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SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

ADVANCED TECHNOLOGY TEST FACILITY FOR LONG PULSE INDUCTION LINACS

TA-35-29

Los Alamos National Laboratory

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

Revision 1: February 2002

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CERTIFICATION

This Plan was developed pursuant to provisions of the federal regulation for oil pollution prevention for bulk storage facilities - 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, verifies that this Plan has been prepared in accordance with good engineering practices.

Certified by: M. E. Smith
Michael Smith
Registered Professional Engineer

Date: 2/28/2002

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.

Approved By: _____ Date: 2/28/02
Richard Boudrie, Group Leader

Reviewed By: Scott Alexander for Peter Bussolini Date: 2/28/02
Peter Bussolini, Facility Manager

Reviewed By: _____ Date: 2-28-02
Harvey Decker, DX-DO/ESH-18, ES&H Generalist

SPILL PREVENTION CONTROL AND COUNTERMEASURE 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 intention is to prevent oil related spills from polluting navigable waters of the U.S. through the implementation of adequate prevention and response measures. This Plan has been developed to meet regulatory requirements under the jurisdiction of the United States Environmental Protection Agency (EPA) and surface water protection requirements established by the New Mexico Environment Department (NMED).

1.1. Definitions

See the latest edition of 40 CFR Part 112.2 or check the following web address; http://www.access.gpo.gov/nara/cfr/waisidx_00/40cfr112_00.html.

1.2. Facility Description

This SPCC Plan addresses the storage tanks and their associated piping and equipment in TA-35-29.

Building TA-35-29 houses the Advanced Technology Test Facility for Long Pulse Induction Linacs. This 6,025 ft^2 building is comprised of a first floor and basement and sub-basement levels. A Marx Generator and an attached Diode are housed in and insulated with approximately 18,000 gallons of dielectric mineral oil. These units, in conjunction with three storage tanks located approximately 24 feet below in the sub-basement, form a closed-loop transfer system for the dielectric oil. Operation of the facility is under the direction of DX-6.

Secondary containment is provided for both the storage tanks and the equipment. Appendix A contains location schematics that show the location of the Marx Generator and Diode on the first floor and the location of the three storage tanks in the sub-basement level. Also is included a schematic which shows the general piping configuration for the system. Tank and secondary containment capacities are listed as appropriate. The facility is located on the east side of TA-35, contributing runoff to Lower Mortendad Canyon, which drains east to the Rio Grande.

1.3. Facility Owner/Operator

FMU 75 Facility Management has responsibility for building TA-35-29 and the surrounding area. DX-6 performs operations within TA-35-29 through a tenant-landlord agreement.

The DX-6 line management shall:

- Develop, implement, and maintain the SPCC Plan.
- Amend the SPCC Plan as appropriate.
- Ensure that employees involved in operation procedures are properly trained.
- Prepare and maintain records of training activities.
- Ensure that containment structures and spill control equipment, such as spill kits, absorbents, or booms, are appropriate for the materials used and adequate quantities are maintained.
- Conduct walk-around inspections and follow-up corrective action to remedy inadequacies.
- Ensure adequate record keeping procedures.
- Report any spills to the FMU 75 Facility Manager.
- Ensure all spilled and absorbent materials are appropriately disposed in accordance with LANL, State and Federal Waste Management Requirements.

The FMU 75 Facility Manager shall:

- Ensure that an approved SPCC Plan exists for all applicable operations in the FMU.
- Review the SPCC and any proposed changes to assure that it meets facility expectations.
- Report any reportable spills through the occurrence reporting process.

1.4. Spill History and Potential Spills

There have been no reportable oil spills at the TA-35-29 facility. Potential spills and a prediction of their discharge quantity and direction include:

- A rupture or leak of all three ASTs could discharge a maximum of 21,300 gallons to the containment area.
- A rupture or leak in the transfer piping could discharge a minimal amount of oil to the containment area. The piping contains oil only during supervised transfer operations.
- A rupture or leak in the Marx Generator could discharge 18,000 gallons into the containment area.

2. ABOVEGROUND STORAGE TANKS AND SECONDARY CONTAINMENT

Secondary containment is provided both for the storage tanks and the experimental equipment (Marx Generator and Diode). Because the three storage tanks and associated equipment are located indoors inside TA-35-29 and are not exposed to storm water, there are no facility drainage issues, nor is there freeboard for precipitation in the secondary containment.

