January 19, 2001

Dr. John Browne
[ ]Los Alamos National Laboratory
P.O. Box 1663
Los Alamos, NM 87545

EA 2000-13

Subject: Preliminary Notice of Violation

Dear Dr. Browne:

This letter refers to the Department of Energy's (DOE) evaluation of violations of DOE's nuclear safety regulations associated with the March 16, 2000, [radioactive material] multiple intake event at TA-55, the 1998 [radioactive material] intake at TA-55 and authorization basis and work control violations at TA-18. During the TA-55 event, eight workers were exposed to airborne [radioactive material]; five of the eight were later determined to have suffered detectable intakes of[radioactive material]. Although final dose estimates have not been completed, it is apparent one worker significantly exceeded the Department's regulatory annual exposure limit and two additional workers may also have exceeded the limit. The TA-18 events included the operation of nuclear facilities outside of the limits and controls established by the facility's safety documents.

During the week of August 21, 2000, the Office of Price-Anderson Enforcement (EH-Enforcement) conducted an onsite investigation of the subject activities. On October 19, 2000, EH-Enforcement issued an Investigation Summary Report documenting the results of this investigation. On November 14-15, 2000, an Enforcement Conference to discuss these issues was held with members of your staff. Based on our evaluation, DOE has concluded that violations of the DOE Quality Assurance and Radiation Protection Rules have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the attached PNOV addresses deficiencies identified in EH-Enforcement's review of the TA-55 events. Our review of the March 16, 2000, intake event identified significant multiple deficiencies in the areas of work control, quality improvement, and radiation protection. The safety significance of this event was high, as reflected by the number of involved workers and magnitude of resultant radiological exposures. The DOE Type A Investigation Board has estimated the intakes to be among the ten worst radiological intake events over the past 41 years within DOE and its predecessor agencies. We also reviewed a 1998 worker overexposure which was identified through Los Alamos National Laboratory's (LANL) routine bioassay program. The enclosed

PNOV includes a Severity Level I violation for the significant overexposure of one worker, and three Severity Level II violations for overexposures and inadequate work controls leading to unplanned exposures of other workers.

Our investigation at TA-55 concluded that the March 16, 2000, event also included procedure violations, equipment labeling violations, and quality improvement violations. Additionally, our review evaluated several recent events, including a May 24, 2000, continuous air monitor alarm and a July 11, 2000, unauthorized gas line venting. These other events were found to reflect deficiencies in work control and formality of operations, similar to those observed during the March 16, 2000, event. The enclosed PNOV includes three Severity Level II violations associated with work controls and quality improvement at TA-55.

Our TA-55 investigation also reviewed certain aspects of the recent compression fitting certification initiative, and work process deficiencies that were identified during that initiative. Although we concluded that violations of 10 CFR 830.120(c)(2)(i), *Work Processes*, did occur in association with that activity, we have exercised discretion in not citing those violations in recognition of your self-identification of the issue and the scope of your corrective actions.

Section II of the attached PNOV addresses deficiencies identified in our review of the TA-18 events. The EH-Enforcement review at TA-18 focused on authorization basis and configuration management deficiencies identified during the late 1999 early 2000 timeframe. The authorization basis violations included deficiencies that were longstanding and should reasonably have been identified during routine assessments and reviews of authorization basis documentation. The configuration management deficiencies involved inadequate post maintenance testing of safety related instruments that were returned to service without ensuring the instruments' safety function was fully operable. Additionally, DOE is concerned that LANL continued Solution High Energy Burst Assembly operations for approximately five weeks after a member of the LANL Reactor Safety Committee provided credible information that a [unanticipated] hazard could be generated during operations. LANL management considered the information preliminary and did not curtail operations until August 23, 2000, when TA-18 personnel confirmed that the [protective system] performance had been degraded. Although no personnel injuries or accidents occurred because of these deficiencies, DOE considers these events to be safety significant. These violations represent an adverse trend in the operation and maintenance of these nuclear facilities not fully compliant with your established safety basis. The violations are of concern because, as described below, they occurred despite the fact that substantial corrective actions to address deficiencies at TA-18 were committed to after the 1998 incidents.

