

**APPLICATION FOR RENEWAL  
OF A  
SPECIAL NUCLEAR MATERIAL LICENSE  
FOR THE  
COLUMBIA FUEL FABRICATION FACILITY  
COLUMBIA, SOUTH CAROLINA**

**LICENSE NUMBER  
SNM-1107  
(Page Changes)**

10.1.6	Off-Site Dose Control.....	127
10.1.7	Performance and Documentation of Analyses.....	133
10.1.8	Audits and Assessments.....	133
<b>CHAPTER 11.0.....</b>		<b>135</b>
DECOMMISSIONING PLANNING .....		135
11.1	<i>DECOMMISSIONING PLANNING STRUCTURE.....</i>	<i>135</i>
11.1.1	Conceptual Decommissioning Plan .....	135
11.1.2	Decommissioning Funding Plan and Financial Assurance Mechanism.....	136
<b>CHAPTER 12.0.....</b>		<b>137</b>
AUTHORIZATIONS AND EXEMPTIONS .....		137
12.1	<i>AUTHORIZATIONS.....</i>	<i>137</i>
12.1.1	Authorization to Make Changes to License Commitments.....	137
12.1.2	Authorization for Leak-Testing Sealed Plutonium Sources.....	137
12.1.3	Authorization for Possession at Reactor Sites.....	138
12.1.4	Authorization for Use at Off-Site Locations .....	139
12.1.5	Authorization for Transfer of Hydrofluoric Acid.....	139
12.1.6	Authorization for Transfers as Non-Regulated Material.....	139
12.1.7	Authorization to Release Contaminated Records.....	140
12.1.8	Authorization to Release for Unrestricted Use.....	141
12.1.9	Authorization to Use ICRP 68 .....	141
12.2	<i>EXEMPTIONS.....</i>	<i>141</i>
12.2.1	Exemption from Prior Commitments.....	141
12.2.2	Exemption from Individual Container Posting .....	141
12.2.3	Exemption from Respirator Use Reporting.....	141
12.2.4	Exemption from Shallow-Dose Equivalent Tissue Depth.....	142
12.2.5	Exemption from Criticality Monitoring System Requirements.....	142
12.2.6	Exemption from Packaged Radioactive Material Monitoring Requirements.....	143
12.2.7	Exemption for Electronic Submissions.....	143
12.2.8	Exemption From the Transportation Requirements for Certain Fissile Material .....	143
12.2.9	Exemption from Chemical Exposure Requirements .....	143

## Revision Record

<u>REVISION NUMBER</u>	<u>DATE OF REVISION</u>	<u>PAGES REVISED</u>	<u>REVISION REASON</u>
0.0	27 Jun 07	All	2007 License Renewal.
0.1	17 Mar 08	ii, v, 102, 103, 104, 105, 106 & 107	Modify Criticality Safety Requirement for Final Assembly Wash Pit
0.2	30 Jun 08	v, 11	Change in Principal Officers
0.3	10 Apr 09	v, 123	Emergency Plan Revision
0.4	09 Mar 10	iv, v, 1, 6, 7, 8	CAA Expansion
0.5	N/A	None	Secondary Source Rods License Application was submitted but activity was approved within the existing license with no changes
0.6	30 Aug 10	v, 10, 11, 18	Change in Principal Officers
0.7	See 1.1	v, 13, 15, 16, 17, 73	Correct the definition of credible; add definition of incredible, adjusted section 4.1.2 to address methodology for designation of Items Relied for Safety.
0.8	10 Sept 10	v, 9,10,11, 12, 13, 14, 15, 16, 17, 18	Possession Limits revised and definitions added to address source and byproduct material transfer to NRC license from South Carolina Department of Health and Environmental Control Radioactive Material License.
0.9	04 Oct 10	v, 11	Change in Principal Officers (Acting)
1.0	22 Feb 11	v, 11	Change in Principal Officers (Remove Acting)
1.1	28 Jul 11	v, 14, 15, 16, 17, 73 Note: Due to NRC approval out of sequence amendment 0.7 above issued editorially as 1.1 to maintain numerical progression in published document.	Correct the definition of credible; add definition of incredible, adjusted section 4.1.2 to address methodology for designation of Items Relied for Safety.
2.0	23 Aug 12	All	Incorporates previously approved page changes; incorporates long term commitments previously only in NRC issued license; adjusts roles and responsibilities for separating the quality and industrial safety functions from regulatory functions; modification to configuration control, fire , chemical programs, editorial and miscellaneous management contact changes.
2.1	27 Sept 12	V, 7,10, 22,30, 48	Drawing and Editorial Page Changes
2.2	09 Nov 12	V, 10, 18	Page Change - COO removal.
2.3	03 Dec 12	iii,v, 143, 144	Exemption Request

