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Environmental Protection Department
Operations & Regulatory Affairs Division

Underground Storage Tank
431-D1U1
Closure Plan

S. Mancieri

Tank Systems and Guidance Group

Lawrence Livermore National Laboratory
University of California • Livermore, California 94551

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Environmental Protection Department
Operation & Regulatory Affairs Division

UNDERGROUND STORAGE TANK 431-D1U1

CLOSURE PLAN

SEPTEMBER 1993

Tank Systems and Guidance Group

Lawrence Livermore National Laboratory
University of California Livermore, California 94551

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

**UNDERGROUND STORAGE TANK
431-D1U1
CLOSURE PLAN**

March 1993

**A COPY OF THIS DOCUMENT MUST BE
ON-SITE DURING ALL ACTIVITIES**

00230

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Abstract

1

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 510/271-4320

Project Specialist (print)

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

(For Tank 431-D1U1)

1. Business Name Lawrence Livermore National Laboratory
Business Owner U.S. Government - Department of Energy
2. Site Address 7000 East Avenue
City Livermore Zip 94550 Phone (510)423-6577
3. Mailing Address P.O. Box 808, L-633
City Livermore Zip 94550 Phone (510)422-5167
4. Land Owner U.S. Government-Department of Energy
Address 1333 Broadway City, State Oakland, CA Zip 94612
5. Generator name under which tank will be manifested Lawrence Livermore National Laboratory
EPA I.D. No. under which tank will be manifested CA2890012584

6. Contractor _____

Address _____

City _____ Phone _____

License Type _____ ID# _____

7. Consultant _____ N/A _____

Address _____

City _____ Phone _____

8. Contact Person for Investigation

Name C. Susi Jackson Title: Division Leader, Operations and Regulatory Affairs

Phone (510) 423-6577

9. Number of tanks being closed under this plan one

Length of piping being removed under this plan approximately 40 feet

Total number of tanks at facility* 1 (*Bldg.431)

10. State Registered Hazardous Waste Transporters/Facilities.

**** Underground tanks are hazardous waste and must be handled as hazardous waste.****

a) Product/Residual Sludge/Rinsate Transporter

Name _____ EPA I.D. No. _____

Hauler License No. _____ License Exp. Date _____

Address _____

City _____ State _____ Zip _____

b) Product/Residual Sludge/ Rinsate Disposal Site

Name _____ EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

c) Tank and Piping Transporter

Name _____ EPA I.D. No. _____

Hauler License No. _____ License Exp. Date _____

Address _____

City _____ State _____ Zip _____

d) Tank and Piping Disposal Site

Name _____ EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

11. Experienced Sample Collector

Name Marion Heaton

Company University of California, Lawrence Livermore National Laboratory

Address P.O. Box 808, L-633

City Livermore State CA Zip 94550 Phone (510) 423-4012

12. Laboratory

Name California Laboratory Services

Address 3249 Fitzgerald Road

City Ranch Cordova State Ca. Zip 95742

State Certification No. 1233

13. Have tanks or pipes leaked in the past? Yes [] No [X] See Precision Tank Test
Test Results, Appendix C.

If yes, describe. _____

14. Describe methods to be used for rendering tank inert

Before tanks are pumped out and inerted, all associated piping must be flushed out into the tanks. All accessible associated piping must then be removed. Inaccessible piping must be plugged.

The Bay Area Air Quality Management District, (415) 771-6000, along with local Fire and Building Departments, must also be contacted for tank removal permits. Fire departments typically require the use of explosion proof combustible gas meters to verify tank inertness. It is the contractor's responsibility to bring a working combustible gas meter on site to verify tank inertness.

15. Tank History and Sampling Information

Tank		Material to be sampled (tank contents, soil, ground-water, etc.).	Location and Depth of Samples
Capacity	Use History		
280 gallons	The tank was installed in 1965 for diesel fuel storage and will be in use until closure procedures begin.	Soil samples of undisturbed natural material beneath the excavation	One soil sample collected by slant boring beneath the tank at a maximum of 2 feet below the native soil/backfill interface. One soil sample beneath the piping at a maximum of 2 feet below the native soil/backfill interface at the edge of the concrete generator pad. One soil sample for every 20 linear feet of product piping. Soil samples will be taken beneath any suspected leak site or stained soil.

One soil sample must be collected for every 20 feet of piping that is removed. A groundwater sample must be collected should any groundwater be present in the excavation.

Excavated/Stockpiled Soil	
<p>Stockpiled Soil Volume (Estimated)</p> <p><1 yard</p>	<p>Sampling Plan</p> <p>1 sample of stockpile material analyzed for substances listed in item 16</p>

Stockpiled soil must be placed on bermed plastic and must be completely covered by plastic sheeting.

16. Chemical methods and associated detection limits to be used for analyzing samples

Contaminant sought	EPA, DTSC, or Other Sample Preparation Method Number	EPA, DTSC, or Other Analysis Method Number	Method Detection Limit
TPH as diesel	EPA method 3550	DTSC:GC-FID modified EPA method 8015 or GC/MS EPA method 8260	1.0 ppm
BTX & E	EPA method 5030	DTSC:GC-FID EPA method 8020, 8240 or GC/MS EPA 8260	0.005 ppm

17. Submit Site Health and Safety Plan.

18. Submit Worker's Compensation Certificate copy

Name of Insurer _____

19. Submit Plot Plan

20. Enclose Deposit

21. **Report any leaks or contamination to this office within 5 days of discovery.**
The report shall be made on an Underground Storage Tank Unauthorized Leak/Contamination Site Report form.

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true.

I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Safety and Health Administration) requirements concerning personnel and safety. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Once I have received my stamped, accepted closure plan, I will contact the project Hazardous Materials Specialist at least three working days in advance of site work to schedule the required inspections.

Signature of Contractor

Name (please type) _____

Signature _____

Date _____

Signature of Site Owner or Operator

Name (please type) C. Susi Jackson

Signature

Date 8.3.93

APPENDIX A
SUPPLEMENTAL INFORMATION

Supplemental Information

The 431-D1U1 tank system was installed in 1965 on the south east corner of Building 431. It supplies diesel fuel to the Building 431 emergency generator. The tank system consists of a 280-gallon, single-walled, carbon-steel tank and associated fill pipe, vent pipe, and supply and return piping. The area around the tank is paved with asphalt. Due to the proximity of an adjacent building, Building 431A, which could possibly be over a portion of the tank, and the restricted access to the work area (see Figure 3), it is proposed that underground storage tank (UST) 431-D1U1 be closed in place. All accessible underground piping will be removed as part of this closure plan. Piping beneath and within concrete will be cut, capped and closed in place. Soil samples will be collected by slant boring beneath the tank and piping (see item #15, Tank History and Sampling Information in the Closure Plan).

The emergency generator and its associated UST, 431-D1U1, are currently in use. The emergency generator will be supplied by a temporary aboveground fuel tank prior to the removal of UST 431-D1U1. It is proposed that UST 431-D1U1 be replaced with a 250-gallon capacity aboveground diesel fuel storage tank.

The system was registered with the State Water Resources Control Board on June 27, 1984 as 431-11D and has subsequently been renamed 431-D1U1. Figure 1 (see Appendix B) shows the location of the 431-D1U1 tank system in relation to the Lawrence Livermore National Laboratory (LLNL). Figure 2 (see Appendix B) shows the 431-D1U1 tank system in relation to Building 431 and 432. Figure 3 (see Appendix B) shows a plan view of the 431-D1U1 tank system.

