

INSPECTION REPORT

I. GENERAL INFORMATION

Facility Name: Lawrence Livermore National Laboratory

Facility Address: 7000 East Avenue
Livermore, CA 94550

Telephone Number: (925) 423-4760

ID Number: CA2 890 012 584

Facility Type: Permitted Units- Area 612, Storage and Treatment: Building 695, Storage and Treatment Building 693, Container Storage: Interim Status-Area 514, Storage and Treatment, Building 233, Container Storage (inactive- undergoing closure), Tiered Permitting-Resin Mixing Unit.

Type of Business: Research and Development Laboratory on: nuclear weapons, magnetic fusion, energy, lasers, biomedical and environmental sciences, and applied technology, and other nuclear applications.

Waste streams: Nearly all hazardous wastes, mixed wastes (RCRA hazardous waste with radioactive components); combined wastes (Non-RCRA hazardous waste with radioactive components)

Regulated Units: Permitted and Interim Status Facility; Permit effective November 19, 1999

Regulatory Status: Permitted storage, treatment, exempt transfer facility, and a registered Hazardous waste transporter

Type of Inspection: Enhanced Surveillance Inspection (ENS)

Inspected By: Essam Eissa, Hazardous Substances Scientist
Eric Brocales, Hazardous Substances Scientist

Date(s) of Inspection: October 31, 2005 and November 1, 2005

II. CONSENT

Consent to conduct an inspection includes: inspecting hazardous waste handling areas, taking photographs, conducting sampling activities, and reviewing and copying documents.

Consent Given By: Patrick Epperson
Department Division Leader, RHWM
Time: 1045 hr

III. BACKGROUND

Lawrence Livermore National Laboratory (LLNL) is a national laboratory owned and operated by the United States Department of Energy (DOE). LLNL is jointly operated by the University of California Regents and DOE. LLNL operates a research and development facility to conduct research and development programs on nuclear weapons, magnetic fusion, energy lasers, biomedical and environmental sciences, and applied technology.

The research and development programs at LLNL generate hazardous, mixed and combined wastes, regulated under the Federal Resource Conservation and Recovery Act (RCRA) that also contain low level radioactive materials. Mixed wastes generated include wastewater that contains organic metals, spent caustic and acidic solutions, soils from clean-up activities, scrap metal, waste treatment sludge, and empty containers. Combined wastes are non-RCRA hazardous wastes that also contain low level radioactive materials. Combined wastes generated at the laboratory include waste oils, contained laboratory trash, and empty containers.

In February 1997, DTSC issued a Compliance Order to the United States Department of Energy (DOE) requiring DOE to comply with the Site Treatment Plan (STP) for the treatment of mixed waste at LLNL pursuant to RCRA as amended by the Federal Facility Compliance Act of 1992 (FFCA). The FFCA required DOE to prepare STP for developing treatment capacities and technologies to treat all the facility's mixed waste to meet LDR. The STP consists of the Compliance Volume and the Background Volume. The Compliance Volume provides overall schedules for achieving compliance with LDR storage and treatment requirements for mixed wastes based on milestones (milestones have both an event and a date component, and is a fixed, firm, and enforceable obligation of DOE). Background Volume contains progress reports and other information. DOE is required to carry out all activities in accordance with the schedules and requirements in accordance with the STP and the Compliance Order.

Combined waste, which is regulated only under state law, is regulated under the terms of the Memorandum of Understanding (MOU) between DTSC and DOE.

The MOU, signed on August 18, 1997, sets forth agreed upon terms for determining the future regulation of combined wastes at DOE facilities. DTSC and DOE agreed to complete a Memorandum of Agreement (MOA) for both agencies to discuss the requirements for future regulation of combined waste. Pending the finalization of an MOA, DTSC agreed to refrain from taking enforcement action against DOE with respect to the treatment, storage and disposal of combined wastes without a permit or authorization, provided the management of the combined waste streams is consistent with DOE.

LLNL is operating a hazardous waste and mixed waste storage and treatment facility under a Hazardous Waste Facility Permit (HWFP) issued to LLNL on November 19, 1999. The last modification on the permit was July 28, 2003. Modifications in 2001, 2002, 2003, and 2004 are listed in Appendices A and B of the Hazardous Waste Facility Permit (HWFP).

