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UCRL-CR-127452

S/C- B317356

**Independent Engineering Report and Certification for
Closure of Building 419 Equipment Including
the Size Reduction Unit & Solidification Unit at
Lawrence Livermore National Laboratory**

Prepared by:
Chow Engineering, Inc.

December 31, 1996

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**INDEPENDENT ENGINEERING REPORT
AND
CERTIFICATION**

For

CLOSURE

Of

**BUILDING 419 EQUIPMENT INCLUDING THE
SIZE REDUCTION UNIT & SOLIDIFICATION UNIT**

At

LAWRENCE LIVERMORE NATIONAL LABORATORY

**7000 East Avenue
Livermore, CA. 94550**

Submitted by:

**CHOW ENGINEERING, INC
Oakland, California**

December 31, 1996

CHOW ENGINEERING, INC.

7700 Edgewater Drive, Suite 729, Oakland, CA 94621
Tel: (510) 636 8500 FAX: (510) 636 8544

December 31, 1996

Ms Dixie Finley
HWM Facilities
LAWRENCE LIVERMORE NATIONAL LABORATORY
7000 East Avenue, L-547
Livermore, CA 94550

Ref: Certification of Closure of Building 419 Equipment, including the Size Reduction
Unit and Solidification Unit, LLNL Subcontract No. B317356.
Our Ref: 95-R1026

Dear Ms Finley:

Chow Engineering, Inc. (CE) has recently completed the Independent Engineering
Assessment and Certification for Closure of the above referenced systems at Lawrence
Livermore National Laboratory (LLNL.)

The scope of work included a review of the Work Plan, Sampling and Analysis Plan,
Health and Safety Plan, and other documentation submitted by LLNL, for the work. CE
also provided on site services and verification that the work was performed as required by
the above described Plans. The attached Independent Engineering Report and Certification
for Closure has been signed and stamped by a California Registered Professional Engineer.
This completes our services for this phase of the project. Please call me with any
questions, or to let me know how else I can be of service. Thank you.

Sincerely,

Reuben H Chow, P.E.
Principal

Attachment

**Closure of Building 419 Equipment Including the Size Reduction Unit & Solidification Unit
December 31, 1996**

INDEPENDENT ENGINEERING REPORT
And
CERTIFICATION
For
CLOSURE
Of
BUILDING 419 EQUIPMENT INCLUDING THE
REDUCTION UNIT & SOLIDIFICATION UNIT
At
LAWRENCE LIVERMORE NATIONAL LABORATORY
7000 East Avenue
Livermore, California

I EXECUTIVE SUMMARY

CHOW ENGINEERING, INC (CE) has recently completed an Independent Engineering Services Program for Lawrence Livermore National Laboratory (LLNL.) The services were performed to provide a Certification of the Closure of Building 419 (B419) Equipment, including the Size Reduction Unit and Solidification Unit at LLNL. The LLNL facility is located at 7000 East Avenue, in the City of Livermore, Alameda County, California.

The tasks performed included a review of the LLNL approved Closure Plan, the Sampling and Analysis Plan, the Health and Safety Plan, other supplemental documents generated during the closure, and the Decontamination and Disposal (D&D) draft report. Site visits were made one or two times per week to observe the closure procedures, and to ensure that the requirements of the Closure plan were being met, including sampling methodology and procedure. As part of the Certification, this report was prepared, signed and certified by a California Registered Professional Engineer.

Meetings were held on-site with LLNL personnel to discuss the closure procedures, which included the removal of mixed waste and hazardous waste, sampling and analysis of the waste, and decontamination of equipment and structural components which handled or were associated with the mixed and hazardous waste.

Closure of Building 419 Equipment Including the Size Reduction Unit & Solidification Unit
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Closure activities began in June, 1995 and equipment closure activities were completed in December, 1996. This current report determines final closure for B419 Equipment, and was prepared and submitted to LLNL in the final stage of the work.

II BACKGROUND

CE performed the Independent Engineering services at the request of Ms Dixie Finley of LLNL, as part of the B419 Closure Plan requirement. B419 was constructed by the Navy in the 1940s and used by the Navy for various purposes related to airplane maintenance. In later years, the building was used by a health chemistry program as an assay laboratory. Since 1975, the building has been used by LLNL for equipment decontamination and hazardous and mixed waste treatment activities known as size reduction and solidification. These activities which were covered by the LLNL Part B Permit Application, were discontinued in late 1989 because B419 could not meet the seismic guidelines of the Uniform Building Code (UBC).

B419 is a 7,860 ft square structure consisting of three areas. The middle area has a second floor (attic area); the other two areas (north side and south side) have one floor. The size reduction activities occurred in the south side of the building (room 124), while the solidification activities occurred in the north side (rooms 155 and 167).

Documentation for closure of B419 was submitted on September 23, 1994 to DTSC. The documentation consisted of a letter, together with the Closure Plan, Sampling and Analysis Plan, and Health and Safety Plan. A revision to this documentation was sent to DTSC on November 14, 1996, reflecting a two-phase closure for B419 as follows:

- 1) RCRA Equipment Closure phase to be completed and certified by December 31, 1996.
- 2) RCRA Structural Closure phase to be extended to September, 1997.

This current report certifies the final B419 RCRA Equipment Closure including the Size Reduction Unit and the Solidification Unit.

III PROCEDURE

CE was contracted to perform Independent Engineering Services in the closure, and to provide a certification that the closure was performed as required in the Closure Plan.