Secondary containment for the three storage tanks consists of sub-basement rooms 001, 001C, and 002. The three steel, 7,100-gallon storage tanks are compatible with oil storage and collectively contain approximately 20,000 gallons of dielectric oil. They are located in room 002, which will serve as the primary containment area in the event of a spill. Measuring 45 feet by 12 feet, with approximately nine (9) inches between the floor and the bottom of the doorways, this room has a containment capacity of approximately 2,550 gallons. A spill larger than 2,550 gallons will flow out of this room and into adjoining rooms 001C and 001. The combined capacity of these three rooms is sufficient to contain the contents of all three tanks. Floor drains located within room 001 and room 001C discharge into a small sump located at the eastern end of this room. The sump pump, which discharges contents of the sump into the sanitary sewer system, has been disabled.

A catastrophic spill from the 18,000-gallon Marx Generator tank and Diode is extremely unlikely. The Marx Generator and Diode are located over a pit covered with fabricated grates that leads directly to the sub-basement, which is capable of containing the entire spill. As the oil flowed to the sub-basement, it would also leak into the basement until it eventually drained entirely into the sub-basement. Neither the sub-basement nor the basement contains valuable equipment (other than the associated tanks, pipes, pumps, etc.), and both levels are sealed to prevent leakage of oil into the environment. Flexible polyurethane dike sections are placed around the Marx Generator and Diode to contain and direct spilled material to the drain on the ground level. Dike sections measure 2 inches high by 10 feet in length. Sections are joined using a 4 inch long connector, and 90 degree angles are formed with a 4 inch long corner piece. The dike forms an instant barrier when placed on the smooth surface of the floor and therefore may be moved or reshaped, as necessary, to accommodate operational activities. The non-absorbent polyurethane dike is resistant to water, oil, and many chemicals, and may be cleaned with soap and water for reuse.

There is no drainage outlet or valve for the containment and trenches. There are no buried or partially buried tanks at the facility.

2.1. Integrity Testing and Inspections

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.

In accordance with API 653, a formal visual external inspection shall be performed by a qualified inspector at least every five years. Either an in-service ultrasonic thickness measurement shall be made at intervals not to exceed every five years, or an internal inspection of the tank shall be made at intervals not to exceed 20 years.

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.

Records of integrity testing shall include all examinations and tests, conditions found, thickness measurements, settlement measurements, repairs/alterations, and recommendations. Inspection records are retained in Appendix B of this document in accordance with Section 3.1.

In addition to the integrity testing of the AST, walk around inspections and spill control material inventories to be performed are outlined below.

WALK AROUND INSPECTIONS: Walk-around inspections are monthly visual inspections conducted by a DX-6 line manager. These inspections are recorded and retained in Appendix B in accordance with Section 3.1. Any leaks or potential problems shall be brought to the attention of the Field Operator's staff to evaluate the need for response and make any necessary corrections.

Aboveground Storage Tanks: The storage tanks shall undergo monthly visual walk-around inspections to observe the conditions of the tank shells, tank content volumes, foundations and supports, piping, secondary containment, pumps, valves, oil, ground wires, sumps, gauges, and general good housekeeping practices.

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, secondary containment, any previously identified leaks, new leaks, and potential problems.

SPILL CONTROL MATERIAL INVENTORY

Spill control material stores shall be inventoried 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.

General operator observations are also made by employees involved in the material handling and system operation of an SPCC location. Operator observation involves a check for leaks, secondary containment condition, and the general safety condition of the site. Records of these inspections are not kept unless a problem is found. In the event of a problem, the deficiency is documented and corrective action is taken.

2.2. Fail Safe Engineering

The storage tanks in TA-35-29 are part of a closed loop oil transfer system. To control the volume in the tanks during transfers, each AST is equipped with a high and low limit switch that will shut off the transfer pump. Automatic shutoff valves actuated with manual overrides are also located in the piping between each AST. These valves will help monitor tank volumes during oil transfers and, in the event of a spill, may also be used to minimize the loss of contents. A Standard Operating Procedure (SOP) will govern valve operation during oil transfers.

In addition, sub-basement Room 002 will be equipped with a fluid detection sensor connected to the Laboratory's SCADA system. This sensor will detect the presence of fluid on the floor of the room and, through the SCADA system, provide an electronic notification of the release. The SCADA system is an electronic monitoring control for the Laboratory's utility systems and is in use throughout the Laboratory. All facility liquid level sensing devices will be regularly tested to insure proper operation.

