

Noncompliance Tracking System Report Verification Form

Sandia NTS Report No: NTS—SS-SNL-NMSITE-2008-0028

1 Original Issue: Rocket Motor Ignited

A rocket motor for a sled test at the TA III 10K Sled Track ignited prematurely, injuring one contractor and three employees. The contractor was taken to the hospital with a broken leg and burns to the hands and arms. The three employees reported ringing in the ears from the sound of the rocket; two went to the hospital but the other declined; all were checked by Sandia Medical the following day.

The personnel had been preparing for a test in which two small thermal batteries were to be placed on a monorial sled along with a HiCapPen hardened data recorder, then propelled down the sled track powered by one Super Zuni rocket motor, which is five inches in diameter and puts out approximately 5000 pounds of thrust. Three other tests in the series had been performed prior to this test, without incident.

The procedures that were followed were the same as those performed during the first three tests of the series, and similar to test procedures that have been used at the Sled Track for many years. The planned operation was to put the sled on the track, short and ground the rocket motor, turn on the HiCapPend data recorder, then evacuate all personnel except for a two-man team. The rocket motor would have then been connected to the fireset, and the remaining two-man team would have been evacuated. As part of the remote operation, the firesets would be charged, the thermal batteries would then initiate, and 55 seconds later the rocket motor would fire. The HiCapPen data recorder would have recorded voltages in the battery during the impact with a water target.

The accident occurred when the rocket motor ignited prematurely. The rocket motor was on the sled on the track, and was shorted and grounded (i.e., leads going into the igniter were shorted together and then grounded). The event occurred while the HiCapPen data recorder was being turned on. When the motor ignited, the sled moved, knocking the contractor to the ground. The three employees were close to the sled, and therefore within the range of the high-decibel sound of the rocket.

Date of the NTS report:

November 18, 2008

ePegasus No. ASM-ESH-10.6.2011-386135, ASRP-ESH-10.6.2011-386137, ISS-ESH-10.6.2011-386149, & ACT-ESH-9.14.2011-378392

Sandia Responsible Mgr: Michael W. Hazen

SSO Responsible Mgr: Dan Pellegrino, AMESH

2 NTS Report Checklist:

A. Has the Sandia Safety and Security Regulatory Support Program (SSRSP) verified that all corrective evidence addresses the causes, are comprehensive, and have been completed? The SSRSP verification should be documented.

YES NO

The SSRSP verification included twelve (12) identified corrective actions. Each corrective action did and/or did not have evidence to support the activity as indicated in table below.

Identified Corrective Actions (CA)	Evidence Addresses CA Y/N	Completed on Schedule Y/N
Twelve (12) Corrective Actions identified in report		
(1) Begin the Executive Safety Review Board to analyze the rocket motor event and other incidents, to assess why Sandia failed to prevent a recent series of incidents that could have resulted in serious injury or death, and what should we be doing differently. The Terms of Reference describes the Problem Statement, Principles, Objectives, Approach, and Deliverables and Schedule. The final report is due at the end of January 2009.	Y Executive Safety Review Board Report, dtd 12/23/2008	Y
(2) Perform a formal Root Cause Analysis after Type B Investigation.	Y Supplemental Causal Analysis	Y
(3) Complete Management Self Assessment and follow the approval process required by SNL ID016 prior to start of energetic material operations (AIB CA 1500-1, OR CA #9).	Y Evidence Package include CA 3-A through CA 3-H	N 25 days late

