December 5, 1997

Mr. Ambrose L. Schwallie
[ ]
Westinghouse Savannah River Company
Building 703-A
P.O. Box
Aiken, SC 29802

EA 97-12

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty-$93,750 (NTS-SR--WSRC-FCAN-1997-0001)

Dear Mr. Schwallie:

This letter refers to the Department of Energy's (DOE) evaluation of the facts and circumstances surrounding an unplanned intake of radioactive material [ ] by a worker that resulted in the worker receiving an occupational whole body dose of [a specifed value] Total Effective Dose Equivalent (TEDE). The intake, which exceeds the regulatory limit of 5 rems, was identified in April 1997 during a review of the worker's routine bioassay sample results. Subsequent investigation by the Westinghouse Savannah River Company (WSRC) identified numerous instances in which radiological work was not performed in accordance with established procedures, standards, and administrative controls and concluded that the intake likely occurred in December 1996 while the worker was participating in hut removal activities in the F-Canyon. A DOE investigation likewise identified numerous instances in which radiological work was not performed in accordance with established procedures, standards, and administrative controls and concluded radiological conditions existed with the potential to have caused the intake. The Office of Enforcement and Investigation conducted an evaluation of these matters in July 1997 and issued an Investigation Summary Report which was transmitted to you on October 8, 1997.

Based upon our evaluation of these issues, DOE has concluded that violations of DOE's Occupational Radiation Protection Rule (10 CFR 835) likely occurred. An enforcement conference was held with you and members of your staff on October 29, 1997. This conference included a discussion of the circumstances surrounding the potential violations, their safety significance and the status of corrective actions. A Conference Summary Report is enclosed.

The violations described in Section A of the enclosed Preliminary Notice of Violation (PNOV) describe violations involving multiple failures to follow your radiological work control procedures between September 1996 and December 1996 during work activities associated with decontamination and removal of equipment in [an area of] the F-Canyon. For example, on December 21, 1996, WSRC radiological control personnel failed to stop work and evacuate personnel after determining that airborne radioactivity in the work area exceeded the Stop Work level of the Radiation Work Permit (RWP) by approximately 100 times. Additionally, radiological work was performed under an RWP that was never formally issued by facility management. The violations described in Section B of the PNOV involve failure to utilize adequate physical design features as the primary method for preventing the spread of contamination and the inhalation of airborne radioactive material. For example, air flow tests performed [in the facility] as part of the DOE Savannah River Operations Office investigation found that localized anomalies existed in the general air flow. The relevance of this information with respect to specifying the location and type of air monitoring equipment was not recognized by WSRC in its work planning. As a result, the only self-alarming air monitoring equipment was located 300 feet from the job site. In another example, a plastic containment hut was not constructed in accordance with the installation procedure, defeating its function of containing radioactive material during dismantlement. These failures directly contributed to the individual worker receiving an unplanned and unnecessary intake of [radioactive material] resulting in an exposure in excess of regulatory limits as described in Violation C of the enclosed PNOV.

These violations are of particular concern to DOE not only because they contributed to an unnecessary worker exposure but because both the DOE and WSRC investigations established that there were multiple examples of the failure to properly plan and control radiological work that occurred throughout 1996. Management oversight was inadequate and as a result, deficiencies in radiological work practices went uncorrected. The intrusion of contamination into the [facility area] represented an undesirable radiological condition which persisted for more than six months. Management failed to analyze the significance of available data and failed to assign adequate priority to stopping the continued intrusion until after the intake was identified. Moreover, these violations are similar to previous radiological work control deficiencies identified and reported to DOE in mid-1995. As you acknowledged during the conference, a principal cause of these most recent deficiencies was the failure by management to recognize the implications of the earlier work control problems in 1995 as an indicator of a broader issue in F-Canyon.

