

August 18, 1999

Mr. W. J. Denson
[]
Lockheed Martin Idaho Technologies Company
P.O. Box 1625, MS 3898
Idaho Falls, ID 83415-3898

EA-1999-07

Subject: Preliminary Notice of Violation and Proposed Imposition of Civil Penalty of \$220,000 (NTS-ID-LITC-CCPFUEL-1998-0001, NTS-ID-LITC-TRA-1999-0001, NTS-ID-LITC-LITCOSITEW-1998-0005, and NTS-ID-LITC-WASTEMNGT-1999-0001)

Dear Mr. Denson:

This letter refers to the Department of Energy's (DOE) evaluation of the facts and circumstances concerning quality deficiencies associated with the procurement of TRUPACT-II Standard Waste Boxes (SWBs) and nuclear fuel storage buckets, and other operational quality issues at your nuclear facilities. This action addresses four investigations that were conducted by DOE that encompassed deficiencies described in the subject noncompliance reports. Our findings were provided to you in the Investigation Summary Reports issued on June 1, 1999. Enforcement Conferences were held with you and members of your staff on June 16, 1999, to discuss these deficiencies. An Enforcement Conference Summary, including our response to selected factual accuracy issues provided by your staff, is enclosed.

Based on DOE's investigative results and information that you provided during the Enforcement Conference, DOE has concluded that violations of 10 CFR 830.120 (Quality Assurance Rule) likely occurred. These violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the enclosed PNOV describes violations identified during DOE's investigation of your processes to procure components for use at nuclear facilities under your control. In one case, 556 SWBs were procured for the interim storage of transuranic radioactive waste and for eventual shipment and long term storage at the Waste Isolation Pilot Plant (WIPP). These SWBs were accepted by your staff and 29 were filled with transuranic waste before they were determined to have structural integrity problems including poor welds and inadequate leak tightness. After further inspections, all 556 SWBs were subsequently determined to be inadequate for use. In another case, your staff procured nuclear fuel storage buckets for the movement and handling of old reactor fuel. During the procurement process your staff found that the

vendor did not have an adequate quality assurance program. You removed this vendor from your approved supplier's list, but still allowed this vendor to continue fabricating the fuel storage buckets. After acceptance of the fuel storage buckets, your staff performed an inspection of the fuel buckets and determined that 41 of 48 buckets had welds that failed to meet the design specification. In addition, our review of these issues determined that failure to adhere to your procedures and administrative controls for the qualification and oversight of vendors and inadequate inspections of these items prior to acceptance from these vendors contributed to the quality deficiencies.

Section II of the enclosed PNOV describes violations identified during DOE's investigation of the reliability of emergency notification/communication systems in several of your nuclear facilities. The investigation identified numerous examples of which your administrative controls were not adequate to ensure that these emergency systems were maintained in an operable condition and would perform as required. In addition, we found a case where a TRIGA fuel transfer process was continued in violation of limits established by the facility criticality safety analysis without the appropriate review.

Section III of the enclosed PNOV pertains to your failure to establish and maintain an adequate process to detect and prevent quality assurance related problems. DOE Idaho repeatedly notified your staff of weakness in your process to evaluate root causes and to establish effective corrective actions. These failures contributed to the recurring quality problems in the procurement of the SWBs and the nuclear fuel baskets; and the repeated failure to ensure operability of required Emergency Notification Systems.

Section IV of the enclosed PNOV pertains to your failure to implement commitments made to DOE in response to Enforcement Action (EA-98-04) coupled with the failure to advise DOE of the missed commitments in a timely manner.

In accordance with the General Statement of Enforcement Policy, 10 CFR Part 820, Appendix A, the violations described in Sections I, II and III of the enclosed PNOV have been classified as Severity Level II violations. The violation described in Section IV of the enclosed PNOV has been classified as a Severity Level III violation. In determining the Severity Level of these violations, DOE considered the actual and potential safety significance associated with these occurrences, the programmatic and recurring nature of these problems, and other factors.

To emphasize DOE's concern about these violations along with the enclosed Preliminary Notice of Violation, I am issuing a Proposed Civil Penalty of \$220,000. DOE has determined that no mitigation is warranted for self-identification and reporting of these problems. DOE Idaho repeatedly notified LMITCO of quality problems associated with the fuel bucket procurement and the inadequate quality improvement process. The remaining quality deficiencies, including the SWBs, were for the most part discovered from self-disclosing events such as failures of equipment or discovered during repairs of the items. No evidence of a proactive process of identifying these quality deficiencies was found in our evaluation.

