

ENCLOSURE 2

REFERENCES

1. Renewal Application Transmittal Letter from Nancy Blair Parr to Director of NMSS, "Westinghouse License SNM-1107 Renewal Application" dated July 31, 2014 (LTR-RAC-14-40), including all documents incorporated by reference.
2. Letter from Nancy Blair Parr to Director of NMSS, "Westinghouse January 2014 Updated ISA Summary" dated January 28, 2014 (LTR-RAC-14-8).
3. Westinghouse CFFF Decommissioning Funding Plan, dated June 8, 2012 (LTR-RAC-12-52).
4. Current revision of the Westinghouse Fundamental Nuclear Material and Control Plan as approved by NRC (Revision 42, dated 8/30/12).
5. Current revision of the Westinghouse Physical Security Plan as approved by NRC (Revision 43, dated 1/15/13).
6. Current revision of the Westinghouse Site Emergency Plan as approved by NRC (Revision 17, dated 12/12/13).

ENCLOSURE 3

**JUSTIFICATION FOR A 40-YEAR LICENSE EXTENSION
FOR THE COLUMBIA FUEL FABRICATION FACILITY**

Justification for a 40-Year License Extension for the Columbia Fuel Fabrication Facility

Prepared for

Westinghouse Electric Company, LLC

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Acronyms and Abbreviations

ac	Acre
ADU	ammonium diuranate
ALARA	As Low As Reasonably Achievable
AS	Air Sparge
CAP	Corrective Action Program
CFFF	Columbia Fuel Fabrication Facility
CFR	Code of Federal Regulations
CVOC	Chlorinated Volatile Organic Compound
EA	Environmental Assessment
EH&S	Environment, Health, and Safety
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
ft	feet
ha	Hectare
IROFS	Items Relied on for Safety
ISA	Integrated Safety Analysis
ISO	International Standards Organization
km	Kilometer
LLC	Limited Liability Company
m	meter
mi	mile(s)
MTU	metric tons of uranium
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
QMS	Quality Management System

RMP	Risk Management Program
SC	South Carolina
SC-DHEC	South Carolina Department of Health and Environmental Control
SCWF	South Carolina Wildlife Federation
SER	Safety Evaluation Report
SNM	Special Nuclear Material
SVE	Soil Vapor Extraction
Tt	Tetra Tech, Incorporated
U	uranium
UF ₆	uranium hexafluoride
UO ₂	uranium dioxide
U.S.	United States
WAIT	Wildlife and Industry Together
Yr	year

1.0 INTRODUCTION

The Westinghouse Electric Company, LLC (Westinghouse) Columbia Fuel Fabrication Facility (CFFF) fabricates low-enriched uranium fuel assemblies for commercial light-water nuclear reactors. The CFFF is located 13 km (8 mi) southeast of Columbia, South Carolina (SC) in Richland County. The CFFF is operated by Westinghouse in accordance with Title 10, Code of Federal Regulations, Part 70 (10 CFR 70) through a Special Nuclear Material (SNM) License 1107 (SNM-1107) from the U.S. Nuclear Regulatory Commission (NRC). On September 28, 2007, the NRC approved a renewal of the license for a 20-year period.

In September 2006 the NRC issued NRC Staff Requirements Memorandum SECY-06-0186, "Increasing Licensing Terms for Certain Fuel Cycle Facilities," in which the NRC approved recommendations to implement maximum license terms of 40 years for license renewals and new applications (NRC, 2006). Westinghouse will submit a license renewal application for a license extension to a 40 year period as per the NRC guidance. The purpose of this report is to provide justification at a summary level for such a license extension.

A separate Environmental Report (ER) is provided in support of the justification for license extension presented herein (Tt, 2014). The ER should be referenced for information regarding details of the CFFF, including site and facility descriptions, the affected environment, potential environmental impacts, and mitigating measures to minimize such impacts. In addition, it describes the environmental monitoring program.

Section 2.0 of this report presents background information regarding past, current and future planned site operations in the context of applicable environmental, licensing and permitting requirements. Section 3.0 addresses technical issues regarding the license extension. Section 4.0 is a summary of the report and conclusions regarding the license extension. Section 5.0 is a list of references cited in the report.

2.0 BACKGROUND INFORMATION

This section presents background information regarding past, current and future planned CFFF site operations in the context of applicable environmental, licensing and permitting requirements.

2.1 Site and Facility Description

The CFFF site is located in the central part of SC in Richland County, 13 km (8 mi) southeast of the city limits of Columbia along SC Highway 48 (see Figures 2-1 and -2) on a semi-rural plot of approximately 469 ha (1,158 ac). The main manufacturing building, waste treatment areas and holding ponds, parking lots, and other miscellaneous buildings occupy approximately 5 percent (24 ha [60 ac]) of the site area. About 445 ha (1,098 ac) of the site remain undeveloped.

