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REVISION RECORD

| REVISION NUMBER | DATE OF REVISION | PAGES REVISED | REVISION REASON |
|---|---|---|---|
| 1.0 | 30APR95 | All | Update to current operations. |
| 2.0 | 28JUN96 | iii, 6.8 | Clarify Criticality Safety Basis for the compaction operation. |
| 3.0 | 30AUG96 | iii, 1.7, 1.9, 12.6, 12.7 | Incorporate Safety Condition S-3 into Application; correct reference to Figure 1.3 instead of 2.3, to reflect expansion of the CAA in order to eliminate need for gate. |
| 4.0 | 30SEP96 | iii, 6.11, 6.12 | Clarification of Criticality Safety Basis for the Pellet Stripping System Equipment and Hoods & Containment. |
| 5.0 | 08NOV96 | iii, 1.12, 3.18, and 3.19 (Reprinted all document pages in Microsoft Word format) | Incorporation of a definition, and incident notification critieria, recently approved by NRC Staff. |

# CHAPTER 1.0

# GENERAL INFORMATION

## 1.1 FACILITY AND PROCESS DESCRIPTION

The Columbia Fuel Fabrication Facility (CFFF) of the Commercial Nuclear Fuel Division (CNFD) will be primarily engaged in the manufacture of fuel assemblies for commercial nuclear reactors. The manufacturing operations to be authorized by this license will consist of receiving low-enriched, less than or equal to 5.0 w/o U-235, uranium hexafluoride; converting the hexafluoride to produce uranium dioxide powder; and processing the uranium dioxide through pellet pressing and sintering, fuel rod loading and sealing, and fuel assembly fabrication. These operations will be governed by the technically sound radiation and environmental protection, nuclear criticality safety, industrial safety and health, SNM safeguards, and quality assurance controls described in detail in this License Application.

Two general systems are used to convert uranium hexafluoride to uranium dioxide powder--Integrated Dry Route (IDR) and Ammonium Diuranate (ADU). IDR conversion equipment has been designed to receive and process uranium in enrichments up to 5.0 w/o U-235, through fuel rod loading. ADU conversion equipment has also been designed to receive and process uranium in enrichments up to 5.0 w/o U-235, through fuel assembly fabrication and shipping. These operations are supported by absorber coating, laboratory, scrap recovery, and waste disposal systems. Additional details concerning the facility and process systems are presented in the Site Safeguards documents described in Paragraph 1.1.1(e) of this Section, and in the SITE EMERGENCY PLAN described in Chapter 9.0 of this License Application.

### 1.1.1 SITE UTILITIES AND SERVICES

(a) Electrical Supply

The CFFF will be served by a single, 115,000 volt, electrical supply line. Four diesel-powered standby generators will be installed and maintained to meet the emergency electrical power requirements of the site in the event of a temporary outage of the normal supply source. Emergency power will be automatically provided to crucial process equipment; emergency lighting systems; cooling system pumps; all fire alarm, hazard alarm, and other designated safety alarm systems; Conversion Control Room alarms; health physics sampling systems; and, emergency ventilation systems, including scrubbers.

(b) Water Supply

A ten-inch main from the Columbia Municipal Water Authority supplies water to the site.

(c) Gaseous and Liquid Effluent Management

Gaseous exhausts, with potential for contamination, from process areas will be routed through HEPA filtration, to remove entrained uranium particulates, prior to discharge to the environment. Exhausts containing uranium in soluble form will be passed through aqueous scrubbers, preceding the HEPA filters. Following filtration, the gases will be continuously sampled, to enable analyses for assuring compliance with the limits specified in this License Application.

Liquid process wastes will be treated, prior to discharge to the Congaree River. Waste treatment, for the removal of uranium, ammonia, and fluorides, will consist of filtration, flocculation, lime addition, distillation, and precipitation (in a series of holding lagoons). Site sanitary sewage will be treated in an extended aeration package plant prior to discharge, either directly or through a polishing lagoon. The discharged effluent will be chlorinated, and mixed with treated liquid process waste, at the facility lift station. The combined waste will then be passed through a final aerater, followed by pH adjustment as required, and subsequently pumped to the river via a 4-inch pipeline. Compliance with licensed limits will be verified by passing the waste streams through on-line monitoring systems, or by manual sampling and analysis on a batch-basis. The treatment systems will have sufficient holdup capacity to assure the limits are continuously met.

Storm water from the site enters a system of drainage ditches and ultimately flows to the Congaree River.

(d) SOLID WASTE STORAGE AND DISPOSAL

Solid wastes will be sorted into appropriate combustible and noncombustible fractions, and placed in specially designated collection containers located throughout the work area. (The wastes consist of paper, wood, plastics, metals, floor sweepings, and similar materials which are contaminated by, or contain, uranium.) Following a determination that the wastes are in fact properly sorted, the contents will be transferred to a waste processing station.

Materials that are suited for thorough survey may be decontaminated for free-release, or re-use, in accordance with provisions of this License Application. Combustible wastes will be packaged in compatible containers, assayed for grams U-235, and stored to await incineration. Noncombustible wastes, and selected combustible wastes, will be packaged in compatible containers, compacted when

appropriate, measured to verify the uranium content, and placed in storage to await shipment for further treatment, recovery, or disposal.

Administrative controls will be in effect to assure that only authorized materials are packaged for disposal. (These include verification of package contents, container security to minimize the probability of unauthorized additions to the containers, documentation of package contents, and routine overchecks to verify that the above referenced controls are effective.) Wastes designated for disposal will be packaged in DOT approved 55-gallon metal drums or in metal boxes. Materials packaged in metal boxes will be pre-measured in standard containers prior to transfer to the boxes. Filled containers will be stored in designated areas within the manufacturing or waste storage buildings; or, they may be stored outdoors, if protected from the elements.

Wastes consigned to disposal will be shipped to a licensed burial facility. Shipments will be made in compliance with all applicable NRC, DOT and State regulations; and, in conformance to burial site criteria.

(e) SITE SAFEGUARDS

Nuclear Materials Control and Accounting at the CFFF is described in the NRC-approved FUNDAMENTAL NUCLEAR MATERIAL CONTROL PLAN FOR THE COLUMBIA FUEL FABRICATION FACILITY, dated April 1, 1987, and subsequently revised in accordance with the regulations. Physical Security at the CFFF is described in the NRC-approved PHYSICAL SECURITY PLAN FOR THE COLUMBIA FUEL FABRICATION FACILITY, dated September 1, 1984, and subsequently revised in accordance with the regulations. These Plans detail the measures employed at the facility to detect any potential loss of, and mitigate the opportunity for theft of, Special Nuclear Material of Low Strategic Significance, in accordance with applicable requirements of 10CFR73 and 74.

1.1.2 SCOPE OF LICENSED ACTIVITIES

Compliance with all applicable Parts of Title 10, Code of Federal Regulations will be required, unless specifically amended or exempted by NRC staff.

(a) Authorized Activities:

(a.1) Authorized activities at the Columbia Fuel Fabrication Facility will include: (1) Receipt, handling, and storage of Special Nuclear Material as uranium hexafluoride, uranium nitrates, uranium oxides; and/or contained in pellets, fuel rods, fuel assemblies, samples, scrap, and wastes; (2) Receipt, handling, and storage of other licensed radioactive material; (3) Chemical conversion processing by the

Ammonium Diuranate Process and the Integrated Dry Route -- including vaporization and hydrolysis, precipitation and centrifugation, drying, calcining, comminution, and blending; (4) Fuel fabrication -- including powder preparation, die-lubricant mixing, pelleting, sintering, grinding, pellet coating with nuclear absorbers, fuel rod loading and inspection, and final fuel assembly; (5) Quality assurance and control inspection activities; (6) Analytical Services Laboratory operations -- including wet-chemistry and spectrographic techniques; (7) Metallurgical Laboratory operations -- including sample preparation, polishing, testing, and examination; (8) Chemical Process Development operations -- including laboratory-scale process research, prototype development, and equipment check-out; (9) Mechanical Process Development operations -- including laboratory-scale research and development; (10) Health Physics Laboratory operations -- including sample preparation and analysis, instrument repair and calibration, respirator fit-testing, and bioassay sample and sealed-source storage; (11) In-house, and contracted, scrap recovery operations -- including scrap batch processing, solvent extraction, coated-pellet recovery, scrap blending, and hydrofluoric acid recovery; (12) $UF_6$ cylinder washing, hydrostatic testing and re-certification; (13) Equipment and facility maintenance activities; (14) Equipment and facility decontamination activities -- including clothing; (15) Waste storage and disposal preparation operations -- including HEPA filter testing, conversion liquid waste treatment, advanced waste-water treatment, lagoon storage, incineration, radioactive waste packaging for disposal, and calcium fluoride disposition; (16) Ancillary mechanical operations -- including non-radioactive component fabrication and assembly; and (17) Shipping container and overpack refurbishment.