DOE has determined the deficiencies at TA-18 represent three Severity Level II violations of the Quality Assurance Rule. The multiple violations of your authorization basis have been combined into one Severity Level II violation and the multiple deficiencies involving inadequate configuration management and post maintenance testing of safety related instruments have also been combined into one Severity Level II

violation. Finally, the recurring nature of these deficiencies and failure to implement adequate corrective actions to prevent recurrence is considered a Severity Level II violation of the Quality Improvement requirement of the Quality Assurance rule.

In September 1998, DOE issued Enforcement Action EA 98-10 in response to work control deficiencies at Chemistry & Metallurgy Research Facility (CMR). At that time, similar work control issues had been identified at TA-18; however, DOE elected not to pursue violations outside of CMR in consideration of LANL's planned sitewide corrective actions. The work control and quality improvement deficiencies identified during our August 2000 investigation indicate that corrective actions undertaken in response to the earlier CMR work control issues have not been effectively implemented and translated to TA-55 and TA-18, as LANL had committed in its response to enforcement action EA 98-10. We view this insularity across LANL facilities to be a significant problem, and have included a separate Severity Level II Quality Improvement violation in the attached PNOV to focus senior management attention to this area. DOE is concerned that adequate LANL management attention was not previously applied to these problems following the CMR stand-down. DOE will continue to monitor completion of corrective actions and assurance of effectiveness of these actions.

I am issuing the enclosed PNOV in response to these violations. LANL is exempt from civil penalty by statute; however, because of the collective safety significance of these violations, DOE would have issued a Proposed Imposition of Civil Penalty in the amount of $605,000.

In keeping with our previous practice, no mitigation was applied for the TA-55 violations related to worker overexposure. The TA-55 section of the PNOV reflects partial mitigation, 25 percent, for the other cited violations based on the comprehensive nature and planned timely completion of your corrective actions. Full mitigation for corrective actions was not provided due to our finding that the underlying problems leading to the TA-55 events should have been corrected in response to the CMR stand-down and enforcement action EA 98-10. Also, no mitigation for self-identification was considered appropriate for the TA-55 problems since these were considered to be disclosed by the events or response to the events.

The TA-18 section of the PNOV reflects partial mitigation, 25 percent, specifically for your self-identification of the violations associated with the Flattop Safety Block B reactivity insertion rate. The remaining TA-18 problems were viewed as being disclosed by the events or response to events; several were long-standing in nature. No mitigation was deemed appropriate for TA-18 corrective actions, which were viewed as generally limited in nature to the immediate event.

You are required to respond to this letter and you should follow the instructions 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,

John A. Gordon
Administrator

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

cc: B. Costner, S-1
D. Michaels, EH-1
S. Cary, EH-1
M. Zacchero, EH-1
K. Christopher, EH-10
S. Adamovitz, EH-10
T. Weadock, EH-10
D. Stadler, EH-2
F. Russo, EH-2
N. Goldenberg, EH-3
J. Fitzgerald, EH-5
M. Creedon, DP-1
R. DeGrasse, DP-3
R. Erickson, DP-3
D. Minnema, DP-45
D. Gurule, DOE-LAAO
R. Glass, DOE-AL
B. Eichorst, DOE-AL
H. Hatayama, UC
A. Elliott, LANL
R. Azzaro, DNFSB
D. Thompson, DNFSB
Docket Clerk, EH-10

PRELIMINARY NOTICE OF VIOLATION

University of California
Los Alamos National Laboratory (LANL)
TA-55 and TA-18

EA 2000-13

As a result of a Department of Energy (DOE) evaluation of the March 2000 multiple [radioactive material] intake event at TA-55, of several subsequent TA-55 events, and of multiple authorization basis/work control deficiencies at TA-18, the Los Alamos Critical Experiments Facility (LACEF), several violations of DOE nuclear safety requirements were identified. In accordance with 10 CFR 820, Appendix A, "General Statement of Enforcement Policy," the violations are listed below.

