



LAWRENCE
LIVERMORE
NATIONAL
LABORATORY

UCRL-TR-214833

RMP Report for Site 300 Water Treatment Facility Update

S. W. Fong, K. J. Folks

September 2005

Auspices Statement

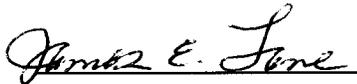
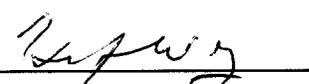
This work was performed under the auspices of the U.S. Department of Energy by University of California, Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.

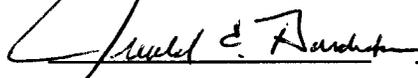
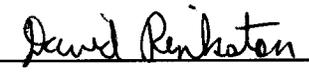
CERTIFICATION LETTER

Certification Statement for Program Level 2 & 3 Processes

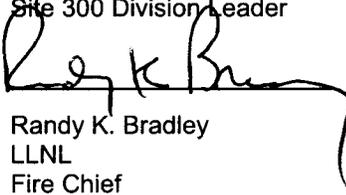
To the best of the undersigned's knowledge, information, and belief formed after reasonable inquiry, the information submitted is true, accurate, and complete.

Reviewed by:

 James E. Lane LLNL Site 300 Manager	<u>8/29/05</u> Date	 Howard J. Wong Safety Programs Division Division Leader	<u>8/25/05</u> Date
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 Jerald E. Bardecker LLNL Site 300 ES&H Team Leader	<u>8/29/05</u> Date	 David M. Pinkston Authorization Basis Section Leader	<u>8/23/05</u> Date
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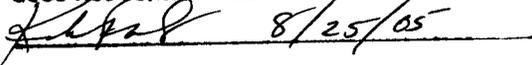
 Larry R. Paukert LLNL Plant Engineering Site 300 Division Leader	<u>8/22/05</u> Date	 John H. Lee LLNL Laboratory Counsel	<u>8/26/05</u> Date
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 Randy K. Bradley LLNL Fire Chief	<u>8/25/05</u> Date
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Approved by:

 William A. Bookless Safety & Environmental Protection Associate Director	<u>8/29/05</u> Date
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As an Authorized Derivative Classifier, I have reviewed this information and verify that it does not contain classified information.

 8/25/05

RMP Report for Site 300 Water Treatment Facility

Section 1. Registration Information

1.1 Source Identification: Facility ID: 1 There were no reportable accidents in the last 5 years.

- a. Facility Name: Site 300 Water Treatment Facility
- b. Parent Company #1 Name: Lawrence Livermore National Laboratory
- c. Parent Company #2 Name: University of California

1.2 EPA Facility Identifier:

1.3 Other EPA Systems Facility ID: CA2890090002

1.4 Dun and Bradstreet Numbers (DUNS):

- a. Facility DUNS:
- b. Parent Company #1 DUNS: 962973731
- c. Parent Company #2 DUNS:

1.5 Facility Location Address:

- a. Street 1: 15999 Corral Hollow Road
- b. Street 2:
- c. City: Tracy d. State: CA e. Zip: 95376 -
- f. County: San Joaquin

Facility Latitude and Longitude:

- g. Lat. (dd.dddddd): 37.635000 h. Long. (ddd.dddddd): -121.537500
- i. Lat/Long Method: I1 Interpolation - Map
- j. Lat/Long Description: PG Plant Entrance (General)
- k. Horizontal accuracy measure (m): 25
- l. Horizontal Reference Datum Code: 002 North American Datum of 1983
- m. Source Map Scale Number: 24000

1.6 Owner or Operator:

- a. Name: US Department of Energy
- b. Phone: (925) 423-5217
- Mailing address:**
- c. Street 1: LLNL d. Street 2: P.O. Box 808, L-871
- e. City: Livermore f. State: CA g. Zip: 94551 -0808

1.7 Name and title of person or position responsible for part 68 (RMP) implementation:

- a. Name of person: James Lane
- b. Title of person or position: Site 300 Manager
- c. Email address: lane5@llnl.gov

1.8 Emergency contact:

- a. Name: Randy Bradley
- b. Title: LLNL Fire Chief
- c. Phone: (925) 423-1800
- d. 24-hour phone: (925) 447-6880
- e. Ext. or PIN:
- f. Email address: bradley7@llnl.gov

