September 19, 1997

Mr. Steven D. Liedle
[ ]
Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

EA 97-08

Subject: Preliminary Notice of Violation (NTS-RL--BHI-DND-1997-0002)

Dear Mr. Liedle:

This letter refers to the Department of Energy's (DOE) evaluation of violations of DOE's nuclear safety regulations associated with two incidents that resulted in small but unplanned uptakes of radioactive material by five workers at 224-B Facility [structures] and 105-C Reactor Building [structure].

The first incident was reported on April 4, 1997. Bechtel Hanford, Inc. (BHI), submitted to the DOE Noncompliance Tracking System (NTS) report NTS-RL--BHI-DND-1997-0002 that described events occurring on January 29, 1997, at 105-C Reactor Building [structure]. A BHI employee assigned to this task received an inadvertent uptake of radioactive materials [ ] that resulted in a committed effective dose equivalent (CEDE) of [a specified exposure]. The uptake occurred as a result of inadequate radiological work controls during removal of a plywood cover from within [the structure] for determining the solidity of sediments beneath the cover.

The second incident occurred on September 4, 1996, and involved four workers performing routine surveillance of 224-B Facility's [structures]. Due to inadequate radiological work controls, the workers were allowed to continue working under conditions that exceeded the radiological work permit "Stop Work" limits. Dose estimates based on the [radioactive material] derived air concentration and stay times resulted in BHI assigning doses to the workers ranging from [specified exposures] CEDE.

The DOE's investigation of these incidents found a number of similar recurrent deficiencies. BHI procedures require task planning to utilize radiological survey information obtained within three months of the task or to justify, in a memorandum, the waiving of this requirement. Both the 224-B and 105-C task plannings were based, in part, on survey data older than three months, and no justifications were prepared. Air sampling survey data for the February 1996 surveillance of 224-B [structures] could not

be found but planning for the September 1996 surveillance utilized a recollection of the February airborne radioactivity concentration. BHI procedures also require a pre-job survey to be completed before a task begins in order to assess current radiological conditions, but radiological survey samples collected during the 224-B and 105-C tasks were evaluated after the tasks were concluded. Field radiological survey instruments utilized during the 224-B and 105-C tasks were unable to detect [ ] radioactive materials that were present at each task site. Finally, any lessons learned from the 224-B Facility surveillance do not appear to have been taken into consideration when the 105-C Reactor Building [structure] task planning began. The failure to follow basic radiological work controls resulted in the unplanned uptake of radioactive materials by four BHI workers and one DOE employee.

The actual consequences of these uptakes are small. Nonetheless, these violations represent a series of problems that, if not having been disclosed by these incidents and left uncorrected, could have led to a more serious concern in a subsequent activity involving greater quantities of nuclear material. Furthermore, similar radiological work control deficiencies are continuing in that on June 24, 1997, workers involved in removing a temporary airlock at 223-S Facility received unplanned uptakes of [radioactive material]. These deficiencies are sufficiently serious to warrant concern by DOE to ensure that effective actions are taken to preclude a recurrence with potentially more serious consequences. Therefore, in accordance with10 CFR 820, "Procedural Rules for DOE Nuclear Activities," Appendix A, the violations associated with these events have each been classified as Severity Level III violations.

You are required to respond to this letter and you should follow the instructions specified in the enclosed Notice when preparing your response. Your response should document any additional specific actions taken to date and planned to prevent recurrence. After reviewing your response to this Notice, DOE will determine whether further action is necessary to ensure compliance with applicable nuclear safety requirements.

Sincerely,

Peter N. Brush
Principal Deputy Assistant Secretary
Environment, Safety and Health

PRELIMINARY NOTICE OF VIOLATION
NTS-RL--BHI-DND-1997-0002

Bechtel Hanford, Inc.
Hanford Site
EA 97-08

As a result of a Department of Energy (DOE) evaluation of activities associated with routine surveillances of 224-B Facility on September 4, 1996, and [work activities] at the 105-C Reactor Fuel Storage Basin on January 29, 1997, violations of DOE requirements were identified. These violations are described below in accordance with 10 CFR 820, Appendix A, "General Statement of Enforcement Policy."

A. 10 CFR 835.401(a)(2) states that monitoring of individuals and areas shall be performed to document radiological conditions in the workplace.

   10 CFR 835.401(a)(3) states that monitoring of individuals and areas shall be performed to detect changes in radiological conditions.

   10 CFR 835.2 defines monitoring as actions intended to detect and quantify radiological conditions.

   Contrary to the above, monitoring of areas to document radiological conditions in the workplace and to detect changes in radiological conditions were not performed in that:

   1. On September 4, 1996, actions intended to detect and quantify radiological conditions of [the structures at] the 224-B Facility were not performed in that quantification of removable contamination and of airborne radioactivity levels were not perform prior to personnel entry into [the structures].

