



# Westinghouse

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December 16, 2005

**SUBJECT: WESTINGHOUSE LICENSE SNM-1107 RENEWAL APPLICATION SUPPLEMENTAL ENVIRONMENTAL REPORT INFORMATION (TAC 31911)**

The following information is being provided by Westinghouse Electric Company (WEC) in response to the NRC Request for Additional Information dated November 17, 2005. This information supplements the Environmental Report provided in Enclosure 2 of our renewal application submitted on September 29, 2005 per WEC letter number LTR-RAC-05-71.

**1. Alternatives to the proposed action and the environmental impacts of the alternatives presented in comparative form with respect to the proposed alternative, in accordance with 10 CFR 51.45(b)(3).**

Alternatives include the proposed action of renewing the license application or denying the renewal request. The alternative of license renewal would result in the continued operation of the facility for a specific period of time. The environmental impact of this proposed action is discussed below and in the answer to Question # 2.

The alternative of denying the renewal request would result in the facility having to cease operations and begin decontamination and decommissioning activities. The environmental impact of the alternative of denying license renewal would be the elimination of effluents discharged to the air and water at the Columbia Fuel Fabrication Facility (CFFF). However, denial of the license renewal would necessitate expansion of similar activities at other existing facilities or construction and operation of a new facility. Because the environmental impacts would be transferred from one location to another, there would be no net benefit to the alternative of denying the license renewal.

**2. An analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding environmental effects, in accordance with 10 CFR 51.45(c). The analysis in the environmental report should also include consideration of the economic, technical, and other benefits and costs of the proposed action and alternatives. The analysis shall, to the fullest extent practicable, quantify the various factors considered.**

**Effluent Monitoring**

Gaseous, liquid, and solid effluents are produced from manufacturing operations at the CFFF. The effluents may contain small quantities of  $^{234}\text{U}$ ,  $^{235}\text{U}$ ,  $^{238}\text{U}$ , ammonia ( $\text{NH}_3$ ), calcium fluoride ( $\text{CaF}_2$ ), and hydrofluoric (HF) gas. An effluent monitoring program is in place at the facility to ensure releases to the environment are within Federal and State regulations and are also as low as reasonably achievable (ALARA).



Gaseous exhausts from the controlled area are routed through High Efficiency Particulate Air (HEPA) filtration to remove entrained uranium particulates prior to discharge to the environment. Exhausts containing chemicals or uranium in soluble form are passed through aqueous scrubbers, preceding the HEPA filters. Each release stack is equipped with an isokinetic probe that continuously draws a sample through a fiberglass filter paper. The filter paper is changed daily and analyzed for uranium levels. Gaseous effluents are also sampled and analyzed for ammonia and fluoride.

The State of South Carolina has issued an air quality permit authorizing the use of the incinerator, boilers, and emergency diesel generators at the CFFF. The current permit will expire on April 30, 2008.

Liquid process wastes are treated in the Waste Treatment Facility (WTF) and then pumped to the Congaree River via a 6-inch pipeline. Waste treatment for the removal of uranium, ammonia, and fluorides consists of filtration, flocculation, lime addition, distillation, and precipitation in a series of holding lagoons. Compliance with Federal and State release limits for radioactive material in the liquid effluent is assured by passing the waste stream through on-line monitoring systems or by manual sampling and analysis on a batch basis. Site sanitary sewage is treated in an extended aeration package plant prior to discharge, either directly or through a polishing lagoon. The discharge effluent is chlorinated, and mixed with treated liquid process waste at the facility lift station.

Liquid process wastes and site sanitary sewage are combined and then passed through a final aerator, followed by pH adjustment and dechlorination, as required and subsequently pumped to the Congaree River.

The advanced wastewater treatment system provides additional uranium removal from major liquid waste streams. Other small waste streams are batch collected in quarantine tanks, sampled, and analyzed prior to discharge to the WTF. Other miscellaneous contaminated liquid wastes, from sources such as laboratory drains and controlled area sinks, are discharged directly to a contaminated waste disposal system where they are collected, filtered, sampled, analyzed, and released to the WTF lift station. Wastes processed through the WTF are continuously sampled at the point of discharge. The samples are composited, and each day's composite is then resampled and analyzed for gross alpha and gross beta activity.

The State of South Carolina and the Environmental Protection Agency reissued a National Pollutant Discharge Elimination System (NPDES) permit to WEC authorizing discharge from the sanitary and process wastewater streams to the Congaree River on June 2004. This new permit reaffirmed previous discharge limits that were already in place. WEC assures compliance with the NPDES permit requirements using the best available technology at the WTF.

Low-level contaminated wastes are stored in a Waste Storage Area. Prior to transfer to this area, contaminated items are visually inspected to ensure that no accumulation of radioactive material is present and then are surveyed and released in accordance with the appropriate contamination limits.

Solid wastes are sorted as combustible and noncombustible and are 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 sorted properly, the contents are transferred to a waste processing station located in the Contamination Control Area.

Materials that are suited for thorough survey may be decontaminated for free-release, or re-use, in accordance with the provisions of the license. Most combustible wastes are packaged in compatible containers, assayed for grams  $^{235}\text{U}$ , and stored to await incineration. Noncombustible wastes and certain combustible wastes are packaged in compatible containers, compacted when appropriate, gamma scanned to verify the uranium content, and placed in storage to await shipment for recovery or disposal. Contaminated wastes are shipped to a licensed burial facility.