The facility is at an elevation of approximately 43 m (142 ft) above mean sea level. Storm water drains from the site drain into Sunset Lake and Mill Creek, which in turn drains into the Congaree River, about 6.4 km (4 mi) distant. The manufacturing facilities are located about 490 m (1,600 ft) from the nearest point on the site boundary. The main manufacturing building for the CFFF is set back approximately 760 m (2,500 ft) from the roadway. The main plant road, which connects the CFFF to Bluff Road, provides access for vehicle and truck traffic.

The facility has been in operation from 1969 to the present. The fabrication process involves the chemical conversion of uranium hexafluoride to uranium oxide using the Ammonium Diuranate (ADU) Process. The uranium dioxide is formed into ceramic fuel pellets which are used in the nuclear fuel assembly. Westinghouse has an existing Integrated Dry Route (IDR) Process within the main manufacturing building at the CFFF that was operated from approximately 1985 to 1995 with a capacity of approximately 400 metric tons of uranium per year (MTU/yr). That portion of the facility, however, was inactivated in 1995 for business reasons. The current production level at full capacity is nominally 1,500 MTU/year by utilizing five ADU lines.

The manufacturing operations consist of receiving low-enriched (less than or equal to 5.0 weight percent of ^{235}U) uranium hexafluoride (UF_6) in cylinders; converting the UF_6 to produce uranium dioxide (UO_2) powder; and processing the UO_2 powder through pellet pressing and sintering, fuel rod loading and sealing, and fuel assembly fabrication. These operations are supported by absorber addition, laboratory, scrap recovery, and waste disposal systems. Most of the manufacturing operations are conducted in the main manufacturing building, which can be divided into two areas: the Chemical Area and the Mechanical Area. Uranium operations conducted in the Chemical Area include UF_6 conversion, powder blending, pellet manufacturing, fuel rod loading, and scrap processing. Uranium operations conducted in the Mechanical Area involve only encapsulated and sealed material, such as rod certification and storage, and final assembly. All manufacturing operations are governed by approved radiation and environmental protection, nuclear criticality safety, industrial safety and health, SNM safeguards, and quality assurance controls.

The CFFF operations result in gaseous, liquid, and solid effluents. An effluent monitoring program is in place to ensure releases to the environment are within Federal and State regulations and that any radioactive releases are as low as reasonably achievable (ALARA). The site environmental monitoring program periodically samples environmental media (air, vegetation, groundwater, surface water, soil and sediment) at a number of selected locations on