I. Violations Identified During the Investigation of TA-55 Activities

A. 10 CFR 835 Violations

1. 10 CFR 835.202(a)(1) requires that the occupational exposure to general employees resulting from DOE activities be controlled so that the employee's Total Effective Dose Equivalent (TEDE) does not exceed the annual limit of five rems.

   Contrary to the above, occupational exposures to general employees were not adequately controlled such that–

   a. During calendar year 2000, a LANL employee received an intake of [radioactive material] resulting in an estimated exposure between 53-93 rems CEDE at the 95% confidence level, thereby exceeding the annual limit of five rems. The exposure was received as the result of a [radioactive material] release event occurring on March 16, 2000.

      This is a Severity Level I violation.
      Civil Penalty - $110,000 (exempted)

   b. During 1998, a LANL employee received an intake of [radioactive material] resulting in an estimated exposure of 6.6 rems CEDE, thereby exceeding the annual limit of 5 rems. The intake was confirmed in 1999 and was identified through implementation of the routine bioassay program. The intake was not attributable to a specific event and was assigned to calendar year 1998.

      This is a Severity Level II violation.
      Civil Penalty - $55,000 (exempted)

2. 10 CFR 835.1001(a) requires that measures shall be taken to maintain radiation exposure in controlled areas As Low As Reasonably Achievable (ALARA) through physical design features and administrative control.

   Contrary to the above, effective measures were not taken in conjunction with the glovebox argon flow troubleshooting activity on March 16, 2000, to maintain worker radiation exposure ALARA. Specifically, physical design features and/or administrative controls were not adequate to prevent the airborne [radioactive material] release and consequent multiple worker intakes. In addition to the worker overexposure cited in I.A.1.a above, two additional workers received unplanned exposures that may exceed the DOE regulatory limit upon final determination of exposure.

   Each example constitutes a Severity Level II violation.
   Civil Penalty - $110,000 (exempted)

B. Quality Improvement Violations

10 CFR 830.120(c)(1)(iii) 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 the problems and working to prevent recurrence."

Contrary to the above, processes to identify and correct quality problems were not effectively established and implemented in that formal processes were not effectively used to identify and resolve quality problems associated with the glovebox involved in the March 16, 2000 [radioactive material] release. Contractor procedure NMT8-FMP-801-R02, *Work Order Request Initiation and Work Package Contro*l, requires that a work/change request (also referred to as a work order) be initiated whenever a maintenance or repair need is identified for a system, structure, or component. However, such work orders to resolve quality problems were not initiated for two examples associated with the March 16 event:

1. A recurring glovebox electrical circuit #10 breaker trip was identified in the several day period prior to March 16, and occurred again on March 16, 2000. Although the concern was brought to the attention of an Area Work Supervisor on March 16, 2000, the circuit was not tagged out and no formal work request to correct the problem was initiated until March 24, 2000.

2. No formal work request was initiated upon identification of an apparent lack of argon flow through the glovebox bubbler on March 16, 2000. Instead, a supervisor informally requested a worker to resolve the issue.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - $41,250 (exempted)

C. Work Process Violations

10 CFR 830 (c)(2)(i) requires that "…Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means."

Contrary to the above, the following instances were identified in which adequate procedures were either not in place or not appropriately implemented:

1. On March 16, 2000, a technician performed troubleshooting activities to evaluate a loss of argon flow to a glovebox bubbler at TA-55. No formal procedure was in place to control the troubleshooting activity. Additionally, no procedures were in place to control the valve lineup or operation of the glovebox airlock purge system.

