SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

PHERMEX FACILITY
DX DIVISION
TA-15

Los Alamos National Laboratory
Los Alamos, New Mexico

Prepared By:
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In Conjunction with
Los Alamos National Laboratory
Water Quality and Hydrology Group (ESH-18)

Revision 2: February 2002

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CERTIFICATION

This Plan was developed pursuant to provisions of the federal regulation for oil pollution prevention, 40 CFR Part 112. Its purpose is to provide spill prevention and response measures to prevent the pollution of navigable waters from oil related spills.

In accordance with 40 CFR Part 112.3 (d), this Plan has been reviewed and certified by a Registered Professional Engineer (PE). By means of this certification, the engineer, having examined the facility and being familiar with the provisions of this regulation, attests that this Plan has been prepared in accordance with good engineering practices.

Certified by: M. E. Smith Date: 2/28/2002

Mike Smith
Registered Professional Engineer
Deputy Facility Manager, DX Division
Los Alamos National Laboratories

2/28/2002

MANAGEMENT APPROVAL

In accordance with 40 CFR Part 112.7, this Plan has the full approval of management at a level with authority to commit the necessary resources.

Facility Owner Approval:

Approved by: M. E. Smith deputy FM for Date: 2/28/2002

Tom Alexander
FMU 67 Facility Manager
Los Alamos National Laboratories

Facility Operator Approval:

Approved by: Rendell L Carver Date: 2/28/02

Rendell Carver
Group Leader
DX-3

Reviewed By: Harvey Decker Date: 2-28-02

Harvey Decker
DX-DO/ESH-18, ES&H Generalist

SPILL PREVENTION CONTROL AND COUNTERMEASURE COMPLIANCE INSPECTION PLAN REVIEW PAGE

In accordance with 40 CFR Part 112.5(b), a review and evaluation of this SPCC Plan is conducted at least once every three years. As a result of this review and evaluation, the SPCC Plan will be amended within six months of the review to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a spill event from the facility, and (2) if such technology has been field proven at the time of review. Any amendment to the SPCC Plan shall be certified by a Professional Engineer within six months after a change in the facility design, construction, operation, or maintenance occurs which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines.

Review Dates	Signature	Name	Title	Amended & Stamped (yes/no)

1. INTRODUCTION

The Spill Prevention Control and Countermeasure (SPCC) Plan is a requirement of the Oil Pollution Prevention Regulation, 40 CFR Part 112. Its intent is to prevent oil related spills from polluting navigable waters of the United States (U.S.) through the implementation of adequate prevention and response measures. With regard to Los Alamos National Laboratory (LANL), navigable waters of the U.S. include all canyons, arroyos, streams, and rivers within and surrounding LANL Technical Areas.

This SPCC Plan addresses the aboveground storage tanks 15-473-AST and 15-474-AST and associated equipment in and around the Phermex facility.

1.1. Facility Description

Technical Area (TA) 15 is located within Los Alamos National Laboratory between Pajarito Road and State Road 4. This area operates under the direction of LANL's Dynamic Experimentation (DX) Division, and is used for high-explosives research, development and testing. TA-15 is used specifically for detonator development for high explosives and for hydrodynamic testing. The area consists of a large buffer zone to protect personnel and facilities from shrapnel from explosives tests.

The Phermex Facility is located in Los Alamos National Laboratory (LANL) Technical Area 15 (TA-15), on the mesa top southwest of Potrillo Canyon. At this facility, a 50-MHz pulsed electron beam Marx Generator, which is housed in Building TA-15-184, is used in flash X-radiography of explosively driven systems. The resulting X-ray emissions are suitable for penetrating materials like iron and uranium used in weapons research.

The R-310 firing site is used for modern weapons testing for ultra-fast instrumentation and hydrodynamic experiments. More than 2200 ft^2 of floor space is divided principally between an optics room, which provides 90° of direct access to the firing point, and a control room that is completely shielded against noise. An uninterruptible power supply with batteries having 30 minutes of reserve capacity furnishes regulated AC power for the entire control room.