Prior to the issuance of the HWFP, LLNL was under interim status. The HWFP allowed LLNL to continue operating under Interim Status, Building 233 Container Storage Unit and specific units at Area 514 Treatment and Storage Area, until the completion of the construction and activation of the DWTF Complex and Building 280 Container Storage Unit.

On April 13, 2001, LLNL informed DTSC of its intent to submit a permit modification requesting to remove Building 280 Container Storage Unit from the permit. On January 9, 2004, LLNL submitted a class 2 modification request to relocate the currently permitted storage capacity and operation from Building 280 to Building 696 R and administratively close Building 280. The DWTF Complex commenced operation in September 2003.

Building 233 Container Storage Interim Status Unit is currently in the process of closure pursuant to LLNL's Phase I Work Plan submitted and approved by DTSC on April 26, 2004. The final Closure Plan for Area 514 was approved on April 30, 2004. Area 514 consisted of building and areas where hazardous wastes have been treated and stored. The treatment and storage areas were phased out of services as the new DWTF became active. Some of the treatment equipment at area 514 was relocated to DWTF, HWFP, Exhibit A, Transition Summary: Transfer of Existing Waste Treatment Units to the DWTF. The Transition Summary in the permit did not include the transfer of the Area 514 Waste Filtration Unit (Dorr-Oliver Unit) to the DWTF. LLNL has submitted a permit modification request to replace the Building 695 Wastewater Filtration Unit provided in the approved Operation Plan, with the Area 514 Dorr-Oliver unit.

Another building that also operated under interim status was Building 419. The Closure Plan for the building has not yet been approved by DTSC. Since the effective date of the HWFP, DTSC has conducted yearly inspections at LLNL. On January 26, 27 and 31, 2005, the Department conducted an Enhanced Surveillance Limited Inspection which was conducted in accordance with the

Settlement Agreement between Tri-Valley Cares v. Department of Toxic Substances Control, Case Number: 821072-4. No violations were observed.

During the March 2000, May 2002 and March 2003 inspections, class I violations were discovered which included the; storage of mixed wastes containing trichloroethylene, toluene, and spent organic solid trash for more than one year; storage of hazardous waste drums containing organic liquid trimsol and water; receipt, treatment and storage of liquid shredder waste without following the Waste Analysis Plan; and failure to provide employees with the required training courses for handling hazardous wastes. The class I violations were settled in a Consent Order, HWCA 20020090, dated February 5, 2004. The 2001 inspection found Class II and minor violations on: container labeling and inaccurate operating record. A copy of the Consent Order and inspection reports from 2001 to 2003 are available on the DTSC website at <http://www.dtsc.ca.gov/hazardouswaste/llnl> .

This inspection, like the January 26, 2005 inspection was conducted in accordance with paragraph 6 (b) the Settlement Agreement and Stipulation for Entry Order Retaining Jurisdiction to Enforce Agreement; (Proposed) Order, Case No: 8210724, filed on June 26, 2001, stemming from a law suit filed by Tri-Valley Communities Against A Radioactive Environment, Western States Legal Foundation, and Physicians for Social Responsibility, SF Bay Area Chapter, against DTSC and LLNL regarding California Environmental Quality Act compliance.

IV. Narrative of Observations

Mr. Essam Eissa, Dave Anderson and I (DTSC employees) arrived at the West Gate Badge Office. We informed the receptionist that we worked for the DTSC, and the purpose of our visit was to do an unannounced inspection. After obtaining all the necessary clearances, Mr. Stan Terusaki, of LLNL, arrived to escort us in to the facility. We then proceeded to the Building 695 conference room for the pre-inspection meeting.

The meeting was attended by both LLNL and the Department of Energy (DOE) personnel. An attendance sheet was passed around for all the attendees to sign. (See attachment 1) After a brief introduction of all the attendees, I informed them of the purpose of our visit. I stated that in addition to the yearly Comprehensive Evaluation Inspection (CEI) of the LLNL's permitted management facilities, the DTSC would perform a second inspection (Enhanced Surveillance/Limited Inspection) during each of the three years that immediately followed the start date of operations at Building 695 Decontamination and Waste Treatment Facility (B695) in accordance with the Settlement Agreement between Tri-Valley Cares v. DTSC, Case Number: 821072-4. (See attachment 2).

