13 nuclear criticality safety inspections at the facility. Included in that total are 2 Operational Safety Assessments (OSAs), one completed in August on 1989 and the other completed in August 1992. With the exception of the last OSA, no violations have been noted but several followup items were identified. The 1992 OSA report is still in draft and the number of violations, weaknesses and improvement items have not been determined. However, a number of problems were noted during the OSA.

3.3.1 The licensee may not have an adequate staff in this area. Westinghouse is in the midst of performing Criticality Safety Assessments (CSAs) for the "wet" systems and this has taken a great deal of the criticality engineers' time. Also, one of the individuals is relatively new and lacks sufficient experience to perform detailed analyses of stations or systems at the plant.

3.3.2 Some of the criticality safety evaluations that have been performed for in support of facility change requests and changes made to the processes and/or equipment do not appear to be adequate or do not provide sufficient documentation to justify the change that was made. The reviews of some of these evaluations appear to be a "rubber stamp" rather than a critical/technical review.

3.3.3 Another problem that was noted is the lack of an adequate system to prioritize the corrective actions identified during audits and CSAs and track them to completion. A new tracking system is being implemented but progress is very slow.

3.3.4 Also, there were a large number of non-favorable geometry containers noted in the production area of the facility. Under the wrong conditions these containers could fill with solution and cause a criticality problem.

3.3.5 The licensee does not have a program (or procedure) that delineates when or how to investigate a problem or incident and determine the root cause of the problem or event that has occurred. The licensee has used the "team concept" to create a team to investigate problems/incidents and determine why it happened and what should be done to correct the situation. No one at the facility has received any formal training in root cause analysis techniques.

As a result of the OSA's findings in the criticality safety area, Westinghouse has committed to develop a Criticality Safety Performance Improvement Program (PIP) to delineate and prioritize criticality safety actions. The first meeting the licensee will have with the NRC to outline the PIP is tentatively scheduled for early November.

3.4 Environmental Protection, Emergency Preparedness, and Security

No major problems have been noted in these areas. During the period from 1989 through the present, Region II performed 3 environmental protection inspections, 6 emergency preparedness inspections, and 2 security inspections.

3.5 Health and Safety Staff

Through interviews with licensee management and operations personnel and through review of the various programs, the OSA team determined that the licensee does not have an adequate

technical staff to support facility operations. The technical staff includes engineers and technicians assigned to industrial safety and fire protection, environmental and effluent monitoring, and emergency planning, as well as to nuclear criticality safety and radiation protection. As noted above, more help is needed in the area of nuclear criticality safety. Also, the licensee is considering increasing the staff to provide assistance in the areas of industrial safety/fire protection and/or environmental monitoring/ emergency planning. Although no serious weaknesses were noted in these areas during the OSA, the programs would be strengthened if more help were provided for the persons performing these duties. In the addition, HP coverage of various job involving radioactive material appeared to be less than adequate. The licensee maintains only one HP technician (including contract support) for every 40 monitored radiation workers. The ratio for the general fuel cycle industry is less than that. Also, holiday and weekend coverage involves only one technician who would be required to perform routine surveillance duties as well as provide coverage for the MAP area which operates 7-days per week.

3.6 Safety Audit Program

The licensee has an audit program covering radiation safety, nuclear criticality safety, industrial safety, and SNM safeguards. However, procedural guidance for performing these audits is less than adequate. Inspections covering these areas are designed to be conducted jointly by the Regulatory Engineering group and line management from the areas inspected. Results of the inspections are presented to and discussed with cognizant supervisors and managers, and followed up to assure that corrective actions are taken. As previously mentioned, a system to properly track, followup, and ensure actual closure of these issues is lacking.

A positive aspect of the licensee's audit program is a daily presence of management on the production floor. Also, the licensee instituted a program of assigning two or more managers to back shift plant coverage each week, on a rotating basis. This coverage involves inspection of activities and discussions with operations personnel.

