August 14, 1996

Mr. John C. Crawford
[ ]
Sandia Corporation
P.O. Box 5800
Albuquerque, NM 87185-5800

EA 96-03

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty - $5,000 (NTS-ALO-KO-SNL-9000-1996-0001)

Dear Mr. Crawford:

This refers to the Department of Energy's (DOE) evaluation of the circumstances surrounding a number of radiological control deficiencies associated with field radiography operations conducted between February 1-7, 1996, in the Liquid Metal Processing Laboratory at Sandia National Laboratories (SNL) in Albuquerque, New Mexico. At the request of DOE, you held a formal critique to evaluate these issues. The conclusions arising from this critique resulted in an occurrence report being issued on March 13, 1996. On April 16-17, 1996, the DOE Office of Enforcement and Investigation conducted an on-site review of these matters, the report of which was provided to you on June 14, 1996.

Based on our evaluation of this matter, DOE concluded that violations of the Occupational Radiation Protection Rule (10 CFR 835) likely occurred. A conference was held with Dr. Gerald Yonas [ ] and members of your staff on July 10, 1996, to discuss the facts and circumstances surrounding the field radiography operations at issue, the safety significance of radiography work control problems, and the status of corrective actions taken or planned to resolve the problems. A summary conference report is enclosed.

During the February 1996 field radiography operations in [a building], SNL failed to provide positive access control and necessary radiation warnings to preclude inadvertent entry of personnel into High and Very High Radiation Areas. The failure to control personnel access and post radiation areas as required during field radiography operations created an unnecessary risk for workers to receive potential significant radiation exposure. Specifically, field radiography operations were ongoing that used a 420 kilovolt x-ray unit. During full power operations, this unit is capable of generating [a dose rate] and can result in High and/or Very High Radiation Areas being created. Although the [building's] doors were locked during radiography operations, all building employees had keys and routine access. The radiographer was not aware of his responsibility to control key access nor did the responsible radiological control technicians know that multiple personnel had keys and routine access to the area where the radiography was being performed.

As described in the enclosed Preliminary Notice of Violation and Proposed Imposition of Civil Penalty (Notice), these violations involve requirements of 10 CFR 835 pertaining to

Radiological Entry Controls, Design and Control, and Posting and Labeling. Specifically, the failure to adhere to these requirements and your implementing procedures developed for personnel radiation protection resulted in the failure to provide the requisite level of positive access control and radiation area warnings to High and Very High Radiation Areas. As a result, any number of employees could have unknowingly entered into increasingly high radiation fields. Additionally, the failure to adhere to your radiological control procedures resulted in the radiographer initiating startup of the radiography unit without knowing that another worker was outside of the designated safe area (an area of relatively low personnel exposure).

DOE is particularly concerned that similar problems involving the inadequate implementation of radiological work controls necessary to minimize worker radiation exposure have been identified over the past year and for which stated corrective action plans and initiatives were never implemented. For example, a Joint Investigation Team (JIT) investigation conducted in July 1995 identified significant radiological program deficiencies including a conclusion that nonadherence to operating procedures was so widespread that it had become institutionalized. In response to this finding, SNL senior management formally committed to a series of corrective actions to resolve the problem and establish accountability for implementation of requirements. However, during this enforcement conference, SNL acknowledged that the findings of this report had not been communicated to facility managers, nor had corrective actions been initiated.

Additionally, in October 1995, in response to other events involving the spread of radioactive contamination outside of controlled areas, SNL committed to review all radiological work to ensure the proper implementation of radiological contamination work controls. During this conference, SNL could not provide any evidence that such actions had been undertaken on a sitewide basis. Moreover, in February 1996, the DOE Office of Enforcement and Investigation deferred enforcement action following a November 1995 event in the [specified location] in which three workers became contaminated, two of whom also received [radioactive material] uptakes as a result of poor radiological work control practices. The decision to defer enforcement action was made in reliance on the full implementation of corrective actions to resolve these problems. Finally, after the February 1996 radiography work control problems occurred in [a building], similar work control issues for field radiography operations in [another building] were identified by you in June 1996 during a self-assessment. This self-assessment, while a positive effort, was not initiated on a timely basis following the February 1996 field radiography problems, and these continuing problems indicate that meaningful corrective actions and lessons learned from the earlier problems have not been communicated at the facility level.

The violations associated with the radiography activities that occurred between February 1-7, 1996, could arguably be considered as Severity Level III Violations. However, when considered in the context of the past performance in the area of radiological work controls and the failure to implement corrective actions as committed, these violations are indicative of a broader programmatic problem in the implementation of radiological work controls at the facility level. Therefore, in accordance with the "General Statement of Enforcement Policy" (Enforcement Policy) 10 CFR 820, Appendix A, the violations associated with this incident have been classified in the aggregate as a Severity Level II programmatic problem.