(4) Develop a template/checklist for Management Operational Reviews (MOR) to ensure that all requirements, including safety, are addressed and documented (1500-3, OR-4).	Y Appendix 5 – MOR Checklist, effective 8/3/09 of Work Planning & Control Procedure	Y
(5) Organizations in center 1500 involved in explosive operations will perform a comprehensive analysis/review of all grounding and bounding procedures (1500-5, OR-11).	Y Review of closure package for CA 1500-5; Evaluation of Action on SSO Verification of Issues for CA 1500-05; Memo of Record – Response to CA 1500-5, Review Grounding and Bonding Procedures; ESD Survey Version 2 & 3; Gap Analysis; Electrical Review of Sled Track Incident; and VQSEC Operating Procedure.	Y
(6) Center 1500 explosives personnel will be required to take the current XPL-160-161 training. Electro Explosive Device (EED) specific training will be provided (1500-7, OR-16).	Y Center 1500 Staff Management Training Compliance Records for XPL 160/161 dated May 2009.	Y
(7) Management of Changes process will be implemented to ensure all test operations fall within the safety envelope of the Rocket Sled Track Assessment (1500-9, OR-7).	Y Management of Change Process Rev 1, May 2009 and training logs	Y
(8) Center 1500 explosive operations will develop a schedule of monthly safety awareness training topics and will review “lessons learned” (1500-11, OR-17)	Y Training schedule for the year (dated 2-25-2009) to include training slides that incorporated Lessons Learned.	Y
(9) Center 1500 explosive operations will add annual inspection of wrist bands and ground straps to an annual maintenance database that sends automated reminders (1500-12, OR-14).	N Samples of “WebWork” were provided; however, there was no evidence provided that demonstrated that the annual inspection was performed and by whom. The “WebWork” only identified the equipment and location of the equipment.	Y
(10) In OP473407-1033G, “Building 6736, 6743 and 9832, Rocket Assembly Buildings” – mark all low-firing-current actuators, initiators, detonators, or rocket motors with “Caution: EED device” when they are brought into the building (1500-14, OR12).	Y VQSEC Operating Procedure section 5.1.10 dated 8/4/2008 identified the marking requirement for all low firing current actuators, initiators, detonators, or rock motors.	Y
(11) Sandia Explosives Safety Committee will complete an extent of condition review for all explosive operations across the corporation (Sandia Explosive Safety Committee Extent of Condition Analysis) S-17a.	Y Version 2 –Sandia Explosive Safety Committee (SESC) Extent of Condition Analysis of Sandia Explosive Operations March 11-12, 2009 provided.	Y
(12) Responsible organization to conduct a verification and validation of the corrective actions and deliver the final report to the Safety and Security Regulatory Support Program office. This was a combined SSO and SNL Validation Report, issued through the SSO, dated 2/22/10.	N The Validation Report provided as evidence was SSO’s Validation Report that was prepared independent of Responsible Sandia Organization. There is no evidence that the Sandia Responsible Organization conducted a verification and validation to include the submittal of their final report the SSRSP office. Therefore, this milestone is not considered closed.	N Action was not completed by Sandia; therefore, completion date was not met.

B. Was an effectiveness review completed and reviewed by the Sandia Safety and Security Regulatory Support Program (SSRSP) to ensure that it was comprehensive?

YES NO

However, as noted above two (2) of the evidence packages provided did not completely address the corrective action deliverables. The SSRSP and Responsible Organizations need to ensure that the evidence packages address all aspects of the corrective actions.

C. Were there any issues identified by the Sandia SSRSP as a result of evaluating the effectiveness review?

YES NO

D. If the answer to “C” was yes, have the additional issues been resolved?

YES NO

E. Does the SSO reviewer have any issues with the NTS effectiveness review?

YES NO

The following issues were noted: (1). Samples of "WebWork" were provided; however, there was no evidence provided that demonstrated that the annual inspection was performed and by whom. The "WebWork" only identified the equipment and location of the equipment and (2) The Validation Report provided as evidence was SSO's Validation Report that was prepared independent of Responsible Sandia Organization. There is no evidence that the Sandia Responsible Organization conducted a verification and validation to include the submittal of their final report the SSRSP office. Therefore, this milestone is not considered closed.

3 Recommendation:

The reviewer recommends closure of NTS—SS-SNL-NMSITE-2008-0028, *Rocket Motor Ignited*, with the following: (1) provide (for the record) evidence that the annual inspections of the wrist bands and ground straps are being performed and (2) provide (for the record) evidence that Verification and Validation was performed by the Sandia Responsible Organization and documented through a formal report.

4 Verification Performed By: Deborah A. Garcia-Sanchez

Responsible SSO Manager: Dan Pellegrino, AMESH

STSA Concurrence: Acting STSA

Date Verified:

6 October 2011

Deborah A. Garcia-Sanchez
Dan Pellegrino 10/6
[Signature] 10/14