

May 21, 1999

Dr. C. Paul Robinson
[]
Sandia Corporation
Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-1142

EA-1999-03

Subject: Preliminary Notice of Violation

Dear Dr. Robinson:

This letter refers to the Department of Energy's (DOE) evaluation of a series of events and activities, which occurred during 1997 and 1998 at the Sandia National Laboratories (SNL). The DOE evaluation identified two recurring and programmatic concerns, which included repetitive, long-term problems with the control of radioactive material and with the documentation, use and implementation of technical work documents, specifically radiological work permits.

Between March 9-11, 1999, DOE's Office of Enforcement and Investigation (EH-10) performed an onsite review of SNL's Price-Anderson Amendments Act (PAAA) program to screen, track, and report noncompliances with the nuclear safety rules. A separate enforcement letter has been issued to address the observations and concerns regarding SNL's PAAA program identified during this review. In the process of performing this evaluation, EH-10 also included a review of the PAAA noncompliances reported in the SNL self-tracking system and actions that have been taken to correct the noncompliances. Based on our evaluation of these matters, DOE has concluded that violations of the Occupational Radiation Protection Rule (10 CFR 835) occurred; these violations are described in the enclosed Preliminary Notice of Violation (PNOV).

The first section of the enclosed PNOV describes a series of events concerning the inadequate identification and control of radioactive materials. Specifically, events occurred which included instances of radioactive material being released from a radioactively controlled area and sent to an uncontrolled area without adequately determining contamination levels; radioactive material or containers labeled as "radioactive" discovered in uncontrolled areas; and the unplanned and initially unknown spread of contamination outside of radiological areas. The second section of the enclosed PNOV describes recurring issues with the use of and compliance with radiological work permits (RWP) during 1997 and 1998. Several occurrences are cited,

including the use of RWPs with incomplete approvals or documentation, continued use of expired RWPs, and failure to comply with the work control requirements in implementation of the RWPs. Additionally, EH-10 noted similar findings in a recent audit conducted between February 5-19, 1999, by the DOE-Kirtland Area Office and DOE-Albuquerque Operations Office. The audit report documented inconsistencies with technical work documents (TWD) which included the use, content and requirement implementation of RWPs. The report further concluded that "while individually these findings were minor, cumulatively they indicate a performance weakness in the conduct of radiological operations at TA-IV" and that "TWDs used to define and control radiological hazards in the work place should be improved."

DOE evaluated whether mitigation should be considered for these violations and determined no mitigation was warranted. DOE issued an enforcement action (EA 97-07) in August 1997 which included a Severity Level III violation for failure to control and properly label radioactive material, and a Severity Level II violation for deficiencies in the use of TWDs including RWPs. Corrective actions associated with these violations were reported to DOE as completed in May 1997. DOE is concerned that corrective actions for EA 97-07 were not sufficient to prevent recurrence of these similar areas of noncompliance. DOE also considered the inadequate analysis by SNL to identify recurring, programmatic issues and the lack of reporting these issues into the Noncompliance Tracking System (NTS). Had SNL conducted a critical analysis and trending of the cited issues and reported into the NTS, this enforcement action would likely not have been taken.

In accordance with the "General Statement of Enforcement Policy," 10 CFR 820, Appendix A, the violations described in the enclosed PNOV involving (1) Control of Radioactive Materials and (2) Radiological Work Permit Recurring Issues have been classified separately as Severity Level III problems. In determining the severity level of these violations, DOE grouped collectively the various examples of problems in each of these areas and considered the programmatic and recurring nature of these problems. Although each occurrence, when evaluated independently, represents low safety significance, collectively these occurrences indicate recurring problems in the implementation of SNL's Radiation Protection Program requirements.

In order to track these enforcement actions and the corresponding corrective actions, SNL should file an NTS report. If SNL chooses to not file an NTS report, EH-10 will enter a report into the system.