2. On May 24, 2000, LANL workers were performing a walk-around in [a] PF-4 room [ ] to verify room conditions prior to resuming operations. No formal procedure was in place to authorize or control the activity; instead, an informal checklist had been developed and was being used by the workers. During the walk-around the workers deviated from instructions in the checklist and physically touched an air filter.

3. On July 11, 2000, during pressure testing of a chlorine gas line in [a] PF [room] a LANL worker vented a section of chlorine line by loosening a fitting in the line. The specific venting operation was not within the scope of the controlling Special Work Permit (SWP) or any other work procedure. Follow-up investigation also identified the controlling SWP to be inadequate, in that it provided no detail or specific instruction in how to perform the steps associated with the pressure testing evolution.

4. Routine radiological “alpha area” surveys of PF-4 room 206, conducted on 11/19/99 and 12/8/99 were not adequately documented in accordance with procedural requirements. LANL procedure ESH-1-02-2.2, *Surveying for Fixed and Removable Contamination*, sections 4.2 and 4.8 indicate “…it is critical to document (survey) results, even if no contamination is detected.” Review of the subject surveys identified the documented survey results did not clearly identify all areas surveyed; instead, survey locations and results were shown only for those areas where contamination was identified. Discussion with ESH-1 personnel indicated this practice (documenting only positive results) was more widespread than the two instances noted above.

5. LANL procedure LIR402-720-01.1, Work Planning, section 4.1 requires that safe operating procedures (SOP) involving radiological hazards shall be reviewed and approved by ESH-1, the Health Physics Operation Group. Contrary to this requirement, neither the SOP controlling the glovebox electrolytic decontamination effort (NMT6-SOP-AT-132-R00, *Electrolytic*

Glovebox Decontamination Units) nor the accompanying work instruction (NMT15-WI-132B, *Decontamination of GB207*) had been reviewed by ESH-1.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - $41,250 (exempted)

D. Quality Assurance - Labeling

10 CFR 830.120(c)(2)(i) requires that "…Items shall be identified and controlled to ensure their proper use."

Contrary to the above, no operator aids (such as instrument or valve labeling) were available on the components of the airlock purge system of the TA-55 glovebox involved in the March 16, 2000, [radioactive material] release event. Labeling was also absent for similar auxiliary systems on other TA-55 gloveboxes.

This is a Severity Level II violation.
Civil Penalty - $41,250 (exempted)

II. Violations Identified During the Investigation of TA-18 Activities

A. Authorization Basis Violations

10 CFR 830.120 (c)(2)(i) *Work Processes* requires that work be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means.

Contrary to the above, LANL TA-18 work was not performed to established technical standards in that–

1. LA-CP-9511, *Technical Safety Requirements for the Los Alamos Critical Experiments Facility and the Hillside Vault*, Revision 1.0, September 1995, Technical Safety Requirement (TSR) Limiting Condition of Operation (LCO) 3.1.1.1 [ ] However, from October 1998 until February 2000, the TA-18 crew continued operation of the Flattop critical assembly with a non-operational vernier-control device[that was required to be operational]. During this time period as documented in Nonconformance Reports, Flattop's control rod E, a vernier-control device, stuck intermittently rendering the device inoperable.

2. LA-CP-9511, Revision 1.0, September 1995, TSR 4.1.1.2 *Surveillance Requirements* [ ] [F]rom 1995 until March 2000, TA-18 personnel failed to perform and document a [required]measurement of the reactivity insertion rate for the Flattop critical assembly Safety Block B.

3. LA-CP-92-235, Revision 4.0, February 1998, *Safety Analysis Report* Section 4.1.4 [and] LA-CP-9511, Revision 1.0, September 1995, TSR LCO 3.1.1.2 [ ] [S]ince 1998, TA-18 personnel had routinely operated the Flattop critical

assembly with the reactivity addition rate above the TSR limit. On March 6, 2000, TA-18 personnel performed a first-time measurement of the insertion rate of Safety Block B and determined the insertion rate to be five times faster than the allowable rate. On August 23, 2000, TA-18 personnel again verified the reactivity addition rate exceeded the TSR limit by approximately a factor of five.