In accordance with the criteria set forth in 10 CFR 820 Appendix A, (Enforcement Policy), the violations described in Sections A and B have each been classified in the aggregate as Severity Level II violations to focus on the broader issue of the control of radiological work activities in [the facility]. In accordance with the graded approach to enforcement based on safety significance as described in the Enforcement Policy, DOE has concluded that an exposure equal to or greater than 5 times the annual limit is the

appropriate threshold that will generally result in assigning a Severity Level I classification. However, any exposure in excess of a regulatory limit is cause for regulatory concern and would be classified at a minimum as a Severity Level II violation. Therefore, the violation described in Section C of the PNOV involving the exposure in excess of regulatory limits has also been classified at Severity Level II.

To emphasize the need for assuring the proper control of radiological work-related activities at the facility level, I am issuing the enclosed Preliminary Notice of Violation and Proposed Imposition of Civil Penalties in the amount of $93,750.

The base civil penalty for a Severity Level II violation is $37,500. With respect to the violations described in Sections A and B of the PNOV, the penalty adjustment factors set forth in the Enforcement Policy were considered and the base civil penalty for these violations was reduced by 25%. While mitigation was not considered appropriate for identifying and reporting the violations since they were identified as the result of a reactive investigation to the intake identified by the worker's bioassay results, partial mitigation was considered appropriate in recognition of the breadth of your investigation to fully assess the problem and to assess the site-wide implications of these issues. Full 50% mitigation for your corrective actions for each of these violations is not considered appropriate since several additional instances of radiological work control problems in F-Canyon have been identified since the time of the exposure incident. While DOE recognizes that these recent new occurrences have been promptly identified as a result of progress in your corrective actions, they also indicate that your corrective actions are not yet fully implemented in a manner that warrants full mitigation. No mitigation of the violation set forth in Section C of the PNOV was deemed appropriate.

You are required to respond to this letter and you should follow the instructions specified in the enclosed Notice when preparing your response to the Preliminary Notice of Violation. After reviewing your response to this Notice, and the status of your corrective action plan, DOE will determine whether further action is necessary to ensure compliance with the applicable nuclear safety requirements.

Sincerely,

Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Enclosures:
Preliminary Notice of Violation and
Proposed Imposition Civil Penalty
Enforcement Conference Summary Report
List of Attendees

cc: M. Zacchero, EH-1
K. Christopher, EH-10
S. Hurley, EH-10
G. Podonsky, EH-2
O. Pearson, EH-3
J. Fitzgerald, EH-5
A. Alm, EM-1
L. Vaughan, EM-10
G. Rudy, SR
R. Clendenning, SR
M. Dayani, SR
K. Thames, SR
F. McCoy, SR
L. Watkins, SR
D. Thompson, DNFSB
J. Lieberman, NRC
Docket Clerk, EH-10

PRELIMINARY NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Westinghouse Savannah River Company
Aiken, South Carolina
EA 97-12

As a result of a Department of Energy (DOE) investigation of activities associated with an unplanned radiological exposure to an F-Canyon Crane Operator that occurred between August 1996 and February 1997, violations of DOE nuclear safety requirements were identified. In accordance with the "General Statement of Enforcement Policy," 10 CFR 820, Appendix A, DOE proposes to impose civil penalties pursuant to Section 234A of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2282a., and 10 CFR 820. The particular violations and associated civil penalties are set forth below:

A. 10 CFR 835.1001(b) requires that for specific activities where use of physical design features are demonstrated to be impractical, administrative controls and procedural requirements shall be used to maintain radiation exposures as low as reasonably achievable (ALARA).

Contrary to the above, adequate administrative controls and procedural requirements to maintain personnel exposures ALARA were not implemented by WSRC in the performance of work associated with the decontamination and removal of equipment in the [facility area] between September 1, 1996, and December 21, 1996, in that

1. On December 21, 1996, the Radiological Control Inspector failed to immediately stop work and evacuate personnel from the [facility area] as required by RWP 96-FC-267, Revision 3, after determining that airborne radioactivity in the area exceeded the protective factor of the full face respirators worn by the workers and was approximately 100 times greater than the Stop Work level of the Radiological Work Permit (RWP).

2. On September 16 and 22, 1996, personnel made entries into and performed

work in the [facility area] under the control of RWP 96-FC-251, and, in addition, on September 22, 1996, a radiological survey was performed referencing RWP 96-FC-251; however, RWP 97-FC-251 was never completed and issued as an approved work permit document.