You are required to respond to this letter and you should follow the instructions specified in the enclosed PNOV when preparing your response. Your response should document any additional specific actions taken to date and any additional actions 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,



David Michaels, PhD, MPH
Assistant Secretary
Environment, Safety and Health

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Enclosures:
Preliminary Notice of Violation
Investigation Summary Report

cc: R. Kiy, EH-1
M. Zacchero, EH-1
K. Christopher, EH-10
S. Adamovitz, EH-10
G. Podonsky, EH-2
O. Pearson, EH-3
J. Fitzgerald, EH-5
V. Reis, DP-1
D. Minnema, DP-311
J. Owendoff, EM-1
L. Vaughan, EM-10
R. Glass, DOE-AL
B. Eichorst, DOE-AL
M. Zamorski, DOE-KAO
R. Simonton, DOE-KAO
B. Wellberry, SNL
J. Lieberman, NRC
R. Azzaro, DNFSB
Docket Clerk, EH-10

PRELIMINARY NOTICE OF VIOLATION

Sandia Corporation
Sandia National Laboratories

EA-1999-03

As a result of the Department of Energy's (DOE) evaluation of a series of events and activities, which occurred during 1997 and 1998 at the Sandia National Laboratories (SNL), violations of DOE nuclear safety requirements were identified. The particular violations are set forth below.

I. CONTROL OF RADIOACTIVE MATERIALS

- A. 10 CFR 835.404(b) requires that appropriate controls shall be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.

10 CFR 835.601(a) requires that radioactive items or containers of radioactive material shall be individually labeled if adequate warning is not provided by control measures and required postings.

Contrary to the above, appropriate controls were not maintained and verified to prevent inadvertent transfer of removable contamination to locations outside of radiological areas, or radioactive items or containers of radioactive material were not individually labeled to provide adequate warning, in that-

1. On March 17, 1998, a radioactively contaminated container #14512 was released from an SNL radiological area and shipped off-site from SNL before release survey results were obtained. On March 18, 1998, survey results identified removable [radioactive material] contamination of approximately 2,820 disintegrations per minute per 100 square centimeters (dpm/100 cm²) on the outside of the container.
2. On May 18, 1998, a pallet containing a depleted [radioactive material] getter was transferred from Building 882 to a radiologically uncontrolled area within the Reapplication yard. A survey of this material on May 18, 1998, at the Reapplication yard identified the presence of removable beta/gamma contamination of 29,660 dpm/100 cm² on the outside of the container. The pallet and material did not contain radioactive material warning labels nor had

the pallet and material been maintained within a radiologically controlled area while stored in Building 882.

3. A radioactively contaminated neutron generator was surveyed and was subsequently released from the Technical Area II landfill in April 1998, to be stored in a radioactive materials cabinet in Building 809. It was not until three months later, during a routine quarterly radiological survey conducted on July 13, 1998, that removable radioactive contamination of 1,290 dpm/100 cm² of [radioactive material] was discovered where the generator had been stored in the radioactive materials cabinet.
 4. Routine annual surveys performed on October 20, 1998, and October 21, 1998, of a radiologically uncontrolled occupied office area identified two separate areas of radioactive contamination. Specifically, one location was an area on top of the carpet and measured 1562 dpm/15 cm² beta/gamma radioactivity. A second area located under the carpet measured 15,000 dpm/15 cm² beta/gamma radioactivity. Prior annual surveys had not revealed this contamination.
 5. A radioactively contaminated item, the centercase of W-45 Trainer Assembly, was released from Tech Area II to a radiologically uncontrolled area at a different onsite location. The receipt radiological survey performed on December 1, 1998, at the second SNL location demonstrated that the item was contaminated with 274,000 dpm of removable [radioactive material] contamination.
- B. 10 CFR 835.401(b) requires that area monitoring in the workplace shall be routinely performed, as necessary, to identify and control potential sources of personnel exposure to radiation and/or radioactive material.

Contrary to the above, area monitoring was not routinely performed to identify and control potential sources of radiation and/or radioactive material in that-

1. On May 25, 1998, a worker discovered a 30-gallon barrel labeled "Hazardous and Radioactive Waste" in a radiologically uncontrolled area outside of Building 9956 and moved the barrel to a controlled area in Building 9956 on that same date. Prior to the barrel being moved, no radiological surveys were performed at the time to determine the extent of the radiological hazard or necessary controls. On June 10, 1998, the barrel was moved a second time without benefit of surveys to define the radiological hazard to a 90-day accumulation area outside of TA-III. Subsequent review by SNL personnel determined that this barrel had been surveyed in 1996, and no radioactive material was identified. No radiological analysis of the barrel contents was

performed in 1996.