(a.2) The licensed activity may also perform work for other Westinghouse Divisions, or outside customers, which is within the authorized capabilities of the facility.

(b) Material Possession Limits and Constraints

The following will be the maximum quantities of Special Nuclear Material that may be possessed by the licensed activity at any one time; and, constraints for procurement, use, and transfer of such material.

(b.1) Material possession limits -- (1) 5-grams of U-233 in any chemical or physical form, limited to laboratory use as individual 1-gram maximum quantities in ventilated hoods; (2) 350-grams of U-235, as uranium of any enrichment, in any chemical or physical form; (3) 75,000-kilograms of U-235, as uranium enriched to no greater than 5.0 weight-percent, in any chemical or physical form except metal; and, (4) 1.5-grams of Pu-238/239 as sealed sources.

(b.2) Material constraints -- The procurement of Special Nuclear Materials will be in accordance with licensed activity needs. Production, utilization, and/or significant

loss of special nuclear materials will not be authorized. Transfers of Special Nuclear Materials will be only as arranged with facilities authorized to receive and possess such materials.

## 1.2 INSTITUTIONAL INFORMATION

This application requests a ten year renewal of License SNM-1107, Docket 70-1151, which authorizes the receipt, possession, storage, use, and transfer of Special Nuclear Material at the Westinghouse Electric Corporation's Columbia Fuel Fabrication Facility (CFFF). There is no control or ownership exercised over Westinghouse Electric Corporation by any alien, foreign corporation, or foreign government. In accordance with the requirements of 10 CFR 70.22(a)(1), the following additional information is submitted:

### 1.2.1 APPLICANT AND STATE OF INCORPORATION

Westinghouse Electric Corporation
Pennsylvania

### 1.2.2 LOCATION OF THE PRINCIPAL OFFICE

Pittsburgh, Pennsylvania

### 1.2.3 NAMES (CITIZENSHIP) AND ADDRESSES OF PRINCIPAL OFFICERS

Michael H. Jordan (USA)
Chairman & Chief Executive Officer
Westinghouse Executive Offices
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Pittsburgh, Pennsylvania 15222-1384

Nathaniel D. Woodson (USA)
Vice President and General Manager, Energy Systems
Westinghouse Energy Center
P. O. Box 355
Pittsburgh, Pennsylvania 15230-0355

Ronald H. Koga (USA)
General Manager, Commercial Nuclear Fuel Division
Westinghouse Energy Center
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Pittsburgh, Pennsylvania 15230-0355

James A. Fici (USA)
CFFF Plant Manager
Westinghouse Columbia Plant
Drawer R
Columbia, South Carolina 29250

### 1.2.4 CORPORATE CONTACT FOR LICENSING MATTERS

Griff Holmes
Manager, Energy Systems Regulatory Affairs
Westinghouse Energy Center
P. O. Box 355
Pittsburgh, Pennsylvania 15230-0355

### 1.2.5 SITE CONTACT FOR LICENSING MATTERS

Robert A. Williams
Licensing Project Manager
Westinghouse Columbia Plant
Drawer R
Columbia, South Carolina 29250

### 1.2.6 ADDITIONAL INFORMATION

Additional corporate financial and business information is provided in the Westinghouse Annual Report, available from:

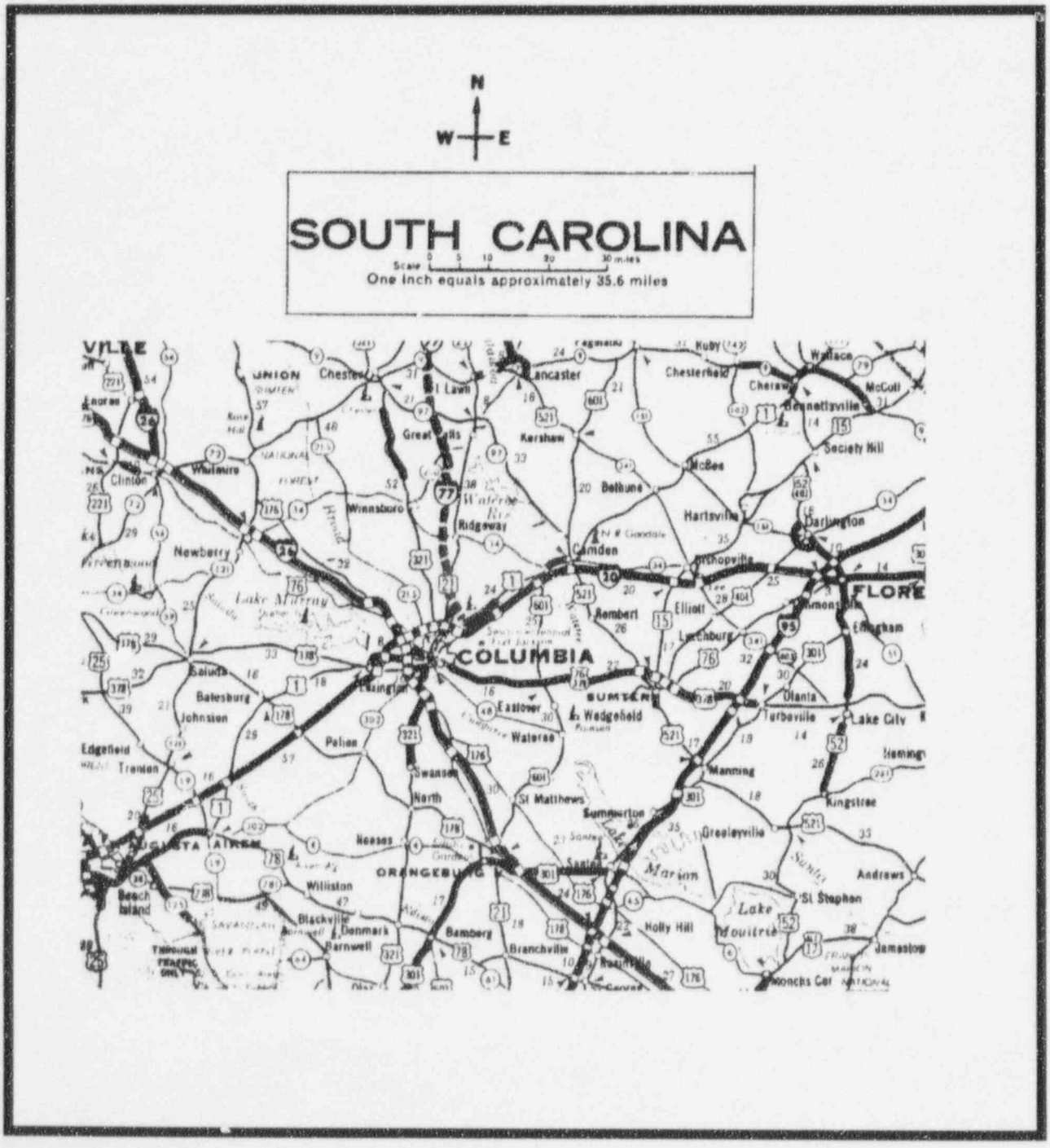
Westinghouse Electric Corporation
P. O. Box 8815
Pittsburgh, Pennsylvania 15221