- The maximum number of packages bearing FISSILE labels stored in any one storage area must be limited so that the total sum of the criticality safety indices in any individual group of such packages does not exceed 100. Groups of such packages must be stored so as to maintain a spacing of at least 6m (20 feet) from all other groups of such packages.

#### **12.2.6 Exemption from Packaged Radioactive Material Monitoring Requirements**

Notwithstanding the requirement of 10 CFR 20.205(b) to monitor the external surfaces of packaged radioactive material receipts for radioactive contamination, the licensed activity is exempted from such requirement relative to flatbed trailer shipments of fuel assemblies received from the General Electric Company for interim storage purposes only, provided the constraints, conditions and controls committed to in a letter, dated November 30, 1993, (identification # NRC-93-036), are satisfied; and further provided that the total number of such fuel assemblies stored at the site at any given time does not exceed 250.

#### **12.2.7 Exemption for Electronic Submissions**

Notwithstanding the requirements of 10CFR 70.5, communications or reports concerning the regulations in Part 70 and any application filed under these regulations may be submitted electronically.

#### **12.2.8 Exemption From the Transportation Requirements for Certain Fissile Material**

The licensed activity is exempt from fissile material classification and from the fissile material package standards of 10CFR71.55 and 10CFR71.59 for the transport of certain bulk materials contaminated with  $U_{235}$ . Concentration limits, stated as the ratio of  $U_{235}$  to non-fissile material, are established that provide control parameters adequate to ensure nuclear criticality safety for shipments. This exemption has already been approved for Westinghouse Licensee SNM-33 on April 15, 2002.

#### **12.2.9 Exemption from Chemical Exposure Requirements**

Notwithstanding the requirement of Title 10, Code of Federal Regulations, 70.61 Performance requirements.

(a) Each applicant or licensee shall evaluate, in the integrated safety analysis performed in accordance with § 70.62, its compliance with the performance requirements in paragraphs (b) and (c);

(b) The risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls,

the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section.

High consequence events are those internally or externally initiated events that result in:

(4) An acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that:

(i) Could endanger the life of a worker.

AND

(c) The risk of each credible intermediate-consequence event must be limited. Engineered controls, administrative controls, or both shall be applied to the extent needed so that, upon implementation of such controls, the event is unlikely or its consequences are less than those in paragraphs (c)(1)-(4) of this section. Intermediate consequence events are those internally or externally initiated events that are not high consequence events, that result in:

(4) An acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that:

(i) Could lead to irreversible or other serious, long-lasting health effects to a worker,

AND

Notwithstanding the requirement of Title 10, Code of Federal Regulations 70.65 Additional content of applications.

(b) (4) Information that demonstrates the licensee's compliance with the performance requirements of § 70.61, including a description of the management measures; .....

And (b) (6) A list briefly describing each item relied on for safety which is identified pursuant to § 70.61(e) in sufficient detail to understand their functions in relation to the performance requirements of § 70.61.

The licensed activity shall be exempted from the requirements in this area, for acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material resulting from dermal and/or ocular worker exposures. [i.e only inhalation criteria will be fully addressed in the ISA Summaries and for the identification of Items Relied on for Safety (IROFS) for worker chemical exposures.]