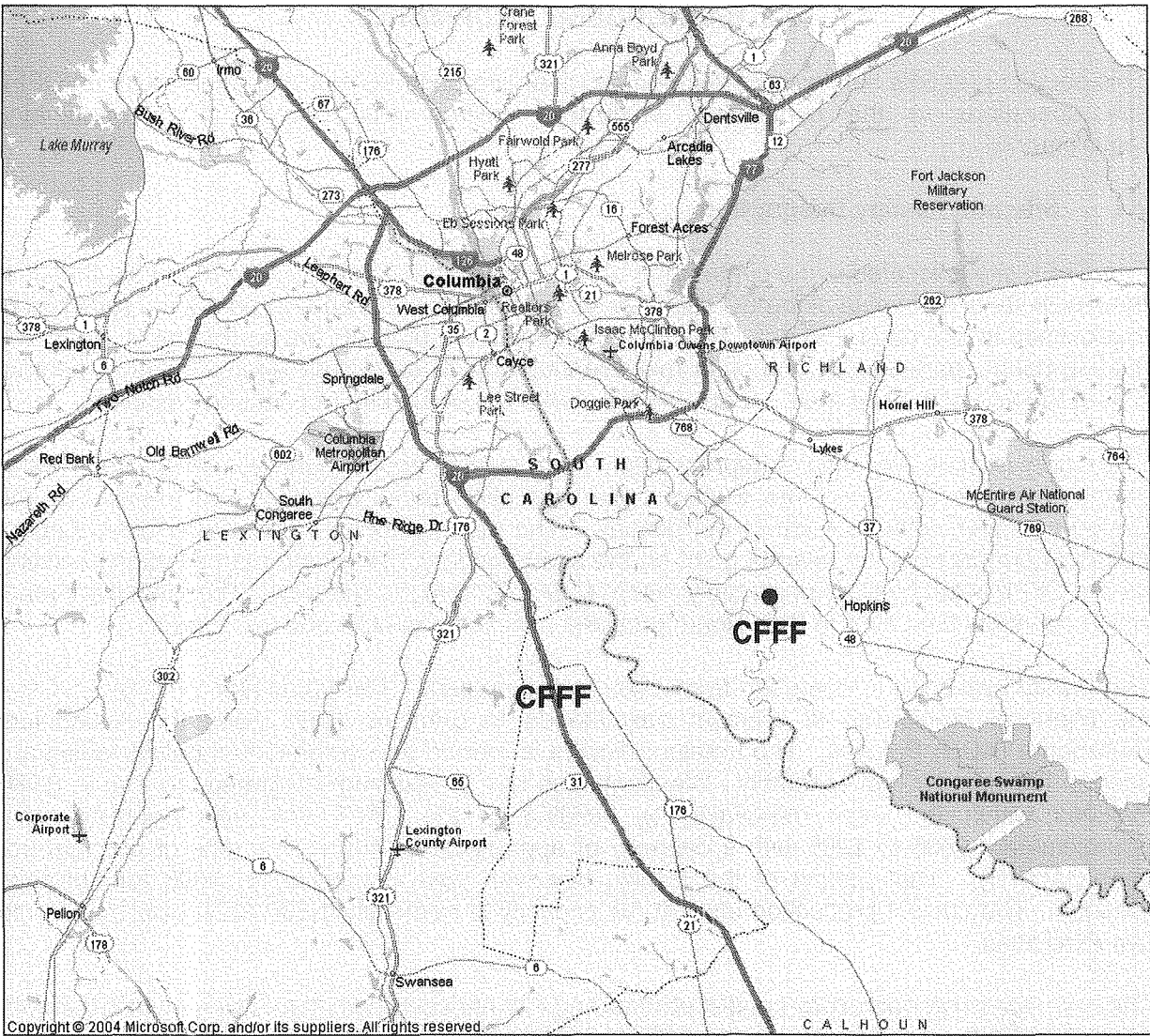


Figure 2-1 CFFF and Surrounding Area



Figure 2-2 Aerial Photograph of the CFFF

site and some locations off site to ensure compliance with State and Federal regulations and to assess the impact to the environment from site operations.

2.2 Applicable Regulations and Permits

Commercial nuclear fuel fabrication facilities in the United States must obtain licenses from the NRC to manufacture, produce, receive, acquire, own, possess, use, or transfer special nuclear material (10 CFR 70.3). Each license specifies the authorized special nuclear materials, their chemical and/or physical forms, and the maximum quantity of each material that the licensee is allowed to possess at any one time. License applications for facilities such as CFFF, and applications to modify facilities, require that the applicant provide an ER, which the NRC uses as a basis to prepare an Environmental Assessment (EA) regarding the planned future operations to be covered by the license application. The NRC provides guidance on format and content of ERs prepared by applicants and the EAs prepared by NRC in NUREG-1748 (NRC, 2003). Such facilities also require permits from the State that include a National Pollutant Discharge Elimination System (NPDES) permit for liquid discharges and an Air Permit for air pollutant discharges.

In accordance with 10 CFR 70, Westinghouse possesses Special Nuclear Material License 1107 (SNM-1107) for CFFF from the NRC. In addition, the facility has NPDES and Air Permits from the State of South Carolina Department of Health and Environmental Control (SC-DHEC). On September 29, 2005, Westinghouse submitted a request to the NRC for a license renewal for a 10 year period. This application included an ER prepared by Westinghouse dated December 2004, which NRC used in preparing an EA. Subsequently, Westinghouse modified the license renewal application for a 20-year period, which was approved by the NRC.

In September 2006 the NRC issued NRC Staff Requirements Memorandum SECY-06-0186, "Increasing Licensing Terms for Certain Fuel Cycle Facilities," in which the NRC approved recommendations to implement maximum license terms of 40 years for license renewals and new applications (NRC, 2006). The NRC also approved of license terms for less than 40 years on a case-by-case basis where there are concerns with safety risk to the facility or where a licensee introduces a new process or technology. Such potential license extensions are specific to licensees required to submit integrated safety analysis (ISA) summaries according to 10 CFR Part 70, Subpart H, requirements. Since the CFFF falls in the latter category, Westinghouse will submit a license renewal application for a license extension to a 40 year period as per the NRC guidance. The purpose of this report is to provide justification at a summary level for such a license extension.

2.3 Environmental Report Summary

A separate ER is provided in support of the justification for license extension presented herein (Tt, 2014). For the purpose of this ER, the No-Action Alternative is defined as continued CFFF operations for the foreseeable future, without any significant changes in the existing facility with the assumption that operating period would be up 40 years is assumed after 2014. The No-Action Alternative is the only alternative considered in the ER. Potential significant, future changes in the CFFF as described herein would become a Proposed Action, requiring an updated ER.

The ER should be referenced for information regarding details of the CFFF, including site and facility descriptions, the affected environment, potential environmental impacts, and mitigating

measures to minimize such impacts. In addition, it describes the environmental monitoring program. The ER also presents a listing of all Federal, State, and local permits, licenses and certifications for the CFFF currently in effect.

