



**Department of Energy**  
Carlsbad Field Office  
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**JUN 13 2008**

Mr. Juan Reyes, Director  
Radiation Protection Division  
U.S. Environmental Protection Agency  
Room 553C  
1310 L St, NW  
Washington, DC 20005

Dear Mr. Reyes,

The purpose of this letter is to follow up our June 11<sup>th</sup> phone conversation concerning the LANL drum characterized and shipped by the Central Characterization Project (CCP) with an unresolved Non-Conformance Report (NCR).

#### Background

LANL 55-gallon drum LAS817174 was processed through Real Time Radiography (RTR) in April of 2004; no deficiencies were identified.

The hazardous waste facility permit in place at that time required that a portion of the waste containers processed through RTR must also be processed through Visual Examination (VE), in order to ensure the adequacy of RTR. This drum was selected for VE, and processed in April of 2005. During this examination, liquid in excess of 1% of the waste container volume was identified. An NCR was issued for this condition, and the drum was tagged and set aside for remediation. The liquid was identified as water, based on the following historical information for containers from this waste stream, as well as specific information from this drum:

- The waste form is an aqueous based sludge, where some level of dewatering is expected;
- Similar de-watering conditions have been found in other containers from this waste stream;
- The VE tape shows clear liquid, with the apparent viscosity of water;
- The liquid was confined to the inner most layer of confinement, eliminating any external source (e.g., rain water through the filter).

In April of 2008, the NCR for VE was mistakenly dismissed due to the assumption that the condition had been remediated prior to the RTR processing date, thereby resolving the VE NCR. The container was then determined by the CCP personnel assigned to LANL to be acceptable for disposal at WIPP. Because the 55-gallon drum did not meet the WIPP requirements for container integrity, the drum was overpacked with three other

drums from the same waste stream, all of which also had container integrity issues, into a Standard Waste Box (SWB). The SWB was then shipped from LANL to the WIPP site on May 20, 2008. It was received at WIPP on May 21, 2008, and emplaced on May 28, 2008.

WTS became aware of the problem on June 6, 2008, when a routine check of unresolved NCRs identified this drum as emplaced within the repository. CBFO was immediately notified by WTS of the problem. Upon notification CBFO decided to retrieve the SWB and return it to LANL for remediation. It should be noted that the prohibition on liquids is based on the volume of the payload container. Thus, even though the drum was overpacked for container integrity reasons, the overpacking resolved the prohibited condition. The total residual liquid in the 4 drums overpacked into the SWB is approximately 5 to 7 liters, well below the 1% value for the SWB (approximately 18 liters). The decision to retrieve the SWB was based on the fact that it was emplaced at WIPP with an unresolved NCR, in an active disposal room.

#### Investigation of Cause

The preliminary investigation of this event has been completed. The following discussion is a summary of the results of that investigation.

The CCP waste certification program incorporates two checks to minimize the chance that this type of event can occur:

1. The primary check requires that immediately prior to certification of a given waste container, two individuals independently ensure that no unresolved NCRs exist for that waste container.
2. The secondary check requires that all containers affected by an NCR be tagged and/or physically segregated. No container is processed through shipment with an NCR tag attached.

These controls have been in place since approximately 2003 within the CCP program. However, for this particular instance, both of these checks failed to prevent shipment.

#### Investigation of Primary Check Failure

A documentation review indicates that the primary check was performed by two qualified individuals, who stated "There are no NCR or CAR dispositions that impact on the acceptability of these drums...", to the Waste Certification Official (WCO). A review of

the NCR database indicates the NCR generated during the VE conducted in April of 2005 was included on this listing. In order to understand why both individuals missed identifying this NCR as an unresolved problem, several aspects of the certification process employed by the CCP at LANL must be understood.

First, nearly all of the TRU waste containers being processed through the characterization activities at LANL have been remediated to correct a prohibited condition. Nearly all of the containers remaining in the inventory similarly require remediation. The condition is more severe at LANL than any other location where CCP is deployed.

Second, as a consequence of this remediation, the reviewers at LANL are accustomed to finding at least two NDE data packages associated with each waste container; one or more rejecting the container via the NCR process, and a final data package providing objective evidence of proper remediation and resolution of the NCR.

Third, it is not uncommon for unresolved NCRs to be identified during the review prior to waste certification. This is a function of the way NCRs are generated and issued. NCRs are issued against most waste containers at some time during the waste characterization process, and it is not uncommon for a single container to be associated with several NCRs during its life. An individual NCR may be issued against an individual container, if the deficiency is unique to the container. Usually, however, an NCR is issued against a group of containers due to a common deficiency. As an example, 20 containers may be processed through an RTR batch, in which perhaps 12 containers are rejected for prohibited conditions. A single NCR is generated for the 12, as this is most efficient administratively. The NCR remains open until all 12 containers are remediated, although individual containers may be cleared for certification as they are individually remediated. The requirement is to resolve the nonconformant condition for the waste container prior to shipment; not to close the nonconformance report.