3. Pre-job briefings were not held as required by RWP 96-FC-281, Revision 0 on December 6, 1996, or on December 21, 1996, as required by RWP 96-FC-267, Revision 3, for the second entry into the [facility area] for performing containment hut removal. A pre-job briefing had been held for the first entry into the [facility area] on December 21, 1996, as required by RWP 96-FC-267, Revision 3; however, the attendance sheet did not reflect the presence of the crane operator who received the overexposure even though he performed work.

4. On December 21, 1996, removal of the plastic containment hut was initiated under the control of RWP 96-FC-267, Revision 3; however, the scope of this RWP did not include dismantlement of the containment hut as an authorized task.

These violations constitute a Severity Level II problem.
Civil Penalty - $28,125.

B. 10 CFR 835.1001 (a) requires measures to be taken to maintain radiation exposure in controlled areas As Low As Reasonably Achievable through facility and equipment design and administrative controls. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls and procedural requirements shall be employed only as supplemental methods to control radiation exposure.

Contrary to the above, adequate physical design features were not used by Westinghouse Savannah River Company (WSRC) in the performance of work associated with the decontamination and removal of equipment in the [facility area] between September 2, 1996, and December 21, 1996, in that

1. A primary containment was not used to prevent the spread of contamination in the [facility area] even though high levels of [radioactive] contamination were first detected on September 1, 1996, and persisted for approximately six months thereafter. WSRC personnel made efforts to decontaminate the affected area on September 2 and 3, 1996, four times between September 4 and 15, 1996, September 16, 1996, September 22, 1996, October 17 and 21, 1996, and October 24 and 25, 1996, before construction of a plastic hut was finally initiated on October 26, 1996.

2. Procedure 221-F-55250, *Constructing a Plastic Hut*, required that a

containment hut be constructed away from heat sources such as steam lines and that the walls and ceiling of the hut be in a continuous piece. However, on October 26, 1996, containment hut construction was initiated with the ceiling of the hut being taped into place after being woven over and under overhead pipes and steam lines. As a result, the containment hut roof had to be cut away from the piping with a worker inside, which defeated the containment function of containing the radioactive material.

3. On December 21, 1996, personnel re-entered the [facility] (an Airborne Radioactivity Area) after a Continuous Air Monitor (CAM) had alarmed from airborne radioactivity of approximately [a specified value] DAC. However, prior to this re-entry, the applicable Radiological Work Permit (RWP-96-FC-267, Rev. 3) was not evaluated for changing radiological conditions. As a result, the measured airborne radioactivity exceeded the protective factor of the protective equipment (full-face air purifying respirators) worn by the workers when they re-entered the [facility].

4. The location of the CAM in the [facility area] was approximately 300 feet away from the area in which the containment hut was being removed. Instead of relocating the CAM (or using another CAM with automatic alarm features), portable air samplers were used to monitor in the area of the hut. Use of the portable samplers required the Radiological Control Inspector to remove the sample media (filter paper), measure the radioactivity present using another instrument, and perform a calculation in order to determine the levels of airborne radioactivity. The time required to complete these actions, coupled with the large distance from the CAM delayed prompt evacuation of affected personnel on December 21, 1996, when high levels of airborne radioactivity occurred.

These violations constitute a Severity Level II problem.
Civil Penalty - $28,125

C. 10 CFR 835.202(a)(1) requires that the occupational exposure to general employees resulting from DOE activities shall be controlled so that the annual limit of 5 rems total effective dose equivalent is not exceeded.

Contrary to the above, WSRC failed to control occupational exposure in that on December 21, 1996, a general employee received an exposure of [a specified value], which is greater than [a multiple of] the permissible annual limit.

D. 10 CFR 835.202(a)(2) requires that the occupational exposure to general employees resulting from DOE activities shall be controlled so that the annual limit of 50 rems is not exceeded for the sum of the deep dose equivalent for external exposures and the committed dose equivalent to any organ or tissue.

