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November 19, 2009

SUBJECT: WESTINGHOUSE LICENSE SNM-1107 AMENDMENT REQUEST (DOCKET 70-1151)

Westinghouse Electric Company LLC (WEC) hereby requests an amendment to our Columbia Fuel Fabrication Facility (CFFF) SNM-1107 license application. This page change revision to our license application is requested to address a modification to Section 6.1.5.3 for validation requirements related to secondary source rods. The supportive calculation is also provided to assist NRC in the review of this amendment request. The change is identified by revision lines in the margin and impacts Section 6 of the SNM-1107 License Application. While designated Page Change 0.5 for internal Westinghouse tracking, this page change may be issued as Page Change 0.4 if approval of this amendment is obtained prior to the Page Changes previously submitted by Westinghouse Letter LTR-RAC-09-52-P, Dated September 21, 2009.

If you have any questions or comments regarding the details of this amendment request, please contact me at (803) 647-2045 or Mr. Sean Gough at (803) 647-3707.

Sincerely,

Gerard F. Couture, Manager,
Licensing and Regulatory Programs
Westinghouse Columbia Fuel Fabrication Facility

Docket 70-1151, License SNM-1107

Enclosures: SNM-1107 License Application Page Changes (7 Total)
Calculation Note CN-CRI-09-26 Revision 0 (Proprietary)

cc: U. S. Nuclear Regulatory Commission, Region II
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NMSS01

WESTINGHOUSE ELECTRIC COMPANY
NUCLEAR FUEL

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

LICENSE NUMBER
SNM-1107

November 19, 2009 (Revision No. 0.5)

U.S. NUCLEAR REGULATORY COMMISSION
DOCKET 70-1151

REVISION RECORD

REVISION NUMBER	DATE OF REVISION	PAGES REVISED	REVISION REASON
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	TBD	iv, v, 1, 6, 7, 8	CAA Expansion
0.5	TBD	ii, v, 104, 105, 106, 107	Secondary Source Rods

(1) Demonstration of the adequacy of the margin of safety for subcriticality by assuring that the margin is large compared to the uncertainty in the calculated value of k_{EFF};

(2) Demonstration that the calculation of k_{EFF} is based on a set of variables whose values lie in a range for which the methodology used to determine k_{EFF} has been validated; or demonstration that trends in the bias support the extension of the methodology to areas outside the areas of applicability;

(3) A description of the specific validation method used, including reference to input data, area of applicability, and discussion of the applicable uncertainties; and

(4) A description of data outliers rejected shall be based on inconsistency of the data with known physical behavior, and not on statistical rejection methods alone.

The validation report documented in LTR-EHS-05-146, Revision 2, "Validation of the CSAS25 Sequence in SCALE-4.4 and the 238-Group ENDF/B-V Cross Section Library for Homogeneous Systems at the Westinghouse Columbia Fuel Fabrication Facility" demonstrates a practical example of the validation methodology used, and all future validations will be performed in a similar manner to comply with this methodology.

The validation report requirements described in this section above are not necessary for beryllium-antimony secondary source rod interactions with Westinghouse-based PWR fuel assemblies. Specific analysis has been conducted which demonstrates for all modeled dimensional and material variations, the reactivity of a Westinghouse PWR fuel assembly is reduced significantly by the presence of beryllium-antimony secondary source rods.

6.1.5.4 Computer Hardware and Software Control

(1) Validation and verification are completed, documented and independently reviewed before:

- Use of specific hardware and software systems utilizing specific cross section libraries;
- Use of analytical codes;
- Use of the methodology; and,
- Qualification and re-qualification of the codes.

(2) The configuration of the hardware platform used in support of software for criticality safety calculations is maintained such that only authorized system administrators are allowed to make system changes. System changes are conducted in accordance with an approved configuration control program that addresses both hardware and software qualification. System operability

verification is used for alerting users to any changes that might impact the operation of codes on the platform.

(3) Software on the platform that is designated for use in criticality safety calculations is compiled into working code versions, with executable files that are traceable with respect to length, time, and version.

(4) Modifications to hardware or software that are essential to the calculation process are followed by code operability verification. In such cases, selected calculations are performed to verify results are not substantially different to those from pre-modification analyses. Any deviations disclosed by code verification, that might alter the bias or uncertainty; require re-qualification of the code prior to continued use.

6.1.6 Technical Review

A qualified NCS technical reviewer (TR) performs an independent verification of all criticality safety evaluations and calculations that support limits specified in a safety analysis. The TR verifies that a proposed calculation geometry model and configuration adequately represents the system being analyzed. The TR also verifies that proposed material characterizations (e.g., density, concentration, etc.) adequately represent the system. The minimum required qualification for a TR will be identified in appropriate CFFF procedures.

The verification of such evaluations and calculations uses one (or more) of the following processes:

(1) Verification using an alternate computer code and/or hand calculations.

(2) Verification by performing a comparison with prior results for a similar, approved calculation and/or a similar configuration.