DOE also evaluated the adequacy of corrective actions identified and implemented by your organization. Our evaluation concluded that your quality improvement process was not adequate to identify the causes of these quality problems and to prevent recurrence. In many of these events, your past corrective actions were neither comprehensive nor timely enough to prevent recurrence. As noted in our Investigation Summary Report the procurement deficiencies existed for several years. Therefore no mitigation for corrective actions is warranted.

DOE recognizes that significant efforts have been made during recent months to correct these problems. Your actions to strengthen your management accountability and oversight of the programs and processes where quality breakdowns occurred is considered a positive step. In addition your commitment to reinforce within your workforce the importance and responsibility to adhere to your procedures and nuclear safety requirements is also an important action to correct these problems. Because of these commitments and recent improvements, DOE has decided not to escalate the civil penalty in this case, despite the fact that your failure to correct these problems in a timely manner during the past several years would be sufficient basis. DOE believes the corrective actions presented during the Enforcement Conference appear to address the problem areas, but would caution, that full implementation of these commitments and effective monitoring of the effectiveness of these corrective actions is expected to adequately meet the commitment.

You are required to respond to this letter and follow the instructions specified in the enclosed PNOV when preparing your response. Your response should document any additional specific actions taken to date. Corrective actions will be tracked in the Noncompliance Tracking System (NTS). You should enter into the NTS (1) any additional actions you plan to prevent recurrence and (2) the target completion dates of such actions. After reviewing your response to the PNOV, including your proposed corrective actions entered into the NTS in addition to the results of future assessments or inspections, DOE will determine whether further enforcement action is necessary to ensure compliance with DOE nuclear safety requirements.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Michaels', written in a cursive style.

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Enclosures:
Preliminary Notice of Violation
Enforcement Conference Summary Report
List of Attendees

cc: M. Zacchero, EH-1
K. Christopher, EH-10
S. Hurley, EH-10
D. Trevillian, EH-10
S. Zobel, EH-10
D. Stadler, EH-2
O. Pearson, EH-3
J. Fitzgerald, EH-5
J. Owendoff, EM-1
L. Vaughan, EM-10
W. Magwood, NE-1
L. Miller, NE-40
B. Cook, DOE-ID
W.N. Sato, DOE-ID
R.M. Stallman, DOE-ID
W. Bergholz, DOE-ID
S. Somers, DOE-ID
K. Whitham, DOE-ID
S. Forcey, LMITCO PAAA Coordinator
R. Farrell, WIPP
J. Lieberman, NRC
D. Thompson, DNFSB
Docket Clerk, EH-10

**Preliminary Notice of Violation
and
Proposed Imposition of Civil Penalty**

Lockheed Martin Idaho Technologies Company
Idaho National Engineering and Environmental Laboratory

EA-1999-07

During a Department of Energy (DOE) evaluation of (1) the procurement by Lockheed Martin Idaho Technologies Company (LMITCO) of Transuranic Packaging TRUPACT-II Standard Waste Boxes (SWBs) and other items having a safety function, (2) failures associated with emergency notification systems in several nuclear facilities managed by LMITCO, and (3) an event at the Test Reactor Area (TRA) involving an inadvertent transfer of an irradiated [material] disk from within a hot cell to the outside charging port area, violations of DOE nuclear safety requirements were identified. In accordance with the "General Statement of Enforcement Policy," 10 CFR 820, Appendix A, DOE is issuing this Preliminary Notice of Violation and Proposed Imposition of Civil Penalty. The particular violations and associated civil penalties are set forth below:

I. Violations Identified During the Investigation of Procurement Issues with TRUPACT-II Standard Waste Boxes and TRIGA Fuel Buckets

- A. 10 CFR 830.120 (c)(2)(iii) Procurement requires that procured items and services shall meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. Processes to ensure those approved suppliers continue to provide acceptable items, and services shall be established and implemented.