UST 431-D1U1 has not leaked according to previous tank testing reports. LLNL had contracted with the Gary Peters Enterprises to perform precision tank tests using the Tank Audit LEAK COMPUTER on this underground diesel fuel storage system for the past 4 years (1988-1992). The most recent test results (May 18, 1992), from Clayton Environmental Consultants using the Horner EZY-CHEK method, are included as Appendix C, and show the tank and piping to be product tight.

Water samples from the groundwater monitoring wells near UST 431-D1U1 are not currently analyzed for diesel fuel. If soil contamination is found and if there is reason to suspect that the contaminants have migrated from the area, groundwater samples from adjacent monitoring wells could be analyzed for diesel fuel. However, groundwater contamination is not expected due to the tank integrity and the depth to groundwater of approximately 100 feet.

A State Water Resources Control Board Underground Storage Tank Permit Application-Form B will be completed and sent to Alameda County Department of Environmental Health once UST 431-D1U1 has been closed.

**APPENDIX B
FIGURES**

Figure 1. Location map for diesel tank 431-DIUI
Lawrence Livermore National Laboratory, Livermore, California.

Figure 2. Orientation of tank 431-DIUI with respect to Buildings 431 and 432.

Figure 3. Plan view of tank 431-DIUI showing proposed soil sample locations.

Figure 4. Location of nearby groundwater monitoring wells and groundwater data.

APPENDIX C
PRECISION TANK TEST DATA

Western Operations

1352 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANT

June 3, 1992

Clayton Project No. 38641.00

Mr. David Castro
LAWRENCE LIVERMORE NATIONAL LABORATORY
P.O. Box 808, L-633
Livermore, California 94550

Subject: Tank Integrity Testing Results

Dear Mr. Castro:

Clayton Environmental Consultants, Inc. is pleased to report the results and observations of the tank integrity tests recently completed at:

Lawrence Livermore National Laboratory
Various Sites
Livermore, California

The tanks were tested on May 11 through 20, 1992, using the Horner EZY-CHEK tank testing system.

The results of the tests are provided below.

Date Tested	Tank	Capacity (Gallons)	Product	Level	Results (Gal/Hr)
5-11-92	194-D1U1	280	Diesel	High	+.0007
5-11-92	298-D1U1	350	Diesel	High	-.0175
5-12-92	332-D3U1	2,000	Diesel	High	+.0038
5-12-92	332-D2U1	1,000	Diesel	High	+.0046
5-13-92	251-D1U1	500	Diesel	High	-.0034
5-13-92	331-D1U1	500	Diesel	High	+.0032
5-14-92	291-D1U1	2,000	Diesel	High	+.0154
5-14-92	511-D1U1	500	Diesel	High	+.0064
5-15-92	490-D1U1	2,000	Diesel	High	+.0084

00247

ME1115.03

Clayton Environmental Consultants, Inc. • A Marsh & McLennan Company • Novi, MI • Edison, NJ • Wayne, PA • Kennesaw, GA
Pleasanton, CA • Cypress, CA • Windsor, Ontario • Toronto, Ontario • Birmingham, U.K. • London, U.K. • Southampton, U.K.

Mr. David Castro
Lawrence Livermore National Laboratory
June 3, 1992

Page 2
Clayton Project No. 38641.00

Date Tested	Tank	Capacity (Gallons)	Product	Level	Results (Gal/Hr)
5-15-92	435-D1U1	280	Diesel	High	+.0095
5-18-92	435-D1U1	280	Diesel	High	+.0080
5-18-92	271-D1U1	1,000	Diesel	High	-.0047
5-19-92	1705-D1U1	350	Diesel	High	-.0021
5-19-92	318-G1U2	250	Diesel	High	-.0247
5-20-92	113-D1U1	350	Diesel	High	-.0069
5-20-92	111-D1U1	350	Diesel	High	+.0044

- GPH @ 95% confidence of <.1 as accepted by the State of California and the Environmental Protection Agency.

The tanks were shown to be "product tight."

In certain jurisdictions, notification of tank test results is required within 30 days of the test. If notification is required, it is the responsibility of the tank owner to provide this information to the proper regulatory agency.

Sincerely,

Gary M. Williams
Sr. Environmental Technician
Lic. #90-1296
Western Operations

GMW/cmh

Enclosures: Chart Recorder Graph 16
Data Sheet 16

07248

DATA CHART FOR TANK SYSTEM TIGHTNESS TEST

DATA CHART FOR TANK SYSTEM TIGHTNESS TEST																		
PRODUCT MONITORING ON LLR						TEMPERATURE COMPENSATION A				TEMPERATURE COMPENSATION B					NET VOL CHANGE			
Time (hh:mm)	Reading No	Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss	Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	LLR	LLR
1000	1	71	75	+1	.103125	+0.031	300	300	.000	.12743	.0002						+0.039	
1005	2	75	76	+1		+0.031	300	298	-.002		.0002						+0.033	
1010	3	76	76	0		0	298	297	-.001		.0001						+0.001	
1015	4	76	76	0		0	297	296	-.001		.0001						+0.001	
1020	5	76	76	0		0	296	293	-.003		.0003						+0.003	
1025	6	76	77	+1		+0.031	293	294	+.001		.0001						+0.030	
1030	7	77	77	0		0	294	293	-.001		.0001						+0.001	+0.001
1035	8	77	77	0		0	293	288	-.005		.0005						+0.006	+0.007
1040	9	77	77	0		0	288	287	-.001		.0001						+0.001	+0.008
1045	10	77	77	0		0	287	286	-.001		.0001						+0.001	+0.009
1050	11	77	77	0		0	286	285	-.001		.0001						+0.001	+0.010
1055	12	77	78	+1		+0.031	285	285	0		0						+0.031	+0.011
1100	13	78	78	0		0	285	283	-.002		.0002						0	+0.043
1105	14	78	78	0		0	283	283	0		0						+0.003	+0.043
1110	15	78	79	+1		+0.031	283	281	-.002		.0002						0	+0.070
1115	16	79	79	0		0	281	281	0		0						0	+0.076
1120	17	79	79	0		0	281	278	-.003		.0003						+0.003	+0.077
1125	18	79	79	0		0	278	277	-.001		.0001						+0.001	+0.080

- A. Tank Bot. to Grade 72
- B. Tank Top to Grade 27
- C. Tank Diameter 45
- D. Test Level above grade 19
- E. Depth of water in tank 0
- F. Depth for taking sample 45
- G. Temp. Probe depth (connector) 28
- H. Test level to Tank Bot. 72
- I. Groundwater above tank bottom 0
- J. Product Pressure per 1" height .032 PSI

Test Pressure Formula

$$\frac{72}{H} \times \frac{.032}{J} - \left(\frac{0}{I} \times \frac{.036}{I} \right) = 2.301$$

NET TEST
TIME

Send Report to:

Client LLNL

Address P.O. Box 808 L-433

City, State Livermore, CA 94550

Phone ()

Attn: Mr. David J. Smith

CERTIFICATION This is to certify that the tank system was tested on date shown. Those indicated "Tight" meet the criteria as set forth by the National Fire Protection Association Paragraph 329

Tank No. 41-D111

Tight 165

Leakage Indicated +0.000

Technician G. Williams LLNL

Date Tested 5-18-72

DATA CHART FOR TANK SYSTEM TIGHTNESS TEST (EZY CHEK)