4. LA-CP-9511, Revision 1.0, September 1995, TSR 3.1.3.2 *Indication of Fission Power Level* LCO [ ] [O]n December 13, 1999, TA-18 personnel operated the Solution High Energy Burst Assembly (SHEBA) without an operable linear-level channel, a remote auto-ranging pico-ammeter (RAP), [required to be operable] for power indication. The monitoring geometry of the RAP had been inadvertently altered during maintenance activities such that the RAP was not capable of performing its specified function. As a result, the SHEBA critical assembly was operated at a power level approximately 10 times higher than the experimental plan established or the SHEBA operators realized such that the actual dose rate measured on the public road which bounds TA-18 was one millirem in one minute rather than one millirem in 10 minutes.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - $41,250 (exempted)

B. Work Process Violations

10 CFR 830.120 (c)(2)(i) *Work Processes* requires that work be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means.

Contrary to the above, LANL TA-18 work was not performed to established technical standards and administrative controls in that–

1. In February 2000, a Log-N instrument for the Planet assembly failed and was removed for repairs. A temporary jumper wire was installed until the repaired Log-N instrument could be replaced and an entry was made in the facility log. Following repairs the Log-N instrument was re-installed but the temporary jumper wire was not removed. Post maintenance testing on the Log-N instrument failed to identify the temporary jumper and declared it operational. On April 18, 2000, TA-18 management discovered the inoperable Log-N instrument during start-up testing of the Planet critical assembly. A review of this issue by TA-18 management established that adequate administrative controls for post maintenance testing to ensure operability were not in place or used for the Log-N instruments.

2. The LANL *Unreviewed Safety Question Process Procedure* NIS-18ADM-QAP-98.64, Revision 1, April 22, 1999, requires, in the case of discovery of a

potentially inadequate safety analysis, the performance of a USQD (unreviewed safety question determination), placing the facility in a safe condition and notifying LANL ESH management. However, in July 2000 when a member of the Reactor Safety Committee informed LANL management that [an unanticipated hazard] in SHEBA could be [present] in both low power and pulsed operation, no USQ process was initiated as required by LANL procedure. TA-18 management continued to operate the SHEBA critical assembly four times through August 23, 2000. [The potential hazard] was subsequently sampled and analyzed during September 2000 and found to be above the [maximum] limit established by the SAR.

3. Los Alamos Critical Experiments Facility Maintenance Plan NIS-CEF-QAP-92..17, R03) requires that corrective maintenance procedures be developed and approved. In addition these procedures will address documentation of the completed work, post maintenance acceptance of completed work and return to service requirements. Contrary to this, corrective maintenance was performed on the SHEBA's RAP instruments in December 1999 using NCR 152, without corrective maintenance procedures. In addition post maintenance acceptance and return to service requirements were not established for this corrective maintenance. These RAP instruments were returned to service but later determined that following corrective maintenance they were in an inoperable condition.

4. LANL Procedure for Nonconformance Reports (NIS6ADM-QAP-92.14, R02) requires the proposed disposition of the problem be identified and approved by Project and Line management signatures. In addition, this procedure requires that all concurring signatures be on the nonconformance report (NCR) and that supporting documentation has been verified before the corrective action is considered complete. Contrary to this, approval signatures of the proposed disposition were not obtained, and some critical assemblies were operated when an NCR was open but without a ”Use as Is” disposition identified on the NCR. Specifically:

   a. NCR 111, initiated on February 12, 1998, for the Flattop critical assembly, identified corrective actions as complete in March 1998, but contains no approval signatures prior to March. The approval signatures are in October 1998, six months later. In addition, this NCR was reopened in October 1998, and was still open during the EH-Enforcement investigation. The re-opened NCR 111 contains no approval signatures of the proposed disposition, although numerous corrective actions were implemented that did not correct the problem. TA-18 personnel continued to operate the Flattop critical assembly through February 2000, despite the absence of designation on the NCR as “Use as is.”

   b. NCR 152, initiated in December 1999 for the SHEBA RAP instrument repair, identified the corrective actions as complete on December 9, 1999, and SHEBA was operated on December 13, 1999. The NCR does not

contain the required signatures for approving the disposition, and the TA-18 line management review and concurrence of the corrective actions is dated in January and February 2000, after the SHEBA was operated.