Associated with the Marx Generator in a closed-loop system are two AST's, which store dielectric oil. These AST's, 15-473-AST and 15-474-AST, each have a storage capacity of 21,000 gallons. The storage tanks are located in a concrete-lined secondary containment structure north of Building TA-15-184. Additionally the transfer lines are contained in a concrete lined trench that discharges back into the tank containment structure in the event of a leak. The trench is covered with removable solid plates to facilitate line inspection.

These facilities are classified under the SPCC regulations as a bulk storage facility. This is not a tank car or tank truck loading and unloading facility.

1.2. Facility Owner & Operator

The Facility Owner of the Phermex Project is LANL, DX Division, FMU 67. The FMU 67 Facility Manager is responsible for safely operating the facilities and for providing responsive and reliable facilities and services to support tenants' operational responsibilities.

The facility tenant operator is currently the DX-3 Group. DX-3 has accepted, with the approval of the Facility Manager, responsibility for implementation and maintenance of the Phermex Facility SPCC Plan. If for any reason DX-3 will not continue to manage the SPCC Plan, a memorandum of understanding will be developed between the operating tenant group/division and the Facility Manager to establish roles and responsibilities associated with the Plan, and the Plan will be properly amended to reflect such action.

Operating Group and facility contacts are listed in Appendix E and will be updated as necessary.

1.3. Spill History

There have been no reportable spills at the Phermex Facility.

1.4. Potential Spill Predictions

The following table lists the predicted direction of flow, name of the receiving canyon, total potential quantity and potential flow rate for a spill at each tank

Structure Number	Predicted Direction of Flow	Receiving Canyon	Total Quantity	Potential Flow Rate
15-473-AST	Northeast	Potrillo Canyon	21,000 gallons	Dependent on size of breach.
15-474-AST	Northeast	Potrillo Canyon	21,000 gallons	Dependent on size of breach.
Marx Generator	Northeast	Potrillo Canyon	9,500 gallons	Dependent on size of breach.

2. STORAGE TANKS AND CONTAINMENT STRUCTURES

To prevent discharged oil from reaching a navigable water of the U.S., two 21,000-gallon-capacity storage tanks, containment structures, ancillary equipment, and management procedures are in place at the Phermex Site. The following sections address items associated with the storage tanks and containment structures including facility drainage, Marx Generator containment descriptions, storage tank descriptions, secondary containment for the AST's and associated storm water drainage, integrity testing, fail-safe engineering, and transfer operations.