**Justification for granting an exemption pursuant to 10CFR70.17a)**

Westinghouse Electric Company LLC (Westinghouse) , the licensee for the Columbia Fuel Fabrication Facility, requests pursuant to 10 CFR 70.17(a) an exemption from certain requirements of 10CFR70.61(b)(4)(i), 10CFR70.61(c)(4)(i) and 10CFR70.65(b)(6) reflected in section 12.2.2 of the SNM-1107 license application and below:

Exemption from Chemical Exposure Requirements

The requirements of Title 10, Code of Federal Regulations, 70.61 Performance requirements specify:

(a) Each applicant or licensee shall evaluate, in the integrated safety analysis performed in accordance with § 70.62, its compliance with the performance requirements in paragraphs (b) and (c);

(b) The risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section.

High consequence events are those internally or externally initiated events that result in:

(4) An acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that:

(i) Could endanger the life of a worker.

AND

(c) The risk of each credible intermediate-consequence event must be limited. Engineered controls, administrative controls, or both shall be applied to the extent needed so that, upon implementation of such controls, the event is unlikely or its consequences are less than those in paragraphs (c)(1)-(4) of this section. Intermediate consequence events are those internally or externally initiated events that are not high consequence events, that result in:

(4) An acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that:

(i) Could lead to irreversible or other serious, long-lasting health effects to a worker,

AND

The requirements of Title 10, Code of Federal Regulations 70.65 Additional content of applications specify:

(b) (4) Information that demonstrates the licensee's compliance with the performance requirements of § 70.61, including a description of the management measures; .....

And (b) (6) A list briefly describing each item relied on for safety which is identified pursuant to § 70.61(e) in sufficient detail to understand their functions in relation to the performance requirements of § 70.61.

Notwithstanding the requirements set forth in 70.61 (a),(b) and (c) and 70.65(b)(4) and(b)(6) the licensed activity shall be exempted from these requirements for acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material resulting from dermal and/or ocular worker exposures. [i.e. only inhalation criteria will be fully addressed in the ISA Summaries and for the identification of Items Relied on for Safety (IROFS) for worker chemical exposures.]

### Discussion

These above referenced sections of Title 10, Code of Federal Regulations Part 70 are applicable to the Columbia Fuel Fabrication Facility (CFFF) in that license SNM-1107 authorizes the licensee to possess a critical mass of special nuclear material and thus the CFFF is subject to Subpart H of Title 10, Code of Federal Regulations Part 70.

An exemption may be granted by the Commission if such exemption will not endanger life or property or the common defense and security and is otherwise in the public interest. As demonstrated by the information provided herein, authorization of the specified exemption will not endanger life or property or the common defense and security and is otherwise in the public interest. Westinghouse and other fuel cycle facilities have engaged the Nuclear Regulatory Commission (NRC) staff in discussions on the correct and compliant treatment of dermal exposures in the context of the Integrated Safety Analysis (ISA). [ADAMS Accession Numbers ML083360632, ML082900889, ML090690732 and ML090920296.] The SNM-1107 license application was approved by the NRC including the specific criteria Westinghouse would utilize to address worker chemical exposure hazards in development and maintenance of the ISA. These did not include criteria for dermal exposures as potential High or Intermediate consequence events. As noted in the discussions between the Commission staff and the fuel cycle facilities, no such criteria was established due to the absence of any scientifically based or regulatory-endorsed standard, methodology, or guidance to perform an evaluation as to whether exposure of a given chemical at varying concentrations constitutes a High or Intermediate Consequence. It is especially cumbersome and difficult to address in terms of High or Intermediate Consequence events those situations (such as maintenance and enrichment cleanouts) where specified PPE is the correct and proper protection against such hazards. The other management measures in place for equipment and systems (periodic testing, purchasing from a NQA-1 qualified vendor, commercial dedication, etc.) are not readily achievable for PPE purchased from commercial vendors. PPE supplied by vendors complies with the applicable standards. As an example, all eye protection used at the Columbia plant must meet the requirements of ANSI Z87.1-2003.

An additional and perhaps more important justification involve the safety culture attributes pertaining to our workforce. Several comments were obtained from both experienced and recently qualified operators pertaining to the impact of making PPE IROFS to address this regulatory issue.