PART 4 - SIGNIFICANT LICENSEE ACCOMPLISHMENTS

4.1 Nuclear Criticality Safety Program

Despite of the problems noted above, the nuclear criticality safety (NCS) program has several positive aspects. In

response to Westinghouse's review of the GE event in 1991 and NRC's subsequent bulletin, Bulletin 91-01, the licensee has placed greater emphasis on criticality safety. As a result, numerous cases (approximately 22 to date) of failure to adhere to requirements or failure to implement proper controls on systems have been identified by the licensee. As a result, the licensee instituted a program to develop "Data Packs" to document these problems and the corrective actions needed to address the problems noted.

The licensee's efforts to perform the Criticality Safety Assessments (CSAs) is another positive aspect. Although some work is needed to improve these assessments, they should provide the licensee with a good basis for future safety reviews and analyses of or investigations into problems if needed.

The licensee's Configuration Control Program is another positive aspect of the safety program. To date it has helped in investigations of problems by providing up-to-date P&IDs. Configuration control will also aid in the review process when changes to the facility are proposed.

4.2 Risk Assessment

In 1985, a Risk Assessment Committee was established in the Nuclear Fuel Division and tasked with identifying significant potential hazards, performing evaluations or assessment or the risks, and providing recommendations for eliminating or minimizing the risks. This committee was formed and was functioning prior to the Kerr-McGee accident.

After the committee identified the potential hazards, a screening was done to identify the hazards with a potential risk of serious injury or death to employees or members of the public or with a risk of serious impact on the environment. The hazards which met this cut were placed on a tracking list and received specific recommendations for resolution. Appropriations were requested and approved for implementation. The types of risks identified for the Columbia Plant included tornado effects, combustible gas monitoring, and nuclear criticality safety.

However, work has been completed on the projects initially identified by this committee and, because of the work effort being placed into CSAs and Configuration Control, this committee is no longer active.

4.3 ALARA Program

The licensee has an effective ALARA program. The Regulatory

Compliance Committee (RCC), composed of technical staff managers and other cognizant personnel, directs the site ALARA efforts. The RCC meets routinely to consider trends in airborne radioactivity concentrations, personnel exposures, effluent releases, and regulatory requirements.

ALARA efforts associated with in-plant airborne reduction were originally assigned to an Airborne Reduction Task Force in 1978. Then, in 1985, the Task Force was reorganized and the problem of airborne reduction was delegated to the Airborne Reduction Team (ART). This "project team" concept has proven to be effective in reducing the airborne problem. (The project team concept has been used widely throughout the plant and applied to other areas or problems. The effectiveness of the various teams the licensee has established to work on numerous projects may currently be less than originally intended by the licensee`s possible overuse of the concept.)

4.4 Solid Waste Reduction

Prior to 1981, the calcium fluoride sludge from the waste water treatment system contained sufficient residual uranium that it had to be disposed of as radioactive waste. The sludge was periodically removed, mixed with a binder, and shipped in bulk to Barnwell, SC for burial. The licensee subsequently installed a supplemental treatment facility and made other modifications to provide additional uranium recovery from the waste stream. The reclaimed uranium is now recycled back to production.

As a result of this process, the uranium concentration in the sludge is low enough to allow the sludge to be disposed of in a chemical waste land fill. (The licensee is authorized by license amendment to dispose of the chemical sludge by selling it to a broker for processing and use in steel plants as slag flux.) As a result of this system's performance, radioactivity in liquid effluents has been reduced by about a factor of 4 since 1987.

The licensee has also been successful in reducing the uranium content in the hydrofluoric acid (HF) waste stream. The licensee is selling the waste HF to two industrial users. Formerly, the HF stream was a major contributor to the waste sludge stream.

4.5 Gaseous Effluents and Environmental Monitoring

Gaseous effluents have remained essentially constant over the past 5 years. The principal activity is U-234 activity from the uranium processes.

Environmental monitoring and effluent monitoring programs at the facility are good. The plant routinely monitors effluents from 38 stacks and vents. A study of the stack monitoring program was conducted by ORAU in September 1986. The study indicated that the stack monitoring program was adequate..

Offsite doses calculated for the plant effluents showed a maximum dose of approximately 2.2 mrem/yr to an infant at the nearest residence. This represents 8.3% of the current acceptable environmental dose limit permitted in 40 CFR 190.

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