1.9 Other points of contact:

- a. Facility or Parent Company E-Mail Address:
- b. Facility Public Contact Phone:
- c. Facility or Parent Company WWW Homepage Address:

1.10 LEPC: Inland Region 4 LEPC

1.11 Number of full time employees on site: 200

1.12 Covered by:

- a. OSHA PSM: Yes
- b. EPCRA 302: Yes
- c. CAA Title V: No Air operating permit ID:

1.13 OSHA Star or Merit Ranking: No

1.14 Last Safety Inspection (by an External Agency) Date:

1.15 Last Safety Inspection Performed by an External Agency: Never had one

1.16 Will this RMP involve predictive filing?: No

1.18 RMP Preparer Information:

- a. Name:
- b. Telephone:
- c. Street1:

d. Street2:

e. City:

f. State:

g. ZIP:

-

Section 1.17 Process(es)

a. Process ID: 1 Program Level 2 Drinking Water Purificati

b. NAICS Code

22131 Water Supply and Irrigation Systems

c. Process Chemicals

c.1 Process Chemical (ID / Name)

1 Chlorine

c.2 CAS Nr.

7782-50-5

c.3 Qty (lbs.)

2,250

Section 2. Toxics: Worst Case

Toxics: Worst Case ID 1

2.1 a. Chemical Name: Chlorine

b. Percent Weight of Chemical (if in a mixture):

2.2 Physical State: Gas Liquified by Pressure

2.3 Model used: EPA's OCA Guidance Reference Tables or Equations

2.4 Scenario: Liquid spill & Vaporization

2.5 Quantity released: 150 lbs

2.6 Release rate: 15.0 lbs/min

2.7 Release duration: 10.0 mins

2.8 Wind speed: 1.5 m/sec

2.9 Atmospheric Stability Class: F

2.10 Topography: Rural

2.11 Distance to Endpoint: 0.80 mi

2.12 Estimated Residential population within distance to endpoint: 1

2.13 Public receptors within distance to endpoint:

a. Schools: No

d. Prisons/Correction facilities:

No

b. Residences: Yes

e. Recreation areas:

Yes

c. Hospitals: No

f. Major commercial, office or, industrial areas:

No

g. Other (Specify):

2.14 Environmental receptors within distance to endpoint:

- a. National or state parks, forests, or monuments:** No
- b. Officially designated wildlife sanctuaries, preserves, or refuges:** Yes
- c. Federal wilderness areas:** No
- d. Other (Specify):**

2.15 Passive mitigation considered:

- a. Dikes:** No **d. Drains:** No
- b. Enclosures:** No **e. Sumps:** No
- c. Berms:** No **f. Other (Specify):**

2.16 Graphic file name:

Section 3. Toxics: Alternative Release

Toxics: Alternative Release ID: 1

3.1 a. Chemical Name: Chlorine

b. Percent Weight of Chemical (if in a mixture):

3.2 Physical State: Gas Liquified by Pressure

3.3 Model: EPA's OCA Guidance Reference Tables or Equations

3.4 Scenario: Transfer hose failure

3.5 Quantity released: 100 lbs

3.6 Release rate: 0.1 lbs/min

3.7 Release duration: 1440.0 mins

3.8 Wind speed: 3.0 m/sec

3.9 Atmospheric Stability Class: D

3.10 Topography: Rural

3.11 Distance to Endpoint: 0.10 mi

3.12 Estimated Residential population within distance to endpoint: 0

3.13 Public receptors within distance to endpoint:

- a. Schools:** No **d. Prisons/Correction facilities:** No
- b. Residences:** No **e. Recreation areas:** No
- c. Hospitals:** No **f. Major commercial, office, or industrial areas:** No
- g. Other (Specify):**

3.14 Environmental receptors within distance to endpoint:

- a. National or state parks, forests, or monuments:** No
- b. Officially designated wildlife sanctuaries, preserves, or refuges:** No
- c. Federal wilderness areas:** No

d. Other (Specify):

3.15 Passive mitigation considered:

- | | | | |
|-----------------------|----|----------------------------|----|
| a. Dikes: | No | d. Drains: | No |
| b. Enclosures: | No | e. Sumps: | No |
| c. Berms: | No | f. Other (Specify): | |

