

June 4, 1998

Mr. Steve Laflin  
[ ]  
MAC Isotopes, L.L.C.  
2325 West Broadway, Suite D  
Idaho Falls, ID 83402

EA 98-05

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty -  
\$25,000 (NTS-ID--LITC-TRA-1997-0003)

Dear Mr. Laflin:

This letter refers to the Department of Energy's (DOE) investigation of the facts and circumstances concerning the release of radioactive material at the Idaho National Engineering and Environmental Laboratory (INEEL). Specifically, on September 17, 1997, radioactive [material] was uncontrollably released to Test Reactor Area [building] from [material] processing activities taking place in [a Hot Cell]. The result of this release was contamination of the entire interior of [the building] and the contamination of six workers inside [the building] at the time of the release. Two companies were involved in this event: Lockheed Martin Idaho Technologies Company (LMITCO) and MAC Isotopes, L.L.C. (MAC) (now International Isotopes Idaho, Inc.). LMITCO is the site prime contractor to DOE while MAC functions as a subcontractor to LMITCO but performs radioisotope production for commercial distribution in a privatized capacity. MAC was also responsible for adhering to all applicable radiological and quality assurance procedures implemented by LMITCO.

The DOE's Office of Enforcement and Investigation initiated an investigation of this event in October 1997. Based on a review of relevant facility documentation, and discussions with involved personnel at the TRA and DOE's Idaho Operations Office personnel during January 13-14, 1998, DOE has concluded that violations of 10 CFR 830, "Nuclear Safety Management," and 10 CFR 835, "Occupational Radiation Protection," occurred; these violations are described in the enclosed Preliminary Notice of Violation (PNOV).

The enclosed PNOV describes deficient radiological work control processes, including work document preparation and review, as well as As Low As Reasonably Achievable planning and review. The execution of these tasks for the September 17, 1997, work on [a Hot Cell Manipulator] failed to ensure that the scope of the maintenance work was

defined, and the associated radiological hazards were identified and communicated to involved workers and management of LMITCO and MAC. Other factors that contributed to the [radioactive material] release were multiple failures to follow written INEEL procedures by LMITCO and MAC personnel.

Although the consequences of the [radioactive material] release resulted in low doses to the workers in [the building], the recovery of [the building] from the contamination event required approximately three weeks. DOE is concerned that, during the event, there were multiple examples of the failure to perform work in accordance with established procedures and standards. Therefore, in accordance with 10 CFR 820, "Procedural Rules for DOE Nuclear Activities," Appendix A, the violations associated with the September 17, 1997, contamination incident have been classified as Severity Level II violations.

To emphasize the need for assuring the proper control of work-related activities, I am issuing the enclosed Preliminary Notice of Violation and Proposed Imposition of Civil Penalty in the amount of \$25,000. In accordance with the Enforcement Policy in effect at the time of this event, the base civil penalty for each of the two Severity Level II violations is \$25,000. The escalation and mitigation factors set forth in the Enforcement Policy were considered and each civil penalty has been reduced by 50 percent. No adjustment was considered appropriate for identifying and reporting the violations since the violations were identified as a result of an event that caused multiple personnel contaminations and shutdown of the facility. However, DOE has concluded that your facility-specific corrective actions, including the "Production Project Initial Design Checklist" and the voluntary cessation of [radioactive material] processing pending a review of additional process improvements and methods, were sufficiently comprehensive to warrant 50 percent mitigation of the base civil penalties.

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 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,

A black rectangular box containing a white handwritten signature, likely of Peter N. Brush.