The ER has been prepared in accordance with NRC 10 CFR 51.60 and guidance contained in NUREG 1748 Chapter 6 (NRC, 2003). It reflects and updates information Westinghouse provided NRC in prior environmental documentation for the CFFF in 1975, 1983 and 2004; and in support of license renewal applications (Westinghouse, 1975, 1983 and 2004). In addition, the NRC considered the latter documentation in preparing an Environmental Impact Statement (EIS), an EA and similar documents for the CFFF (NRC, 1985, 1995 and 2007a). The previous reports have documented the Westinghouse CFFF environmental protocol and management program and have concluded that the environmental impact of operating the CFFF is minimal. NRC regulations 10 CFR 51.60 provide for incorporating previously submitted environmental information. Past NRC reviews of CFFF operations, undertaken in accordance with 10 CFR 51.7 regarding the National Environmental Policy Act (NEPA) of 1969, identified no significant environmental impacts. The plant has been safely operated since September 1969, and no major events have occurred in the interim which would reverse those previous conclusions.

The ER considers information related to existing and planned future operations in the following areas:

- Facility and process description
- Applicable environmental, licensing and permit regulations and compliance
- Nuclear safety
- Hazardous material handling and storage safety
- Occupational safety
- Gaseous, liquid and solid effluents
- Environmental controls and mitigation
- Environmental monitoring program and related data.

In documenting environmental conditions for the CFFF and its environmental impacts, the ER covers the following resource areas:

- Land Use
- Transportation
- Geology and Soils
- Water Resources
- Ecological Resources
- Meteorology, Climatology, and Air Quality
- Noise
- Historic and Cultural Resources
- Visual/Scenic Resources
- Socioeconomic
- Public and Occupational Health (including Radiation)
- Waste Management

The ER summarizes environmental effects under the No-Action Alternative that could result from past, present, or reasonably foreseeable future. No significant environmental impacts, including cumulative effects, have been identified for the areas within the affected environments described.

Westinghouse conducts program audits and self-assessments as a way to minimize adverse environmental effects. This includes an environmental and effluent monitoring program designed to 1) monitor CFFF effluents and the environment in and around the site, 2) evaluate potential health and environmental impacts from its effluents, and 3) monitor compliance with applicable regulations. Onsite groundwater contamination (volatile organic compounds, fluoride, nitrate, ammonia) has occurred in the past, but such contamination has been minimized through a remedial action program and groundwater monitoring.

CFFF is in compliance with relevant environmental standards and regulations, as well as NRC regulations related to radiation dose to the public and facility workers. Further, the facility utilizes an ALARA program, routine environmental and radiation monitoring, a radiation safety program, a chemical safety program, and an environmental protection program to minimize the associated direct, indirect, and cumulative effects. Westinghouse also conducts program audits and self-assessments as a way to minimize adverse environmental effects.

2.4 Facility Safety Summary

The potential exists for accidents leading to releases of radioactive and chemical materials at CFFF resulting from operations and during transportation of materials to and from the facility in support of operations. In accordance with 10 CFR Part 70, Subpart H, Westinghouse performed an ISA (Westinghouse 2012a). An ISA is defined in 10 CFR 70.4 as "a systematic analysis to identify facility and external hazards and their potential for initiating accident sequences, the potential accident sequences, their likelihood and consequences, and the items relied on for safety." Items relied on for safety are structures, systems, equipment, components, and activities of personnel that prevent or mitigate potential accidents that could exceed the performance requirements in 10 CFR 70.61.

The NRC prepared a Safety Evaluation Report (SER) regarding the CFFF to evaluate the potential adverse impacts of continued operation of the facility to the worker and public health and safety, under both normal operating and accident conditions (NRC, 2007b). The review also considered physical protection of SNM, material control and accounting of SNM, and the management organization, administrative programs, and financial qualification proved to ensure the safe design and operation of the facility. The NRC staff concluded in the SER that "the licensee's [Westinghouse] descriptions, specifications, and analyses provide an adequate basis for the safety and safeguards of facility operations, and that continued operation of the facility does not pose an undue risk to worker and public health and safety."

3.0 TECHNICAL ISSUES REGARDING LICENSE EXTENSION

This section describes technical issues regarding the extension of Westinghouse's SNM-1107 license from a 20- to a 40-year period. This section builds on the background information regarding environmental, licensing and permitting issues outlined in Section 2.0. Section 3.1 outlines considerations regarding a license extension. Section 3.2 summarizes the approach taken in developing justification for a license extension. Section 3.3 describes Westinghouse's proactive approach in addressing issues that could arise during the extension period.