CLIENT

NAME OF SUPPLIER

OWNER OR DEALER

ADDRESS (NO & STREET)

CITY AND STATE

DATE OF TEST

WEATHER

TEMPERATURE

TANK INFORMATION

CAPACITY (NOMINAL)

CAPACITY (CHART)

DIMENSIONS: DIAMETER

LENGTH

SIZE OF FILL OR TEST OPENING

TOP OFF TIME

NUMBER OF GALLONS ADDED TO START TEST

TANK NO

INCHES OF WATER - BEFORE TEST AFTER TEST

IN

CONTENTS (PRODUCT)

TANK MATERIAL

APPROX. AGE

PUMP SYSTEM (TYPE)

TEST CALIBRATION

SIZE OF CAL. (GAL OR ML'S ADDED)

LINE MOVEMENT

1 57 to 66 = 9 LINES
2 57 to 65 = 8 LINES
3 57 to 65 = 8 LINES
TOTAL 27 LINES + 3 = 30 LINES

NO OF TEST CALIBRATION

SIZE OF CAL. (GAL OR ML'S ADDED)

LINE MOVEMENT

1 71 to 79 = 8 LINES
2 72 to 80 = 8 LINES
3 71 to 79 = 8 LINES
TOTAL 24 LINES + 3 = 27 LINES

MEASURED API SPECIFIC GRAVITY

PRODUCT TEMPERATURE

API SPECIFIC GRAVITY @ 60° F

COEFFICIENT OF EXPANSION

(FROM TABLE A)

(FROM TABLE B)

COE. x TOTAL CAPACITY (GAL) = VOL. CHANGE (GAL) (FACTOR B)

PRODUCT LINE TESTING

Time (Min)	Reading No	PRODUCT MONITORING ON LL				Product + Gain - Loss
		Start	End	+ Gain - Loss	X Factor A	
					.003	
					.003	
					.003	
					.003	

SYSTEM

Serial	Number

TANK LAYOUT

Signature 5-18-91

431-DIM
5-11-72

2000
2000

7

APPENDIX D
SITE HEALTH AND SAFETY PLAN

Notes and Instructions for Completing Site Safety and Health Plan

1. WARNING -- COMPLETE ALL ENTRIES; IF ITEM IS NOT APPLICABLE TO PROJECT, OR METHOD OF WORK BEING USED ENTER 'NOT APPLICABLE', 'N/A', OR "----". INCOMPLETE FORMS WILL BE GROUNDS FOR REJECTION OF PLAN WITHOUT REVIEW OR COMMENT.
2. Entries do not need to be limited to space provided on forms. If additional space is required, affix additional sheets of paper (to ease photocopying of plans, do not write on backs of forms). Clearly cross reference form entries and extension sheets.
3. Supplemental information, such as contractor standard operating procedures, checklists, or protocols can be submitted to expand or illustrate answers. Affix supplemental information directly to applicable form. Clearly cross reference form entries and supplemental information. If supplemental information sheets contain information extraneous to the project and plans, line extraneous information out.

Emergency Information

- LLNL will provide Location of Nearest Telephone At Site.

Onsite Organization and Coordination

- LLNL will complete portion of form entitled "Lawrence Livermore National Laboratory".

Site Supervision and Responsibilities

- No Notes.

Pre-Job Start Safety and Health Briefing

- Provide detailed outline of items to be discussed during pre-job start safety and health briefing ("tailgate meeting").

Daily Safety and Health Briefing Record

- If mandatory daily safety and health briefings are planned in advance of project, complete one copy of record for each planned day on site and submit with remainder of plan. On each day's record, provide a detailed outline of items to be discussed during briefing. During project, annotate/amend records to indicate any changes from pre-planned briefing. On a daily basis, submit signed copies of day's record to Plant Engineering Construction Inspector for filing in project file.

Project ID: 431-D1U1

EMERGENCY INFORMATION

Lawrence Livermore National Laboratory

Laboratory Emergency Services (Ambulance, Fire, Security):

From LLNL Telephones Dial:911
From Offsite and Cellular Telephones:.....(510) ~~422-7595~~ 447-6880

Location of Nearest Telephone To Site: _____

Contractor's Local Resources

Hospital / Emergency Medical Clinic:

Facility Name: VALLEY MEMORIAL HOSPITAL
Street Address: STANLEY BOULEVARD
City: LIVERMORE, CALIFORNIA
Telephone Number: 510-447-7000 Emergency Room
Operating Hours: 24 hours

From LLNL, the route to this facility is: Take East Avenue to 4th Street, 4th
Street to Marietta Street directly to hospital

24 Hour Company Contact or Dispatcher:

Name: PETER W. ALLEN
Telephone Number: 916-381-1600 wk 916-671-4021 home

ROUTE TO THE NEAREST MEDICAL FACILITY
LNL HEALTH SERVICES (BUILDING 663)

Employee Name (Last, First, MI)	Employee ID Number or Date of Birth	Dates of Initial HAZWOPER (29 CFR 1910.120) Training ¹	Date of Most Recent HAZWOPER Refresher ¹	Date of Most Recent Medical Exam

¹ Attach copies of training certificates or records

Reference: Alameda County Requirement 17(k). 29 CFR 1910.120(b)(4)(ii)(B) & (D)

etolv1.0

00280

Project ID: _____

Respiratory Protection Program Summary

The Use of Respirators _____ Is XX Is Not Expected On This Project. Explain:

LEVEL D PPE ONLY

If The Use of Respirators Is Expected, Identify:

Who Developed Company's Written Respiratory Protection Program: _____

Person With On-Site Responsibility For Respirator Use: _____

Respirator Fit Testing: _____ Not Required (Explain) _____

_____ Qualitative (Test Agent) _____

_____ Quantitative (Challenge Agent & Detector) _____

Frequency of Respirator Fit Testing: _____

Additional Information:

Method How Respirators Will Be Cleaned and Sanitized On-Site:

Location On-Site Where Respirators Will Be Stored When Not In Use:

If Supplied Air Respirators Are Used:

Describe Breathing Air Source:

Describe Breathing Air Purification Equipment:

Describe In-Line Air Quality Testing Equipment:

Attach Copy of Results from last breathing air quality test.

Attach Copies Of NIOSH/MSHA Approvals for Respirators to Be Used On Site

Project ID: _____

Emergency Procedures Summary

Describe What Additional Personal Protective Equipment Will Be Available On-Site In Case of Emergencies:

HARD HATS

FIRST AID KIT

SAFETY GLASSES

PORTABLE EYE WASH STATION

LEATHERER WORK GLOVES

LEATHER BOOTS

EAR PROTECTION

Describe What Equipment and Supplies Will Be Maintained On-Site to Control/Remediate Spills and Leaks:

ABSORBENT RAGS

VISQUEEN

FIRE EXTINGUISHER

Describe What Other Resources the Company Has Available for Foreseeable Emergencies:

Cellular telephone

2-way radio

All personnel shall be CPR certified.

How Can These Resources Be Mobilized?

under the direction of the site superintendent.