## 1.3 SITE DESCRIPTION

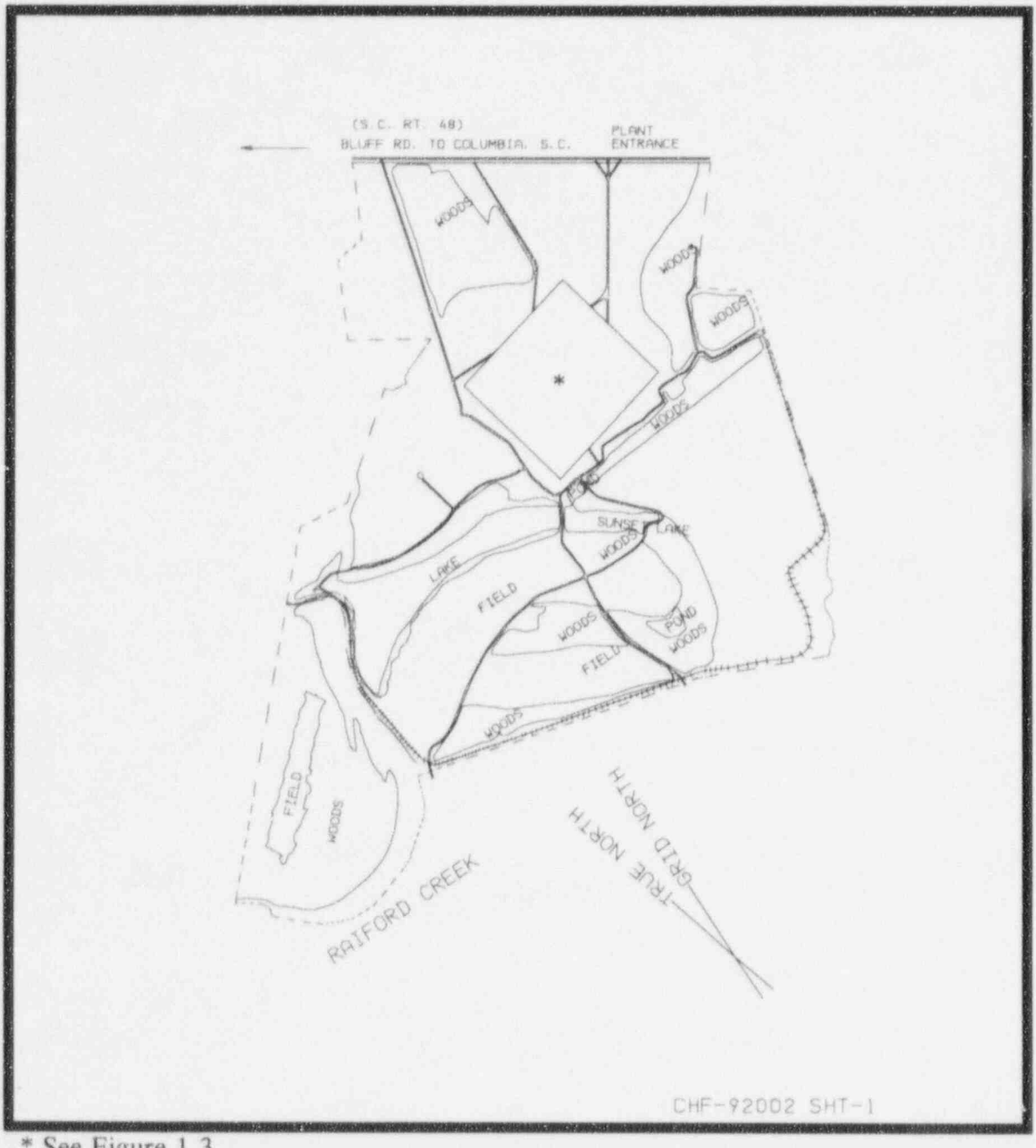
The Columbia Fuel Fabrication Facility (CFFF) is located near Columbia, South Carolina and is situated on an approximately 1,158 acre site in Richland County, some 8 miles southeast of the city limits of Columbia (see Figures 1.1 and 1.2) along South Carolina

FIGURE 1.1

CFFF SURROUNDING AREA



# FIGURE 1.2
# CFFF PROPERTY BOUNDARY




* See Figure 1.3

Highway 48. The region around the site is sparsely settled, and the land is characterized by timbered tracts and swampy areas, penetrated by unimproved roads. Farms, single-family dwellings, and light commercial activities are located chiefly along nearby highways.

The site is bordered by abutting properties, as presented in the PHYSICAL SECURITY PLAN described in Paragraph 1.1.1(e) of this License Application. Approximately 1098 acres of the site remain undeveloped. Of the total 1,158 acres, only 60 acres (about 5 percent) have been developed to accommodate the fuel fabrication facilities, holding ponds, and landscaped areas. A site plan is shown in Figure 1.3.

Details of the CFFF location, including proximity to nearby towns, industries, public facilities, the Congaree River, transportation links; and, site topography; are presented in Section 1 of the SITE EMERGENCY PLAN. Details of the site characterization are presented in Section 2.0 of the SITE EVALUATION REPORT.

## 1.4 TERMS AND DEFINITIONS

Throughout this License, the following terms will be defined and used as indicated:

**ALTERNATIVE ACTIONS** -- Tests, procedures or other practices that may be substituted for prescribed activities as deemed appropriate by the Regulatory Component. In such case, a detailed analysis will be performed and documented by the cognizant Regulatory Functions. This analysis will include a comparison of the proposed action with that specified in the license; and, a demonstration that action levels and limits of the license will be met, and that health and safety of employees and the public, and quality of the environment, will be protected.

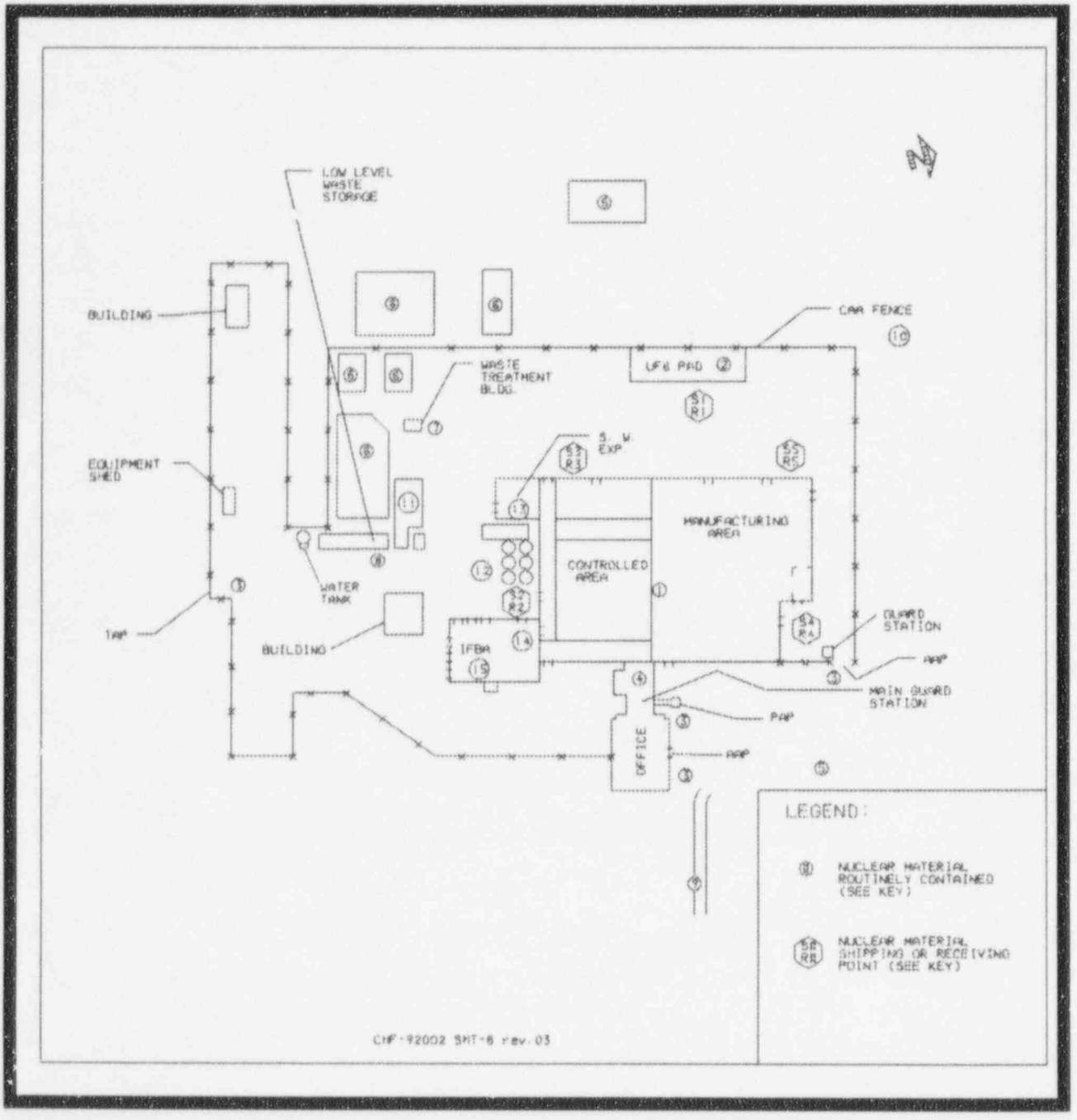
**CHEMICAL AREA** -- An area where uncontained radioactive material is processed, the probability of contamination on floors and accessible surfaces is high, and protective clothing is required; such as, the $UF_6$ Bay, the Conversion Area, the Pelleting Area, the Rod Loading Area, etc.