I also added that we would limit our inspection only to B695. However, I explained that at any time we could expand the scope of our inspection. I stated that the inspection would take place over the next several days and that a close out meeting would be scheduled on the last day of the site visit. I then asked for consent to conduct the inspection. I stated that consent to the inspection may include, inspecting hazardous waste handling areas, taking photographs, conducting sampling activities, and reviewing and copying documents. Consent was granted by Mr. Patrick Epperson, LLNL Department Division Leader.

After receiving consent, I introduced Mr. Anderson (DTSC Industrial Hygienist) to the attendants, and stated that Mr. Anderson would be monitoring the storage areas with a Ludlum 19, because DTSC has an exposure limit of 2mR per hour.

I stated to the attendants that we would start off the inspection by doing a walk-through of Building 695. In an effort to save time, I then requested documents from their files that would be needed during our records review portion of the inspection. The documents requested were listed in the consent order (see attachment 2) as items to be reviewed to evaluate LLNL's compliance with their permit requirements. The documents requested are as follows:

- Emergency notification requirements
- ES&H Worksheet requirements
- Waste in hold status requirements
- Unacceptable waste requirements
- Single Container Inventory Limits requirements
- Verification failure requirements
- Newly Generated and UN Profiled Wastes
- Entire Inventory for DWTF (see attachment 24)

We then walked over to Building 695 (DWTF). At the lobby of the DWTF, we all signed the guest log. John Bowers, of LLNL, provided us with a Safety Orientation prior to entering the DWTF. After the orientation briefing, we began the walk-through portion of the inspection.

Liquid Waste Processing (LWP) Area, Room 1028

The LWP houses nine 5000 gallon cylindrical tanks with conical bottoms. At this time, Mr. Eissa and I requested the inventory for the tanks, which showed tank THL-108 being empty, and the other eight tanks holding either low level mixed waste (LLW) or combined mixed waste (LLW with California hazardous waste). (See attachment 3) The tanks appeared to be in good condition, and the secondary containment was dry and free of liquid.

Room 1028 also housed the Waste Filtration Unit (Dorr/Oliver Unit). According to Mr. Bowers, this unit was not in use. (See photograph attachment 4)

We then proceeded to the Low Level Waste Evaporator unit. This particular unit was undergoing some maintenance and was cordoned off with caution tape to prevent personnel from crossing due to a high decibel reading. A photograph of the unit was provided to Mr. Eissa and I after maintenance was completed. (See photograph attachment 5)

The next treatment unit we observed in Room 1028 was the Cold Vapor Evaporator. (See photograph attachment 6) The evaporator units concentrate dissolved radioactive and hazardous solids in liquid waste by evaporating water from the waste. I asked Mr. Bowers when the last treatment was performed using this unit. I then asked LLNL to provide me with the treatment log associated with this unit. Photographs of the waste feed inlet and the product outlet for the unit, as well as the whole unit itself were taken. The system was not in use at the time of the inspection, and appeared to be in good condition with no visible signs of any release of hazardous waste. (See photograph attachment 7) Mr. Eissa and I also requested the lesson plan used to train employees operating this unit. (See attachment 8) No violations were observed during this time.

Building 695 (DWTF) Airlock, Room 1027

In this room Mr. Eissa and I observed the Bulking/Drum Rinsing station. This treatment unit serves as the entry point for the addition of most liquid wastes stored in the Tank Farm. Wastes are dumped into the pan and pumped from the pan to the tank farm. This station is also used to triple rinse containers that held hazardous wastes by using pressure washers. Mr. Eissa asked Mr. Bowers if this was a permitted unit because he did not see this unit during his last inspection. Mr. Bowers stated that it was a permitted treatment unit, and that the unit may have been in a different location because it is transportable. A photograph of this unit was requested. (See photograph attachment 9) No violations were observed during this time.

Airlock (Room 1037 and 1036)

We then proceeded to Room 1037, which houses the Solidification/Stabilization Unit and the Debris Washer. The Debris Washer, uses chemical extraction technology (i.e. Water washing/spraying and liquid phase solvent extraction) to remove hazardous and/ or reactive contaminants from debris in compliance with LDR treatment standards listed in California Code of Regulations, title 22, section 66268.45. The Solidification/Stabilization Unit is used to produce solidified waste that would meet requirements for off-site land disposal and have long term leach resistant characteristics.