Contrary to the above, WSRC failed to control occupational exposure in that on December 21, 1996, a general employee received an exposure to an organ, i.e., bone surfaces, in excess of [specified value], which is greater than [a multiple of] the permissible annual limit.

Violations C and D constitute a Severity Level II problem.
Civil Penalty of $37,500.

Pursuant to 10 CFR 820.24, Westinghouse Savannah River Company (WSRC) is hereby required within 30 days of the date of this Preliminary Notice of Violation and Proposed Imposition of Civil Penalty, to submit a written statement or explanation to the Director, Office of Enforcement and Investigation, Office of the Assistant Secretary for Environment, Safety and Health, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-12903 Attention: Office of the Docketing Clerk, CXXI, Suite 305, with copies to the Manager, DOE Savannah River Operations Office, and to the cognizant DOE Secretarial Office for the facilities that are the subject of this PNOV. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation and Proposed Civil Penalty" and should include the following for each violation: (1) admission or denial of the alleged violations and (2) the facts set forth above which are not correct and the reasons for the violations if admitted, and if denied, the reasons they are not correct.

Any request for remission or mitigation of civil penalties must be accompanied by a substantive justification demonstrating extenuating circumstances or other reasons why the assessed penalties should not be imposed in full. Unless the violations are denied, or remission or mitigation is requested within the 30 days after the issuance of the Preliminary Notice of Violation and Civil Penalty, WSRC shall pay the civil penalty totaling $93,750 (imposed under Section 234a of the Act) by check, draft or money order payable to the Treasurer of the United States (Account Number 891099) mailed to the Director, Office of Enforcement and Investigation, U.S. Department of Energy. Should the contractor fail to answer within the time specified, an order imposing the

civil penalty will be issued. If requesting mitigation of the proposed penalty, WSRC should address the adjustment factors described in Section VIII of 10 CFR 820, Appendix A.

Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health

Dated at Washington, D.C.
this 5th day of December 1997

ENFORCEMENT CONFERENCE SUMMARY
NTS-SR--WSRC-FCAN-1997-0001

The Office of Enforcement and Investigation held a Conference with Westinghouse Savannah River Company (WSRC) on October 29, 1997, to discuss the circumstances, causes, and corrective actions associated with radiation protective deficiencies and an unplanned internal radioactive intake of a worker at the F-Canyon Facility. An Investigation Summary Report describing the radiation protection deficiencies had been provided to WSRC with an October 8, 1997, letter requesting this Conference. The Conference was called to order by R. Keith Christopher, the Director of the Office of Enforcement and Investigation; a list of attendees is enclosed. Information provided and key areas discussed at the Conference are summarized below, and material provided by WSRC during the Conference was incorporated into the docket file.

WSRC stated that it found no factual accuracy issues with the Investigation Summary. WSRC provided an overview of the unplanned intake, including a time line, and acknowledged that the radiological occupational exposure to the worker was unnecessary. WSRC acknowledged several occurrences in late 1997, where work control deficiencies were identified that were similar to those described in the Investigation Summary Report. WSRC also acknowledged that similar previous work control problems had occurred in 1995 and that it failed to recognize the implications of these problems as a potential indicator of issues in F-Canyon.

WSRC management was asked how it determined where to place the Continuous Air Monitor (CAM) during work activities on December 21, 1996. WSRC acknowledged that the placement of the CAM was based upon incorrect information.

Mr. Walt Loring, [ ], provided information regarding the exposure received by the worker for 1996 as being [a specified value] TEDE and [a specified value] CEDE.

WSRC noted that the company initiated a comprehensive investigation after the bioassay results revealed that the F-Canyon worker received the unplanned intake. WSRC discussed their efforts to identify the root causes of the deficiencies and the corrective actions the contractor has taken or are ongoing. WSRC management described corrective actions that were implemented in the following general areas:

1. Characterization of work place radiological conditions
2. Posting and control of radiological boundaries
3. Improvements in Radiological Work Permits
4. Job Planning/pre-job briefs/ALARA/Job Hazard Analysis
5. Compliance with procedures
6. Improvements in oversight peripheral work
7. Procedure retention
8. Worker attitude about compliance with work controls