There are no discharge facilities. Internal heating coils are not used. Visible oil leaks will be promptly corrected. Leaks and corrective actions will be recorded in Appendix C.

2.3. Facility Transfer Operations

As part of the closed-loop transfer system, the three storage tanks provide storage capacity for the Marx Generator and Diode. Oil is transferred to the storage tanks for filtration or when the Marx Generator and Diode are being serviced. The tank transfer system consists of a pump, pump controls, Cuno filtration system, valving, and piping. As described in a facility Standard Operating Procedure (SOP), during transfer operations the appropriate valves are opened and the exterior base-mounted pump is started. When the operation is complete, the pump is turned off and the valves are closed.

Piping for transfer operations is entirely contained within the building, which serves as secondary containment. Piping goes from the generator, through the floor, to the sub-basement and is equipped with a pressure alarm system to alert the operator in the event of pressure loss from the system. There is no buried or out of service piping for this facility, and the terminal connection of the transfer pipes will be capped or blank-flanged and marked as to origin when in standby service for an extended time. There is no vehicle access to the building. This facility is not a tank car or tank truck loading and unloading facility.

3. SPCC PLAN REQUIREMENTS

The FM is accountable for SPCC requirements applicable to his or her facility and has responsibility for developing, implementing, enforcing, and maintaining the SPCC Plan requirements. The FM may delegate these duties to a qualified individual. The Operating Group's responsibilities include ensuring that recordkeeping, Plan amendments, training, spill response and reporting, and inspections are properly completed and submitted to the FM. The complete SPCC Plan shall be located at building TA-35-29.

3.1. Inspections, Record Keeping and Plan Amendments

Written inspection procedures are included in Section 2.1. Inspection records state when inspections were done, who conducted the inspection, what areas were inspected, what problems were found, what steps were taken to correct problems, and who was notified about any problems found. The inspection will be signed by the appropriate supervisor or inspector. A sample inspection form is included in Appendix B.

In the event of a spill, the spill tracking form will be used to describe the spill, corrective actions taken, and plans for preventing recurrence. If the spill causes a change in design, construction, operation, or maintenance, this Plan will be amended as necessary. A spill tracking form is included in Appendix C, and copies of spill reports will be retained in Appendix C.

Signed inspection records, integrity testing records, spill reports, and other applicable data and documentation will be kept with the Plan and retained for a period of three years.

The 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 the discharge. Such amendments shall be fully implemented as soon as possible, but not later than six months after such change occurs. At a minimum, this SPCC Plan will be reviewed and updated every three years. These amendments will be certified by a Professional Engineer. Amendments that do not reflect a change in facility design, construction, operation or maintenance that materially affects the facility's potential for the discharge do not need to be certified by a Professional Engineer.

3.2. Security

The storage tanks and associated equipment are located within building TA-35-29 inside TA-35. TA-35, as an area, is surrounded by a perimeter security fence and is restricted to badged personnel who must enter the area through a security station. Security within building TA-35-29 includes locked doors during nonworking hours, an SOP for valve operation and oil transfer, and lighting that is adequate to detect spills and deter vandalism. All master flow valves, drain valves, and oil pump starter controls are securely within the restricted-access building. Any oil that would flow through these master flow and drain valves would be contained within the secondary containment.

3.3. Training

Facility owners and operators are responsible for properly instructing their personnel in the operation and maintenance of equipment to prevent the discharge of oil. Employee training programs instill in personnel, at all levels of responsibility, a complete understanding of the following:

- operations and maintenance of equipment
- the SPCC program
- procedures for operator observation inspections
- site safety hazards
- practices for preventing spills
- procedures for responding properly and rapidly to spills

- protocol used to report spills
- spill events or failures, malfunctioning components, and recently developed precautionary measures
- additional applicable pollution control laws, rules, and regulations

Employee training is conducted at least annually, and more often when needed, to ensure adequate understanding of the goals and objectives of the SPCC program and the individual responsibilities of each involved employee. Topics may also be covered during routine employee meetings. Training activities are documented in accordance with LANL's Training Standard LS113-09.0, *Training Documentation*, in the Employee Development System (EDS), which automatically tracks the annual retraining dates, and/or in Appendix D of the SPCC Plan. Informal briefings are documented by recording the attendance and maintaining the meeting roster in Appendix D. These meetings are not recorded in EDS.