Person On-Site With Basic First Aid Training: GREG SHEEHAN

Person On-Site With CPR Training: GREG SHEEHAN

	Worksite	Excavation	Soil Pile
Warning Signs	NO SMOKING	NO SMOKING	N A
Caution Tape	CAUTION	CAUTION	N A
Barricades	YES, LIGHTED	YES LIGHTED	N A
Fencing	SNOW FENCING	SNOW FENCING	N A
Trench Plates	YES	YES	N A
Plastic Sheeting	VISQUEEN .20m	Visqueen .20m	visqueen .20m
Other (Describe)			

Project ID: _____

Confined Space Entry Procedures Summary

Confined Space Entries _____ Are XX Are Not Expected On This Project. Explain:

If Entries Are Expected, Identify:

Testing Equipment: _____ Oxygen Meter (Brand/Model) _____
 _____ Combustible Gas Meter (Brand/Model) _____
 _____ Toxic Gas Monitor (Gas) _____
 (Brand/Model) _____

Ventilation: _____ Not Required (explain) _____
 _____ Required (method) _____

Rescue/Retrieval Equipment: _____ Not Required (explain) _____
 _____ Required (describe equipment) _____

Personal Protective Equipment:

_____ Respirator (type) _____

_____ Eye Protection (type) _____

_____ Head Protection (type) _____

_____ Foot Protection (type) _____

_____ Coveralls (type) _____

_____ Other (describe) _____

How will standby person summon help in emergency?

On-Site Person Responsible For Performing and Documenting Testing: _____

On-Site Person Trained In Cardio-Pulmonary Resuscitation (CPR): _____

Attach copy of Company's Confined Space Entry Procedures to this sheet.

Operation / Task: CONCRETE DEMOLITION AND REMOVAL

Hazard: NOISE, and flying debris

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):
moderate

Anticipated Level / Condition During Normal Operation:
moderate

Normal Precautionary Measures Used to Avoid Hazard:
use of ear plugs or protection and safety glasses,
avoiding direct access near demo area.

Corrective Action(s) if Action Level / Triggering Condition Exceeded:

N/A

Additional Personal Protective Equipment if Action Level / Triggering Condition Exceeded:

<u>X</u> Respirator (type) <u>3-M series 5000</u>	<u>X</u> Eye Protection (type) <u>safety glasses</u>
<u>X</u> Gloves (type) <u>leather</u>	<u> </u> Coveralls (type) <u>cloth</u>
<u>X</u> Foot Protection (type) <u>leather</u>	<u> </u> Head Protection (type) <u>Hard hat</u>
<u> </u> other (describe):	

Monitoring Method For Hazard: <u>XX</u> observation	<u> </u> direct reading instrument
<u> </u> colorimetric tube	<u> </u> dosimeter
<u> </u> other (describe):	<u> </u> air sampling pump & media

Frequency of Monitoring: <u>XX</u> continuous	<u> </u> start of shift
<u> </u> hourly	<u> </u> half-hourly
<u> </u> other (describe):	<u> </u> 15 minute intervals

Monitoring Device:

SITE SUPERINTENDENT

Calibration Method / Frequency of Calibration:

N/A

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
slow 1.1

Operation / Task: TANK REMOVAL EXCAVATIONHazard: Excavating equipment and open pit area

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:

remain clear of all equipment and avoid direct contact near open hole.
to avoid cave-ins soil will be benched and sloped.

Corrective Action(s) if Action Level / Triggering Condition Exceeded:

N/A

Additional Personal Protective Equipment if Action Level / Triggering Condition Exceeded:

☐ Respirator (type) _____ ☐ Eye Protection (type) _____
☐ Gloves (type) _____ ☐ Coveralls (type) _____
☐ Foot Protection (type) _____ ☐ Head Protection (type) _____
☒ other (describe): Barricade and caution tape

Monitoring Method For Hazard: ☒ observation☐ direct reading instrument☐ colorimetric tube☐ dosimeter☐ air sampling pump & media☐ other (describe):Frequency of Monitoring: ☒ continuous☐ start of shift☐ hourly☐ half-hourly☐ 15 minute intervals☐ other (describe):

Monitoring Device:

JOB SUPERINTENDENT

Calibration Method / Frequency of Calibration:

 Person ^{N/A} On-Site Responsible For Evaluating Monitoring Data:
GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
0101.1

Operation / Task: DISCONNECTING AND CAPPING TANKS

Hazard: RESIDUAL DIESEL LIQUIDS AND VAPORS AND SLIPPING ON TANK SURFACE

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

MODERATE

Anticipated Level / Condition During Normal Operation:

MODERATE

Normal Precautionary Measures Used to Avoid Hazard:

Tanks to be emptied of all liquids and flushed prior to disconnect.
 Tank hole to be monitored for vapor levels.
 Tank tops to be exposed to avoid slipping.

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

Institute supplemental Health and Safety plan attached hereto.

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

<u>XX</u> Respirator (type) _____	<u>XX</u> Eye Protection (type) _____
<u>XX</u> Gloves (type) _____	<u>XX</u> Coveralls (type) _____
<u>XX</u> Foot Protection (type) _____	<u>XX</u> Head Protection (type) _____
<u>XX</u> other (describe): <u>LEL Monitor</u>	

Monitoring Method For Hazard: XX observation _____ direct reading instrument
 _____ colorimetric tube _____ dosimeter _____ air sampling pump & media
 _____ other (describe):

Frequency of Monitoring: XX continuous _____ start of shift
 _____ hourly _____ half-hourly _____ 15 minute intervals
 _____ other (describe):

Monitoring Device:

JOB SUPERINTENDENT AND LEL Monitoring devices.

Calibration Method / Frequency of Calibration:

monthly

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
 slow 1.1

Operation / Task: Inerting of Tank

Hazard: Dry ice handling--- Diesel fuel vapors

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

Moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:

Use of leather gloves while handling and continuous tank hole monitoring.

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

immediately institute the Aronson Health and Safety plan.

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

XX Respirator (type) _____ XX Eye Protection (type) _____

XX Gloves (type) _____ XX Coveralls (type) _____

XX Foot Protection (type) _____ XX Head Protection (type) _____

____ other (describe):

Monitoring Method For Hazard: XX observation _____ direct reading instrument

____ colorimetric tube _____ dosimeter _____ air sampling pump & media

____ other (describe):

Frequency of Monitoring: XX continuous _____ start of shift

____ hourly _____ half-hourly _____ 15 minute intervals

____ other (describe):

Monitoring Device:

JOB SUPERINTENDENT

Calibration Method / Frequency of Calibration:

N/A

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
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Operation / Task: Removal of Tank

Hazard: Lifting of tank, open excavation area

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):
moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:
caution tape as a perimeter warning for excavation., incl erection of fence.
Safety rope attached to tank.

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

n/a

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

<u>XX</u> Respirator (type) _____	<u>XX</u> Eye Protection (type) _____
<u>XX</u> Gloves (type) _____	<u>XX</u> Coveralls (type) _____
<u>XX</u> Foot Protection (type) _____	<u>XX</u> Head Protection (type) _____
____ other (describe):	

Monitoring Method For Hazard: XX observation _____ direct reading instrument
____ colorimetric tube _____ dosimeter _____ air sampling pump & media
____ other (describe):

Frequency of Monitoring: XX continuous _____ start of shift
____ hourly _____ half-hourly _____ 15 minute intervals
____ other (describe):

Monitoring Device:

JOB SITE SUPERINTENDENT

Calibration Method / Frequency of Calibration:

N A

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

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Operation / Task: Stablizing and backfilling of excavation pit

Hazard: Backhoe and other heavy equipment

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:

establish boundaries and erect barricades and caution tape.