Fourth, the documentation train associated with a waste container successfully completing RTR, and then being rejected for a prohibited condition during VE is extremely uncommon. This condition can only arise in waste containers that were selected for VE as a QC check on RTR, and the resulting VE identified an issue. Of the nearly 50,000 containers processed by the CCP, this total population amounts to eight containers. Of the eight containers, only two are associated with homogenous solids waste, both at LANL.

Accordingly, in this specific instance, both individuals assumed they were looking at a container that had been processed and corrected through remediation. This assumption

led to an inadequate review by both individuals. Had they examined the available information with the rigor required by procedure, they would have seen that the RTR data package was superseded by the VE NCR.

#### Investigation of Secondary Check Failure

There are two possibilities associated with the secondary check. Either the NCR tag was attached, and missed by the individuals processing the drums for overpacking into the SWB, or the tag was no longer on the drum by the time the overpacking operations were initiated.

There is a specific procedural step to check for tags, and personnel involved with the overpacking operations have stated that no tags were attached. The actual condition will be verified when the SWB has been returned to LANL and unloaded. As such, we deem this possibility unlikely but still possible.

Our reviews of tagging operations at LANL have shown that tags do, in fact, occasionally become separated from the container. The mechanism of failure appears to be embrittlement of the plastic tie used to secure the tag to the container. Interviews with drum handling personnel have indicated that when tags are found separated from the waste container, they are reattached to the appropriate container. As a result, CCP had previously recognized the need for a better method of attaching the tags, and had already begun substituting metal ties in place of the plastic ties.

#### Retrieval and return of the Waste Container

The following is a timeline of the actions completed to return the SWB to LANL:

1. CCP identified the discrepant condition to CBFO on June 5, 2008.
2. Appropriate notifications were completed on June 6, 2008.
3. Shipments to the WIPP were suspended on June 6, 2008.
4. Plans to retrieve the SWB were completed on June 10, 2008.
5. The SWB was removed from the repository on June 12, 2008.
6. The SWB was loaded into a TRUPACT-II shipping container, and shipped to LANL on June 12, 2008.
7. The shipment arrived at LANL on June 13, 2008.

#### Corrective Actions

The following corrective actions have been, or are in the process of being, implemented to ensure the adequacy of the certification process and prevent recurrence.

1. All shipments that were enroute to WIPP when shipments were suspended were verified to contain only drums with no unresolved NCRs.

2. All waste containers certified in the WWIS, but not yet shipped, were confirmed to have no unresolved NCRs.
3. Workplace meetings were conducted with CCP personnel, emphasizing that all reviews must be performed to the required rigor, and explaining the potential liabilities of inadequate review.
4. Detailed briefings were conducted for specific CCP personnel to review their roles and responsibilities, along with management expectations for performing reviews.
5. CCP has implemented two additional interim reviews to ensure no containers are certified or shipped with unresolved NCRs. These additional reviews will remain in place until the full set of permanent corrective actions has been identified and implemented. The first will be an additional check in the CCP Project Office, performed by the Waste Certification Official. This check will be required prior to certification of a waste container. The second will be an additional check at the generator site, performed by the Site Project Manager. This check will be required prior to loading any containers into overpacks or transport packages.
6. CCP has placed an electronic hold on all LANL waste containers with unresolved NCR conditions as an interim control measure until every container can be checked to verify that the container is appropriately tagged.
7. CCP has implemented the use of a wire tie to attach hold tags to containers, replacing the plastic ties.
8. A formal root cause analysis has been initiated to ensure the investigations and resulting corrective actions are comprehensive and complete.

#### Path Forward

Based upon review of the event, the results of the investigation conducted to date, and the scope of the corrective actions completed thus far, CBFO has concluded that this event is isolated to CCP operations at the LANL site, and appropriate controls exist to allow shipments to resume from all other sites. As per our discussion on June 11, 2008, CBFO will not resume LANL shipments without your concurrence. This letter provides the information requested in your June 12 letter. CBFO will provide additional information to your staff (e.g., WWIS information on the affected drum and SWB) by close of business on June 16, 2008. CBFO looks forward to meeting with your staff at LANL on June 18, 2008, to further review this event and address your concerns.

Thank you for your time and attention in this matter.

Sincerely,



David C. Moody  
Manager

JUN 13 2008

Juan Reyes

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