   2. On January 29, 1997, actions intended to detect and quantify radiological conditions at the job site of 105-C reactor [structure] were not performed in that quantification of removable contamination and of airborne radioactivity levels were not perform prior to personnel initiating work involving manipulation of a plywood cover [ ].

   This is a Severity Level III violation.

B. 10 CFR 835.401(c)(2) requires that instruments used for monitoring and contamination control be appropriate for the type(s), levels, and energies of the radiations encountered.

Contrary to the above, on January 29, 1997, instruments used for radiation monitoring of workers at the exit to the job site at the 105-C [structure] were not appropriate in that instruments sensitive only to [ ] radiation were used while the primary exposure hazard to the workers from manipulating the [ ] plywood cover was [ ] radiation.

This is a Severity Level III violation.

C. 10 CFR 835.404(c) requires that any area in which contamination levels exceed the values specified in 10 CFR 835, Appendix D, be posted in accordance with 10 CFR 835.603.

10 CFR 835.603(d) requires that each access point to any occupied area in which airborne radioactivity levels exceed or are likely to exceed 10 percent of the DAC value listed in 10 CFR 835, Appendix A, be posted with conspicuous signs bearing the words "Caution, Airborne Radioactivity Area."

10 CFR 835.603(f) requires that each access point to any occupied area in which contamination levels are greater than 100 times the values listed in 10 CFR 835, Appendix D, be posted with conspicuous signs bearing the words "Danger, High Contamination Area."

Contrary to the above,

1. On September 4, 1996, the access point to [the structures at] the 224-B Facility were not posted with signs stating "Caution, Airborne Radioactivity Area," and "Danger, High Contamination Area" in that prior to worker entry into [the structures], access point postings were removed. Radiological conditions inside the [structure] were later found to have airborne radioactivity levels 34.4 times the derived air concentration (DAC) for [specified radioactive material] and 3.9 times the DAC for [specified radioactive material], and removable contamination was measured to be [a specified amount].

2. On January 29, 1997, the work area access point to the 105-C [structure] was not posted with a sign stating "Caution, Airborne Radioactivity Area" while [ ] airborne radioactivity was 0.67 times the [radioactive material] DAC on the fuel basin floor and 48.8 times the DAC eight feet below the rim of the pit.

   This is a Severity Level III violation.

D. 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 reasonable achievable (ALARA).

Contrary to the above, adequate administrative controls and procedural requirements to maintain personnel radiation exposures ALARA were not developed or not implemented in that:

1. BHI-SH-02, Procedure 1.9, *Radiological Work Permits*, Revision 3, Section 5.2, dated October 3, 1996, required radiation work permit (RWP) information be based on a current radiological survey of the work location. The procedure required that if radiological survey data were older than three months, a radiological survey must be performed before the RWP is written. However, the 224-B Facility [structures] entry on September 4, 1996, used survey data from February 16, 1996, while on January 29, 1997, 105-C reactor [structure] work used survey data from September 5, 1996. In both cases, survey data were older than three months and current surveys were not obtained.

2. BHI-SH-02, Procedure 1.22, *Planning Radiological Work*, Section 7.1, dated November 1, 1996, states that before work can be accomplished, a pre-job survey and a pre-job inspection/walkdown must be performed. Section 7.1.1 states that in the event a pre-job survey cannot be accomplished, the Radiological Engineer will provide a justification for not obtaining current survey data and a memo to the project file will be prepared. However, a pre-job survey was not conducted for either the September 4, 1996, or the January 29, 1997, work evolution, and justifications via memos to the project files for deviation from procedural requirements for a pre-job survey were not prepared.

3. BHI-SH-04, Procedure 2.1, *Field Air Sampling*, Revision 4, Section 3.1, dated January 13, 1997, provides cautions regarding the difficulty associated with verifying airborne radioactivity levels that are less than 10 percent of a DAC in a timely manner for some radionuclides, [ ]. Section 3.12 of the same procedure states that a portable [ ] survey meter will not detect 10 percent of a DAC for [radioactive materials]. However, instructions on how to proceed with field air sampling in such situations are not provided.

   This is a Severity Level III violation.

Pursuant to the provisions of 10 CFR Part 820, Bechtel Hanford, Inc., is hereby required within 30 days of the date of this Notice to submit a written statement or explanation to the Director, Office of Enforcement and Investigation, Attention: Office of the Docketing Clerk, EH-10, CXXI, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290, with copies to the Manager, DOE, Richland Operations Office, and to the Cognizant DOE Secretarial Office for the facility that is the subject of this Notice. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation" and should include for each noncompliance: (1) admission or denial of the alleged noncompliance; (2) the steps that will be taken to address the corrective action issues identified in DOE's Investigation Summary Report for this incident; and (3) the date when full compliance will be achieved and corrective actions completed.

Peter N. Brush
Principal Deputy Assistant Secretary
Environment, Safety and Health

Dated at Washington, DC,
this day of 1997