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CE performed a review of the Closure Plan, and other documentation submitted, including the Sampling and Analysis, and Health and Safety Plan, for the closure. CE performed site visits during closure procedures starting June 26, 1995, for meetings with the LLNL representatives, to observe the closure activities, and to insure that the Closure Plan requirements were met. CE also performed a review of the D&D Equipment Closure Disposition Summary Report (draft) submitted by LLNL in the final stage of the equipment closure.

This current report and certification submitted by CE, was completed by a California Registered Professional engineer. The closure, as required by the Closure Plan, is now complete.

IV DOCUMENT REVIEW

The documents made available to CE by LLNL included the Closure Plan dated September, 1994. The Closure Plan included the Health and Safety Plan for the closure operations and the Sampling and Analysis Plan. Other documents included the bi-weekly status reports commencing with the August 2, 1995, closure update report, by William T. Fritts, HWM Facilities Manager at LLNL, and the D&D Equipment Closure Disposition Summary Report (draft) by Tony Belue. CE used the information provided in these Plans and reports, to assist in performing the required Independent Engineering services for the Closure certification, and in preparing this report.

V BUILDING 419 SIZE REDUCTION UNIT AND SOLIDIFICATION UNIT EUIPMENT CLOSURE

1.0 Closure Activities Group

The closure activities were performed by LLNL internal groups, including the Hazardous Waste Management Division, the LLNL Hazards Control Department, and the LLNL ORAD Division. The sampling activities were performed by the LLNL Hazardous Waste Management (HWM) personnel, and the analyses were performed by State Certified Laboratories.

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2.0 Regulatory Requirements

The closure of B419 was completed in accordance with the Closure Plan, which met or exceeded the requirements of California Code of regulations (CCR) Title 22, Section 66265.112 (a) through (d). This Section requires the owner or operator of a hazardous waste management facility to have a written Closure plan. The following are excerpts of the closure requirements per section 66265.112 (a) through (d):

1. The written closure plan must be kept at the facility until final closure.
2. The plan shall identify necessary steps to perform partial or final closure of the facility including:
 - i. A description of how and when each hazardous waste management unit at the facility will be closed in accordance with section 66265.111 (Closure Performance Standard).
 - ii. An estimate of the maximum inventory of hazardous wastes ever on-site during the active life of the facility.
 - iii. Detailed description of the decontamination procedures, including methods for sampling and testing surrounding soils and groundwater monitoring.
 - iv. A schedule of closure including the total time required to close each hazardous waste management unit, including estimates of the time required to treat or dispose of all hazardous waste inventory.
 - v. Estimate of the expected year of final closure.

Section 66265.115 also requires the owner or operator of a hazardous waste management facility to submit to the DTSC at final closure, a certification of closure signed by the owner or operator and an independent Professional Engineer, registered in California. This current report is part of the required certification of closure.

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3.0 Equipment Closure

The equipment addressed in the present closure is the Size Reduction Unit and the Solidification Unit Equipment which were located inside B419. The building itself, the walk-in hoods, and associated ducting, is part of the Structural Closure, which has been extended to September, 1997.

B419 equipment closure activities by LLNL commenced on June 21, 1995 and were completed in December, 1996. The equipment closure activities comprised of the following:

1. Dismantling and decontamination of the potentially contaminated equipment inside B419 according to the LLNL Closure Plan dated 9-20-94.
2. Sampling of the equipment inside B419 using the Environmental Analytical Sciences (EAS) Procedures and EPA Test Methods for Evaluating Solid Waste (SW-846).
3. Evaluation of the analytical results by qualified personnel according to 40 CFR 261, Title 22, California Code of Regulations, and DOE orders 5400.5 and 5480.11, as well as the radiological requirements for Alpha, Beta, and Tritium release levels, as outlined in sections 3.2.1 and 3.2.2 of the LLNL Closure Sampling and Analysis Plan.
4. Final disposal of the equipment based on the analytical results.

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VI CONCLUSION

All B419 equipment closure activities were reviewed, monitored, and witnessed by an independent, California-registered Professional Engineer. The sampling and chemical analysis was performed adequately by qualified individuals per the required sampling procedures outlined in the B419 Sampling and Analysis Plan, and the LLNL EAS and EPA test methods. The decontamination procedures were also performed adequately per the closure performance standards described in Section A.4 of the Closure Plan. The evaluation of the analytical results were performed by qualified chemists in compliance with 40 CFR 261, Title 22, California Code of Regulations, and DOE orders 5400.5 and 5480.11, as well as the radiological requirements for Alpha, Beta, and Tritium release levels, as outlined in sections 3.2.1 and 3.2.2 of the LLNL Closure Sampling and Analysis Plan. The analytical results were then used to determine the final disposition of the items from the B419 equipment closure.

From information provided by LLNL from the "B419 D&D Closure Equipment Disposition Summary", approximately 54% of the equipment items were released as scrap, 32% was as Low Level Waste (LLW) dispositioned to go to the Nevada Test Site (NTS), 6% was dispositioned as Mixed Waste to go to Envirocare, 5% was dispositioned as Non-regulated waste to go to a Class 2 Landfill, and 3% was dispositioned as Hazardous Waste to go to a Class 1 Landfill.

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VII LIMITATIONS

Chow Engineering, Inc. (CE) provides these services for the specific entities and for these certain applications only. CE makes no warranty, expressed nor implied, regarding these and any services provided. No warranty is made about the condition nor application of the facilities. These services have been performed in accordance with generally accepted and customary Engineering principles and applicable Regulations.

VIII CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Registered Engineer:	Reuben H Chow
Registration Number:	M 22778
Engineering Discipline:	Mechanical Engineering
Date of Expiration of Engineer's Registration:	Sept 30, 2000

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