2.1. Facility Drainage and Storm Water Considerations

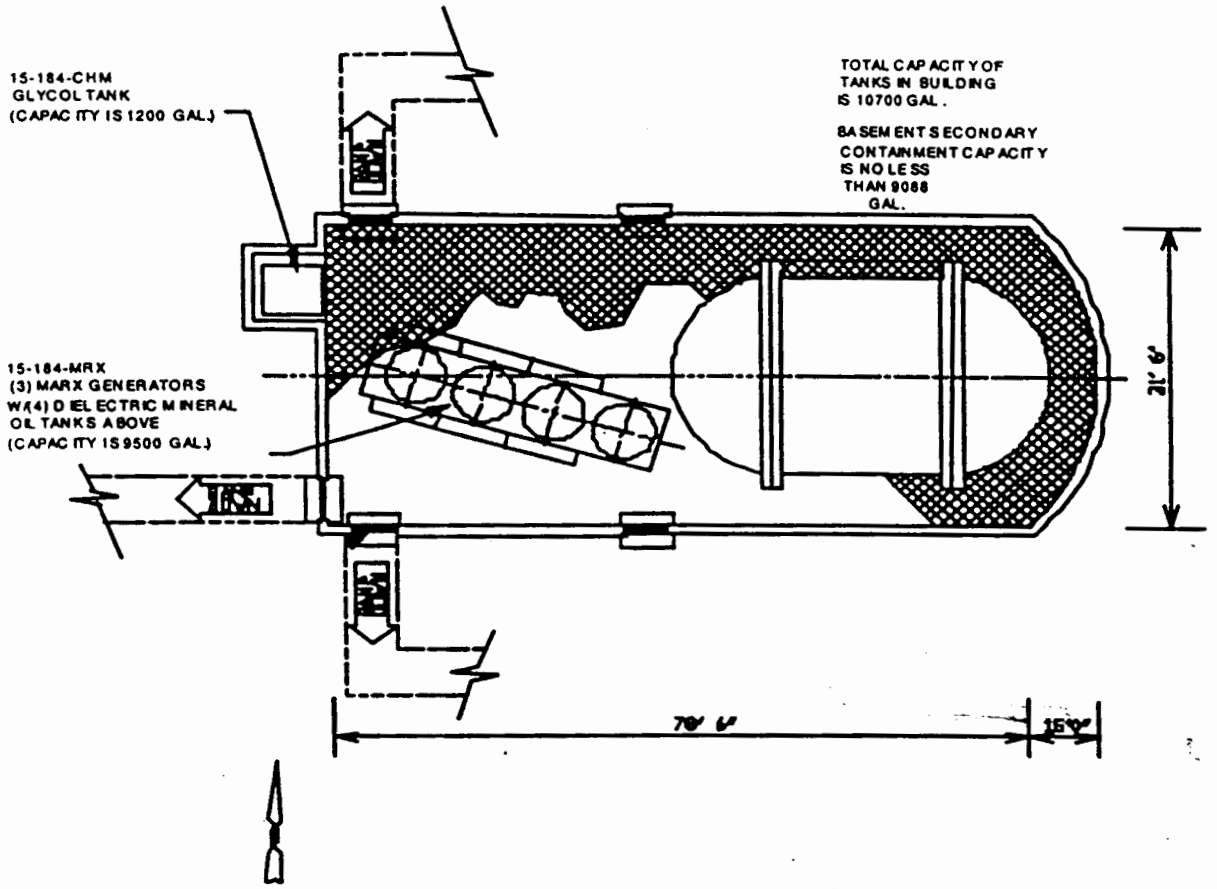
The Phermex Site and surrounding area is relatively flat and well vegetated, with a slight slope downward to the northeast. There are no watercourses or arroyos that run across the site. There are run-on diversion boards to the southwest of the secondary containment structure to help prevent storm water from running in to secondary containment and washing oil into the environment. Additionally, a storm drain immediately to the south of the tanks structure has been installed to help capture run-on and divert it to the east, outside the boundary of the secondary containment. There is a catch basin and an 18-inch CMP that drains storm water from the Building TA-15-184 area northwest into Potrillo Canyon.

2.2. Secondary Containment

Oil storage tanks 15-473-AST and 15-474-AST are located below grade. The excavated area has been bermed and lined with concrete to form a secondary containment unit for the tanks. The capacity of the secondary containment unit is approximately 94,260 gallons. This volume is large enough to contain the total volume of the tanks plus the volume of storm water produced by a 3-inch rainfall. The containment unit is also equipped with a drop inlet and drain line to discharge storm water accumulations. The drain line is equipped with a lockable valve. Additionally the transfer lines are contained in a concrete lined trench that discharges back into the tank containment structure in the event of a leak. The trench is covered with removable solid plates to facilitate line inspection.

The secondary containment for the Marx Generator is the building itself, and has a volume of no less than 9088 gallons, which is not large enough to contain a total breach for the volume of the Marx Generator (9,500 gallons) but is large enough to contain at least 1.5 times the capacity of any one of the 4 tanks inside the building. Floor drains below the Marx tank(s) have been equipped with 6 inch standpipes sealed to the floor. The standpipes are removable in the event a catastrophic failure of all tanks were to occur simultaneously, then they could be removed to prevent liquid from entering electrical equipment in the room. These floor drains do drain to the environment.