3.4. Spill Response & Reporting

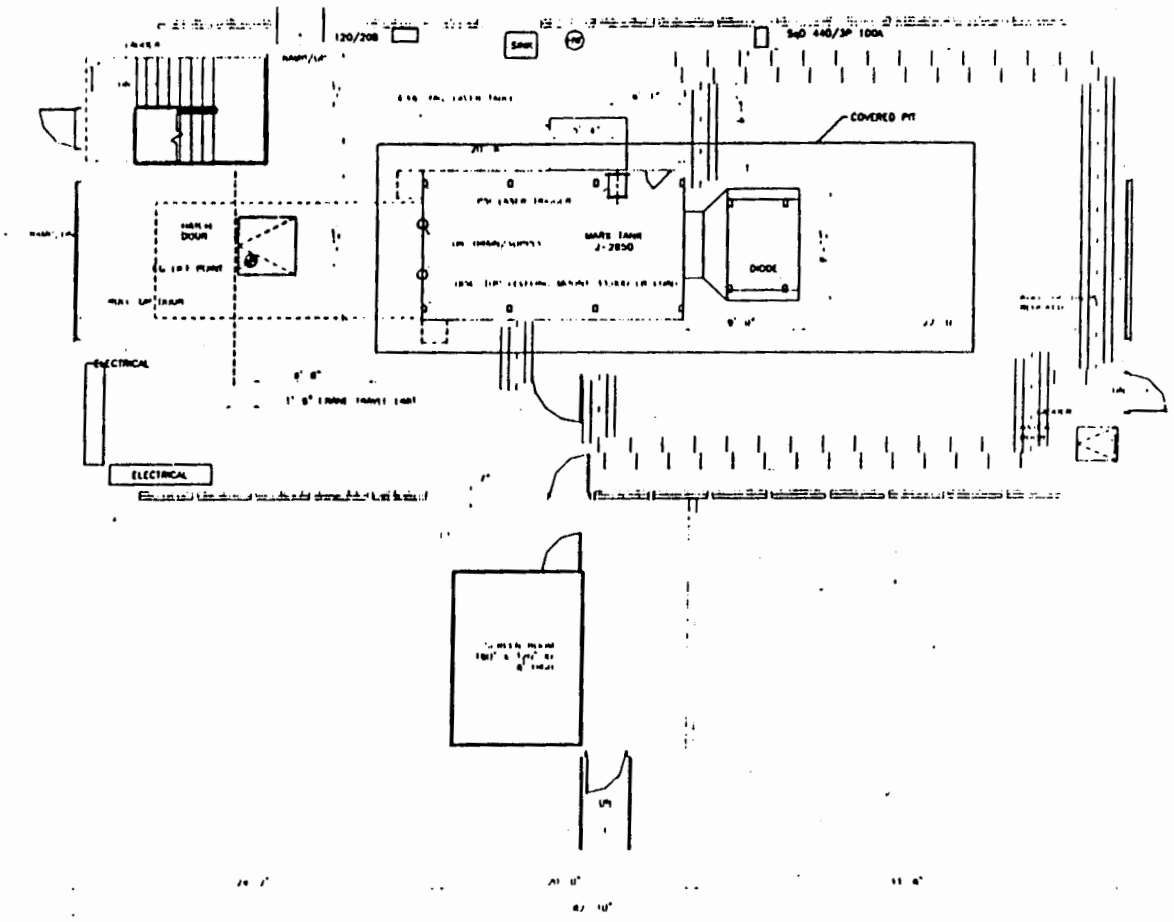
To achieve effective spill response, employees receive training in response procedures. Personnel involved with facility operations are instructed on safety precautions, initial spill response procedures, and how to use available spill cleanup materials. The DX-6 line manager is the designated person responsible for oil spill prevention at the facility, including training programs and spill control equipment. In addition to annual training, periodic spill prevention briefings will be conducted.