10 CFR 830.120 (c)(2)(ii) Design, requires that items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design.

Contrary to the above,

1. In June 1996 LMITCO awarded a contract to Vulcan Industries to fabricate 556 TRUPACT-II Standard Waste Boxes (SWBs) to be used for storage and movement of transuranic radioactive waste at the Idaho National Engineering and Environmental Laboratory (INEEL) and for future waste shipments and long term storage at the Waste Isolation Pilot Plant (WIPP). After accepting the 556 SWBs from the vendor and filling 29 boxes with radioactive waste, significant structural defects were identified. LMITCO concluded that it did not have confidence that any of the 556 SWBs met the procurement technical specifications.
2. In October 1995 LMITCO awarded a contract to Diversified Metal Products to fabricate 48 TRIGA fuel storage buckets. The LMITCO procurement specification required the vendor to have an approved quality assurance program. During fabrication of these fuel storage buckets, LMITCO determined that the vendor had an unacceptable quality assurance program. Despite the LMITCO requirement that the vendor have an approved quality assurance program, LMITCO allowed the vendor to continue fabrication of the items. Subsequent inspections of the TRIGA fuel storage buckets found that 41 of the 48 buckets failed to comply with the procurement technical specifications.
3. Between October 1995 and April 1996 LMITCO failed to adequately review the impact of a design change to the criticality safety analysis prior to acceptance of 48 TRIGA fuel buckets from Diversified Metal Products. Specifically, LMITCO approved the vendor of the fuel buckets to substitute 11-gauge sheet metal instead of using .125 plate as required by the design specification for TRIGA fuel buckets. LMITCO initiated an Engineering Change Request documenting the change in metal thickness in late March 1997, after the fuel buckets had been fabricated by the vendor and accepted by LMITCO.
4. LMITCO design calculations developed between February 1995 and September 1995 for the TRIGA fuel storage buckets failed to include a Safety Analysis Report design requirement to have a safety factor of three times material yield strength. This design requirement omission was discovered after the fuel buckets had been fabricated by the vendor and accepted by LMITCO.
5. The LMITCO design calculations for the TRIGA fuel buckets developed between February 1995 and September 1995 contained errors in identifying the correct load path and load bearing welds. A peer review and a formal Design Review failed to identify and correct this error.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty- \$55,000

- B. 10 CFR 830.120(c)(2)(i), Work Processes, requires that work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

10 CFR 830.120 (c)(1)(iv), Documents and Records, requires that documents shall be prepared, reviewed, issued, used and revised to prescribed processes, specify requirements or established design. Records shall be specified, prepared, reviewed, approved, and maintained.

Contrary to the above,

1. Procedure 3.8, Supplier Evaluation, effective October 28, 1994, requires that, when a desk evaluation is used to provide the basis for approving a prospective supplier, Procurement Quality shall ensure that a review of previous procurement records for identical or similar products or services provided by the prospective supplier is accomplished. Lockheed Martin Management Control Procedure Number MCP-591, Evaluated Supplier Program, effective June 15, 1996, requires that previous experience with the supplier be considered.

On or about June 6, 1996, in support of the procurement of 556 SWBs, LMITCO approved Vulcan Industries' NQA-1 Quality Assurance Program by conducting only a review of the documentation, and failed to ensure adequate review of previous procurement records for similar products from Vulcan Industries. If performed, this review would have identified quality deficiencies with overpack containers fabricated by Vulcan Industries for use at INEEL. LMITCO failed to ensure these quality deficiencies were adequately resolved and would not recur with the SWBs.

2. The Procurement Specification for Westinghouse Specification E-I-343 TRUPACT-II Standard Waste Box, Document ID: ES-51587, Revision 0, requires that welding personnel shall be qualified per ASME Section IX for the process used. Procedures Manual Number 3.8, Supplier Evaluation, effective October 28, 1994, requires that, "Prior to award of any procurement action, the assigned Procurement Agent shall, as appropriate obtain supplier documentation to support any nationally-recognized industry certification (ASME, Code of Federal Regulation, etc.). Lockheed Martin Management Control Procedure Number MCP-591, Evaluated Supplier Program, effective June 15, 1996, requires that certifications or other evidence of conformance to nationally recognized industry codes and standards (e.g., ASME, NCR, Code of Federal Regulation, ISO-9000, etc.) be obtained prior to awarding of procurement action.

LMITCO failed to obtain documentation from Vulcan Industries to support ASME Section IX nationally recognized certification. Specifically on June 10, 1996, LMITCO awarded a contract to Vulcan Industries for the fabrication of 556 TRUPACT-II SWBs. Prior to award of this contract, LMITCO did not obtain ASME certification documentation or other evidence of conformance from Vulcan Industries for the welding personnel.