3.1 Environmental, Licensing and Permitting Issues

There are a number of intertwined environmental, licensing and permitting issues affecting future CFFF operations and a potential 40-year license extension. The supporting ER addresses some, but not all of these issues. Some of the issues of interest regarding a 40-year license extension include the following:

- Potential future modifications to CFFF. Such modifications would need to be addressed on a case-by-case basis in terms of a license amendment or 10 CFR 70.72.
- Potential increase in groundwater contamination. Westinghouse has a comprehensive groundwater monitoring program designed to characterize the nature and extent of such contamination, and to provide a basis for mitigation actions. The groundwater in at the CFFF site has been contaminated somewhat by nitrates, fluoride, and volatile organics from spills and leaks. The site utilized Air Sparge / Soil Vapor Extraction from 1998 to 2011 as part of a groundwater remediation project. Per an AECOM Remedial Investigation Report (AECOM 2013), CVOC concentrations have decreased or remained stable since shutdown of the AS/SVE system and it is evident that the COVC mass is depleting and mass reduction over time can be expected. In addition, groundwater borings in May 2011 indicated the North and South Lagoons to be source of nitrate contamination. As a result, Westinghouse relined the site lagoons in January to February 2012. In 2010, gross beta concentrations in two groundwater sampling wells exceeded limits. The source was traced to technetium-99 (Tc-99), originating from UF6 cylinder washing. Sampling of Tc-99 in groundwater and liquid effluents was initiated in 2011.
- Buildup of uranium in the environment. Control of emissions and a comprehensive environmental monitoring program are designed to minimize this potential.
- Potential for accidents leading to releases of radioactive and chemical materials at CFFF resulting from operations and during transportation of materials to and from the facility in support of operations. The potential for such accidents is minimized through the ALARA program, environmental and radiation monitoring, a radiation safety program, a chemical safety program, an environmental protection program. NRC-approved Site Emergency and Physical Protection Plans further minimize the potential for such accidents and the severity of such accidents should they occur. Use of anhydrous ammonia at CFFF was eliminated in August 2011, and replaced by aqueous ammonium hydroxide (Westinghouse 2012a). This resulted in a reduction in chemical hazard risk.
- The air quality in the region could be affected by future growth. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards

(NAAQS) for criteria air pollutants. EPA has designated all of South Carolina in attainment for all criteria air pollutants except for the 2008 8-hour ozone standard for which York County is "non-attainment" and the remainder of the state is unclassifiable/attainment" (EPA 2012, SC-DHEC 2012). Future changes in the NAAQS could affect the region's attainment status.

- Population growth, increased development and increased traffic in the CFFF site vicinity. Environmental impacts of CFFF operations are small, as confirmed by Westinghouse and NRC evaluations as part of the license renewal process. Future growth in the site vicinity is unlikely to affect those conclusions.
- Adequate planning and funding need to be in place for the eventual decommissioning of CFFF. The CFFF Decommissioning Funding Plan (DFP) is updated and validated once every three years in accordance with 10 CFR 70.25(e) regarding the decommissioning cost estimate and technical approach (SNS, 2012).. It was determined that the CFFF decommissioning activities are consistent with industry standards and that no unusual circumstances will be encountered.

In order for Westinghouse to obtain a 40-year license extension as per the NRC Staff Requirements Memorandum, Westinghouse will submit a license renewal application for a license extension to a 40 year period as per the NRC guidance. Based on NRC general requirements for license applications and license renewal applications (10 CFR 70) and NEPA requirements, such an application would be accompanied by an ER. The ER supporting this report is designed for that purpose. In accordance with NEPA, the NRC in turn would need to follow the NEPA process by notifying the public through the Federal Register and preparing an EA or EIS. Due to past NRC NEPA-related documents prepared regarding the CFFF, an EA would likely be appropriate.

In considering a 40-year extension in accordance with SECY-06-0186, NRC will be reviewing its Fuel Cycle Facility inspection program to ensure that inspectors are appropriately focused on the licensees' existing programs that address material degradation and aging issues, such as the chemical process safety, corrosion prevention, and environmental qualification programs. This includes the need to address material degradation and aging issues as they might relate to 10 CFR 70, Subpart H and the NRC's licensing and inspection programs. The NRC is developing an appropriate process for completing its review of ISA updates to facilitate effective risk-informed inspection and validation of licensee programs.

The CFFF has been in operation from 1969 to the present, or 45 years. As noted in Section 2.2, the ER indicates that no significant environmental impacts, including cumulative effects, have been identified for the areas within the affected environments as a result of past or present operations. CFFF is in compliance with relevant environmental standards and regulations, as well as NRC regulations related to radiation dose to the public and facility workers. The CFFF has been safely operated since 1969 and no major events have occurred in the interim which would reverse this characterization. Extending CFFF operations into the future for an additional 40 years would be expected to result in similar conclusions.

The global energy crisis supports a potential future growth in commercial nuclear power both within the United States (U.S) and worldwide. Westinghouse supports the nuclear industry at CFFF by manufacturing low-enriched uranium fuel for light-water commercial nuclear reactors. With consideration to future demand for additional uranium fuel within the U.S. and by other

countries, Westinghouse believes that continued operation the CFFF is vital to meet this demand.