We asked Mr. Bowers when the latest treatment was performed using the stabilization treatment unit, and during that time requested a copy of that treatment log (See attachment 10). We received a copy of the treatment log on

November 1, 2005. The treatment log showed treatment activity using this unit on January 12, 2005 for Stabilization Batch Number: 695-04-08. The treatment logs showed that waste from container Q19580 was processed for solidification on January 12, 2005. After treatment, the solidified material was packaged into two separate containers Q200609 and Q200610. A note at the bottom stated that the solidified material had a clay like consistency, light grey in color and had no free standing liquids. Included in the attachment were the two new disposal requisition forms associated with the solidified material. This unit was not being used during the time of our inspection; however the unit appeared to be in good condition and showed no signs of any release of hazardous wastes. No violations were observed during this time.

On November 1, 2005 LLNL personnel provided me a copy of their latest treatment log for the Debris Washer, which we requested during our walk-through on October 31, 2005 (see attachment 15). The treatment was for Blend Number (Processing Plan): 695-05-04. According to the records, the treatment processed 3,192.362 cubic feet of mixed waste, generating two portable tanks of rinsate which was then transferred to 695 THL113, and also generating five portable tanks of rinsate which was then transferred to tank 695THL112.

In addition to the last treatment log, LLNL personnel provided me a copy of their daily when in use inspection logs for that unit (see attachment 16). LLNL inspected the unit each day it was used, and the dates matched up with the dates on the treatment log (also see attachment 15 for treatment log). No violations were observed at this time.

Reactive Waste Processing Area (Room 1023)

Glove Boxes (radioisotope/inert atmosphere and combination hazards glove boxes) which provide containment and ventilation controls for treating small quantities of waste were found in this area. At the time of inspection, these glove boxes were not being used to treat hazardous wastes, and did not have any containers stored in them. The glove boxes also appeared to be in good condition. No violations were observed during this time.

Reactive Waste Storage (Rooms 1019-1022)

There were approximately four rooms (1019-1022) which compose the Reactive Waste Storage. These rooms are used for the storage of reactive waste containers. Mr. Eissa pulled at random two containers ID's, container ID Q00201381 from Room 1021, and container ID Q00200607 in Room 1022 for their Container Contents Report. (See attachment 11) The containers stored in these rooms were labeled, closed, and in good condition. In addition, the floor in each of these storage rooms had no cracks, and the sumps were free of liquid. No violations were observed during this time.

Small Scale Treatment Laboratory (Room 1077)

The inspection team proceeded to the small-scale treatment laboratory. In the laboratory, I inspected the fume hoods and work bench areas. During the time of the inspection, I did not observe any treatment activity in this area. The benches and fume hoods did not hold or store any hazardous waste containers. No violations were observed during this time.

The inspection of the Small Scale Treatment Laboratory was the last area inspected, which concluded our walk-through portion of the inspection.

Back to DWTF Conference Room

With the conclusion of the walk-through portion of the inspection, the inspection team returned to the conference room to hold a closing meeting with LLNL personnel. During this time Mr. Eissa and I discussed the areas we inspected with the LLNL staff. We informed them that we did not observe any violations during our walk-through of the DWTF and thanked the LLNL staff for their cooperation during our inspection. We ended the meeting by scheduling the time and date that we would be returning to the site for document review.

Day 2: November 1, 2005

Mr. Eissa and I arrive at LLNL at 1030. We proceeded to the conference room to conduct the record review portion of the inspection. We were met by Mr. Peter Yimbo and other LLNL personnel (see attachment 12). I then asked Mr. Yimbo for consent to continue with our inspection. I explained to Mr. Yimbo that consent includes: inspecting hazardous waste handling areas, taking photographs, conducting sampling activities, and reviewing and copying documents. Mr. Yimbo granted us consent to continue with our inspection.

Mr. Yimbo first provided us with a listing of newly generated waste at the facility. From this list of newly generated waste, two containers were chosen at random. The containers chosen for review were containers Q00219314 and Q00221857 (see attachment 13). Mr. Yimbo provided us the contents report for these containers. The container contents report showed that container Q00219314 was a 55 gallon steel poly lined drum containing ferric chloride (CA waste code 512). The container was received at the storage facility on October 20, 2005, which matched the information from the list of newly generated waste (see attachment 13(a)). The container contents report showed that container Q00221857 was a 30 gallon DF (plastic drum) containing an aqueous waste solution containing inorganic acids (CA waste code 135). The container was received on July 20, 2005, which matched the information from the list of newly generated wastes. No violations were observed at this time (see attachment 13(b)).