Some direct comments from an Operator perspective:

- *I am now concerned about the PPE and its failure (is this reportable since it involves an IROFS?) and this diverts my attention from the critical task at hand.*
- *Do I need to wear double of everything to cover myself from being part of a failed or degraded IROFS?*

- *Will I be required to wear a thicker glove or thicker acid suit to assure it does not tear. This may potentially limit my mobility and create more difficult working conditions.*
- *They felt that if they used some PPE and later found it degraded (e.g. manufacturer defect) that they would be responsible. They were concerned that they would be a party to a potential reportable condition.*

These are the types of questions and scenarios triggered by the prospect of establishing PPE as an IROFS. Given the minimal reduction of exposure risk which would be accomplished by designating PPE as IROFS, it is not desirable to introduce additional physical constraints (double gloving, thicker gloves, etc.) and/or to distract the operators from properly executing their tasks by requiring them to focus on PPE as an IROFS.

The chemical industry has established industry standards which are used by chemical facilities across the US and around the world. The PPE manufacturers attempt to make the PPE adequate to protect the worker while providing the worker with flexibility, dexterity and comfort. OSHA regulates the chemical industry and Westinghouse is required to be in compliance with OSHA as well as with the NRC and other regulatory agencies. The use of double gloves or heavier gloves or other PPE to meet the performance level of a regulatory IROFS could/would create potential safety hazards for the operator.

**Reduced dexterity could cause the operator to drop a container and cause accident with an injury. Reduced flexibility could cause ergonomic related trauma because the operator range of motion would be affected. Also, the reduced comfort level could cause additional strain on the operator causing unnecessary fatigue and the heavier PPE could also create an increased heat stress issue.**

Comfort, fit and style all can help drive compliance. This approach reflects the OSHA guidelines for selecting PPE, which state: *"Employers should take the fit and comfort of PPE into consideration when selecting appropriate items for their workplace. PPE that fits well and is comfortable to wear will encourage employee use of PPE."*

Specific attributes which warrant further consideration for granting this exemption request include:

Existing License Conditions Provide Protection;

- An extensive number of Items Relied on For Safety (IROFS) are currently in place to prevent chemical spills that could lead to airborne concentrations above ERPG limits. These same IROFS also prevent dermal/ocular exposure.
- Westinghouse has a well established and license required Chemical Safety Program (described in SNM-1107 License Application Chapter 7). While a management measure, the robustness of this program element and the necessary training and procedures provide an equivalent level of safety for our workers.
- The Chemical Safety Program contains requirements for worker protection from the chemical hazards.
- Westinghouse further has established and committed to within the license application an Industrial Safety Department in Section 2.1.1.3(c).
- The commitments noted within the license application ensure that should the situation warrant, enforcement options remain available to the NRC for non-compliances.



### Other Applicable Federal Regulations Provide Protection As Well;

- In addition to the SNM-1107 License Application Section 7.0 Chemical Safety Program the governing Occupational Health and Safety (OSHA) regulations already contain requirements for worker protection from these hazards. The Columbia plant recognizes these hazards through its Process Hazards Analysis (PHA) and Job Safety Analysis (JSA) processes and identifies the need for such controls, where applicable.
- Robust procedures, training and appropriate Personal Protective Equipment (PPE) are in place to ensure worker safety from these types of hazards.
- One of the primary responsibilities of the Industrial Safety Department is to ensure compliance with Occupational Health and Safety (OSHA) regulations.
- The required number and proper placement of eye-wash stations and safety showers are in place for proper and prompt mitigation should an accidental dermal/ocular exposure occur.
- Due to the long standing memorandum of agreement between the Occupational Health and Safety Administration (OSHA) and the NRC, staff can continue to monitor compliance.

### Conclusion

The existing license conditions and procedures, training and equipment implemented to comply with OSHA requirements are sufficient to protect human health from dermal/ocular chemical exposures. The requested exemption does not impact the common defense and security. Therefore, Westinghouse respectfully requests that NRC authorize the requested exemption.