### **Environmental Monitoring**

WEC samples environmental media at the CFFF to ensure compliance with State and Federal regulations and to assess the impact to the environment from site operations. This environmental monitoring program includes air, soil, vegetation, surface water and groundwater sampling. Sample data for 1995 through 2004 were summarized and submitted to the NRC in Enclosure 2 of the renewal application. In addition, WEC generates an annual ALARA Report which includes a summary of the environmental performance. A review of the annual ALARA reports also demonstrates that operations at the CFFF have had minimal impact on the environment.

Ambient environmental air samples are collected at four locations onsite. The air samplers run continuously with the particulate sample being collected on a fiberglass filter. This filter is changed weekly and, after the appropriate decay period, analyzed for gross alpha activity. Ambient air monitoring data indicates releases to the environment have been well within regulatory limits.

Soil and vegetation samples are collected from locations near the four ambient air monitoring stations within the site boundary. The samples are analyzed for gross alpha and gross beta activity as well as for fluoride. The sampling data indicates that there is no substantial accumulation or uptake of uranium or fluorides in the soil or vegetation at the sampling locations.

Surface water samples are collected from three locations onsite and three locations on the Congaree River. These samples are collected quarterly and analyzed for gross alpha and gross beta activity. The surface water data from 1995 through 2004 indicates that liquid effluent discharges from the facility are not adversely impacting the onsite surface water on the Congaree River.

Groundwater is collected quarterly from 10 sampling wells onsite to comply with NRC requirements. These samples are analyzed for gross alpha and gross beta activity. The data from 1995 through 2004 indicates minimal radiological impact to the groundwater from plant operations.

Groundwater samples are also analyzed for pH, ammonia, fluoride, nitrate, and conductivity. Three of the wells near the lagoons have elevated nitrate levels. However, samples from wells adjacent to Sunset Lake and the swamp indicate nitrate levels at less than detectable levels.

An EPA team visited the facility in early 1989 to perform a site screening investigation which would evaluate past hazardous waste handling practices and groundwater contamination. This screening identified volatile organic contamination in the groundwater on the plant site. In 1992, WEC conducted an investigation to further document the problem, and with input from the South Carolina Department of Health and Environmental Control (SCDHEC), developed a work plan to study the contaminated area.



The study indicated that the plume consisted of perchlorethylene, trichloroethylene, and their degradation products. A remedial design plan was developed and submitted to the State of South Carolina for review and approval. Phase I of the plan was implemented during the first quarter of 1995.

Westinghouse voluntarily installed a groundwater remediation system in 1998 as a barrier to prevent volatile organic compounds (VOCs) from reaching the deeper groundwater aquifers and surface water, i.e., Sunset Lake. The objective of this approach was to contain the plume and prevent further migration. This remediation system used current technology for air sparging and soil vapor extraction. Air sparging involves pressurizing a well to introduce air below the water table to promote volatilization and biodegradation. Soil vapor extraction involves withdrawal of air under negative pressure from the vadose zone. When coupled with air sparging, soil vapor extraction can expedite the volatilization of compounds to the atmosphere.

Initially wells were analyzed to contain approximately 0-3000 ug/l VOCS (1995-98). The maximum level noted in the 2004 report was 569 ug/l. Processes have been implemented to assure that raw materials or waste VOC containing materials do not leak or contaminate groundwater. These remediation efforts appear to have been successful in containing the VOC plume and preventing additional contamination.

Fish samples are collected annually from the Congaree River downstream of the plant discharge. The samples are analyzed for gross alpha and gross beta activity and isotopic uranium. The data from 1995 through 2004 indicates that no uptake of radioactive material by the fish is occurring.

Sediment is collected annually from the Congaree River near the plant discharge to the river. Samples are analyzed for gross alpha, gross beta, and fluoride. The data from 1995 through 2004 indicates that there is no radioactive material concentrating and accumulating at the sample locations.

### **Radiological Impacts**

The radiological impacts from site operations are routinely assessed through the monitoring programs, the annual CFFF ALARA reports, and the Integrated Safety Analyses. The dose to the nearest resident and to the local population has also been previously calculated. The nearest resident resides in the northwest sector, approximately 500 meters from the facility. The dose of the nearest resident was calculated using EPA's COMPLY code, Screening Level 4, which is the most conservative of the four levels, and guidance from NRC Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I." Screening Level 4 uses site specific meteorological information and assumes the resident produces his own milk, meat and vegetables at home.

As previously calculated, the Total Effective Does Equivalent (TEDE) to the nearest resident from licensed operations is about 0.03 millirem/year. The natural background radiation in the vicinity of Columbia, South Carolina is about 117 millirem/year. EPA limits the dose received by a member of the public from licensed operations to 25 millirem/year. Based on this analysis, the radiological impacts from operations at the CFFF are minimal.



3. **A discussion of cumulative effects of the proposed action, defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person takes such other actions. Cumulative impacts can result from individually minor, but collective significant actions taking place over a period of time” (40 CFR 1508.7). Examples of cumulative impacts are listed in Section 4.2.5.2 of NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs* (August 2003).**

Based on our telephone discussion, WEC plans to submit the response to this question no later than January 13, 2005.

If you have any questions regarding this supplemental information, please contact me at (803) 647-3338.

Sincerely,

*Nancy Blair Parr*

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Licensing Manager

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