**CLEAN AREA** -- An area where radioactive material, if present, is completely contained and there is negligible contamination on the floors or accessible surfaces. Such locations include, but are not limited to, the Machining Area, Grid Assembly Area, Final Assembly Area, Office Areas, and the Cafeteria.

**COMPONENT** -- When used in an administrative context, an independent organizational unit distinguishable by its assigned responsibilities; such as, the Engineering Component, the Manufacturing Component, the Quality Component, and the Regulatory Component.

# FIGURE 1.3

## SITE PLAN



# SITE PLAN KEY

S1 : R1 Shipping/Receiving point for $UF_6$ Cylinders.

S2 : R2 Shipping/Receiving point for Uranyl Nitrate.

S3 : R3 : Shipping/Receiving point for U Powders, U Pellets, U Scrap, and U Waste.

S4 : R4 Shipping/Receiving point for U Rods and U Assemblies.

S5 : R5 Shipping/Receiving point for miscellaneous U Samples and U Standards.

1 : Fuel Manufacturing Building.

2 : $UF_6$ Storage Pad.

3 : Gatehouses (4).

4 : Administration Building.

5 : Parking Area.

6 : Lagoons (6).

7 : Waste Treatment Building.

8 : Waste Storage Area.

9 : Access Road.

10 : Controlled Access Area (CAA) Fence.

11 : Advanced Liquid Waste Treatment Building.

12 : Uranyl Nitrate Storage Tanks.

13 : Fuel Manufacturing Building Southwest Expansion.

14 : Fuel Manufacturing Building Southeast Expansion.

15 : Nuclear-Poisoned Fuel (IFBA) Area.

**CONTAMINATION CONTROLLED AREA** -- An alternate name for the Chemical Area.

**CONTROLLED ACCESS AREA** -- A physically defined area, represented on three sides by a seven-foot high barrier of Number-11 American Wire Gauge fabric-fence topped by three strands of barbed wire, and on the fourth side by the Administration and Main Manufacturing Building. This area is the "Controlled Access Area" described in the Physical Security Plan.

**ENRICHMENT LIMIT** -- When used as an authorized enrichment limit, 5.0 w/o U-235 means that, based on an enrichment measurement uncertainty no greater than 0.50 percent relative, the hypothesis that the true enrichment level is 5.0 w/o U-235 or less can not be rejected at the 0.05 level of significance.

**EQUIVALENT EXPERIENCE** -- When used in a personnel qualification context to equate experience with education, eight years of applicable experience is equivalent to a baccalaureate degree.

**FIXED LOCATION GENERAL AIR SAMPLE** -- Air samples used to assess general area radioactivity concentrations; and, to assess the adequacy of radioactive material containment and confinement within the processing areas of the facility; and, to establish airborne radioactivity areas.

**FIXED LOCATION BREATHING ZONE REPRESENTATIVE AIR SAMPLE** -- Air samples used for purposes of assessing and assigning operator intake.

**FREQUENCIES** -- When measurement, surveillance, and/or other frequencies are specified in License documents, the following will apply: DAILY means once each 24-hour period; WEEKLY means once each seven consecutive days; MONTHLY means twelve per year, with each covering a span of 40-days or less; QUARTERLY means four per year, with each covering a span of 115-days or less; SEMIANNUAL means two per year, with each covering a span of 225-days or less; ANNUAL means once per year, not to exceed a span of 15-months; BIENNIAL means once every two years, with each covering a span of 30-months or less. TRIENNIAL means once every three years, with each covering a span of 45 months or less.

**FUNCTION** -- When used in an administrative context, an individual (or individuals), designated by the Component Manager, acting in coordination with the other personnel of a component, having the capability, responsibility, and authority to make and implement decisions required to carry out assigned duties; such as the Environmental Protection Function, Radiation Safety Function, Nuclear Criticality Safety Function, Chemical Safety Function, Fire Safety Function, and Safeguards Function of the Regulatory Component.

**LICENSED ACTIVITY** -- That combination of personnel, plant, and equipment established by Westinghouse Electric Corporation to carry out the processing of radioactive material authorized by this License Application.

**MAY** -- Denotes implied permission by NRC Licensing Staff to take a stated action or course.

**PORTABLE AIR SAMPLE** -- An air sample that is not integrated into the plant's central air sample vacuum system.

**REGULATORY-SIGNIFICANT PROCEDURES** -- Those procedures that contain, in whole or in part, actions that are important to environmental protection, health, safety, and/or safeguards.

**RESTRICTED AREA** -- Areas such as the Manufacturing Building, or equivalent areas, to which access is restricted by physical or administrative methods and which is monitored on a scheduled basis by the site Security Function.

**SAFE MASS** -- The minimum credible critical mass for a particular process or vessel given the credible material geometry for that process/vessel, and the License Evaluation Bounding Assumptions for that material type (e.g., homogeneous $UO_2$) and reflection. Optimum moderation and material density are assumed.

**SAFETY-RELATED** -- Relevant to systems crucial or important to safety; and, those systems that improve the margin of safety (e.g., in the context of maintenance).

**SAFETY-SIGNIFICANT** -- Relevant to systems crucial or important to safety (e.g., in the context of quality assurance).

**UNRESTRICTED AREA** -- An area, access to which is neither limited nor controlled.

**WILL** -- Denotes a mandatory requirement to take a stated action or course.

# CHAPTER 3.0

# CONDUCT OF OPERATIONS

The basis for total quality conduct of operations at the Columbia Fuel Fabrication Facility (CFFF) will be the Safety Margin Improvement Program (SMIP). This program will be a structured oversight process that maintains management awareness, and enables monitoring, of management-specified regulatory and process improvement activities; and, will be a management decision process for determining where and when resources will be allocated. This program will address, until their logical completion, elements of Environmental Protection Improvement, Criticality Safety Margin Improvement, Occupational Safety Improvement, and General Plant Improvement. A responsible individual will be assigned accountability for each SMIP element initiative. The Safety Margin Improvement Program will not be a commitment tracking system; SMIP commitments will be followed to management-approved completion by the responsible individual specifically assigned accountability for each particular initiative. This program will be a documented demonstration of CFFF Managements' strong commitment to evaluate, on a continuing basis, opportunities to improve the Plant margin of safety -- with the understanding that: addition, change, and/or deletion of program elements and/or initiatives; continuation of ongoing program elements and/or initiatives; and/or, additions, deletions and/or changes of program implementation schedules - relevant to the Safety Margin Improvement Program - will always be at the discretion of the Plant Manager, as advised by the Engineering, Manufacturing, and Regulatory Components.

## 3.1 CONFIGURATION MANAGEMENT

To assure that design changes will not adversely impact on environmental protection, health, safety, quality, and/or safeguards programs at the Columbia Fuel Fabrication Facility (CFFF), a formal review process will be established to analyze new systems and components, or modifications to existing systems and components, in order to reliably predict performance under normal operating conditions and potential process upsets. Structured hazard analyses, as conducted in accordance with Chapter 4.0 of this License Application, will specifically include analysis of verified drawings under configuration management.