3.16 Active mitigation considered:

- | | | | |
|------------------------------|----|---------------------------------------|----|
| a. Sprinkler systems: | No | f. Flares: | No |
| b. Deluge system: | No | g. Scrubbers: | No |
| c. Water curtain: | No | h. Emergency shutdown systems: | No |
| d. Neutralization: | No | i. Other (Specify): | |
| e. Excess flow valve: | No | | |

3.17 Graphic file name:

Section 4. Flammables: Worst Case --- No Data To Report

Section 5. Flammables: Alternative Release --- No Data To Report

Section 6. Accident History --- No Data To Report

Section 7. Prevention Program 3 --- No Data To Report

Section 8. Prevention Program 2

Process ID: 1 Drinking Water Purificati

Prevention Program ID: 1

Prevention Program Description: 150 lb cylinders of chlorine provide the oxidizer for the purification of drinking water. A commercial vacuum regulator is attached to the cylinder. The vacuum regulator senses the flow of water through the vacuum exerted at a venturi in the water pipe. This opens a valve in the regulator to release chlorine at a rate that is preset in the field by the Water Treatment Operator

8.1 NAICS Code: 22131

8.2 Chemicals: **Chemical Name**
Chlorine

8.3 Safety Information:

a. The date of the most recent review or revision of the safety information: 07/15/2005

b. Select all Federal or state regulations or industry-specific design codes and standards used to demonstrate compliance with the safety information requirement:

NFPA 58 (or state law based on NFPA 58): No **ANSI Standards:** No

OSHA (29 CFR 1910.111): No **ASME Standards:** No

ASTM Standards: No **None:** No

Other (Specify): 29 CFR 1910.1200; NFPA 55 & 704; Semiconductor Equipment and Materials International Standard F13 & F14; Chlorine Institute standards

Comments: Operation must also meet public health requirements for water treatment (Permit No. 03-10-94-001)

8.4 Hazard review:

a. The date of completion of most recent hazard review or update: 07/15/2005

b. The expected or actual date of completion of all changes resulting from the hazard review:

c. Major hazards identified:

Toxic release:	Yes	Overpressurization:	No	Earthquake:	No
Fire:	No	Corrosion:	No	Floods (flood plain):	No
Explosion:	No	Overfilling:	No	Tornado:	No
Runaway reaction:	No	Contamination:	No	Hurricanes:	No
Polymerization:	No	Equipment failure:	No	Other (Specify):	Human error
		Loss of cooling, heating, electricity, instrument air:	No		

d. Process controls in use:

Vents:	No	Emergency air supply:	No	Other (Specify):
Relief valves:	No	Emergency power:	No	
Check valves:	No	Backup pump:	No	
Scrubbers:	No	Grounding equipment:	No	
Flares:	No	Inhibitor addition:	No	
Manual shutoffs:	Yes	Rupture disks:	No	
Automatic shutoffs:	Yes	Excess flow device:	No	
Interlocks:	No	Quench system:	No	
Alarms and procedures:	Yes	Purge system:	No	
Keyed bypass:	No	None:	No	

e. Mitigation systems in use:

Sprinkler system:	No	Water Curtain:	No
Dikes:	No	Enclosure:	No
Fire walls:	No	Neutralization:	No
Blast walls:	No	None:	No
Deluge system:	No	Other (Specify):	Vacuum regulator contains spring-actuated inlet safety valve

f. Monitoring/detection systems in use:

Process area detectors: No **None:** No
Perimeter monitors: No **Other (specify):** Odor detection by operators

g. Changes since last hazard review or hazard review update:

Reduction in chemical inventory: No **Installation of perimeter monitoring systems:** No
Increase in chemical inventory: No **Installation of mitigation systems:** No
Change process parameters: No **None recommended:** No
Installation of process controls: No **None:** No
Installation of process detection systems: No **Other (Specify):** Continuous chlorination of Well No. 18 has been shifted to a calcium hypochlorite (tablet) system with gas chlorination as a temporary backup. There is no chlorine gas routinely stored at Well 18

8.5 The date of the most recent review or revision of operating procedures: 11/15/2004

8.6 Training:

a. The date of the most recent review or revision of training programs: 11/23/2004

b. The type of training provided: **Classroom:** Yes **On the job:** Yes
Other training (Specify): California Department of Health Services water treatment and/or water distribution operator training

c. The type of competency testing used:

Written tests: Yes **Observation:** No
Oral tests: No **Other (Specify):**
Demonstration: No

8.7 Maintenance:

a. The date of the most recent review or revision of maintenance procedures: 07/15/2005

b. The date of the most recent equipment inspection or test: 08/17/2005

c. Equipment most recently inspected or tested: Equipment is inspected daily when in use. Maintenance procedures are supplied by equipment vendor in most current editions of user manuals.