The schematic below shows the Marx Generator secondary containment layout at the TA-15 Phermex Facility.



MARX GENERATOR 15-184 AND SECONDARY CONTAINMENT IN BUILDING TA-15-184

2.3. Secondary Containment Drainage Operations

Storm water and snow melt occasionally accumulate in the dielectric mineral oil containment area around the tank. The containment structure does have a lockable storm water discharge valve to release excess accumulations of storm water to Potrillo Canyon. The storm water discharge valve shall be locked at all times when not in use for a drainage operation. Prior to discharge, an inspection of the storm water must be performed to ensure compliance with applicable federal and state water quality standards. ESH-18 should be contacted for assistance with this procedure. The storm water discharge valve shall be locked at all times except when a drainage operation is taking place.

Prior to discharge, accumulations must meet federal and state water quality standards. To ensure compliance with these standards, the following steps will be used for secondary containment unit discharge operations:

- Visually inspect accumulation to ensure that the water does not possess an oil sheen, odor, or other constituents that could result in a harmful discharge.
- Notify facility ES&H prior to a discharge.
- Notify ESH-18 at 665-4752 to obtain authorization for release and for testing of contaminates and pH, if necessary.
- Properly record each drainage operation. Include the time, date and employee who performed the operation. (Records will be kept in Appendix B of this document in accordance with Section 3.2.)

2.4. Integrity Testing

40 CFR Part 112, Section 7(2)(vi) states, "Aboveground tanks should be subject to periodic integrity testing, taking into account tank design and using such techniques as hydrostatic testing, visual inspection or a system of non-destructive shell thickness testing." Integrity testing incorporates both visual and internal inspection to determine the structural integrity of a storage tank, its associated piping, and its support structures. Such testing must be conducted by a certified inspector. API standards 510 and 653 are the primary U.S. industry standards for storage tank inspection and testing.

Visual inspections will be performed by the operating group on a routine basis consistent with the particular site conditions. The time between inspections, however, shall not exceed one month. All storage vessels will be given a formal visual external inspection by a qualified inspector every five years or at the quarter corrosion-rate life of the shell, whichever is less. The time between internal inspections for the AST shall not exceed 20 years. The integrity testing interval for the AST will be primarily derived from the service history of the tank and manufacturer's recommendation. Annually, each Marx tank associated with the pulsed power generator is drained, by transferring oil back to the AST, and then internally inspected for debris collection, rust, mechanic damage to welds, deterioration of the gaskets or other mechanical problems.

Tank inspection history reports form the basis for integrity testing record keeping. Records shall include all examinations and tests, conditions found, thickness measurements, settlement measurements, repairs/alterations, and recommendations. Inspection records are retained in Appendix D of this document in accordance with Section 3.2.

2.5. Fail-Safe Engineering

The level of liquid in the AST's is determined by periodic visual observation and by the operational procedures associated with the closed loop system in which the tanks operate. There is no liquid level alarm system or other monitoring devices.

Since the system is a closed loop and oil inventories normally remain constant, an inventory assessment following major transfers is an adequate method of monitoring for a loss of oil. This assessment consists of a measurement of the tank and associated equipment inventory, accounting for any oil added to the system.

2.6. Facility Transfer Operations

Oil is transferred through single-walled, underground piping between the generator and the AST's. The oil transfer operations are mainly for the purposes of semi-annual maintenance and periodic repair of the Marx Generators and associated appurtenances. Additionally the transfer lines are contained in a concrete lined trench that discharges back into the tank containment structure in the event of a leak. The trench is covered with removable solid plates to facilitate line inspection.
This facility is not designated as a tank car or tank truck loading and unloading facility. Any removal or additional filling of the AST shall follow facility specific and Department of Transportation procedures and regulations. The oil transfer pumps and shall be accessible for use of authorized personnel only, and shall be locked when not in use.