### 3.1.1 CONFIGURATION MANAGEMENT PROGRAM AND PROCEDURE

The CFFF Configuration Management Program will embrace an approved procedure for implementation of proposed additions or changes to facility systems. The procedure will define the review and approval process to assure the impacted systems will continue to meet or exceed regulatory specification requirements of baseline safety assessments. The

procedure will specify documentation required to maintain a current record of existing system conditions.

### 3.1.2 CONFIGURATION MANAGEMENT IMPLEMENTATION

The Configuration Management Program will be a major sub-element of the Safety Margin Improvement Program described in the introduction to this Chapter. Configuration management will not be a substitute for procedures described in Subsection 3.4.1 of this Chapter, but will facilitate continuing compliance with their requirements through responsible facility addition and/or change project reviews.

### 3.1.3 CONFIGURATION MANAGEMENT PROCESS

The following sequence of activities will be utilized for all facility addition and/or change projects. Complexity of each project, and the issues involved, will determine the magnitude of effort afforded to each activity.

(a) A project will be formally opened for review by an assigned responsible individual completing a configuration change control form, and enclosing specified project information for the review process.

(b) Manufacturing, Engineering, And Quality Component Reviews

Designated Manufacturing, Engineering, and/or Quality Component Functions will review the project proposal for economics, practicality, and technical merit. Formal approvals will be documented as part of the review package.

(c) Regulatory Component Reviews For Approval

Extent and depth of regulatory review of the project will be formally determined by an assigned Regulatory Component Manager. Designated Regulatory Component Functions will review the project proposal for impact on environmental protection, health, safety, and/or safeguards programs; and, for compliance with applicable regulatory requirements and conformance to regulatory commitments. Formal approvals will be documented as part of the review package.

(d) Ancillary Programs and Procedures

Ancillary programs and procedures will be activated commensurate with identification of environmental protection, health, safety, and/or safeguards issues. Such programs will range from simple design reviews by cognizant multi-discipline

Functions, through structured What-If/Checklist or Hazards and Operability Analyses. Formal approvals will be documented as part of the review package.

The Regulatory Component may issue conditional, documented approvals for preliminary and/or detailed project designs as the process advances.

(e) Specific documents to be updated will be formally identified as the process advances.

(f) Drawings that are generated, or modified, will be maintained in a "For Construction" state until applicable installation is completed. Following installation, the "As Built" conditions will be recorded as "Released" drawings that represent actual system configuration.

(g) A project will be formally closed by the assigned responsible individual signing the configuration change control form, attesting that all required documentation has been updated, all required training has been completed, and the project has been terminated.

## 3.2 MAINTENANCE

The purpose of the maintenance program for safety-related systems and components at the Columbia Fuel Fabrication Facility (CFFF) will be to assure that this equipment is kept in a condition of readiness such that it is likely to perform its desired function when called upon to do so. The maintenance program will embrace three functional activities: Programmed Maintenance, to include specified frequency calibrations; Periodic Functional Testing; and, Repair or Replacement, for systems and components that fail to perform to required standards.

### 3.2.1 PROGRAMMED MAINTENANCE OF SAFETY-RELATED SYSTEMS AND COMPONENTS

The Manufacturing Component will utilize a suite of maintenance planning and control computer programs to initiate work orders for programmed maintenance, and to record details of the execution of the work orders. The computer programs will include procedures for programmed maintenance of safety-related systems and components -- prepared, reviewed, and approved in accordance with Subsection 3.4.1 of this Chapter.

The following safety-related systems and components will receive programmed maintenance:

- Air Compressors;

- Emergency Electrical Generators;
- Fire Detection and Fire Control;
- Natural Gas Valves;
- Nuclear Criticality Detection;
- Pellet Carts;
- Pressure Relief Valves;
- Steam Boilers.

Additional safety-related systems and components will be placed under programmed maintenance, as disclosed by the results of Integrated Safety Assessments described in Chapter 4.0 of this License Application.

Programmed maintenance of safety-related systems and components will include specified calibration and re-calibration of relevant instruments. Such calibration and re-calibration will be initiated and controlled by the maintenance planning and control computer programs. Discrimination between safety-related and non-safety-related calibrations will be by use of an entry on the electronic instrument calibration card utility within the maintenance planning and control computer programs.

### 3.2.2 PERIODIC FUNCTIONAL TESTING OF SAFETY-RELATED SYSTEMS AND COMPONENTS

The following safety-related systems and components will receive programmed maintenance at the frequencies indicated:

- Plant-wide Fire Alarm System and Criticality Alarm System -- Each working shift, one day per working week;
- Plant-wide Hazard Warning System -- Semiannual;
- Specified Safety-related Interlocks on Process Equipment -- Annual;
- Hydrogen and Natural Gas Line Leak Tests -- Annual.

Additional safety-related systems and components will be placed under periodic functional testing, based on the results of integrated safety assessments described in Chapter 4.0 of this License Application.

### 3.2.3 REPAIR OF SAFETY-RELATED SYSTEMS AND COMPONENTS

The maintenance planning and control computer-generated work orders and records will provide documentation of systems and components that have been repaired or replaced.

When a component of a safety-related system is repaired or replaced, the component will be field-tested to assure that it is likely to perform its desired function when called upon to do so.

If the performance of a repaired or replaced safety-related component could be different from that of the original component, the safety-related system will be field-tested to assure that it is likely to perform its desired function when called upon to do so.

## 3.3 QUALITY ASSURANCE

The purpose of the formal quality assurance (QA) program for safety-significant processing equipment at the Columbia Fuel Fabrication Facility (CFFF) will be to assure that such equipment is designed, installed, operated, and maintained so that it will perform its desired function when called upon to do so. This quality assurance program will be in addition to the quality assurance programs for nuclear components and fuel shipping containers; however, the three programs may share common elements (e.g., organization structures, tool and gage control, change management, etc.).

### 3.3.1 QA PROGRAM STRUCTURE

To the maximum extent practicable, the QA program for safety-significant processing equipment will utilize elements of the facility's Process Safety Management (PSM) program (29 CFR 1910.119), structured to include licensed radioactive materials. The Engineering Component will maintain a detailed matrix that graphically demonstrates how the PSM program elements will address the following QA program criteria:

(a) QA Organization;

(b) QA Program;

(c) Equipment/System Design Control;

(d) Procurement Documentation Control;

(e) Instructions, Procedures, and Drawings;

(f) Document Control;

(g) Control of Purchased Materials, Equipment, and Services;

(h) Identification and Control of Materials, Parts, and Components;

(i) Control of Special Processes;

(j) Internal Inspections;

(k) Test Control;

(l) Control of Measuring and Test Equipment;

(m) Handling, Storage, and Shipping Controls;

(n) Inspection, Test, and Operating Status;

(o) Control of Nonconforming Materials, Parts, or Components;

(p) Corrective action;

(q) QA Records; and,

(r) Audits.

The PSM program will then be supplemented, as required, to assure detailed inclusion of all QA criteria.

3.3.2 GRADED APPROACH

The "graded approach" will be addressed by performing a systematic and integrated assessment of the hazards at the facility; then, identifying the safety systems and components that are intended to prevent, or mitigate the consequences of, these hazards; then, to apply the programs of assurance which provide the appropriate level of quality. (Completion of these assessments, as an ancillary supporting process, will be phased-in according to the implementation schedule for the facility's Integrated Safety Assessment.) Where judgement is required, salient decisions will be documented; when quality requirements are determined not to be necessary, the bases will be documented.

(a) Quality Level A; Crucial Safety Systems

These systems are crucial to safety and, therefore, will receive rigorous attention to installation, operation, and quality assurance. They will be defined by controlling the following hazard consequences:

- Greater than or equal to 5 rem dose equivalent to an individual offsite; and/or,

- Greater than or equal to 10 milligrams soluble Uranium intake by an individual offsite; and/or,
- Greater than or equal to 25 milligrams $HF/m^3$ exposure to an individual offsite.

Crucial safety systems will require full application of the QA program requirements, where each of the 18 criteria that could apply are specifically addressed. They will be initially qualified when placed into service, and will be requalified as required, using controlled methods and procedures.