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

C. Quality Improvement Violation

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 the problems and working to prevent recurrence."

Contrary to the above, LANL failed to detect and prevent quality problems at the TA-18 critical assemblies, in that, during a stand down of LACEF operations from August 1998 through April 1999, significant quality problems were identified in the operational procedures of some critical assemblies. Despite identifying these problems, TA-18 personnel made a decision to not perform a comprehensive review of all critical assembly operating procedures. In May 1999, following a series of quality problems identified in the Occurrence Reporting and Processing System report ALO-LA-LANL-TA-18-2000-0004 and subsequent causal analysis, LANL concluded “although the above issues and problems [with operational procedures] were identified, the assessment did not comprehensively review all LACEF assemblies and associated procedures for similar deficiencies. Consequently, necessary corrective actions were not uniformly implemented for all LACEF operations….”

This is a Severity Level II violation.
Civil Penalty - $55,000 (exempted)

III. Quality Improvement Violation

10 CFR 830.120 (c)(1)(iii) Quality Improvement requires that “…Processes to detect and prevent quality problems 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 work affected. Correction shall include identifying the causes of the problems and working to prevent recurrence.”

Contrary to the above, LANL management failed to ensure that previously identified work control deficiencies were effectively controlled and corrected. In September 1998, DOE issued Enforcement Action EA 98-10 in response to work control deficiencies at the Chemistry & Metallurgy Research Facility (CMR). Specific deficiencies included procedural noncompliance, performance of unauthorized work,

and failure to stop work when conditions exceeded planned work controls. Similar work control issues were identified concurrently at TA-18 but were not pursued separately by DOE in consideration of LANL's proposed sitewide corrective actions. The TA-55 and TA-18 work control and quality improvement violations identified above are reminiscent of those identified in 1998 and indicate that corrective actions undertaken in response to the earlier CMR work control issues have not been communicated across facilities and effectively implemented.

This is a Severity Level II violation.
Civil Penalty - $55,000 (exempted)

Pursuant to the provisions of 10 CFR 820.24, Los Alamos National Laboratory is hereby required within 30 days of the date of this Preliminary Notice of Violation (PNOV), to submit a written statement or explanation to the Director, Office of Price-Anderson Enforcement, Attention: Office of the Docketing Clerk, EH-10, P.O. Box 2225, Germantown, MD 20874-2225. Copies should also be sent to the Manager, DOE Albuquerque Operations Office, the Administrator, National Nuclear Security Administration Operations Office, and to the Cognizant DOE Secretarial Office for the facilities that are 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 the 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 PNOV are admitted, this Notice will constitute a Final Notice of Violation in compliance with the requirements of 10 CFR 820.25.

John A. Gordon
Administrator
National Nuclear Security Administrator

Dated at Washington, DC,
this day of January, 2001

Enforcement Conference Summary

(NTS-ALO-LA-LANL-LANL-2000-0007; NTS-ALO-LA-LANL-TA18-2000-0001; NTS-ALO-LA-LANL-LANL-2000-0005; ORPS ALO-LA-LANL-TA18-2000-0005; ORPS ALO-LA-LANL-TA18-2000-0007)

The DOE Office of Price -Anderson Enforcement (EH-Enforcement) held an Enforcement Conference with Los Alamos National Laboratory (LANL) personnel on November 14 and 15, 2000, in Germantown, Maryland. EH-Enforcement held the meeting to discuss the facts, circumstances, and corrective actions pertaining to a series of safety issues at TA-55 and TA-18. The TA-18 issues were discussed on November 14, 2000, and included recurring authorization basis and work control deficiencies. Additionally, LANL personnel discussed the circumstances surrounding exceeding the Safety Analysis Report (SAR) lower flammability limit for hydrogen during Solution High Energy Burst Assembly (SHEBA) operations.