3. ADDITIONAL SPCC REQUIREMENTS

In addition to requirements specific to storage tanks and containment structures, 40 CFR Part 112 requires the development of procedures associated with inspections, record keeping, security, training, spill prevention, and Plan amendment. The following sections address implementation of these requirements at the Phermex facility.

3.1. Inspections

In addition to the integrity testing of the AST described in Section 2.4, other types of inspections are to be performed that are related to oil spill prevention are outlined below.

WALK AROUND INSPECTIONS

Aboveground Storage Tanks: 15-473-AST and 15-474-AST shall undergo monthly visual walk-around inspections to observe the conditions of the tank shells, tank foundations, secondary containment, locking storm water outlet shut-off valve, pump house works, bleeder valves, oil transfer shut-off and bypass valves, exposed piping, and general good housekeeping practices. Each inspection shall be documented in writing on an inspection form, and kept with the SWPP Plan for a period of no less than 3 years. Any leaks or potential problems shall be brought to the attention of the Field Operator's staff to evaluate the need for response.

Marx Generator: The Marx Generator and the facility in which it is housed shall undergo monthly visual walk-around inspections to observe changes in the conditions of gaskets; any previously identified leaks, new leaks and potential problems. Each inspection shall be documented in writing on an inspection form, and kept with the SWPP Plan for a period of no less than 3 years. Any deterioration of gasket conditions, worsening of leaks, or potential problems shall be brought to the attention of the Field Operator's staff to evaluate the need for response.

SPILL CONTROL MATERIAL INVENTORY

Spill control material stores at the Phermex Facility shall be inventoried semi-annually to assure that the proper materials are available in sufficient quantity and of sufficient quality to minimize the spread of oil products in the case of a spill prior to the arrival of response teams.

3.2. Record Keeping

The inspections identified in Section 3.1 shall be documented on the applicable forms in Appendix A. These inspection reports identify the date the inspection was performed, noted observations or measurements, and the name and signature of the inspector. Completed inspection reports will be maintained in the SPCC Plan in Appendix A.

Additional records that will be kept as they are generated include spill reports, secondary containment unit storm water discharge records, and training records. In the event of a spill, the spill tracking form in Appendix C will be used to describe the spill, corrective actions taken, and plans for preventing recurrence. Copies of spill reports will also be retained in Appendix C. Storm water discharge records will be retained in Appendix B, and training records will be maintained with the LANL Employee Development System (EDS) and in accordance with LANL's Training Standard LS113-09.0, *Training Documentation*, or within Appendix D.

All inspection records, spill reports, and other applicable data and documentation will be kept with this Plan and retained for a period of at least three years. All original official records will be kept with the SPCC Plan in building TA-15-184. A copy of all SPCC records will be kept at the FMU Office building TA-8-21. If, at any time, the operating group ceases operations and vacates the space, all original records will be transferred to the FMU Office.

3.3. Security

TA-15 is restricted to badged and cleared or escorted personnel. Building TA-15-184 shall be restricted to authorized personnel during working hours and locked during non-working hours. Control pumps shall be locked and accessible to only authorized personnel at all times. Lighting is adequate for this facility. LANL security personnel regularly patrol the facility and its surrounding area.

3.4. Training

40 CFR Part 112.7 (10) states, "Owners or operators are responsible for properly instructing their personnel in the operation and maintenance of equipment to prevent the discharge of oil and applicable pollution control laws, rules and regulations." To fulfill this requirement, formal employee training shall be conducted at least annually, and more often when needed, to ensure that all site workers have an adequate understanding of the SPCC Plan for the facility and the individual responsibilities of each involved employee. Training topics shall include the following.

- Goals and objectives of the SPCC program
- Additional applicable pollution control laws, rules, and regulations
- Practices for preventing spills
- Procedures for responding properly and rapidly to spills
- Protocol used to report spills
- Operations and maintenance of equipment
- Spill events or failures
- Malfunctioning components
- Recently developed precautionary measures

These and other associated topics may also be covered during routine employee meetings.