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

N/A

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

XX Respirator (type) _____ XX Eye Protection (type) _____
XX Gloves (type) _____ XX Coveralls (type) _____
XX Foot Protection (type) _____ XX Head Protection (type) _____
____ other (describe):

Monitoring Method For Hazard: XX observation _____ direct reading instrument
____ colorimetric tube _____ dosimeter _____ air sampling pump & media
____ other (describe):

Frequency of Monitoring: XX continuous _____ start of shift
____ hourly _____ half-hourly _____ 15 minute intervals
____ other (describe):

Monitoring Device:

JOB SITE SUPERINTENDENT.

Calibration Method / Frequency of Calibration:

N/A

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
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Operation / Task: Collection of soil samples

Hazard: Backhoe and excavation equip, open pit area

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:

Locate and identify all underground utilities.
All personnel shall be dressed in minimum protective clothing.

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

N/A

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

XX Respirator (type) _____ XX Eye Protection (type) _____

XX Gloves (type) _____ XX Coveralls (type) _____

XX Foot Protection (type) _____ XX Head Protection (type) _____

XX other (describe): COMPANY ISSUED SHIRTS AND HATS.

Monitoring Method For Hazard: XX observation _____ direct reading instrument
_____ colorimetric tube _____ dosimeter _____ air sampling pump & media
_____ other (describe):

Frequency of Monitoring: XX continuous _____ start of shift
_____ hourly _____ half-hourly _____ 15 minute intervals
_____ other (describe):

Monitoring Device:

Barricades, caution tape and observation bt the site superintendent.

Calibration Method / Frequency of Calibration:

N/A

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(ii)(A), (C) & (E)

00276
etolvi.1

Operation / Task: New equipment tank setting

Hazard: overhead objects

Action Level / Triggering Physical Condition (use separate sheet for different severity of each condition):

moderate

Anticipated Level / Condition During Normal Operation:

moderate

Normal Precautionary Measures Used to Avoid Hazard:

barricades and caution tape

Corrective Action(s) If Action Level / Triggering Condition Exceeded:

avoid overhead objects.

Additional Personal Protective Equipment If Action Level / Triggering Condition Exceeded:

 Respirator (type) XX Eye Protection (type)
XX Gloves (type) XX Coveralls (type)
XX Foot Protection (type) XX Head Protection (type)
 other (describe):

Monitoring Method For Hazard: XX observation direct reading instrument
 colorimetric tube dosimeter air sampling pump & media
 other (describe):

Frequency of Monitoring: XX continuous start of shift
 hourly half-hourly 15 minute intervals
 other (describe):

Monitoring Device:

JOB SITE SUPERINTENDENT.

Calibration Method / Frequency of Calibration:

N/a

Person On-Site Responsible For Evaluating Monitoring Data: GREG SHEEHAN

Reference: Alameda County Requirements 17(d), 17(e), & 17(f). 29 CFR 1910.120(b)(4)(i)(A), (C) & (E)

00276
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Project ID: _____

Page 1 of 1

Work / Task Hazard Analysis Summary
(Duplicate As Required)

Operation / Task	Hazard	Detail Sheet Number
Concrete demo & rem	Noise and flying debri	1
Tank removal Excav	Excav equip and open pit area	2
Discon & capping tank	res. diesel liq & vap/ slip on tank	3
Inerting of Tank	Dry ice handling--Diesel fuel vapors	4
Removal of tank	Lifting of tank/ open pit area	5
Stablizing and backfil	backhoe and other heavy equip	6
Collect soil samples	Backhoe and other heavy equip.	7
New equip tank setting	overhead Objects	8

00275

Operation ->	Excavation & Tank Removal	Tank Disconnect, Capping, & Inerting
Coveralls	cloth	cloth
Gloves	leather	leather
Eye Protection	safety glasses w/side shields	safety glasses w/side shields
Foot Protection	leather boots	leather boots
Head Protection	approved hard hats	approved hard hats
Respirator	Easy Care 3-M series 5000	if required
Other	Company issued shirts & hats	same as exc.

Operation ->	Soil Sampling	Support Personnel
Coveralls	cloth	cloth
Gloves	leather	leather
Eye Protection	Safety glasses w/side shield	safety glasses w/side shields
Foot Protection	leather boots	leather boots
Head Protection	approved hard hats	approved hard hats
Respirator	3-M Easy Care series 5000	if required
Other		

Project ID: _____

Daily Safety and Health Briefing Record
(Duplicate As Required)

Topics Discussed:

Repeat pre-job indoctrination briefing regarding all health and safety issues listed hereinbefore.

Length of Briefing: _____

Briefing Presented By: GREG SHEEHAN

Date: _____

Attendees

Signature

Printed Name

Company

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page.

Topics to Be Discussed:

DURING A TAILGATE MEETING CONDUCTED BY THE SITE SAFETY OFFICER THE FOLLOWING TOPICS WILL BE DISCUSSED:

1. location of nearest telephone stationary or cellular;
2. site location of all health and safety materials and supplies;
3. emergency procedures;
4. review of safety precautions when working around heavy equipment;
5. establish an exclusion zone
6. review Health and Safety closure plan for specific site;

Estimated Length of Briefing: 30 minutes Actual Length of Briefing: _____

Briefing Presented By: GREG SHEEHAN Date: _____

Attendees

Signature

Printed Name

Company

Project ID: _____

Site Supervision & Responsibilities

	Site (General) Supervisor	Site Health and Safety Officer
Name	GREG SHEEHAN	GREG SHEEHAN
Company Title	SITE SUPERINTENDANT	SITE SAFETY OFFICER
Years With Company	FOUR YEARS	FOUR YEARS
Years in Position	FOUR YEARS	FOUR YEARS
Supervisor's Name	PETER W. ALLEN	PETER W. ALLEN
Supervisor's Title	VICE PRESIDENT	VICE PRESIDENT
Description of Responsibilities On-Site	Supervise all contractor related activities. Insure all quality controll standards are complied with. Supervise and direct all employees and sub-contractors.	Monitor all contractor related activities to insure strict compliance with the established Health and Safety guidelines. (See suppl H & S Plan at IV ON-SITE- ORGANIZATIONS page D-2)
Description of Authority On Site:		
During Routine Activities	UNLIMITED	UNLIMITED
During Emergencies	UNLIMITED	UNLIMITED
For Disciplinary Actions	UNLIMITED	UNLIMITED

Attach Copies of Records/Certificates Demonstrating Compliance With 29 CFR 1910.120 (HAZWOPER) Training Requirements

00271

Lawrence Livermore National Laboratory

Project Management:	Name	Telephone Number	Radio Pager ¹
Project Manager	Erik Brown	(510) 422-0649	0-6561
Construction Manager	Steven Shih	(510) 423-9308	0-5187
Construction Inspector	Daryl Williams	(510) 423-2840	0-0503
Construction Safety Inspector	Larry Chesney	(510) 423-9005	0-1132
Environmental, Health, and Safety Team:			
Team Office			
Team Leader			
Area EH & S Tech			
Off-Shift EH & S Tech	Call LLNL Fire Dispatch at (510) 422-7595, request Off-Shift Tech be paged		
Facility:			
Facility Coordinator			

¹ LLNL Radio Paging System Accessed By Dialing 3-7777 on-site, or (510) 423-7705 off-site.