Further justification for a license extension include the following:

- Giving Westinghouse, financial sources, and Westinghouse customers assurance of a stable licensed process for a reasonable period of time in support of long-term U.S., global and nuclear industry goals regarding commercial nuclear power
- Reducing CFFF operating costs, and leveling the competitive "playing field," by allowing Westinghouse to amortize costs and spread decommissioning funding over a longer period of time

3.2 CFFF Operational Issues

Another aspect of justifying a 40-year license extension would be on material degradation and aging issues associated with CFFF facilities. From a broader perspective, these issues in turn lead to environmental and safety issues that could potentially develop over a 40-year facility life period. Westinghouse will demonstrate to the NRC that CFFF operations over such a period will be accomplished in an environmentally sound and safe manner. For this reason, Westinghouse will take a proactive approach to these issues with emphasis on the following areas:

- Degradation and aging
- Cumulative environmental impacts
- Nuclear safety
- Hazardous material safety
- Emergency planning
- Occupational safety
- Community relations
- Sustainability
- Decontamination and decommissioning
- Lessons learned from events at CFFF and other fuel fabrication facilities.

Examples of this proactive approach applied to the areas identified above are outlined in Table 3-1.

3.3 Proactive Westinghouse Approaches to Issues

An overriding consideration in a license extension to 40 years, is how Westinghouse will handle changes and potential technical problems arising as part of CFFF operation. In addition to programs identified previously (e.g., ALARA program; environmental and effluent monitoring program, a radiation safety program; a chemical safety program, Site Emergency Plan and Physical Protection Plan), Westinghouse management at CFFF already has in place established programs and procedures to address these issues, which include:

- Environmental, Safety and Health Policy
- Quality Assurance
- Continuous Improvement

- Configuration Control
 - Problem Identification and Corrective Action
- These are described below in more detail.

Table 3-1 Potential Areas Affecting a 40-year License Extension

Issue	Description	Example Action Plan
Degradation and aging	Potential degradation of equipment, piping, pond liners, drums, and other aspects of CFFF operations could result in conditions potentially affecting environmental or safety aspects.	Implement a plan to identify all aspects of the facility and its operations subject to long-term degradation and aging in a manner that could result in undesirable environmental and/or safety related conditions.
Cumulative environmental impacts	Cumulative environmental impacts developing over time could include buildup of radioactive and non-radioactive hazardous materials in environmental media (air, vegetation, groundwater, surface water, soil and sediment) on site and in the site vicinity.	Continue to track and identify potential environmental inventories of released radioactive and non-radioactive hazardous materials in environmental media.
Nuclear safety	Facility operational conditions developing over time could increase the likelihood of an unplanned nuclear critically. Degradation of storage cylinders, drums, tanks and piping could lead to unexpected releases.	Continue to support a robust nuclear criticality safety program based on NRC regulations and national consensus standards. Review procedures for inspection of cylinders, drums, tanks and piping. Develop replacement criteria based on time in service and usage for selected facility components.
Hazardous material safety	Hazardous material safety related handling, storage, and potential accidents. Degradation of storage cylinders, drums, tanks and piping could lead to unexpected releases.	Review procedures for inspection of cylinders, drums, tanks and piping. Develop replacement criteria based on time in service and usage for selected facility components. Continue to support a Mechanical Integrity Program applied to Risk Management Program (RMP) covered systems.
Physical security	Facility security threats, including sabotage, terrorism (domestic and international), and workplace violence	Periodically update the Physical Protection Plan and Physical Security features beyond that normally required of a Category III Nuclear Facility. This will ensure its adequacy with regard to the range of potential facility security threats and the related changing domestic and international environment.
Emergency planning	Emergency response planning for accidental releases of radioactive and non-radioactive hazardous material to the environment.	Review emergency planning and preparedness with continued focus on improvement and exercises beyond that normally required.
Occupational safety	Worker exposure and potential health effects will continue to be an area of interest over the license extension period.	Enhance the CFFF occupational exposure and monitoring program to include consideration of issues encountered at similar facilities.