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

CERTIFIED MAIL  
RECEIPT REQUESTED

Enclosures:

Preliminary Notice of Violation and  
Proposed Imposition of Civil Penalty  
Enforcement Conference Summary  
Enforcement Conference Attendance List

cc: M. Zacchero, EH-1  
K. Christopher, EH-10  
S. Zobel, EH-10  
B. Revsin-Watson, EH-10  
G. Podonsky, EH-2  
O. Pearson, EH-3  
J. Fitzgerald, EH-5  
L. Miller, NE-40  
J. Wilcynski, DOE-ID  
W. Bergholz, DOE-ID  
S. Sommers, DOE-ID  
K. Whitham, DOE-ID  
S. Forcey, LMITCO PAAA Coordinator  
J. Lieberman, NRC  
D. Thompson, DNFSB  
Docket Clerk, EH-10

**PRELIMINARY NOTICE OF VIOLATION  
and  
PROPOSED IMPOSITION OF CIVIL PENALTY**

**NTS-ID--LITC-TRA-1997-0003**

MAC Isotopes, L.L.C.  
Idaho National Engineering and Environmental Laboratory  
Test Reactor Area

EA 98-05

As a result of a Department of Energy (DOE) evaluation of activities associated with the uncontrolled release of radioactive [material] to the Test Reactor Area [building] that occurred on September 17, 1997, violations of DOE nuclear safety requirements were identified. In accordance with 10 CFR 820, Appendix A, "General Statement of Enforcement Policy," 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.

- I. 10 CFR 830.120(c)(2)(i) requires that work shall be performed to established administrative controls using approved instructions and procedures.

Contrary to the above, work was not performed to established administrative controls using approved instructions and procedures in that

- A. Procedure MCP-2798, "Maintenance Work Control," Revision 3, dated July 1, 1997:

1. Section 4.2.1.2 stated that "where a written work order is required, enter or verify that the appropriate information has been entered into the Computerized Maintenance Management System fields (see Appendix B)." Appendix B, "Work Package Checklist," identifies the Work Plan Detail Section as "the procedure to be used for performing the work." However, Work Order BI031, that described work to be performed on [a Manipulator] on September 17, 1997, contained no provision for partial withdrawal and *in situ* repair of [the Manipulator]. Furthermore, Work Orders BI025 and BI031 for July 16, September 15, and September 17, 1997, were inadequate for maintenance on Manipulators [ ] in that the work orders did not contain instructions for removal of radioactively contaminated

manipulator sleeves.

2. Section 4.2.2., Note 1, states that in developing work packages, "If general intent compliance is required, identify this requirement before the first action step. If not identified as a general intent Work Order, it is assumed that the work will be conducted as a step-by-step procedural compliance without deviation." However, on September 15, 1997, the removal and repair of [a Manipulator] was initiated using a partially completed and initialed work order (BI025) that had already been used on July 16, 1997. Therefore, step-by-step compliance could not be assured.
3. Section 4.2.2, Note 2, states that "Written work orders shall contain at least one craft sign-off to indicate work order completion." However, on July 16, 1997, Work Order BI025 did not have a craft sign-off. Instead, the work order owner signed for the maintenance craft.
4. Section 4.3.1.2 states "Job Supervisor, Foreman, Technical Lead: Review maintenance work to ensure that all necessary documentation and required reviews and approvals are included, and the job can be performed as planned." However, on September 17, 1997, maintenance work was initiated to partially withdraw [a Manipulator] to effect cable repairs, although management and radiological control for the job knew that Work Order BI031 did not contain steps for partial manipulator withdrawal and *in situ* repair of [ the Manipulator].
5. Section 4.3.1.9.E states that the "Operations Manager: Sign off authorization for crafts personnel to initiate work on the system/equipment specified in the work order to affirm that appropriate work package reviews and approvals have been obtained consistent with the work scope and facility/plant hazards." However, sign-off authorization to begin work on Work Order BI031 was given by the MAC facility manager even though he knew that the work scope identified on BI031 did not contain steps for a partial manipulator withdrawal and *in situ* repair.
6. Section 4.3.2 Note stated that "if a maintenance task cannot be executed in accordance with written work instructions, then stop the maintenance activity and notify the foreman." Work on [a Manipulator] on July 16, 1997, could not be executed in accordance with written instructions. However, procedure MCP-2798 was inadequate in that guidance as to the final disposition of an incomplete work order package was not specified. As a result, the exact same copy of Work Order BI025 was reused on September 15, 1997. It was not possible, then, for the maintenance crew to comply with written check-offs that were required by the first 17 steps of Work Order BI025.