Training activities shall be documented in the LANL Employee Development System (EDS), and in Appendix D, to be in accordance with LANL's Training Standard LS113-09.0, *Training Documentation.* Informal briefings shall be documented by recording the attendance and maintaining a file of the meeting roster.

3.5. Spill Prevention, Response & Reporting

Spill prevention for the Phermex Facility is achieved primarily through proper implementation of the SPCC Plan. This effort includes training employees on appropriate spill prevention and work procedures and performing inspections and maintenance activities to minimize the potential for equipment failure. The designated individual for the Phermex Facility who is accountable for oil spill prevention and who reports to line management is the DX Official/Facility Management Designee.

All incidents at the Phermex Facility shall be immediately reported to the DX Officer/Facility Manager Designee at 104-2926 or 664-2926 (digital pager – enter your phone number followed by #). The DX Officer/Facility Manager Designee will then contact the appropriate personnel to address the incident. In the cases of injury, explosion, or fire, dial 911 and report the situation before contacting the DX Officer/Facility Manger Designee. If the DX Officer/Facility Manger Designee cannot be reached, the incident shall be reported to the Emergency Management Office at 667-6211, or after hours at 667-7080.

Required LANL spill reports will be completed by the organization responsible for overseeing site operations, and copies of the reports will be maintained by both the responsible organization and the LANL Water Quality & Hydrology Group, ESH-18. The federal reporting of spill events is the responsibility of ESH-18, and the determination for such notification will be made by ESH-18 and the

EM&R Office in accordance with Laboratory and DOE policies, and federal and state regulatory reporting requirements.

Information on each spill (date, spill location, what spilled, quantity spilled, corrective action taken, and plans to prevent reoccurrence) shall be noted in the Spill Tracking Log in Appendix C of this plan. In addition, a copy of each Spill Event Report will be filed in Appendix C of this SPCC Plan.

3.6. Plan Amendment

This SPCC Plan will be amended whenever there is a change in facility design, construction, operation or maintenance that materially affects the facility's potential for discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. The Plan will also be amended as necessary if a spill causes a change in design, construction, operation, or maintenance. Such amendments shall be fully implemented as soon as possible, but not later than six months after such change occurs.

In addition, in accordance with 40 CFR 112.5(b), a complete review and evaluation of this SPCC Plan will be conducted at least once every three years by the operating group and/or Facility Manager, and by ESH-18. As a result of this review and evaluation, the SPCC Plan will be amended and stamped by a Licensed Professional Engineer within six months of the review to include more effective prevention and control technology if:

1) such technology will significantly reduce the likelihood of a spill event from the facility, and
2) such technology has been field proven at the time of review.

Changes to inspection forms, the spill contact list, the addition of records to the Plan, or development of a memorandum of understanding between the operating group/division and the FMU modifying the distribution of responsibilities do not require certification by a Professional Engineer. All other amendments to the SPCC Plan shall not be effective to satisfy the regulatory requirements governing the document unless they have been certified by a Licensed Professional Engineer.

Appendix A

Inspection Reports

Los Alamos

Los Alamos National Laboratory

Los Alamos, New Mexico 87545

WALK-AROUND INSPECTION FORM

ABOVEGROUND TANKS ASSOCIATED PIPING & MARX GENERATOR

General Site Information

Inspection Date:		Inspector:	
Technical Area:		Structure #:	
Tank Contents:		Capacity Tank:	
Adequate lighting:	Yes ❑ No ❑	Is facility fenced?	Yes ❑ No ❑