8.8 Compliance audits:

a. The date of the most recent compliance audit: 02/22/2005

b. Expected or actual date of completion of all changes resulting from the compliance audit:

8.9 Incident investigation:

a. The date of the most recent incident investigation (if any):

b. Expected or actual date of completion of all changes resulting from the investigation:

8.10 The date of the most recent change that triggered a review or revision of safety information, the hazard review, operating or maintenance procedures, or training:

Section 9. Emergency Response

9.1 Written Emergency Response (ER) Plan:

- a. Is facility included in written community emergency response plan? Yes
- b. Does facility have its own written emergency response plan? Yes

9.2 Does facility's ER plan include specific actions to be taken in response to accidental releases of regulated substance(s)? Yes

9.3 Does facility's ER plan include procedures for informing the public and local agencies responding to accidental releases? Yes

9.4 Does facility's ER plan include information on emergency health care? Yes

9.5 Date of most recent review or update of facility's ER plan: 01/01/2004

9.6 Date of most recent ER training for facility's employees: 07/15/2005

9.7 Local agency with which facility's ER plan or response activities are coordinated:

- a. Name of agency: Office of Emergency Services
- b. Telephone number: (209) 468-3969

9.8 Subject to:

- a. OSHA Regulations at 29 CFR 1910.38: No
- b. OSHA Regulations at 29 CFR 1910.120: Yes
- c. Clean Water Act Regulations at 40 CFR 112: Yes
- d. RCRA Regulations at 40 CFR 264, 265, and 279.52: Yes
- e. OPA-90 Regulations at 40 CFR 112, 33 CFR 154, 49 CFR 194, or 30 CFR 254: No
- f. State EPCRA Rules/Law: No
- g. Other (Specify): DOE Order 151.1, Comprehensive Emergency Management System

Executive Summary

Executive Summary

A. Accidental Release Prevention and Emergency Response Policies

It is the Lawrence Livermore National Laboratory's (LLNL) policy to perform work in a manner that protects the health and safety of employees and the public, preserves the quality of the environment, and prevents property damage using the Integrated Safety Management System. The environment, safety, and health are to take priority in the planning and execution of work activities at the Laboratory. Furthermore, it is the policy of LLNL to comply with applicable ES&H laws, regulations, and requirements identified in approved work smart standards (LLNL Environment, Safety and Health Manual, Document 1.2, ES&H Policies of LLNL.) The program and policies that improve LLNL's ability to prevent or mitigate accidental releases are described in the LLNL Environment, Health and Safety Manual that is available to the public at http://www.llnl.gov/es_and_h/esh_manual.html.

The Laboratory uses an emergency management system known as the Incident Command System, in accordance with the California Standardized Emergency Management System (SEMS) to respond to Operational Emergencies and to mitigate consequences resulting from them. Operational Emergencies are defined as unplanned, significant events or conditions that require time-urgent response from outside the immediate area of the incident that could seriously impact the safety or security of LLNL's employees, its facilities, or the environment. The Emergency Plan contains LLNL's Operational Emergency response policies, commitments, and institutional responsibilities for managing and recovering from emergencies. It is not possible to list in the Emergency Plan all events that could occur during any given emergency situation. However, a combination of hazard assessments, an effective Emergency Plan, and Emergency Plan Implementing Procedures (EPIPs) can provide the framework for responses to postulated emergency situations.

B. Facility Description and Regulated Substances Handled

LLNL's Experimental Test Site (Site 300) is located at 15999 Corral Hollow Road, in the hills west of Tracy, California. Site 300 is owned by the Department of Energy, National Nuclear Security Administration and operated by the University of California.