3. LMITCO Purchase Order Number C96-180450 for the SWBs required a first article inspection of the items at Vulcan Industries' facility prior to shipment of the first SWBs. No first article inspection of a single SWB was conducted prior to the initial shipment of SWBs, which began in November 1996.
4. LMITCO Purchase Order Number C96-180450 for the SWBs specifically prohibited Vulcan Industries from subcontracting work on the items. A work control imposed on Vulcan Industries in Purchase Order Number C96-180450 required it to have an approved NQA-1 quality assurance program. Despite these controls, in November 1997 LMITCO permitted repairs to be performed on SWBs by a subcontractor to Vulcan Industries without formal modification of the Purchase Order and without requiring the subcontractor to have an approved NQA-1 quality assurance program.
5. In 1997, during the fabrication of SWBs Vulcan Industries submitted seventeen Supplier Disposition Requests (SDRs) asking for deviations from the WIPP SWB technical specifications (Drawing 165-F-001-W), including design and material changes. LMITCO Procedure EMP-4 requires that design changes approvals be performed consistent with the original approval. LMITCO approved the SDRs even though it was not the design authority for drawing 165-F-001-W.
6. LMITCO procedure PLN-120 requires a Quality Level I assignment for procurements involving DOT Type A packages. The SWBs procured from Vulcan Industries are DOT Type A packages. However, the June 1997 procurement for the SWBs to be supplied by Vulcan Industries was assigned Quality Level II procurement.
7. LMITCO procedure MCP-538 requires that a Nonconformance Report (NCR) to be issued when nonconforming items are identified. LMITCO inspectors identified significant weld nonconformances with the TRIGA fuel buckets in October and November 1997, but an NCR was not issued until October 1998.
8. LMITCO failed to maintain quality inspection records generated during 1996 that pertained to TRIGA fuel buckets procured by LMITCO. These records were identified to be missing in June 1998.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - \$55,000

II. Violations Identified during the Investigation of the Emergency Notification Systems

10 CFR 830.120(c)(2)(i), Work Processes, requires that work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

Contrary to the above,

1. LMITCO did not establish adequate administrative controls or other appropriate means to ensure operability of Emergency Notification Systems (ENS) was maintained in that-
 - A. On January 9, 1998, the battery providing backup power for Remote Distribution Module 13 (RDM-13) completely discharged resulting in partial loss of the Emergency Communication System (ECS) for the CPP-666 Fuel Storage Area. Normal electrical power to RDM-13 was lost when an electrical breaker had been manually opened and left open. Although remote monitoring is provided by a Remote Status Panel located in [] in CPP-606, repair technicians were not notified by operators monitoring the system that a problem existed.
 - B. The ENS for the Power Burst Facility (PBF) reactor building was removed on August 23, 1998, from service resulting in a violation of nuclear safety administrative controls. The ENS is to be operable when the PBF exclusion zone is occupied. During the time frame the ENS was inoperable, the PBF exclusion zone was occupied by at least one person on at least five different occasions for normal work activities.
 - C. On October 7, 1998, technicians discovered that a halon system control panel supervisory signal did not activate a required alarm at the main fire alarm computer system because a Reporting Panel Silence Switch was in the "off-normal" position. Operators had placed the switch in "off-normal" to silence annoying Reporting Panel system trouble signals and local audible alarms that had activated unnecessarily. The operators did not return the switch to the "normal" position following restoration of normal conditions.
 - D. On November 24, 1998, in Building 635 of the Waste Management Facility at the Radioactive Waste Management Complex (RWMC) it was determined that none of the fire alarm control panels on communications Loop 18 were reporting alarms to the alarm center. The cause of the communications failure was that a data terminal unit (DTU) in Loop 18 had an electronic data handling protocol that was incompatible with that of the other DTU's on loop 18. Analog modems on Loop 18 were replaced with a DTU on November 2,

1998. Testing of various alarm points on Loop 18 was not performed after that installation.
2. LMITCO performed a transfer of fuel operation, under conditions, which violated the [nuclear] safety analysis limits. On June 5, 1998, while performing a transfer of nuclear fuel to a drying station at the Integrated Fuel Storage Facility, an operator noticed an unanticipated amount [] of water remaining in one of the fuel storage cans. The procedure, INTEC-TRP-P3.3-G94, required the operator to allow the water to drain from the fuel storage cans. The facility safety basis, [] safety analysis, allowed [minimum quantity] of water in total for 18 fuel cans. A USQ was not performed to evaluate this condition for criticality safety prior to resuming the fuel transfer operation.

Collectively, these violations constitute a Severity Level II problem.
Civil penalty - \$55,000

III. Violations Associated with Quality Improvement

10 CFR 830.120 (c)(1)(iii), Quality Improvement, requires that processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and data analyzed to identify items, services, and processes needing improvement.

Contrary to above,

1. DOE ID determined that LMITCO's process to detect and prevent quality problems was not adequate. Between August 1997 and April 1998, DOE ID issued three letters to LMITCO articulating concerns about systemic and recurring quality problems. One of the letters was issued April 2, 1998, and identified significant deficiencies in the LMITCO procurement process and concluded that LMITCO has not adequately analyzed the root causes and implemented corrective actions to address this problem.
2. The root cause analysis of quality problems with the procurement of the TRUPACT-II SWBs was inadequate. LMITCO issued the Root Cause Analysis Report on the TRUPACT-II Standard Waste Boxes in April 1998. This report stated, "Actions taken by individuals in the event were based upon compliance to procedures". However DOE identified numerous examples of noncompliance with procedures as described in Section IB of this PNOV.
3. A June 1998 DOE ID surveillance report (tracking number SMC98003.SR) identified 14 problems where LMITCO had failed to develop corrective actions

to adequately address the root cause of procurement problems.