The TA-55 issues that were discussed on November 15, 2000, included the following:

1. The March 16, 2000, [radioactive material] release and multiple worker intake
2. The May 24, 2000, continuous air monitor alarm event at PF-4
3. The July 11, 2000, unauthorized venting of the chlorine gas line at PF-4
4. The 1998 Pu-239 uptake at TA-55 identified by routine bioassay.

The conference was called to order by R. Keith Christopher, Director, Office of Price-Anderson Enforcement. A list of attendees is attached. Information and key areas discussed at the conference are summarized below, and material provided by LANL during the conference was incorporated into the docket file.

Howard Hatayama,[], stated that the University acknowledged the seriousness of the issues at TA-18 and TA-55, including the facility level work controls and transferring lessons learned throughout the site. Mr. Hatayama further outlined the actions that the University and LANL were taking to address the issues and identified the integrated safety management (ISM) process as an important tool in continuing work process improvement.

Dick Burick, [ ] discussed LANL's improving historical trend of industrial safety indicators and recent LANL initiatives including LANL's feedback and improvement system, authorization basis enhancements and emphasis on a site-wide, not facility specific, quality assurance program.

Terry Hawkins,[ ] Evelyn Mullen, [ ] and Steve Clement,[ ] discussed the LACEF authorization basis and work control deficiencies outlined in the EH-Enforcement's

Investigation Summary. Mr. Hawkins identified that the purpose of the 1998 TA-18 stand-down was to implement the ISM process and to formalize a process to identify problems. Additionally, the stand-down was to ensure that employees were properly trained, work planning and controls were institutionalized and TA-18 management was changed.

Ms. Mullen then presented a summary of the authorization basis issues with LANL comments and acknowledged that LANL recognized that the issues were deficiencies with the authorization basis. LANL's analysis of the safety significance of the events included actual and potential consequences but did not take into account operating outside the safety envelope established by the authorization basis. She further indicated that the 1998 stand-down of TA-18 operations was not intended to review the authorization basis in detail.

Mr. Clement discussed the Solution High Energy Burst Assembly (SHEBA)[ ] occurrences, which included failure of the catalytic recombiner and identification of a potentially inadequate safety analysis [ ] during SHEBA operations. Mr. Clement presented a timeline of events for SHEBA operations and identified that in July 2000, the Reactor Safety Committee (RSC) member presented his review [ ] which identified that the original 1995 calculations were incorrect (low by a factor of five). However, SHEBA operations were not terminated until August 2000 [ ]. EH-Enforcement questioned the continued operation of SHEBA for several weeks once the RCS member's report was presented to TA-18 management and also whether the site's unresolved safety question (USQ) process procedure allowed continued operations. Ms. Mullen responded that the RCS member's report was considered preliminary and the report's calculations and conclusions were being verified during that time period. Additionally, they felt that the site's USQ procedure allowed time for data analysis.

LANL management then provided an analysis of the division-level causal factors and corrective actions. Ms. Mullen discussed mitigation considerations which included self-identification of the Flattop missed surveillance. Al Elliott, LANL PAAA coordinator, then summarized the identification and reporting of the noncompliances into the Noncompliance Tracking System.

Mr. Christopher then adjourned the conference for the day.

On November 15, 2000, Mr. Christopher continued the enforcement conference with a discussion of the TA-55 events. A list of attendees is attached.

Howard Hatayama,[ ] stated that the University considers the issues pertinent to this conference to be very important. Mr. Hatayama said that LANL has developed a comprehensive corrective action plan to address and correct the problems that are the subject of the conference.