On October 31, 2005, during the pre-inspection meeting I requested documents demonstrating LLNL's management of unacceptable wastes. LLNL provided us the operating record for six containers Q00089790, Q00089792, Q00089795, Q00089776, Q0089782, and Q00089785 (see attachment 14). These wastes cannot be accepted in B695, because they contained waste explosives. The tracking record showed that the waste was received in the B191A Waste Accumulation Area (WAA) on 12/01/2004. The tracking record also showed that the containers had been shipped to LLNL Site 300 on March 2, 2005. Upon further review, a discrepancy was noted when comparing LLNL's HAZTRAK (LLNL's electronic tracking system) with the hazardous waste manifest 23440683. The date on the manifest showed that the containers were shipped out on March 3, 2005 which was different from the date listed on HAZTRAK (see attachment 14(a)).

On May 10, 2006 I requested information regarding the discrepancy between manifest 23440683 and HAZTRAK. On May 11, 2006 I received a fax from LLNL with their response for the discrepancy. LLNL stated that the March 2, 2005 date was a data entry error and that the correct date was March 3, 2005 (see attachment 14(b)).

Upon further review of the revised HAZTRAK records, I phoned Ms. Vicky Salvo, LLNL employee, because I noted a discrepancy with the date the waste was received at ATGEN SITE 300. The date listed on HAZTRAK was March 2, 2005 which also showed up on the accumulation start date. I asked Ms. Salvo to please send me an explanation for this discrepancy.

On May 16, 2006 I received a fax from LLNL stating that a programming "bug" had been identified in their electronic tracking system. The "bug" automatically replaced the accumulation start date with the received date whenever the received date was entered into the database. Included with the response was a summary demonstrating that the "bug" was identified and corrected on January 18, 2006 (see attachment 14(c)). In addition, LLNL also stated that the container tracking history had been updated to show the corrected accumulation start and end dates. To demonstrate that the correct accumulation start date was in fact 12/8/2004, LLNL provided container information that was printed on 12/08/2004 showing the correct accumulation start and end dates (see attachment 14(d)).

On May 22, 2006 I contacted Ms. Salvo via e-mail requesting additional documents to support that the actual accumulation start date was 12/08/2004. I explained to Ms. Salvo that the original documents provided to me on November 1, 2005 showed an accumulation start date of 12/01/2004, not 12/08/2004. On May 24, 2006 I received a fax with LLNL's response. The response stated that after extensive interviews of the personnel involved, the WAA received date was 12/08/2004. However LLNL stated that the only other form of documentation that displayed the received date was on the container label which no longer existed because the waste had been treated. They further explained that a new version

of their Waste Disposal Requisition (WDR) form had been created on 03/16/2006 which now captures the WAA received date from the original container labels (see attachment 14 (e) and see Section VI violation 1).

On November 1, 2005 LLNL provided us a document showing the procedures LLNL uses for hazardous waste management (see attachment 19). We requested this information during the pre-inspection briefing. Request for these particular documents were made because the settlement agreement (see attachment 2) required that the Department evaluate LLNL's compliance with their permit requirements. The topics covered in this document are procedures for placing and removing wastes on hold. In addition, this document outlines procedures LLNL uses for chemical waste acceptance. The document also describes the approved methods LLNL uses in ensuring that the Single Container Inventory Limits (SCILs) are not exceeded (see attachment 20) LLNL also provided for us a document that demonstrated a waste that has failed verification. A waste failing verification is then placed on hold pending further action. This was only an example (see attachment 21). No violations were observed at this time.

On November 1, 2005 LLNL personnel provided me a copy of their daily inspection logs for B695 for the month of July and August 2005 (see attachment 17). The logs showed the inspector name, date and time of the inspection, and a checklist for the areas that were inspected. The logs were properly filled out and verified by a supervisor with a date and signature. No violations were observed at this time.