ARONSON ENGINEERING, INCORPORATED

(Company Name)

	Name	Telephone Number	Radio Pager
Project Manager	PETER W. ALLEN	916-381-1600	328-0336
Site Supervisor	GREG SHEEHAN	916-531-0953	328-6837
Site Health & Safety Officer	GREG SHEEHAN	916-531-0953	328-6837
Employees:			
GARY FRYER			
MIKE BURKE			
MATT STEPHENS			
RON PERRY			
PAUL DeMONTIGNY			
JIM SHAFFER			
DAVE CHANNELL			

Employee Training and Medical Surveillance Summary

Employee Name (Last, First, MI)	Employee ID Number or Date of Birth	Dates of Initial HAZWOPER (29 CFR 1910.120) Training ¹	Date of Most Recent HAZWOPER Refresher ¹	Date of Most Recent Medical Exam
Allen, Peter W.	12-27-58	07-28-91	10-10-92	04-27-93
Bailey, Scott	08-04-62	02-14-92	05-06-93	05-27-93
Channell, David R.	08-26-41	10-10-92		04-22-93
deMontigny, Paul	04-20-61	05-06-91	05-01-93	
Fryer, Gary	06-07-63	05-06-91	05-01-93	04-22-93
Fuller, Robert	06-21-58	11-27-91	01-16-93	05-05-93
Perry, Ron	05-21-63	05-06-91	05-01-93	04-08-93
Shaffer, James	07-26-60	01-16-93		04-29-93
Sheehan, Greg	04-02-67	4-21&22-90 5-5&6-90	05-22-93	
Stevens, Kevin	08-09-61	05-06-91	05-01-93	10-27-92

¹ Attach copies of training certificates or records

Reference: Alameda County Requirement 17(k). 29 CFR 1910.120(b)(4)(ii)(B) & (D)

00056

etow1.0

Certification

May it be known by all who read this that

PETTER ALLEN

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 10 Day of October, 19 92

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

CONTROL #

0101092-8 A

1864

**successfully completed the Initial 40 Hour requirements
listed under OSHA Regulation 29 CFR 1910.120**

this forteenth day of February 1992

Marty Marchese
Operations Manager

Certification

May it be known by all who read this that

DAVID R. CHANNELL

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 10 Day of October, 19 92

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

Charles V. Hare

CONTROL # 0101092-40 3

Certification

May it be known by all who read this that

PAUL de MONTIGNY

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 1 Day of May, 19 93

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

CONTROL # 050193-8 G

Certification

May it be known by all who read this that

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 1st Day of May, 1993

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

Signed

Control # 050193-8 J

Certification

May it be known by all who read this that

ROBERT FULLER

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of JANUARY, 19 93

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

Charles H. Hall

CONTROL #

011693-8 P

Certification

May it be known by all who read this that

RON PERRY

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 1 Day of May, 19 93

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

CONTROL # 050193-8 F

Certification

May it be known by all who read this that

JAMES SHAEFFER

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD: 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 day of JANUARY, 1993

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

Contract # 011793-40 R

Certification

May it be known by all who read this that

CHIEF SUPERVISOR

has met and surpassed all of the requirements of

HAZARDOUS WASTE OPERATIONS
AND EMERGENCY RESPONSE

29 CFR 1910.120 SUPERVISORY

COURSE

Presented this 14th day of JULY, 19 93.

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

Signed

CONTROL # 071493-8S

Certification

May it be known by all who read this that

GREG SHEEHAN

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 22

Day of MAY, 19 93

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

Control # 0522938A

Certification

May it be known by all who read this that

KEVIN STEVENS

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 1 Day of May, 1993

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

Signed

Control # 050193-8.1

PERMIT

Permit Issued To
(Insert Employer's Name, Address and Telephone No.)

Aronson Engineering, Inc.
6809 McComber St.
Sacramento, CA 95828
(916) 381-1600

No. _____
Date 12-23-92
Region 2
District 1
Tel. (916) 920-6123

Type of Permit Trench/Excavation -- Annual

Pursuant to Labor Code Sections 6500 and 6502, this Permit is issued to the above-named employer for the projects described below.

State Contractor's License Number 592010 A HAZ		Permit Valid through December 31, 1993	
Description of Project	Location Address	City and County	Anticipated Dates
			Starting Completion
Trench/excavation projects The IIPP submitted for this permit is accepted by DOSH for permit purposes only. Although it addresses the primary points required, failure to implement it or assure its effectiveness may result in citation.	Statewide	Statewide	1-1-93 12-31-93

This Permit is issued upon the following conditions:

1. That the work is performed by the same employer. If this is an annual permit the appropriate District Office shall be notified, in writing, of dates and location of job site prior to commencement.
2. That employer will comply with all occupational safety and health standards or orders applicable to the above projects, and any other lawful orders of the Division.
3. That if any unforeseen condition causes deviation from the plans or statements contained in the Permit Application Form the employer will notify the Division immediately.
4. Any variation from the specification and assertions of the Permit Application Form or violation of safety orders may be cause to revoke the permit.
5. This permit shall be posted at or near each place of employment as provided in 8 CAC 341.4.

Received From M. Aronson		Received By kna	
☐ Cash	Amount	Date	
☒ Check 456	\$100.00	12-23-93	

EMPLOYER ORIGINAL—GREEN DISTRICT COPY—PINK
ACCOUNTING COPY—CANARY REGION COPY—WHITE
3-89 (Rev. 2-81)

Investigated by _____
Safety Engr. _____ Date _____
Approved by [Signature] 12-23-93
Dist. Manager _____ Date _____

CONTRACTORS STATE LICENSE BOARD

License Number

592010

Entity

CORP

Name/Namestyle

ARONSON ENGINEERING
INCORPORATED

Classification(s)

A HAZ C10

Expiration Date

04/30/94

SMITH FIBERGLASS PRODUCTS INC.

2700 WEST 65TH STREET, LITTLE ROCK, AR 72209-8591 • 501-568-4010

A SUBSIDIARY OF A. O. SMITH CORPORATION

Aronson Engineering
Inc., a subsidiary

MAR 06 1993

CERTIFICATION OF ATTENDANCE

REC'D.

This is to certify that on February 25, 1993 the following employees of Aronson Engineering attended a seminar detailing the proper procedures to be used when installing Smith Fiberglass Products' UL/ULC listed fiberglass piping systems for use in conveying underground petroleum products.

The piping installation procedures were directly in accordance with the following Smith Fiberglass Products instruction manuals.

1. Manual B2160 - General Installation Instructions
for UL Listed RED THREAD® II
Pipe and Fittings (Part 1 & 2)
2. Manual F6600 - Assembly and Operating Instructions
for 1"-6" Field Tapering Tool
3. Manual B2165 - RED THREAD II Secondary Containment
Telescoping Pipe System

One copy of this certification is provided for each company participating. Please distribute copies to each attendee. The personnel attending were as follows:

Sammy Ortiz

Executive Vice President

Date - March 1, 1993

CERTIFICATE OF COMPLETION

Enviroflex

Flexible Double-Wall Piping System

Presented to

Mike Fuller

of Aronson Engineering, Inc.

for successful completion of the
Enviroflex Coupling and Installation Training Course

held in Paso Robles, CA on 6/1/93

Certification # EFC-93-2310

Trainer: Jim Whelden

TOTAL
CONTAINMENT
INC

James L. Lawrence
Executive Vice President
Total Containment, Inc.

ESD System Only

EFC01-593

CERTIFICATE OF COMPLETION

Enviroflex

Flexible Double-Wall Piping System

Presented to

Ron Perry

of Aronson Engineering, Inc.

for successful completion of the
Enviroflex Coupling and Installation Training Course

held in Paso Robles, CA on 6/1/93

Certification # EFC-93-2312

Trainer: Jim Whelden

TOTAL
CONTAINMENT
INC

James L. Lawrence

James L. Lawrence
Executive Vice President
Total Containment, Inc.