(b) Quality Level B; Important Safety Systems

These systems are important to safety and, therefore, will include key aspects that require high quality judgement or attention to detail. The key aspects will be identified and documented in the hazard assessment. They will be defined by controlling the following hazard consequences:

- Greater than regulatory limits to an individual offsite;
- Death or serious injury to an individual onsite.

Important safety systems will require selected application of the QA program requirements, where elements of the 18 criteria that the Quality Component determines will apply are specifically addressed.

(c) Quality Level C; Safety Margin Improvement Systems

These systems have safety implications, but are neither crucial nor important to safety. They do not require specified attention to quality assurance, and no extraordinary level of safety detail is applied. Safety margin improvement systems will be maintained and operated as part of routine and prudent industry practice.

3.3.3 ADDITIONAL QA PROGRAM COMMITMENTS AND EXCLUSIONS

The program will be designed and incorporated, as an ancillary supporting process of the facility's Integrated Safety Assessment, such that it becomes an integral part of routine CFFF operations.

The program will be performance-based. Quality assurance decisions will be based, to the extent practicable, on system performance histories.

The program descriptions will be documented in facility procedures that specify responsibility, authority, and accountability for all program elements. PSM program

elements and other facility programs and procedures important to quality assurance, will be specifically cross-referenced; and, the cross-reference will be maintained by the Quality Component for future audit.

The program elements will be conducted in accordance with approved, written procedures. Training to these procedures will be conducted to ensure the program operates effectively.

The program will require documented records to demonstrate compliance with program requirements.

The program will include a level of checks and balances through functional separation and audit. The program will be developed to incorporate quality-at-the-source concepts. Routine quality assurance for safety systems may be performed by the functions responsible for operating the systems.

The program will embrace issues identification, remedial actions, and management control elements to ensure that deficiencies, deviations, and defective equipment and components are disclosed, and corrected, in a timely manner.

The program will be forward-fitting upon implementation. It will be a bounding assumption that existing systems were appropriately designed, installed, and operated in accordance with applicable requirements and acceptable practices. Existing systems will not be back-fitted except for component replacement, system modification, and/or actions arising from internal investigations and/or external disclosures such as NRC Information Notices. Such back-fitting will always be at the discretion of the Plant Manager, as advised by the Engineering and Regulatory Components.

## 3.4 PROCEDURES, TRAINING AND QUALIFICATION

At the Columbia Fuel Fabrication Facility (CFFF), procedures, training and qualification will be integrated into a combined process to assure that environmental protection, health, safety, quality, and safeguards programs are being conducted in accordance with Westinghouse policies, and in accordance with commitments to Regulatory Agencies. Elements of this integrated process will be developed by knowledgeable Component staff, will be reviewed and approved by cognizant individuals in affected Components, and will be authorized for implementation by Component Management at a level that is responsible and accountable for the operations covered.

### 3.4.1 PROCEDURES

Operations to assure safe, compliant activities involving nuclear material will be conducted in accordance with approved procedures. Approved procedures will be maintained and

controlled by an Electronic Procedure System. Approved procedures will provide the basis for training of all personnel involved in operations with nuclear material at the facility.

Structured hazards analyses, as conducted in accordance with Chapter 4.0 of this License Application, will include human factors analysis of applicable procedures, as described in Section 3.5 of this License Application.

(a) Regulatory-Significant Procedure Structure

CFFF procedures will be classified into three general categories:

(a.1) Category-1 Procedures

Category-1 procedures will be for use by the Regulatory Component. The salient utility of such procedures will be to provide health, safety, and safeguards training and instructions for Regulatory Functions. They will be prepared, and approved for issuing, by Regulatory Functions assigned by a cognizant Regulatory Component Manager; and, will be reviewed, and approved for issuing, by the cognizant Regulatory Component Manager.

The Category-1 scope will group sets of procedures into such subcategories as:

- Administration;
- Health Physics:
- Nuclear Criticality Safety
- Environmental Protection
- Safeguards
- Shipment and Transportation;
- Instruments;
- Surveys;
- Dosimetry;
- Bioassay; and,
- Laboratory Practices

Changes to Category-1 Procedures will be prepared, and approved for issuing, by Regulatory Functions assigned by a cognizant Regulatory Component Manager; and will be reviewed, and approved for issuing, by the cognizant Regulatory Component Manager.

(a.2) Category-2 Procedures

Category-2 procedures will be for use by individuals outside the Regulatory Component, and deal exclusively with regulatory practices. The salient utilities of such procedures will be to provide health, safety, and safeguards training and instructions for Engineering, Manufacturing, and Quality Functions; and, for use by these Functions in preparing Category-3 Procedures. They will present regulatory guidance methodology acceptable to the Regulatory Component. They will be prepared, and approved for issuing, by Regulatory Functions assigned by a cognizant Regulatory Component Manager; and, will be reviewed, and approved for issuing, by the cognizant Regulatory Component Manager.

The Category-2 scope will be similar to, and may in many cases overlap, that for Category-1 -- as applicable to use outside the Regulatory Component.

Changes to Category-2 Procedures will be prepared, and approved for issuing, by Regulatory Functions assigned by a cognizant Regulatory Component Manager; and, will be reviewed, and approved for issuing, by the cognizant Regulatory Component Manager.

(a.3) Category-3 Procedures

Category-3 procedures will be for use by responsible individuals outside the Regulatory Component. The salient utility of such procedures will be to provide training and instructions -- including health, safety, and safeguards -- for the Operations, Maintenance, Inspection, and Analytical Services Functions. They will be prepared, and approved for issuing, by Component Functions assigned by a cognizant Component Manager, based on consideration of applicable Category-2 Procedures and/or consultation with cognizant Regulatory Component Engineers; and, will be reviewed, and approved for issuing, by the cognizant Component Manager.

The scope of Category-3 Procedures will be as determined by the cognizant Component Manager.

Changes to Category-3 Procedures will be prepared, and approved for issuing, by Component Functions assigned by a cognizant Component Manager, and will be reviewed, and approved for issuing, by the cognizant Component Manager.

(b) Issuance, Approval, and Communication of Contents of Procedures

Acceptable practices for environmental protection, health, safety and safeguards activities will be provided to operations Components in documented procedures that are approved, by the Regulatory Component, for electronic issue. Contents of these

procedures will be communicated to operations personnel, by Component Management, through incorporation into specified operating and/or quality assurance procedures.

Regulatory-significant practices in operations and quality assurance procedures, and changes to such procedures, will be issued by cognizant Components in accordance with documented policies for procedure preparation, review, and approval. Specifically, Regulatory Component approvals will be required for all regulatory aspects of procedures, and their changes, involving the storage, handling, processing, inspection, and/or transport of nuclear materials. Component Management will be responsible for assuring and documenting that contents of these procedures are communicated to appropriate personnel through training programs, access to the Electronic Systems, and/or posting of instructions.

(c) Procedure Review Frequencies

Maximum frequencies of reviews-for-updating for regulatory-significant procedures will be:

- Annual, for Category-1 and Category-2 Procedures; and,
- Biennial for Category-3 Procedures.

(d) Procedure Compliance

A formal system will be maintained to enable employees to report inadequate procedures, and/or inability to follow procedures, to their First Level Managers for follow-up action.

First Level Managers will enable, and require, compliance with all regulatory-significant procedures. This will be accomplished by providing ready employee access to procedures, requiring documented employee procedure review and acknowledgement, then evaluating employee performance with respect to procedure compliance on a continuing basis. Employees will receive additional instruction, if determined necessary by the First Level Manager evaluations; and, if procedures are deliberately or repeatedly violated, disciplinary action will be taken in accordance with established Westinghouse policies.

### 3.4.2 TRAINING AND QUALIFICATION

Training will be provided for every individual in the Columbia Fuel Fabrication Facility (CFFF), commensurate with their duties. Formal training programs will be developed and implemented to enhance and augment procedure review and acknowledgement described in

Paragraph 3.4.1(d) of this Chapter, and training responsibilities described in Chapter 2.0 of this License Application. Such training programs will be performance-based; and as such, will incorporate the structured elements of job and task analysis, learning objectives, instructional methodology, implementation, and evaluation and feedback. In addition, training of Nuclear Criticality Safety Function Engineers will include qualification by cognizant Regulatory Component Management that goes beyond the position requirements described in Chapter 2.0 of this License Application. The programs will be structured such that specified training and qualification requirements will be met prior to safety-significant positions being fully assumed, or covered tasks being independently performed. Training records will be maintained in accordance with Section 3.8 of this Chapter.