2. On September 9, 1998, a bag labeled "Caution Radioactive Material" was discovered outside of a controlled radioactive materials area in TA-V, Building 6591 Machine Shop. Subsequent gamma spectroscopy analysis determined that no radioactive material was present, despite the label.
 3. On November 6, 1998, a glass vial labeled, "Radiation Hazard, [radioactive material] anhydrous C.P." was discovered in Building 869/6 laboratory outside of a radiologically controlled area. The vial was determined to contain 20 microcuries of [radioactive material] and to measure 9 millirem/hour on contact.
- C. 10 CFR 835.603(f) requires that the words "Danger, High Contamination Area" shall be posted where contamination levels are greater than 100 times the values listed in Appendix D, i.e., 1000 dpm/100 cm² beta/gamma activity.

Contrary to the above, areas with contamination in excess of 100,000 dpm/100 cm² were not adequately posted in that on August 7, 1998, several areas of removable beta/gamma contamination were identified in Room 203, Building 6580, including activities up to 1,995,000 dpm of [radioactive material] under the area of the instrument probe, and High Contamination Area warning postings were not used.

Collectively, these violations represent a Severity Level III problem.

II. RADIOLOGICAL WORK PERMIT RECURRING ISSUES

- 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 exposures as low as reasonably achievable (ALARA).

Contrary to the above, adequate administrative controls and procedural requirements to maintain personnel radiation exposures ALARA at SNL were not implemented in that-

1. Section "Radiological Work Permit (RWP) Termination" of MN471016, "Radiological Work Planning and Controls" from the Radiological Protection Procedures Manual, Issue D dated May 15, 1997, and Issue E dated July 24, 1998, requires that "an RWP shall be terminated if...the RWP end date is reached." Additionally, section "Radiological Work Implementation" requires that before "beginning radiological work, cognizant job supervisors and radiological workers shall implement applicable requirements in

preparation for radiological work by... reading and complying with approved RWP requirements." However, radiological workers did not implement

applicable RWP requirements for timely RWP termination prior to beginning radiological work in that:

- a. RWP R4-97-0018 for Building 986, High Bay expired March 19, 1998, and the RWP was not terminated. From March 20, 1998, until April 6, 1998, radiological workers continued accelerator operations in Building 986 over a period of 11 days after the RWP had expired.
 - b. RWP R4-97-0062 for Building 962, B302A expired September 17, 1998, and was not terminated until October 8, 1998. On September 29, 1998, and October 7, 1998, radiological workers performed warm-up operations of a radiation generating device after the RWP had expired.
 - c. RWPs 116 and 117 expired September 18, 1998, and work continued for eight working days after the RWPs had expired. RWP 235 expired September 10, 1998, and work continued for 14 working days after the RWP had expired.
2. Section "Approval of RWPs" of MN471016, "Radiological Work Planning and Controls" from the Radiological Protection Procedures Manual, Issue D dated May 15, 1997, requires that "line managers shall approve all technical work documents (TWD) and RWPs used in the conduct of their organization work." However, line managers did not approve five job-specific RWPs (R5-97-0098, R5-97-0112, R5-97-0172, R5-97-0185, and RWP #0047) used to conduct work in Buildings 6580, 6581, and 6597 during 1997 and 1998.
 3. Section "Records" of MN471016 "Radiological Work Planning and Controls" from the Radiological Protection Procedures Manual, Issue B dated December 13, 1996, and Issue C dated February 21, 1997, requires that "the record copy (original) of ...the RWP or TWD and associated documents shall be retained in the applicable Radiation Protection (RP) records center." Issue D of "Radiological Work Planning and Controls" dated May 15, 1997, requires that "the record copy (original) of ... the RWP and associated attachments (briefing forms, sign-in sheets, revisions, etc.) shall be sent to the RP Line Support Team supervisor." Further, Section "General RWP Requirements - Sign-in Sheets" of MN471016, "Radiological Work Planning and Controls" Issue D states that "sign-in sheets are legal records which must be retained." However, the sign-in sheets for three RWPs (R5-97-0011 ended January 10, 1997; R5-97-0037 ended April 15, 1997; and RWP R5-97-0086 ended July 22, 1997) were not

retained as required.