ESD System Only

EPC01-593

CERTIFICATE OF COMPLETION

Enviroflex

Flexible Double-Wall Piping System

Presented to

Greg Sheehan

of Aronson Engineering, Inc.

for successful completion of the
Enviroflex Coupling and Installation Training Course

held in Paso Robles, CA on 6/1/93

Certification # EFC-93-2311

Trainer: Jim Whelden

James L. Lawrence
Executive Vice President
Total Containment, Inc.

TOTAL
CONTAINMENT
INC

ESD System Only

EFC01-593

Robert Fuller
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
Michael J. Aronson
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
Kevin Stevens
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
Greg Sheehan
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
James Stephens
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
James Shaffer
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
Mike Burke
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

This certifies that
Mark Andrews
has completed the requirements for
STANDARD FIRST AID
sponsored by
SACRAMENTO AREA CHAPTER
Date completed
22 Mar 93

+ Gary Fryer

+ Kevin Williams

This certifies that

Gary Fryer
has completed the

ADULT CPR

course of instruction sponsored by

SACRAMENTO AREA CHAPTER

Date course completed

13 MAR 93

This certifies that

Gary Fryer
has completed the

STANDARD FIRST AID

course of instruction sponsored by

SACRAMENTO AREA CHAPTER

Date course completed

APR 22 1993

Valid for 2 years

5000 Series

3M

Easi-Care™ Dual Cartridge Respirators

Pre-Assembled for Convenience. Designed for Comfort.

The innovative design of 3M's 5000 Series Easi-Care gas and vapor respirators make it easier and more economical to help assure worker protection. Respirators are pre-assembled, have no spare parts and require no maintenance. Their lightweight, well-balanced

design provides greater comfort increasing user wear time. The 5000 Series Respirators are NIOSH/MSHA approved for use with cartridges alone, with replaceable dust/mist prefilters, and with replaceable high efficiency (HEPA) filters.

5000 Series dual cartridge respirators for gas and vapor protection

All 5000 Series gas and vapor respirators offer workers greater comfort, convenience and performance.

- Pre-assembled — with no spare parts to replace
- Lightweight design — for greater user comfort
- Custom-sized — small, medium and large
- Cradle suspension — holds respirator in place with minimal pressure to the back of neck, bridge of nose.
- Low profile facepiece/cartridge — provides a wider field of vision and greater comfort while wearing glasses or goggles
- NIOSH/MSHA approved
- Color coded by size and NIOSH/MSHA approval — for easy identification
- Resealable storage bag — keeps respirator clean between uses
- Replaceable prefilters — eliminates the need to replace entire respirator

5000 Series dual cartridge respirator assembly with paint spray/pesticide and dust/mist prefilters

This respirator offers all the benefits of the standard 5000 Series products plus the added protection of an easy-to-install prefilter that is approved for three different uses: paint spray, pesticides, and dust/mist applications. For convenience, the 5111, 5211 and 5311 are packaged with one pair of No. 5010 paint spray/pesticide/dust-mist prefilters and one pair of No. 501 prefilter retainers.

Resealable Storage Bag

5000 Series combination respirators with HEPA filters

The first maintenance-free gas and vapor respirator with replaceable HEPA filters. Lightweight, flexible HEPA filters offer high efficiency protection. Replaceable filters provide longer life and greater economy from the respirator assembly.

Two HEPA respirator assemblies are available: First, the 5000 Series organic vapor/HEPA respirator is approved for certain organic vapors, dusts, fumes, mists, asbestos, radon daughters, radionuclides and paint spray/pesticides. Second, the 5000 Series organic vapor-acid gas/HEPA respirator is approved for use in areas containing organic vapors and acid gases, in combination with certain dusts, fumes, mists, asbestos, radon daughters, and radionuclides.

5000 Series Approvals (a) (b)

RESPIRATOR	PRODUCT NO.	ALONE	WITH 5010 PREFILTER AND 501 PREFILTER RETAINER	WITH 2040 HEPA FILTER AND 502 ADAPTOR
5101 (Small) 5201 (Medium) 5301 (Large)	Organic vapors. Approved for respiratory protection against organic vapors. Do not exceed maximum use concentration established by regulatory standards.	Organic vapors and dusts and 30 Hz approved for respiratory protection against organic vapors and dusts of particulate matter. Do not exceed maximum use concentration established by regulatory standards.	Organic vapors and dusts, formaldehyde and radon. Approved for respiratory protection against organic vapors, dusts of particulate matter and radon. Do not exceed maximum use concentration established by regulatory standards.
5102 (Small) 5202 (Medium) 5302 (Large)	Chemical, inorganic carbonates, sulfur dioxide, carbon dioxide and hydrogen cyanide. Approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.	Chemical, inorganic carbonates, sulfur dioxide, formaldehyde, hydrogen cyanide, carbon monoxide, and dusts and 30 Hz approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.	Chemical, inorganic carbonates, sulfur dioxide, carbon dioxide, formaldehyde, hydrogen cyanide, carbon monoxide, and dusts and 30 Hz approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.
5103 (Small) 5203 (Medium) 5303 (Large)	Organic vapors, chemical, inorganic carbonates, hydrogen cyanide and sulfur dioxide. Approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.	Organic vapors, chemical, inorganic carbonates, hydrogen cyanide and sulfur dioxide and dusts and 30 Hz approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.	Organic vapors, chemical, inorganic carbonates, hydrogen cyanide and sulfur dioxide and dusts and 30 Hz approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.
Ammonia, hydrocyanic acid and formaldehyde. Approved for respiratory protection against ammonia, hydrocyanic acid, and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.	Ammonia, hydrocyanic acid and formaldehyde and dusts and 30 Hz approved for respiratory protection against ammonia, hydrocyanic acid, and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.	Ammonia, hydrocyanic acid and formaldehyde and dusts, formaldehyde, and radon. Approved for respiratory protection against ammonia, hydrocyanic acid, and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.
Formaldehyde and organic vapors. Approved for respiratory protection against organic vapors and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.	Formaldehyde, organic vapors and dusts and 30 Hz approved for respiratory protection against organic vapors and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.	Formaldehyde, organic vapors and dusts, formaldehyde, and radon. Approved for respiratory protection against organic vapors and formaldehyde. Do not exceed maximum use concentration established by regulatory standards.
Paint, lacquer, enamel, varnish, and organic vapors and dusts and 30 Hz approved for respiratory protection against organic vapors and dusts. Do not exceed maximum use concentration established by regulatory standards.
5141 (Small) 5241 (Medium) 5341 (Large)			Organic vapors and dusts, formaldehyde and radon. Approved for respiratory protection against organic vapors, dusts of particulate matter and radon. Do not exceed maximum use concentration established by regulatory standards.
5143 (Small) 5243 (Medium) 5343 (Large)			Organic vapors, chemical, inorganic carbonates, hydrogen cyanide, sulfur dioxide, carbon dioxide, formaldehyde, hydrogen cyanide, carbon monoxide, and dusts and 30 Hz approved for respiratory protection against organic vapors, sulfur dioxide, carbon dioxide, and hydrogen cyanide. Do not exceed maximum use concentration established by regulatory standards.
ACCESSORIES
3010 Prefilter with 501 Prefilter Retainer	(a) All respirators and respirator/prefilter assemblies can be used up to the NIOSH approval limits, 10 times the permissible exposure limit, or the maximum use concentration allowable in applicable OSHA standards, whichever is lower. (b) For specific usage, limitations and warning information, see respirator and/or prefilter packaging, or call OH&ESD Technical Service, 1-800-243-4630. (c) OSHA regulations require gas proof goggles be worn with half mask respirators when used against formaldehyde.
2040 High Efficiency Filter with 502 Prefilter Adaptor			