(a) General, Topical, and Refresher Training

All new employees will receive training relative to safety aspects concerning radiation and radioactive materials; risks involved in receiving low level radiation exposure; basic criteria and practices for radiation protection, nuclear criticality safety (based upon selected guidance from ANSI/ANS-8.20-1991, facility operating experience, and area specific requirements), chemical and fire safety, maintaining radiation exposures and radioactivity in effluents As Low As Reasonably Achievable (ALARA), and material safeguards. Facility visitors will either be provided with equivalent training (commensurate with their visit's scope); and/or, will be escorted by trained employees.

Employees or visitors for whom respiratory protection devices might be required, within the scope of their work, will receive pre-work training in the proper use of such devices.

Employees designated to take part in emergency response to safety accidents or incidents will receive training commensurate with their assigned activities during such response.

Employees who work with nuclear materials will receive regulatory refresher training on a biennial basis. This training will consist of:

- Providing each employee with a current revision of the Regulatory Affairs Training Manual;
- Presenting each employee supplementary videotaped instruction on general regulatory issues; and,
- Requiring each employee to successfully pass an examination.

The Training Manual will include such subjects as:

- ALARA;
- General health physics practices;
- Health physics rules and recommendations;
- Area-specific health physics practices;
- General nuclear criticality safety practices;
- Area-specific nuclear criticality safety practices;
- Industrial safety and hygiene, and fire safety, practices;
- Chemical Area work practices;
- Radiation risks;
- Emergency planning; and,
- Safeguards.

Employees who are absent from the facility during scheduled regulatory refresher training will receive such training within one month of their return to work.

(b) Training and Qualification of Nuclear Criticality Safety Function Engineers

Nuclear Criticality Safety Function Engineers will develop skills and abilities directed by the cognizant Regulatory Component Manager, who will evaluate fundamental development methodologies for applicability and utilization on a case-by-cases basis. Examples of development methods include:

- A nuclear criticality safety short course;
- Westinghouse auditing certification;
- American Nuclear Society Standards development and review;
- Facility criticality safety handbook development and review;
- A structured hazards analysis course;
- A structured human factors course; and,
- Criticality safety calculations certification.

Demonstrated performance of Nuclear Criticality Safety Function Engineers skills and abilities will be formally reviewed and documented by the cognizant Regulatory Component Manager and the senior Regulatory Component Manager. Performance evaluated by the Managers, for review on a case-by-case basis, will include:

- Reports of internal audits and inspections conducted;
- Feedback from worker training presented;
- Criticality safety analyses and evaluations performed.

Qualification of each Nuclear Criticality Safety Function Engineer will be formally documented by the cognizant Regulatory Component Manager and the senior

Regulatory Component Manager -- prior to the Function position being fully assumed, or crucial tasks being independently performed.

(c) Training and Qualification of Health Physics Technicians

Training and qualification prerequisites for a Health Physics Technician will include, as a minimum, a high school diploma or equivalent.

Health Physics Technicians will develop skills and abilities, as directed by the cognizant Regulatory Component Manager. Methods evaluated by the cognizant Manager for qualification, on a case-by-case basis, will include:

- Documented acknowledgement of applicable procedures;
- Emergency preparedness training; and/or
- Applicable skills competency training.

## 3.5 HUMAN FACTORS

Human factors concepts will be employed at the Columbia Fuel Fabrication Facility (CFFF), in recognition of how the total job environment -- areas, equipment, training, and procedures -- shapes the expectations, thoughts, and decisions of employees who work with licensed materials. A human factors awareness will be developed at various levels of the organization, and structured human factors analyses will be performed. Because the operating philosophy of the organization is strongly embodied in procedures, as described in Subsection 3.4.1 of this Chapter, procedures will receive particular human factors attention.

### 3.5.1 DEVELOPMENT OF HUMAN FACTORS AWARENESS

To enable integration of human factors concepts into facility operations, an initial, formal course -- prepared and presented by recognized human factors experts -- will be provided for the Plant Manager; all Engineering, Manufacturing, Regulatory, and Quality Component Managers; and, designated Functions from these Components. The course will address the following elements, including exercises to enhance learned skills:

(a) Process Safety Management;

(b) Human Factors Concepts;

(c) Performance Shaping Factors For Hardware;

(d) Performance Shaping Factors For Procedures;

(e) Analysis Preparation;

(f) Error-Likely Situations;

(g) Procedure Analysis Techniques;

(h) Worker Self-Checking Techniques; and,

(i) Supervisor Coaching Principles.

### 3.5.2 STRUCTURED HUMAN FACTORS ANALYSIS

A part of the CFFF Integrated Safety Assessments, described in Chapter 4.0 of this License Application, will include a structured human factors analysis of assessed system procedures. These analyses will be led by an individual who has completed a formal human factors course. The analyses will embrace the following:

(a) Using Procedure-Specific Guide Words For Structured Analysis Of Procedures.

(b) Minimizing Opportunities For Human Errors Of Omission and Commission Related To Procedures.

Results of the structured analyses, including findings and recommendations for improvements, will be documented in formal reports to cognizant Component Management.

## 3.6 AUDITS AND SELF-ASSESSMENTS

The bases of the Columbia Fuel Fabrication Facility (CFFF) Audits and Self-Assessment program will be the performance-based reporting process described in Section 3.7 of this Chapter, the performance-based internal inspection and audit program, and facility management self-assessment of regulatory program performance.

### 3.6.1 PERFORMANCE-BASED INTERNAL INSPECTIONS AND AUDITS

(a) INFORMAL INSPECTIONS

Regulatory Component personnel on duty, including Regulatory Component management, will conduct continuing informal inspections of regulatory program performance in the course of their routine duties. Observed process upsets and procedural inadequacies will be promptly reported to the cognizant First Level Component Manager for remedial action. Repeated upsets and inadequacies will be reported to the cognizant Regulatory Component Manager, who in turn will report

them to increasingly higher levels of Component Management until effective remedial action has been taken. Such repeated upsets and inadequacies will be documented in monthly formal audits to assure applicable tracking and resolutions.

(b) FORMAL AUDITS

Cognizant Regulatory Function Engineers will conduct monthly formal audits of regulatory program performance. The auditors will have the technical capability, and will be formally directed by Regulatory Component management, to find process upsets and procedural inadequacies well beyond those surfaced by simple paperwork reviews. The audits will include reviews of items entered into the performance-based reporting process, and repeated upsets and inadequacies reported to Regulatory Component management, for the areas being audited; and, detailed area walkdowns. Disclosed upsets and inadequacies will be formally documented in a report to cognizant First Level Component Managers; and, will be tracked by the audit team leader until appropriately addressed.

3.6.2 FACILITY MANAGEMENT SELF-ASSESSMENT

The purpose of the self-assessment program will be to provide a means to assure that deficiencies in regulatory performance are identified and corrected to Westinghouse management standards.

The Plant Manager will document CFFF policy on the purpose and objectives of self-assessment to Component Managers, including aggressive demand for quality assessment performance.

The management self-assessment organization will be the Regulatory Compliance Committee (RCC) described in Chapter 2.0 of this License Application. RCC members will be provided with the Nuclear Regulatory Commission Staff's views concerning self-assessment -- particularly, that the function of such assessment will be to aggressively disclose and forcefully report identified process upsets and procedural inadequacies before they self-reveal and/or Regulatory Agencies find them.

On a semi-annual basis the following assessment parameters will be summarized and trended by the Regulatory Component:

- A summary of items documented in the performance-based reporting process;
- A summary of upsets and inadequacies documented in performance-based internal audit reports;
- Facility Collective Dose Equivalent;
- Facility average Total Effective Dose Equivalent;

- Top 10 facility workers' Total Effective Dose Equivalents;
- Overexposures;
- Regulatory Agency notifications;
- Ratio of Recordable Incident Rate to SIC code average;
- Lost time accidents per production hour;
- Results of Special Nuclear Material Physical Inventory (annual);
- Emergency response team activations;
- Radioactive emissions in gaseous effluents;
- Radioactive emissions in liquid effluents;
- Radioactive material transportation incidents; and,
- Regulatory Agency violations.