4. Section "Radiological Workers" of MN471016, "Radiological Work Planning and Controls" from the Radiological Protection Procedures Manual, Issue D dated May 15, 1997, and Issue E dated July 24, 1998, requires that "radiological workers are responsible for complying with all requirements of the applicable RWP or other TWD at all times." Additionally, procedure RPO-06-605 entitled "Radiological Work Permits," Issue 07, effective April 21, 1998, defines a radiological hold point as "that radiation level, contamination level, or process/procedure step at which work shall not proceed until the radiological controls/conditions have been assessed and additional controls have been implemented as needed." However, radiological workers did not comply with the applicable RWP requirements and did not implement the RWP's radiological hold points or special instructions in that-
 - a. RWP 0281 approved July 14, 1998, for work in the Sled Track Area North End contained a Radiological Hold Point which required the workers to "pause during intrusive work (digging greater than six inches) as directed by the RCT to allow adequate survey of the area." RWP 0281 also contained a Radiological Protection Requirement to "notify RCT at Job Start" and a Special Instruction, dated August 14, 1998, which required the workers to "contact RCT prior to start of any work each day." However, on August 14, 1998, and again on August 17, 1998, SNL subcontractor personnel performed intrusive work in a soil contamination area of the Sled Track Area North End without notifying the RCT prior to beginning work and without the RCT being present to survey the area as required.
 - b. RWP 0232 approved June 10, 1998, for work in the PBFA-Z accelerator contained a Radiological Hold Point which required if "the target contains [radioactive material], ..work must be stopped and a new RWP must be generated to continue working under those conditions." However, on at least three occasions from August 3, 1998, until October 15, 1998, radiological workers had used a [radioactive material] target and had not stopped work or generated a new RWP.
- B. 10 CFR 835.703(a) requires that the results of surveys for radiation and radioactive material in the workplace shall be documented and maintained as required by 10 CFR 835.401.

10 CFR 835.401(a) requires that monitoring of areas shall be performed to

(1) document radiological conditions in the workplace, and (2) detect changes in radiological conditions.

Contrary to the above, the results of surveys for radiation and radioactive material in the workplace to document and detect changes in radiological conditions were not maintained in that three RWPs (R5-97-0112 approved June 30, 1997; R5-97-0167 approved October 9, 1997; and RWP #0045 approved January 12, 1998) contained radiological hold points that required radiation or contamination surveys be performed; however, the results of the radiological surveys were not maintained. Work covered by these RWPs involved Buildings 6580 and 6588 and included sampling glove box high efficiency particulate air (HEPA) filters, collecting ventilation system flow data and handling irradiated components.

Collectively, these violations represent a Severity Level III problem.

Pursuant to the provisions of 10 CFR 820.24, Sandia Corporation (Sandia) is hereby required to submit a written statement or explanation to the Director, Office of Enforcement and Investigation, Attention: Office of the Docketing Clerk, EH-10, 270CC, P.O. Box 2225, Germantown, MD 20874-2225. Copies should also be sent to the Manager, DOE, Kirtland Area Office, and to the Cognizant DOE Secretarial Offices for the facilities that are the subject of this Notice of Violation (Notice), within 30 days of the date of the letter transmitting this Notice. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation" and should include the following for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation; (2) the corrective actions that have been taken and the results achieved, (3) the corrective actions that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. In the event you admit the violations set forth in this Preliminary Notice of Violation, this Notice will constitute a Final Notice of Violation in compliance with the requirements of 10 CFR 820.25.



David Michaels, PhD, MPH
Assistant Secretary
Environment, Safety and Health

Dated at Washington, DC,
this 21st day of May 1999