Table 3-2 Potential Areas Affecting a 40-year License Extension (continued)

Issue	Description	Example Action Plan
Community relations	There will be a need for continued attention to community relations with regard to persons living in the vicinity of the site and potential impact of facility operations. Population growth in Richland County will increase the potential for perceived offsite impacts.	Maintain community relations to focus on how to increase positive benefits of CFFF to the local community. This includes partnerships with local schools, Wildlife and Industry Together (WAIT) certification by the South Carolina Wildlife Federation (SCWF), and support for local and national charities.
Sustainability	A focus on sustainability and going "green" would be an important aspect of an extended CFFF operating life. Recovering, recycling and reuse of natural resources and other materials would be a key environmental initiative.	Continued development and implementation of the Sustainability Plan for future CFFF operations with milestones implementing related actions in this regard.
Decontamination and Decommissioning	The state of the facility, the site and its environs will affect the nature and extent of decontamination and decommissioning required at the end of facility life. Adverse conditions affecting closure build-up over time.	Review facility operations and potential cumulative buildup of radioactive and non-radioactive hazardous materials over time with a view to facilitate decontamination and decommissioning. Update the Closure Plan to reflect the license extension periodically as required by the regulations.
Lessons learned	Lessons learned from events at CFFF and other fuel fabrication facilities can help improve future operations and prevent similar occurrences.	Maintain a process that updates Lessons Learned and provides a feedback into facility operations and procedures. Westinghouse currently utilizes the Corrective Action System for Lessons Learned.

3.3.1 Environmental, Safety and Health Policy

The Westinghouse policy regarding its Environmental, Health, and Safety Commitment is summarized below (Westinghouse 2014):

“It is our policy to design, produce, market, and distribute our products and services and to conduct our operations in an environmentally sound, socially responsible manner. We consider the impact our actions may have on the environment and on the health and safety of our employees, subcontractors, customers, and the public.

Westinghouse is committed to:

- Providing safe working conditions to protect the health and safety of employees
- Reducing waste, preventing pollution, conserving resources, and using energy efficiently in all our operations
- Complying with all applicable environmental, health, and safety legislation and regulations, as well as any other requirements to which the Company subscribes
- Continually improving environment, health, and safety management systems and performance by establishing and maintaining meaningful objectives and targets, taking into consideration significant environment, health, and safety aspects, technological options, and legal, operational, business, and other requirements
- Establishing and maintaining procedures to identify the potential for, and response to, accidents and emergency situations, and preventing and mitigating the impacts associated with them
- Training employees to work in a safe and environmentally responsible manner
- Effectively managing and promptly resolving impacts from historical operations in a manner that minimizes risks and liabilities while accommodating current operations
- Periodically monitoring, auditing and evaluating environment, health, and safety performance as it relates to applicable requirements and established objectives and targets

Each employee of Westinghouse is responsible for supporting these commitments within his or her area of responsibility.”

3.3.2 Quality Assurance

Westinghouse integrates Quality Assurance considerations at all levels of the CFFF operation as established through its Quality Management System (QMS). Elements of the QMS are summarized below (Westinghouse, 2002):

“The Westinghouse Electric Company (Westinghouse) Quality Management System (hereafter known as the QMS) has been developed to comply with statutory, regulatory, industry, and customer quality requirements that are applicable to items (i.e., structure, system, or component, or part thereof) and services provided by Westinghouse’s world-wide operations. The QMS describes Westinghouse’s commitment to quality assurance (QA) requirements that ensure the highest levels of customer satisfaction.

The QMS and implementing procedures apply to activities that affect the quality of items and

services supplied by Westinghouse. It defines the basic requirements and commitments applicable to customer contracts.

The QMS also serves as a directive for all organizational functions in establishing the necessary policies and procedures that comply with the requirements of ISO 9001. Westinghouse will comply with the most recent edition of the ISO 9001 standard prior to the required compliance date.

The QMS may be submitted to a governing regulatory agency, as needed. Westinghouse submits the QMS to the NRC for review and acceptance prior to implementation of any changes that reduce commitments contained herein for safety-related items and services subject to 10CFR50, Appendix B, ASME NQA-1 or applicable NRC Regulatory Guides. Westinghouse informs the NRC within ninety days of any implemented QMS changes that do not reduce QMS commitments in accordance with 10CFR 50.4(b)(7)(ii) requirements.”

3.3.3 Continuous Improvement

Westinghouse implements a Continuous Improvement Program at CFFF. This includes assignment of a full-time manager for this purpose. This program is inherent at all levels of CFFF operations, starting with each individual employee, and applied to 1) each step the operation, 2) the management process, and 3) all other programs in effect (e.g., environmental, safety, and health; quality assurance; and nuclear safety). Potential improvements are identified, evaluated and implemented if deemed appropriate.

As part of the Continuous Improvement Program, Westinghouse received International Standards Organization (ISO) 14001 certification for CFFF in November 2010 (ISO Certificate Number: UQA 0102162/D). The ISO 14000 family includes most notably the ISO 14001 standard, which represents the core set of standards used by organizations for designing and implementing an effective environmental management system. It serves as a framework to assist organizations in developing their own environmental management system, and can be integrated with other management functions in meeting their environmental and economic goals. In implementing ISO 14001, Westinghouse states (Westinghouse 2012c):

“Columbia Plant continues to benefit from the implementation of ISO 14001, as it has helped focus our Environmental Improvements. We have started recycling wood, cardboard and plastic also. This year we completely eliminated the use of anhydrous ammonia from the plant. We have an active sustainability team within the plant, and are working on our Key Performance Indicators (KPIs) conscientiously. We continue to be full participants in the Toshiba Environmental Audits and have maintained steady improvements since 2009.”