The summaries and trends will be formally reviewed by the RCC, particularly for need to be addressed by initiatives of the Safety Margin Improvement Program described in Chapter 3.0 of this License Application.

## 3.7 INCIDENT INVESTIGATIONS

At the Columbia Fuel Fabrication Facility (CFFF), the organizational structure described in Chapter 2.0 of this License Application, and procedures in accordance with Subsection 3.4 of this Chapter, will provide for: systematic investigation of abnormal events; making decisions on corrective measures to prevent recurrence of such events; and, follow-up on the implementation of the preventive measures. Further, the CFFF will have in-place a structured methodology for determining and categorizing the root cause(s) of the failure(s) that led to investigated events.

### 3.7.1 INTERNAL REPORTING OF INCIDENTS

A formal system will be maintained to enable employees to report process upsets and procedure inadequacies to their First Level Managers for follow-up action; and, employees will be instructed in its use. Documentation of this performance-based reporting process will provide for the following information:

- Event identification number, date, and time.
- Names of the report originator and the First Level Manager, shift number, and event description;
- Immediate action taken by the First Level Manager;
- Explanation of ultimate event closure; and,
- Acknowledgement of closure (and date acknowledged) by the cognizant Engineering Function Engineer, the cognizant Regulatory Function Engineer, the originator's First Level Manager, and the originator.

Potential safety-significant reports will be forwarded to the Regulatory Component for evaluation and determination of necessity for action by the incident review committee, as described in Subsection 3.7.2 of this Chapter. All documentation of the performance-based reporting process for an area will be reviewed as a part of the formal audits of the area, as described in Paragraph 3.6.1(b) of this Chapter.

## 3.7.2 STRUCTURED INCIDENT EVALUATION

An incident review committee -- comprised of the Engineering Component Senior Manager, the Manufacturing Component Senior Manager, and the Regulatory Component Senior Manager -- will determine if reported process upsets and/or procedure inadequacies are to undergo structured incident evaluation. Structured incident evaluations will be maintained by a datapack process. Documentation of this process will provide for the following information:

- Results of a Root Cause Analysis, led by an individual with formal training in conducting such an analysis, including recommendations;
- Status of corrective action(s) implementation;
- Regulatory assessment;
- Notification documentation;
- Training documentation;
- Plant-wide applicability assessment; and,
- Miscellaneous information pertaining to the incident and/or the evaluation.

## 3.7.3 NOTIFICATION OF REGULATORY AGENCIES

Cognizant Regulatory Agencies will be promptly notified of major safety incidents in accordance with all requirements from 10 CFR Parts 20 and 70. In particular, as points of additional clarification, the NRC Operations Center will be notified of the following types of incidents, within the time limits prescribed:

(a) 1-Hour Notifications

(a.1) Any incident for which an Alert or Site Area Emergency has been declared, as prescribed by the Site Emergency Plan described in Chapter 9.0 of this License Application.

(a.2) Any incident involving Quality Level A systems, for which accident controls cannot be initiated, whether or not regulatory limits are exceeded.

(b) 4-Hour Notifications

(b.1) Any incident involving Quality Level B systems, for which accident controls cannot be initiated, whether or not regulatory limits are exceeded.

(b.2) Any nuclear criticality safety incident for which less than double contingency protection remains (multi-parameter control or single-parameter control) and:

- Greater than a safe mass is involved and double contingency protection is not restored within four (4) hours.
- Greater than a safe mass is involved and controls are restored within four (4) hours, but:
  i. Only single contingency protection is restored and more than one of the original controls were modified or replaced.
  ii. Double contingency protection is restored but multiple original controls under both contingencies were modified or replaced.

(b.3) Any determination that a criticality safety analysis or evaluation was deficient and that double contingency protection, in fact, does not exist.

(b.4) Any unanticipated/unanalyzed nuclear criticality safety incident for which the severity and remedy are not readily determined.

(c) 24-hour Notifications

(c.1) Any incident for which the work area is unavailable for normal use for an entire day, following a loss of radioactivity contamination control.

(c.2) Any incident for which Quality Level A or B system safety equipment is not performing its intended function.

(c.3) Any incident for which an employee, having removable radioactivity contamination, receives medical treatment outside of facility contamination control areas.

(c.4) Any incident for which a fire or explosion damages nuclear fuel and its processing equipment or container.

(c.5) Any nuclear criticality safety incident for which less than double contingency protection remains (multi-parameter control or single-parameter control) and:

- Less than a safe mass is involved.
- Greater than a safe mass is involved, but a sufficient number of the controls that were lost are restored within four (4) hours such that double contingency protection is restored.

(d) A procedure will be prepared, maintained, and followed -- in accordance with Subsection 3.4.1 of this Chapter -- that details the information to be included in a notification.

Each notification of a nuclear criticality safety incident will include the following information:

- Whether the notification is the result of an event, or of a deficient nuclear criticality safety analysis (including the time period for which the deficiency existed);
- The significance of the incident;
- Potential criticality pathways involved, including brief scenario(s) of how accidental criticality could occur;
- Controlled parameters -- mass, moderation, geometry, concentration, etc. -- involved;
- Estimated amount, enrichment, and form of licensed material involved -- including applicable process limits and the percent of worst-case critical mass of the material, in the configuration, involved;
- A description of the involved failures or deficiencies -- including applicable nuclear criticality safety controls or control systems; and,
- Corrective actions to restore safety systems, and when each was implemented.

## 3.8 RECORDKEEPING AND REPORTING

The Columbia Fuel Fabrication Facility will identify, maintain, preserve, control, and destroy records -- as defined in the records management section of the controller's manual -- in accordance with the guidelines, procedures, and practices set forth by the Westinghouse Electric Corporation. Such records, specifically required by applicable regulations, will be maintained in accordance with those regulations. Reporting of records data will be as prescribed by applicable regulations.

### 3.8.1 RECORDS

Written procedures, prepared and maintained in accordance with Subsection 3.4.1 of this Chapter, will specify the management program for licensed activity records; including:

(a) Environmental Surveys;

(b) Radiation And Contamination Surveys;

(c) Personnel Exposures;

(d) Instrument Calibration Results;

(e) Nuclear Criticality Safety Evaluations, Analyses and Methodology Validations;

(f) Audit And Inspection Reports;

(g) ALARA Reports;

(h) Regulatory Compliance Committee Meeting Minutes;

(i) Employee Training And Re-training Documentation;

(j) Records Of Plant Alterations Or Additions;

(k) Documentation Of Abnormal Or Atypical Occurrences And Events Associated With Radioactivity Releases;

(l) Decontamination And Decommissioning Files; and,

(m) Other Such Records Required By the Regulations.

These procedures will include Records Flow Schedules, which list:

- Record category,
- Name of record;
- Form numbers;
- Retention period in active files;
- Retention period in the central records bureau; and,
- Retention period in the records center.

Records of tests, measurements, and surveys required to document compliance with conditions of operating licenses and permits will be retained for at least three years, unless otherwise specified in the regulations.

Records of nuclear criticality safety anaiyses will be retained for the lifetime of the facility.

3.8.2 RECORDS RETRIEVAL

All retained records will be stored, and maintained readily accessible, in order to meet time restraints relative to their use. Retained records will be as complete and detailed as necessary to enable traceability to original source data.

The records retention system will include the capability to retrieve records within 24-hours for records generated within the past 12-months; and, inside 7-calendar-days for older generation periods.

### 3.8.3 RECORDS RE-CREATION

Prudent measures of protection and redundancy will be afforded such that acts of record alteration or inadvertent destruction will not foreclose capability for reconstructing a complete and correct set of required records.

In cases where protective measures fail, and a particular record is lost or inadvertently destroyed, a reconstruction may be generated using source data applicable to the time the subject record was originally created. When a document is just partially missing, all salvaged portions will be attached to the reconstruction. If source data is not available for re-creating a missing record, the record may be reconstructed using inference to data relative to other documents for similar information and time periods.

### 3.8.4 REPORTS

A detailed listing of reports required by NRC regulations will be maintained and followed. This listing will document:

- Reference to applicable regulations;
- Descriptions of the reports required; and,
- Frequencies at which the reports must be submitted.