Owner Information

Phil Hill (925) 423-7936
National Nuclear Security Administration
Livermore Site Office
P.O. Box 808, L-293
Livermore, CA 94551-0808

Operator Information

William A. Bookless, Associate Director Safety and Environmental Protection
(925) 422-3343
University of California
Lawrence Livermore National Laboratory
P.O. Box 808, L-668
Livermore, CA 94551-0808

Facility Contact

James E. Lane, Site 300 Manager
(925) 423-5217
University of California
Lawrence Livermore National Laboratory
P.O. Box 808, L-871
Livermore, CA 94551-0808

Work at Site 300 is primarily focused on supporting the National Stockpile Stewardship Program through the formulation and testing of explosives materials, assemblies, and components. Explosives are received, shipped, formulated, and tested at the site. Chemical and other materials necessary to support the effort are received, and waste generated by the activities are treated on-site, or packaged and shipped off-site to approved locations.

Site 300 operates its own drinking water system for employee consumption and cooling, process, fire fighting, and sanitation. Water is supplied by two onsite wells. The drinking water supply and distribution system is treated with chlorine for control of microorganism growth. Onsite chlorine gas storage and use exceeds the California Accidental Release Prevention Program levels. Chlorine is present in cylinders containing 150 pounds of liquid. There are five locations where chlorine is routinely stored and used, one well head (near

Corral Hollow Road), three booster stations, and one storage facility. One well head (also near Corral Hollow Road) is routinely disinfected using calcium hypochlorite, however, chlorine is still identified as a temporary backup disinfection system. There is no chlorine stored at that location on a routine basis. Each well head or booster station can have two cylinders (300 pounds total) present at one time. However, Site 300 manages the chlorine at the well heads to limit the total maximum amount of chlorine to 225 pounds at one well head. The central storage facility may have up to six cylinders stored at one time. The total chlorine inventory at Site 300 does not exceed 2250 pounds.

C. General Accidental Release Prevention Program and Chemical-Specific Prevention Steps

LLNL maintains an active program to protect workers, the public, and the environment from harm resulting from its activities. Its policies and technical directions for controlling all hazards that are present as a result of its operations are described in the LLNL Environment, Health, and Safety Manual (referenced above). Applicable sections of this manual concern inspection and maintenance of pressure systems, health hazard awareness, handling toxic materials, personal protective equipment, and emergency response. Plans and procedures are developed for operations handling toxic materials. Operation specific training (both classroom and on the job training) are provided as well as health hazard awareness training, and hazardous material response training provided to LLNL emergency responders. The LLNL Fire Chief is a California Fire Chief and is empowered, as are other California Fire Chiefs, to direct public response to emergency events. The LLNL firefighters are the first responders to local fires and to hazardous materials spills in the Livermore Valley and areas around Site 300 in agreement with local agencies.

D. Five-Year Accident History

No accidents occurred in the last five years.

E. Emergency Response Program

LLNL's Emergency Programs within the Hazards Control Department is responsible for emergency response planning. Their responsibilities include interactions with NNSA/DOE on emergency planning issues, coordinating emergency response planning with LLNL's Security Department, Public Affairs Office, and off-site entities, providing guidance to LLNL program and facility operations, developing and implementing emergency response drills, operating the LLNL's Emergency Operations Center, oversight of the various LLNL Operations Support Centers, preparing and maintaining emergency preparedness program documents, implementing the LLNL Emergency Duty Officer program, implementing the Evacuation and Shelter-In-Place program, and preparing institutional emergency plans, procedures, and hazards assessments.

LLNL's Fire Department has the primary responsibility for providing Site 300 with fire, rescue, hazardous material response, and emergency medical services. LLNL maintains a fire station at Site 300. Memoranda of Understanding exist with several community agencies, including the Tracy, Alameda County and Livermore/Pleasanton Fire Departments, Valley Care and Eden Medical Centers, and local governments. These Memoranda of Understanding include notification of, and coordination with, local authorities. LLNL operates and manages the Alameda County Regional Emergency Communication Center and is responsible for the coordination fire and rescue mutual aid within Alameda County. The LLNL Fire Department is one of the first responder to hazardous material emergencies in Livermore and unincorporated Alameda County. LLNL participates in joint training exercises local state and federal agencies.

F. Planned Changes to Improve Safety

Existing procedure review indicates that these procedures are adequate. Therefore, there are no planned changes.