B. Maintenance Work Order BI031 - Step 12 of Work Order BI031 was a radiological control hold point during which the radiological control technician was to

have provided support to the operations personnel to survey and spray down the interior of the hot cell and manipulator prior to manipulator movement. However, on September 17, 1997, the decontamination was not performed as required. Instead, the facility management initialed the sign off blank as "N/A," not applicable. This action was taken based on the fact that [radioactive material] had not been processed in the hot cell since the previous decontamination on September 15, 1997, even though removal and re-installation of [the Manipulator] had been performed on that date.

- C. Procedure MCP-3003, "Performing Pre-Job Briefings and Post-Job Reviews," Revision 0, dated June 2, 1997, Section 4.1.4.2.1 required that when a formal pre-job briefing was performed, document the briefing and attach Form 434.15#, "Pre-Job Attendance Record," to the work documentation records. Section 4.1.5 stated "Employee: Attend pre-job briefing." However, for the September 17, 1997, pre-job briefing for Work Order BI031, attendance lists were not maintained as required on Form 434.15#. In addition, one radiological control technician, who provided support to the job-coverage radiological control technician, did not attend the pre-job briefing.

These violations constitute a Severity Level II problem.  
Civil Penalty - \$12,500

- II. 10 CFR 835.404(a) requires that techniques used for radioactive contamination control be adequate to ensure compliance with 10 CFR 835.404(c)(2).

10 CFR 835.404(c)(2) requires that any area in which contamination values exceed removable beta/gamma contamination of 1,000 disintegrations per minute be controlled in a manner commensurate with the physical characteristics of the contaminant.

Contrary to the above, radioactive contamination control techniques were not adequate in that on September 17, 1997, after insertion of [a Manipulator] into [a Hot Cell], contamination control techniques implemented by Radiological Control did not encompass known data regarding the physical characteristics of the radioactive [material], i.e., the [material] being readily dispersible. As a result, [material] was released into the entire [ ] Facility when the plastic containment containing the [material], in a quantity sufficient to generate a radiation field of [a specified amount], was removed from [the Manipulator].

- III. 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, procedures were not followed or were inadequate to maintain personnel exposures ALARA in that

- A. Procedure MCP-91, "ALARA Program and Implementation," Revision 5, dated

June 25, 1997, Section 4.5.4 requires that the facility ALARA Committee perform a review of Work Order BI031. Furthermore, Section 4.5.4.C states, "Request a Facility ALARA Committee review for specific jobs when radiological work activity is infrequent or a first-time operation as stated in Section 4.2.7.2 - 4.2.7.4." Section 4.2.7.2 requires an ALARA Committee review of work activities with a high potential for unknown radiological consequences that included conditions of probable high levels of contamination where dose rates and contamination levels could increase rapidly; and Section 4.2.7.3 addresses radiological work activities that were infrequent or are first time activities where dose rates and contamination were not easy to characterize. However, Work Order BI031 for September 17, 1997, was not submitted to the ALARA Committee for evaluation of the radiological hazards and consequences of the activity.

- B. Radiological Work Permit No. 978046, Revision 0, identified the limiting conditions that voided the permit; however, a contingency plan for what to do should a limiting condition of the permit be reached was not identified on the permit nor discussed in the pre-job briefing. Instead, on September 17, 1997, when it became known that a limiting condition of the permit had been exceeded, i.e., the dose rate measured [a specified amount], rather than stop work, personnel immediately began to reinsert the manipulator arm back into the hot cell. Subsequent activities resulted in the uncontrolled release of radioactive [material to the building].

The violations described by II and III constitute a Severity Level II problem.  
Civil Penalty - \$12,500

Pursuant to the provisions of 10 CFR Part 820, MAC Isotopes, L.L.C., 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, P.O Box 2225, Germantown, MD 20875-2225, with copies to the Manager, DOE, Idaho 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 the following for each violation: (1) admission or denial of the alleged violation; (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  
Acting Assistant Secretary  
Environment, Safety and Health

Dated at Washington, DC,  
this 4th day of June 1998