To emphasize the need to develop and fully implement corrective actions to assure the implementation of radiological work controls at the facility and work activity level, I am issuing the enclosed Preliminary Notice of Violation and Proposed Imposition of Civil Penalty in the amount of $5,000. The appropriate base civil penalty under the DOE Enforcement Policy for violations of 10 CFR 835 associated with radiography operations has been determined to be

$5,000. The penalty adjustment factors set forth in 10 CFR 820, Appendix A, Section VIII were considered and no adjustments to the base civil penalty were deemed appropriate. Specifically, the full import and programmatic significance of these violations were not promptly identified by the contractor. DOE considered escalating the base civil penalty by 50% because your corrective actions from this event and previous radiological work control issues have not been adequately implemented; however, since this consideration formed part of the basis for classifying the violations at Severity Level II, escalation on this factor is considered inappropriate.

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

Sincerely,

Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety and Health

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

PRELIMINARY NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Sandia National Laboratories
[ ]
Radiography Operations
EA 96-03

As a result of a Department of Energy (DOE) evaluation of activities associated with field radiography operations conducted between February 1-7, 1996, in the [specified building], violations of the DOE nuclear safety requirements were identified. In accordance with "General Statement of Enforcement Policy," 10 CFR 820, Appendix A, DOE proposes to impose a civil penalty 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 penalty are set forth below.

A. 10 CFR 835.502(a)(4) requires that each entrance or access point to a High Radiation Area be locked, i.e., when radiation levels could result in an individual exceeding a deep dose equivalent to the whole body of one rem per hour at 30 centimeters from the radiation source. Further, during periods when access to the area is required, positive control over each entry must be maintained.

10 CFR 835.502(b) requires that in addition to High Radiation Area control measures, e.g., locked entryways, Very High Radiation Areas shall have additional measures implemented to ensure that individuals are not able to gain access when radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads in one hour at one meter from the radiation source.

Contrary to the above, at various times during February 1-7, 1996, positive controls for locked entryways and access points were not instituted nor were additional measures implemented when Very High Radiation Areas were created from radiography operations in that:

1. Although the doors to the [room] were locked, more than 19 employees possessed keys to these doors, and no key controls were instituted during radiography operations when dose rates exceeding 500 rads in one hour were generated.

2. No additional measures, such as direct surveillance or other measures, were used to ensure individuals could not gain access to Very High Radiation Areas in the [room].

B. 10 CFR 835.603 requires that each access point to a radiological area shall be posted with conspicuous signs bearing specific wording.

10 CFR 835.603 (b) states that for a High Radiation Area, the words "Danger, High Radiation Area" shall be posted at any area accessible to individuals...

10 CFR 835.603 (c) states that for a Very High Radiation Area, the words "Grave Danger, Very High Radiation Area" shall be posted at any area accessible to individuals...

Contrary to the above, at various times between February 1-7, 1996, the required radiation warning signs bearing the appropriate wording were not conspicuously posted at all access points in that:

1. The primary access point (a door) to the [room] was not posted with any radiation warning signs.

2. Other access points, including several doors to the [room] and roped off areas outside the [room], did not have the required warnings for either High Radiation and/or Very High Radiation Areas.

C. 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, at various times during February 1-7, 1996, administrative controls and procedural requirements to maintain personnel radiation exposures ALARA were not implemented or adhered to in that:

1. Procedure RPO-06-602, "Conduct of ALARA Reviews and Briefings," Issue No. 1, June 27, 1995, requires a formal, documented ALARA Pre-Job Review when installation, removal or modification of temporary shielding is involved; nevertheless, no ALARA review or pre-job briefing for radiography operations was performed even though temporary shielding was installed.

2. Procedure SP-471755, "Non-Destructive Evaluation Using Radiation Producing Equipment (U)," Issue A, Section 7.2.0 requires the following:

a. All radiographers to wear both a personnel dosimetry badge and a chirper (an audible radiation monitoring device) while performing field operations; however, the radiographer failed to wear the required chirper.

b. All personnel to be cleared from any potential exposure area prior to activation of the x-ray unit; however, on February 7, 1996, the radiographer failed to clear the exposure area prior to initiating startup of the x-ray unit.

c. Direct surveillance to be maintained on all penetrable locations (those that are roped or signed) on the Radiological Area perimeter for the duration of the exposure; however, direct surveillance was not maintained for the access areas roped off in the [room].

3. Radiological Work Permit R3-95-0035:

a. Requires that "only the radiographer and HP are allowed within the isodose boundary during shoot;" however, on February 1, 1996, at least three workers were within the Radiological Area Boundary.

b. Was inadequate in [its recording of the radiological hazard for radiography operation].

These violations constitute a Severity Level II problem and a civil penalty of $5000.

Pursuant to the provision of 10 CFR 820.24, Sandia Corporation is hereby required within 30 days of the date of this Notice 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 20874-1290, Attention: Office of the Docketing Clerk, CXXI, Suite 300, with copies to the Manager, DOE Albuquerque Operations office, the Acting Area Manager, DOE Kirtland Area 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 Proposed Civil Penalty" and should include for each violation: (1) admission or denial of the alleged violations, (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, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further violations, and (5) the date when full compliance will be achieved.

Any request for remission or mitigation of civil penalty must be accompanied by a substantive justification demonstrating extenuating circumstances or other reasons why the assessed penalty 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, Sandia Corporation shall pay the civil penalty (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, Sandia Corporation should address the adjustment factors described in Section VIII.C. of 10 CFR 820, Appendix A.

Tara O'Toole
Assistant Secretary
Environment, Safety and Health

Dated at Washington, D.C.
this day of 1996