(3) Verification by using a technical verification checklist, including checks of the computer code used, and evaluation of code input and output.

(4) Verification using a custom method, including detailed information that describes the custom methodology.

6.1.7 Posting of Limits and Controls

Posting includes placement of signs and/or physical identification (e.g., using tape, paint, etc.) of floors, to designate approved work and storage areas. Postings provide information and/or specific precautions to supplement operating procedures.

Appropriate postings are placed at the entrance to work and holding areas (e.g. equipment, rooms, etc.) where fissile material is processed or stored. Criticality safety precautions or prohibitions (e.g., approved moderator limits, approved fire-fighting methods, etc.) are posted at entrances to affected areas. Storage postings are conspicuously located at entrances to holding areas (i.e., at such locations that it would be unlikely that personnel could enter an area without seeing the postings); and, include (as applicable) information such as material type, container identification, number of containers allowed, controlled parameter limits, and spacing requirements.

Postings are approved and issued by the Nuclear Criticality Safety Function. First level managers are responsible for assuring that their cognizant personnel are aware of, and understand, posted information.

6.1.8 Criticality Accident Alarm System (CAAS)

The CAAS initiates immediate evacuation of the facility in response to detection of a potential criticality accident. The CAAS, and the proper response protocol, is detailed in the CFFF Emergency Plan and Emergency Procedures.

The CAAS radiation monitoring detectors are located to pursue conformance to the guidance of ANSI/ANS-8.3(1997) (as modified by Regulatory Guide 3.71), and compliance with 10CFR70.24. Location and spacing of the detectors are chosen to minimize the effect of shielding by massive equipment or materials of construction. Spacing is reduced where high-density materials (e.g., concrete, cinder block, brick, etc.) are located between a potential accident source and a detector. Low-density materials (e.g., wooden construction walls, non-load walls, office panel walls, metal-corrugated panels, doors, plaster, etc.) are disregarded when determining CAAS spacing.

If the CAAS is out-of-service, within one hour the CFFF will suspend movement and processing of fissile material in the coverage area until the process is brought to a safe shutdown condition. Movement of fissile material necessary to establish or maintain a safe shutdown condition may continue. Movement and processing of fissile material will not resume unless the CAAS is returned to service, or continuously attended portable detection instruments, capable of detection and alarm, are provided to monitor the area normally covered by the installed CAAS. These actions will be directed and enforced by the plant emergency response team. The portable detection and alarm devices shall be of a type pre-approved for this use by the Nuclear Criticality Safety Function. Once the installed CAAS is returned to service, the monitoring provided by the portable devices may be discontinued. Routine testing, calibration, and/or maintenance of the CAAS for up to four hours is permitted without suspension of fissile material movement or processing.

Employees and visitors are trained in responding to the alarm signal, which is a continuous warbling siren. An ongoing aspect of this training is a weekly test of the signal on all working shifts.

6.1.9 Audits and Assessments

Audits and assessments are conducted to compare established NCS standards to CFFF performance. These audits and assessments address the guidelines of ANSI/ANS-8-19(1996) and are performed as described in Chapter 3.0, Section 3.6 of this License Application.

Program assessments take the form of program audits. Specific portions of the NCS program evaluated during a particular assessment are based on previous internal audit findings, external audit findings, NRC inspection activities, current operating conditions, and time since last assessment. Program audits schedules are developed annually, with the complete NCS program assessed on a triennial frequency. Results of the assessments are documented and maintained for NRC Staff review and inspection.

Process assessments take the form of compliance audits that evaluate implementation of NCS requirements (e.g., conformance to the applicable CSE container spacing, following procedures and postings, etc.) for CFFF operations. The frequency of these audits is based on previous internal audit findings, NRC inspection results, incidents (those reported and those requiring notification), configuration management activities, and the time since last assessment. Formal compliance audit schedules are developed annually, with one third of the fissile material processing areas described in the ISA audited annually, so that the complete set of operations making up the CFFF ISA are assessed on a triennial frequency. Results of the assessments are documented and maintained for NRC Staff review and inspection.

Facility walkthrough assessments are conducted for each of the fissile material processing areas described in the ISA. These assessments are performed by the Nuclear Criticality Safety Function with a focus on field compliance with established NCS controls. These assessments are based on the criticality safety risk defined in the ISA and performed periodically so that the complete set of operations making up the CFFF ISA are assessed on a quarterly (higher risk) or semiannual (lower risk) frequency. Results of the assessments are documented and maintained for NRC Staff review and inspection.

6.1.10 Procedures, Training, and Qualification

At the CFFF, procedures, training and qualification are integrated into a combined process to assure that safety and safeguards activities are being conducted by trained and qualified individuals, in accordance with Westinghouse policies and in accordance with commitments to Regulatory Agencies. This process is described in Chapter 3.0, Section 3.4 of this License Application, and meets the guidelines of ANSI/ANS-8.19(1996) and ANSI/ANS-8.20(1991), as they relate to training, procedures, and the requirement that no single, inadvertent departure from a procedure could cause an inadvertent criticality.