On November 2, 2005 the Department received via fax from Ms. Vicki Salvo, Container Contents Reports for five containers (Q00049045 from B695, Q00200607 from B695-1022, Q00216386 from B695, Q00201381 from B-695-1021, Q00223327 from B695) identified during our walk through on 10/31/2005 (see attached 18). The container contents reports matched the labels on the containers observed during the walk-through and were not containing any unacceptable waste streams. No violations were observed at this time.

V. Discussion with Operator

On November 1, 2005, after we reviewed the records, we gathered in the conference room for the close out meeting. A sign in sheet for the attendees was passed around (see attachment 22).

I opened the meeting by thanking everyone for their assistance with our inspection. I stated that I had prepared a Summary of Observations (SOO), and proceeded to discuss the observations Mr. Eissa and I had made during our inspection. I informed them that we did not find any violations during our walk-through or initial review of their operating record, however I did mention that I would be returning to the office with the documents for further review. I also

added that if additional violations were to be found during my review, that they would be addressed in the inspection report. I then issued the SOO which was signed by Mr. Patrick Epperson, LLNL Department Division Leader (see attachment 23).

VI. Violations

Summary of Observations Attached? Yes (see attachment 23)

Class II Violation

1. On or about November 1, 2005 Lawrence Livermore National Laboratory (LLNL) violated California Code of Regulations, title 22, section 66264.73 (b)(1) in that LLNL failed to provide an accurate record of each hazardous waste received, and the date(s) of its transfer and storage.

LLNL's HAZTRAK (electronic hazardous waste tracking system) showed discrepancies in the date (March 2, 2005 versus March 3, 2005) containers Q00089790, Q00089792, Q00089795, Q00089776, Q00089782, and Q00089785 were shipped off-site to LLNL Site 300 when compared with the date on the manifest (23440683) accompanying the wastes. LLNL's HAZTRAK also showed discrepancies in the dates (December 1, 2004 versus December 8, 2004) that wastes were received at B191A and ATGEN SITE 300.

Compliance Action

LLNL shall maintain an accurate description and quantity of each hazardous waste received, and the method(s) and date(s) of its transfer, treatment, storage, or disposal at the facility. Based on LLNL's responses the violation has adequately been addressed. Compliance will be evaluated during the next compliance evaluation inspection.

VII. SAMPLING ACTIVITIES

Not applicable.

VIII. ATTACHMENTS

1. Attendance sheet for October 31, 2005
2. Settlement Agreement and Stipulation for Entry Order Retaining Jurisdiction to Enforce Agreement; (Proposed) Order Case No.: 821072-4
3. Tank Farm Volumes
4. Photo: Waste Water Filtration Unit
5. Photo: Low Level Waste Evaporator
6. Photo: Cold Vapor Evaporator
7. Photo: Cold Vapor Evaporator (Inlet and Outlet Ports)

8. Lesson Plan for Evaporator Units
9. Photo: Bulking/Drum Rinsing Station
10. Stabilization Treatment Log
11. Container Contents Report for two containers from 695-1021 and 695-1022
12. Attendance sheet for November 1, 2005
13. Inventory for newly generated waste w/ container contents report for:
 - (a) Q00219314
 - (b) Q00221857
14. Hazardous Waste Manifest showing the shipment of unacceptable wastes from LLNL main site to LLNL Site 300
 - (a) HAZTRAK for unacceptable wastes w/ hazardous waste manifests showing shipment to LLNL Site 300
 - (b) LLNL's response to information request regarding date discrepancy between manifest shipping date and HAZTRAK shipping date
 - (c) LLNL's response to information request regarding discrepancy with the received date and accumulation start date on HAZTRAK
 - (d) Copies of Container Information demonstrating the actual accumulation start date was 12/08/2004
 - (e) Response to information request showing the revised WDR form
15. Treatment Log for Debris Washer
16. Inspection Log for Debris Washer
17. Daily Inspection Log for DWTF
18. Fax received from Ms. Vicki Salvo regarding Container Contents Reports for containers identified during our walk through
19. Procedures for Container Holds and Releases
20. Procedures for Chemical Waste Acceptance (SCILs)
21. Example of a verification failure for hazardous waste
22. Attendance sheet for Close-Out meeting held on November 1, 2005
23. Summary of Observations Issued
24. Inventory for of hazardous waste in DWTF

Eric Brocales
Hazardous Substances Scientist

Date