Daily Trenching Log

DAILY TRENCHING LOG

DATE: _____		SIGNATURE: _____	
WEATHER: _____		PROJECT: _____	
Was One Call System contacted: Yes _____ No _____			
Protective system:		Trench shield (box) _____ Wood shoring _____ Sloping _____ Other _____	
Purpose of trenching:		Drainage _____ Water _____ Sewer _____ Gas _____ Other _____	
Were visual soil tests made: Yes _____ No _____ If yes, what type? _____			
Were manual soil tests made: Yes _____ No _____ If yes, what type? _____			
Type of soil: Stable Rock _____ Type A _____ Type B _____ Type C _____			
Surface encumbrances: Yes _____ No _____ If yes, what type? _____			
Water conditions: Wet _____ Dry _____ Submerged _____			
Hazardous atmosphere exists: Yes _____ No _____ <i>(If yes, follow confined space entry procedures policy, complete Confined Space Entry Permit, monitor for toxic gas(es))</i>			
Is trenching or excavation exposed to public vehicular traffic (exhaust emission): Yes _____ No _____ <i>(If yes, refer to confined space entry procedures, complete Confined Space Entry Permit, monitor for toxic gas(es))</i>			
Measurements of trench: Depth _____ Length _____ Width _____			
Is ladder within 25 feet of all workers: Yes _____ No _____			
Is excavated material stored 2 feet or more from edge of excavation: Yes _____ No _____			
Are employees exposed to public vehicular traffic: Yes _____ No _____ <i>(If yes, warning vests required)</i>			
Are other utilities protected: Yes _____ No _____ <i>(Water, sewer, gas, or other structures)</i>			
Are sewer or natural gas lines exposed: Yes _____ No _____ <i>(If yes, refer to confined space entry procedures policy, complete Confined Space Entry permit, monitor for toxic gas(es))</i>			
Periodic inspection: Yes _____ No _____ Last (date) _____			
Did employees receive training in excavating: Yes _____ No _____			

Project ID: 431-D101

Plan Certification

The plans and procedures provided within this Safety and Health Plan are an accurate representation of those that will be used on the Lawrence Livermore National Laboratory Site. Information provided within the plan regarding Company employees including, but not limited to training and medical qualification information, is an accurate representation of Company records.

Printed Name and Signature of Company Representative Completing Plan

Date Signed

Printed Name and Signature of Site Safety Officer

Date Signed

Printed Name and Signature of Company Project Manager

Date Signed

000001

APPENDIX E MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheet

CHEVRON Diesel Fuel No. 2

Page 1 of 7 CPS272102

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised for indexing purposes only. No changes have been made in this MSDS.

1. PRODUCT IDENTIFICATION

CHEVRON Diesel Fuel No. 2

- DANGER:
- COMBUSTIBLE
 - HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
 - CAUSES SKIN IRRITATION
 - CANCER HAZARD
 - PROLONGED OR REPEATED SKIN CONTACT MAY INCREASE THE RISK OF SKIN CANCER
 - KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS272102

PRODUCT INFORMATION: (510)242-5357

Revision Number: 12 Revision Date: 01/03/93 MSDS Number: 000525
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering. Read the Additional Health Data section (12) of this document for more information.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

RESPIRATORY/INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. This hazard evaluation is based on data from similar materials.

INGESTION:

If swallowed, this substance is considered practically non-toxic to internal organs. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the

Revision Number: 12

Revision Date: 01/03/92

MSDS Number: 000525

NDA - No Data Available

NA - Not Applicable

substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use this material only in well ventilated areas.

5. FIRE PROTECTION

FLASH POINT: (P-M) 125F (52C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

MFPA RATINGS: Health 0; Flammability 2; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

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MSDS Number: 000529

NDA - No Data Available

NA - Not Applicable

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

BOILING POINT: 176 - 370C (348-698F)

MELTING POINT: NA

EVAPORATION: NDA

SPECIFIC GRAVITY: 0.84 @ 15.6/15.6C (Typical)

VAPOR PRESSURE: 0.04 PSIA @ 40C

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 1.9 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up spills immediately, observing precautions in Protective Equipment section. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

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NDA - No Data Available

NA - Not Applicable

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-6802.

DISPOSAL METHODS:

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CASE COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Diesel Fuel No. 2

CONTAINING

100.0 % FUELS, DIESEL, NO. 2
CAS66476346

DISTILLATES, HYDRODESULFURIZED MIDDLE
CAS64742809

DISTILLATES, STRAIGHT RUN MIDDLE
CAS64741462

KEROSENE
CAS8008206

KEROSENE, HYDRODESULFURIZED
CAS64742810

DISTILLATES, LIGHT CATALYTIC CRACKED
CAS64741599

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000528
NDA - No Data Available NA - Not Applicable

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: FUEL OIL, NO. 2
DOT HAZARD CLASS: COMBUSTIBLE LIQUID
DOT IDENTIFICATION NUMBER: NA1993

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects: YES
2. Delayed (Chronic) Health Effects: YES
3. Fire Hazard: YES
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

KEROSENE
is found on lists: 02,10,11.

REGULATORY LISTS SEARCHED:

01-SARA 311	02-MASS RTR	03-NTP Carcinogen
04-CA Prop. 65	05-MI 406	06-IARC Group 1
07-IARC Group 2A	08-IARC Group 2B	09-SARA 302/304
10-PA RTR	11-NJ RTR	12-CERCLA 102.4
13-DE RTR	14-ACGIH TLV	15-ACGIH STEL
16-ACGIH Calculated TLV	17-OSHA TWA	18-OSHA STEL
19-Chevron TLV	20-EPA Carcinogen	21-TSCA Sect 4(e)
22-TSCA Sect 8(a)(e)(f)	23-TSCA Sect 8	24-TSCA Sect 12(b)
25-TSCA Sect 8(a)	26-TSCA Sect 8(d)	28-Canadian WHMIS
29-OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Minimal effects clearing in less than 24 hours.

SKIN IRRITATION:

Moderate irritation at 72 hours. (Moderate erythema).

DERMAL TOXICITY:

The dermal LD50 in rabbits is > 8 ml/kg.

RESPIRATORY/INHALATION:

The 4-hour inhalation LC50 in rats is greater than 5 mg/l.

INGESTION:

The oral LD50 in rats is > 8 ml/kg.

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NDA - No Data Available

NA - Not Applicable

ADDITIONAL TOXICOLOGY DATA:

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains a mixture of petroleum hydrocarbons called middle distillates (which means they boil between approximately 350F and 700F). Because of this broad description, many products are considered middle distillates yet they are produced by a variety of different petroleum refining processes. Toxicology data developed on some middle distillates found that they caused positive responses in some mutagenicity tests and caused skin cancer when repeatedly applied to mice over their lifetime. This product may contain some middle distillates found to cause those adverse effects.

Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust. The excess risk of cancer for people exposed to diesel exhaust has not been determined as studies on exposed workers have been inconclusive. It is recommended that exposure to diesel exhaust be minimized to reduce the potential cancer risk.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000529
NDA - No Data Available NA - Not Applicable