3.3.4 Configuration Control

Westinghouse has formal procedures regarding Configuration Control (Westinghouse, 2009b and 2009c). The procedures establish requirements for 1) implementing of proposed changes to all plant manufacturing and inspection systems, facilities, and utilities, and 2) identifying documentation requirements for maintaining records of current conditions. The procedures define the review and approval process necessary to make sure that systems continue to meet their specification requirements for manufacturing and inspection functions in a manner which is safe. They are intended to ensure compliance with all applicable regulations, and appropriately incorporates ALARA considerations in accordance with the NRC license for CFFF.

Configuration Control applies plant-wide to: 1) all areas of manufacturing and inspection, ancillary support facilities and systems, and utilities; and 2) when the equipment or system is to be connected to any existing approved process, or is to independently produce usable product. It provides for review and approval by the appropriate parties of any work changing the configuration of manufacturing or inspection systems and their ancillary facilities, including potential safety significant software changes. Appropriate specifications defining manufacturing and inspection systems are required to be updated to reflect the current conditions.

All Safety Significant Control changes involving "Items Relied on for Safety" (IROFS) require an independent design verification. New or modified systems may require development of a Process Hazard Analysis, Criticality Safety Evaluation, Fire Hazards Analysis, or ISA documentation.

In accordance with NRC regulation 10 CFR 70.72 regarding "Facility changes and change process", the licensee may make changes to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel, without prior NRC approval, if the change:

- Does not create new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of 10CFR70.61 and that have not been previously described in the integrated safety analysis summary;
- Does not use new processes, technologies or control systems for which the licensee has no prior experience;
- Does not remove, without at least an equivalent replacement or the safety function, an item relied on for safety that is listed in the integrated safety analysis summary;
- Does not alter any item relied on for safety, listed in the integrated safety analysis summary, that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements of 10CFR70.61; and
- Is not otherwise prohibited by this regulation, license condition, or order.

The NRC requires that Westinghouse submit to NRC annually within 30 days after the calendar year, a report reflecting Configuration Control changes that did not require NRC preapproval.

3.3.5 Problem Identification and Corrective Action

The Corrective Action Program (CAP) establishes requirements and responsibilities for identifying, documenting and resolving issues that require corrective or preventive action (Westinghouse, 2009a).

Conditions adverse to the quality of items and services are identified, documented, analyzed, and corrected in accordance with established procedures. For significant conditions adverse to quality, these procedures provide for identification; assignment of responsibility for corrective action; documentation of the cause and corrective action taken; implementation, evaluation, and verification of corrective action to prevent recurrence; and reporting to the appropriate levels of management.

4.0 SUMMARY AND CONCLUSIONS

The information presented Sections 2.0 and 3.0 of this report establishes justification for an extension of the Westinghouse license (SNM-1107) for the CFFF to a 40-year period, as per the NRC Staff Requirements Memorandum dated September 2006. This justification is based on the following considerations:

- CFFF has been safely operated since 1968 and no major events have occurred. The supporting ER indicates that no significant environmental impacts, including cumulative effects, have been identified for the areas within the affected environments as a result of past or present operations. The facility is in compliance with relevant environmental standards and regulations, as well as NRC regulations related to radiation dose to the public and facility workers. Extending CFFF operations into the future for an additional 40 years would be expected to result in similar conclusions.
- Westinghouse is aware of range of potential technical issues associated with the license extension, which include:
 - Degradation and aging of equipment
 - Cumulative environmental impacts
 - Nuclear safety
 - Hazardous material safety
 - Physical security
 - Emergency planning
 - Occupations safety
 - Community relations
 - Sustainability
 - Decontamination and decommissioning
 - Lessons learned from events at CFFF and other fuel fabrication facilities.
- Westinghouse has an established proactive approach to addressing changes and potential technical problems arising as part of CFFF operation during the license extension period in the following area:
 - Environmental, Safety and Health
 - Quality Assurance
 - Continuous Improvement
 - Configuration Control
 - Problem Identification and Corrective Action

In order for Westinghouse to obtain a 40-year license extension as per the NRC Staff Requirements Memorandum, Westinghouse will need to submit a license renewal application. Based on NRC general requirements for license applications and license renewal applications (10 CFR 70) and NEPA requirements, such an application would be accompanied by an ER. The ER supporting this report is designed for that purpose. In accordance with NEPA, the NRC in turn would need to follow the NEPA process by notifying the public through the Federal Register and preparing an EA or EIS. Due to past NRC NEPA-related documents prepared regarding the CFFF, an EA would likely be appropriate.

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