4. During 1995 LMITCO calculations for the design of the TRIGA fuel buckets were reviewed and verified by drafter who was not qualified to determine the adequacy of the calculations and the assumptions used by the Design Engineer.
5. A DOE ID Surveillance Report (tracking number SMC98003.SR) issued in June 1998 identified that LMITCO had failed to ensure individuals determining root causes were knowledgeable in root cause analysis conditions adverse to quality.

Collectively, these violations constitute a Severity Level II problem.
Civil penalty - \$55,000

IV. Violations Specific to the Test Reactor Area

- A. 10 CFR 830.120 (c)(1)(ii) Personnel Training and Qualification requires that personnel shall be trained and qualified to ensure that they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained.

Contrary to the above, LMITCO failed to comply with a training commitment to DOE made in response to EA-98-04. LMITCO committed to perform an analysis of specific knowledge requirements for each facility performing radiological work and to implement those training requirements by December 17, 1998. In January 1999, this training requirement had not been met for personnel involved in the TRA-632 radiological event.

- B. 10 CFR 830.120 (c)(2)(i), Work Processes, requires that work shall be performed to established technical standards and administrative controls using approved instructions, procedures or other means. Items shall be maintained to prevent their damage, loss or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

Contrary to the above, work was not performed to established technical standards and administrative controls using approved instructions, procedures or other means in preparing Maintenance Work Order (MWO) BI054 in that-

1. LMITCO Management Control Procedure MCP-2798 requires Maintenance Work Orders to reference procedures applicable to the work being performed. MWO BI054 failed to reference procedure TRA-TPR-DOP-9.2, White Elephant Cask Loading and Unloading at TRA Hot Cells. This procedure was required for positioning of the transfer cask performed on January 6, 1999, against the hot cell charging port and for inserting and removing the cask moveable platform.

2. The Radiation Work Permit (RWP 99000235), dated January 5, 1999, for the activities on January 6, 1999, involving the insertion and removal of the cask moveable platform into Hot Cell 3, was not complete as required by procedure MCP-7, Radiological Work Permits. The RWP did not include specific requirements for radiation surveys, radiological protection measures, necessary hold points, and contingency actions if radiological conditions exceeded the estimated conditions.

This is a Severity Level III violation.

Pursuant to the provisions of 10 CFR 820.24, Lockheed Martin Idaho Technologies Company is hereby required within 30 days of the date of this Preliminary Notice of Violation and Proposed Imposition of Civil Penalty, to submit written statement or explanation to the Director, Office of Enforcement and Investigation, Attention: Office of the Docketing Clerk, P. O. Box 2225, Germantown, MD 20875-2225. Copies should also be sent to the Manager, DOE Idaho Operations Office, and to the DOE Cognizant Secretarial Offices at Headquarters 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 violations; (2) any facts set forth which are not correct and (3) the reasons for the violations if admitted, or if denied, the basis for denial. Corrective actions that have been or will be taken to avoid further violations will be delineated with target and completion dates in DOE's Noncompliance Tracking System. In the event the violations set forth in this Preliminary Notice of Violation are admitted, this Notice will constitute a Final Notice of Violation in compliance with the requirements of 10 CFR 820.25.

Any request for remission or mitigation of the civil penalty must be accompanied by a substantive justification demonstrating extenuating circumstances or other reasons why the assessed penalty should not be paid in full. Within the 30 days after the issuance of this Notice and Civil Penalty, unless the violations are denied, or remission or mitigation is requested, Lockheed Martin Idaho Technologies Company shall pay the civil penalty of \$220,000 imposed under Section 234a of the Act by check, draft, or money order payable to the Treasurer of the United States (Account 891099) mailed to the Director, Office Enforcement and Investigation, Attention: Office of the Docketing Clerk at the above address. Should Lockheed Martin Idaho Technologies Company fail to answer within the time specified, the contractor will be issued an order imposing the civil penalty.

If requesting mitigation of the proposed civil penalty, Lockheed Martin Idaho Technologies Company should address the adjustment factors described in Section VIII of 10 CFR 820, Appendix A.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Michaels', written in a cursive style.

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

Dated at Washington, D.C.
this 18th day of August 1999