Storage Unit Condition

Describe general condition of tank and support structure, valves, and/or piping (signs of rust, leakage, tank residing in water, cracks in foundation, no labels,etc.):	
Any change in tank content's volume?	Yes ❑ No ❑
Grounding Wires:	Adequate ❑ Inadequate ❑ N/A ❑
Level Gauge:	Adequate ❑ Inadequate ❑ N/A ❑
Liquid Level Alarm System:	Adequate ❑ Inadequate ❑ N/A ❑
Foundation Condition:	Good ❑ Poor ❑ N/A ❑
Flanges, Valves, Nozzles and Piping:	Good ❑ Poor ❑ N/A ❑
Ladders or Stairs:	Good ❑ Poor ❑ N/A ❑
Transfer Pump:	Good ❑ Poor ❑ N/A ❑

Secondary Containment Condition

Describe general condition of containment unit (storm water accumulation, presence of oil or other material, signs of damage, leaks, cracks, erosion, status/condition of discharge valve, etc.):	
Storm water discharge valve:	Locked ❑ Unlocked ❑ No valve ❑
Sump? (if yes, describe in comments below):	Yes ❑ No ❑
Containment liner (for earthen berms):	Good ❑ Poor ❑ No liner ❑
Storm Water Accumulation in Containment Unit:	Yes ❑ No ❑
Oil accumulation in dike or collection sump:	Yes ❑ No ❑

Marx Generator Condition

Describe general condition of Marx Generator (changes in the conditions of gaskets; any previously identified leaks, new leaks and potential problems; secondary containment condition; etc.):	

Comments:

Items Requiring Corrective Actions:

Corrective actions taken (give dates):

Inspector's signature: **Date:**

Appendix B

Storm Water Discharge Records

SECONDARY CONTAINMENT
STORMWATER DISCHARGE RECORD

LOCATION: TA-_____ Bldg._____

DESCRIPTION OF TANK:_____

USER GROUP:_____ **CONTACT PERSON:**_____

PHONE:_____ **PAGER:**_____

***DATE AND TIME OF DISCHARGE:**_____

***DURATION OF DISCHARGE:**_____

***VOLUME OF DISCHARGE:**_____

DESCRIPTION OF CONTAINMENT:_____

_____

_____

ESH-18 CONTACT OR DESIGNEE:_____

SAMPLES TAKEN: YES NO (*If Yes, complete sampling form*)

DISCHARGED RECOMMENDED: YES NO (*Complete comment section below*)

COMMENTS:_____

_____

_____

_____

_____

_____

*Information to be completed by User Group

Complete the discharge record and return to Robin Reynolds, ESH-18, MS K497

REVIEWED BY:_____ **DATE:**_____

Appendix C

Spill Records

Spill Tracking Form

Date	Spill Location	What Spilled	Quantity Spilled	Corrective Action Taken	Plans to Prevent Recurrence

Appendix D

Training Records

Appendix E

Facility Owner/Operator and Contacts

Facility Owner
Dynamic Experimentation (DX) Division Facility Management (FMU 67)
University of California (UC)
Los Alamos National Laboratory (LANL)

Facility Owner Contacts

Name	*Phone*	*Pager*	*Title*
Tom Alexander	667-6471	104-2083	FMU 67 Facility Manager
On call FMD		104-2926	Facility Manager Designee
Harvey Decker	667-1616	104-7568	ES&H Generalist

Facility Operator
Dynamic Experimentation
DX-3
University of California (UC)
Los Alamos National Laboratory

Facility Operator Contacts

Name	*Phone*	*Title*
Rendell Carver	667-4425	DX-3 Group Leader
Gerald Seitz	667-6834	Phermex Field Operator

Appendix F

Certification of the Applicability of the Substantial Harm Criteria

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Facility Name: Pharmex

Facility Address: TA-15-184

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   Yes ____ No X

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

   Yes ____ No X

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in accordance with EPA 40 CFR 112, App. C) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

   For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" and the applicable Area Contingency Plan.

   Yes ____ No X

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in accordance with EPA 40 CFR 112, App. C) such that a discharge from the facility would shut down a public drinking water intake 2?

   Yes ____ No X

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   Yes ____ No X

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

M. E. Smith
Name (please type or print)

Deputy Facility Manager
Title

M. E. Smith
Signature

2/28/2002
Date