Alverton Elliott outlined the topics and presenters for the LANL presentation. He then provided a simplified organization chart to show the reporting relationship of various key

managers with responsibility for TA-55 activities, and provided some summary statistics on NST reporting trends by LANL over the past few years.

Timothy George, [ ], then summarized the TA-55 Intake events. He indicated that LANL did not challenge any of the facts or noncompliances pertaining to these events that were documented in the DOE Investigation Summary Report. He did provide certain clarifications to make sure some of the circumstances pertaining to the event were recognized by DOE. He then provided LANL's perspective on the safety significance of the noncompliances associated with these TA-55 personnel exposure events, the management-related causal factors for these events, and pertinent mitigation factors.

Eric Ernst, [ ] provided an overview of the corrective actions pertaining to these events. Immediate actions taken following the March 16 multiple exposure event were reviewed, as well as various follow-up actions after the event. He then reviewed the comprehensive Lab-wide Corrective Action Plan (CAP) as well as the TA-55 specific CAP, both developed in response to the Type-A accident investigation of the March 16 event. Current scheduling charts were provided, which appeared to have a timely implementation schedule for the comprehensive actions planned. One of the later tasks will be to conduct an assessment of effectiveness of the corrective actions. Mr. Christopher requested, and LANL agreed to provide, a copy of the assessment report when available.

Carolyn Mangeng, [ ], then summarized various additional Directorate-level management actions being taken to address the TA-55 issues elsewhere in the nuclear weapons Directorate at ALNL. These included implementing enhanced work controls, conducting ISM revitalization training, improving the implementation of quality assurance controls across the Directorate, and developing plans for use of teams with external experts to assess performance assurance, work control and management systems.

Dick Burick, [ ]addressed various activities underway at the Lab that could be expected to improve quality of operations.

Mr. Christopher indicated that DOE would consider the information presented by LANL when DOE undertakes its enforcement deliberations. After a question and answer period, Mr. Christopher adjourned the conference.

November 14, 2000

Los Alamos National Laboratory
TA-18 Authorization Basis and Work Control Deficiencies

List of Attendees

DOE Office of Price-Anderson Enforcement

R. Keith Christopher, Director
Susan Adamovitz, Senior Enforcement Specialist
Tony Weadock, Enforcement Specialist
Steven Hosford, Technical Advisor

DOE Defense Programs

Tracey Bishop, Senior Technical Safety Manager

DOE Nuclear and Facility Safety Policy

Richard Stark, Deputy Director

DOE Office of Oversight

Frank Russo, Senior Technical Advisor

DOE Albuquerque Operations Office

Bradley Eichorst, PAAA Coordinator

DOE Los Alamos Area Office

William Bell, [ ]

UC, Los Alamos National Laboratory

Howard Hatayama, [ ]
Dick Burick, [ ]
H.T. Hawkins, [ ]
Evelyn Mullen, [ ]
Alverton Elliott, PAAA Coordinator
Lily Reese, PAAA Coordinator
Steven Clement, [ ]

November 15, 2000

Los Alamos National Laboratory
TA-55 Multiple Pu-238 Intake Event During 2000
TA-55 Pu-239 Intake During 1998

List of Attendees

DOE Office of Price-Anderson Enforcement

R. Keith Christopher, Director
Susan Adamovitz, Senior Enforcement Specialist
Tony Weadock, Enforcement Specialist
Hank George, Technical Advisor

DOE Defense Programs

Dale Dunsworth, General Engineer
Joseph King, Team Leader

DOE Albuquerque Operations Office

Bradley Eichorst, PAAA Coordinator

DOE Los Alamos Area Office

William Bell,[ ]

UC, Los Alamos National Laboratory

Howard Hatayama, [ ]
Dick Burick,[ ]
Carolyn Mangeng, [ ]
Tim George,[ ]
Eric Ernst, [ ]
Paul Hoover, [ ]
Alverton Elliott, PAAA Coordinator
Lily Reese, PAAA Coordinator