In the event of a spill, DX-6 will notify the FMU 75 Facility Manager and will provide the FM with a copy of the completed spill report. The LANL Emergency Management & Response (EM&R) Office will be notified if a spill cannot be easily controlled with the materials on hand, threatens to escape the facility or enter the environment, additional resources are needed, an unidentified hazard exists, injuries have occurred, fire protection is needed, or if operational or facility personnel are not adequately trained in the use of spill control equipment or are not confident in their ability to carry out spill response activities. They may also be notified if the DX Officer/Facility Manager Designee (FMR) determines that the situation warrants such action. EM&R, which has been appointed by the Laboratory Director as the organization responsible for emergency management at LANL, may be contacted at **667-6211** or, after hours, at **667-7080.** In such an event, the 24-hour on-call Facility Manager Designee (FMD) must also be notified at **104-4444.** *If fire or explosion is present, or if the potential for such exists, the situation must be reported by dialing **911 or activating a fire pull box.***

Spills shall be reported in accordance with LANL LIR 402-130-01.0, Abnormal Events. Spill events in excess of one quart will also be documented in Appendix C of the SPCC Plan. 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.

Appendix A

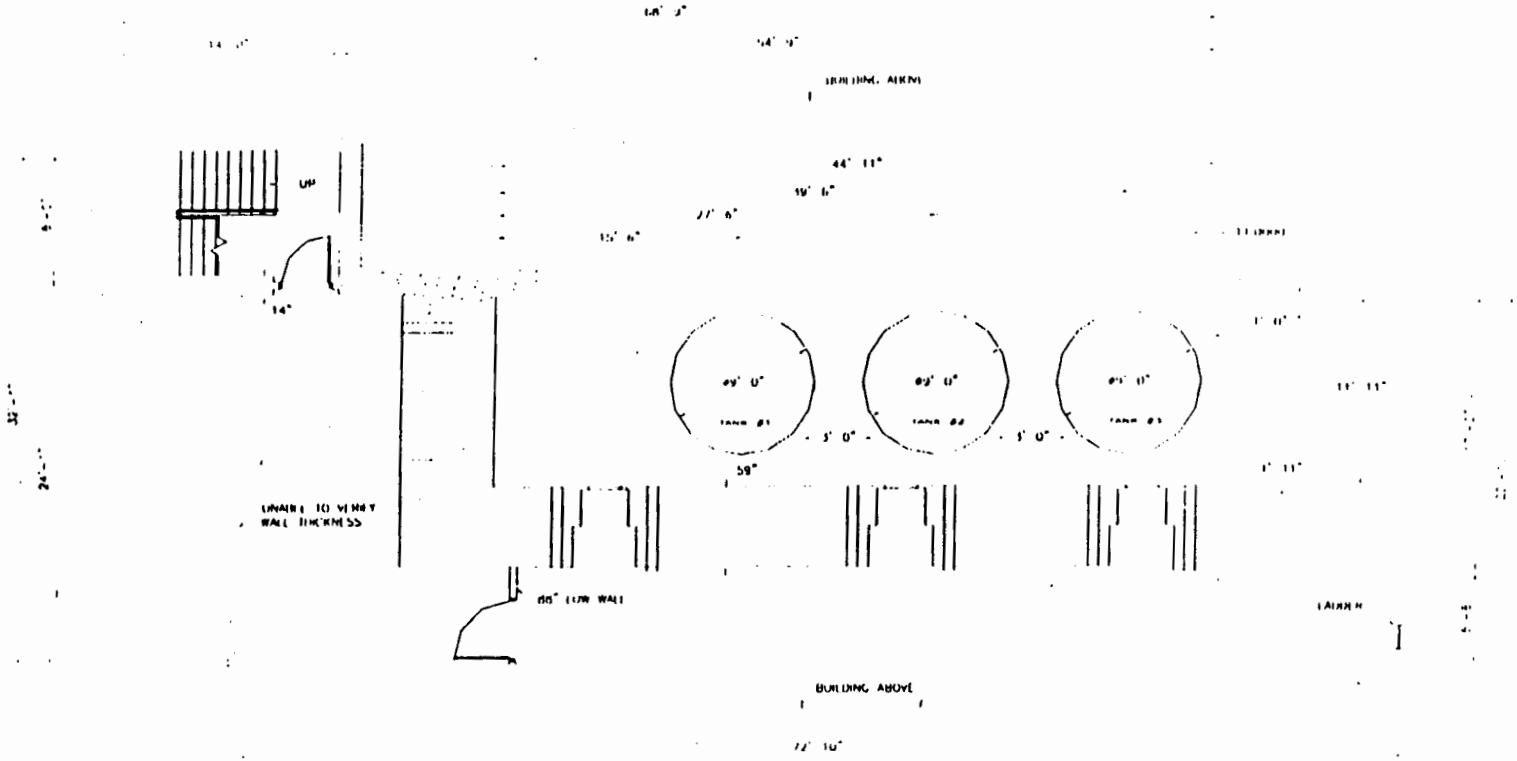
Facility Schematics



N

TA-35-29 FIRST FLOOR PLAN

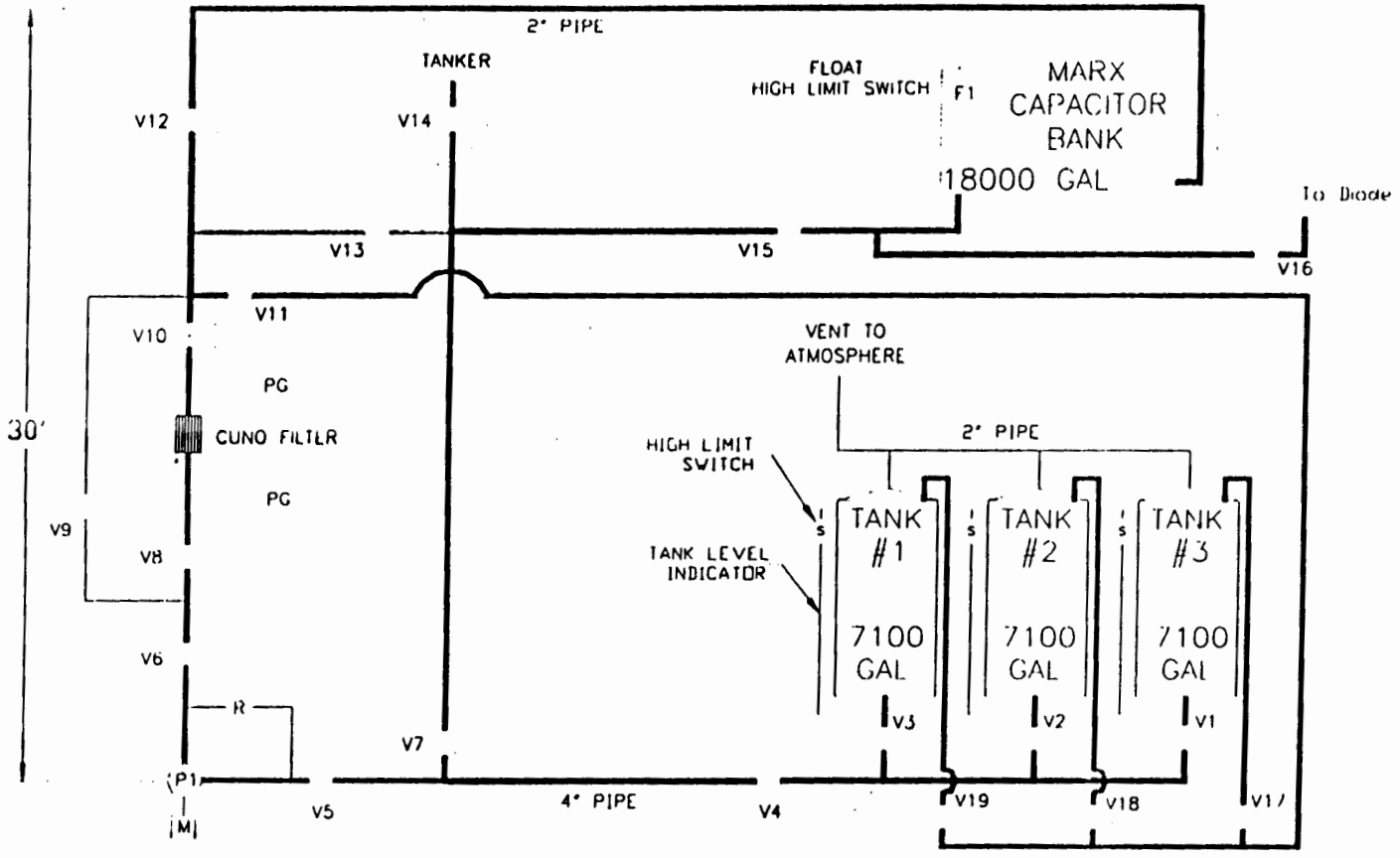
NOT TO SCALE



N

TA-35-29 SUB-BASEMENT FLOOR PLAN

NOT TO SCALE



N

TA-35-29 GENERAL PIPING CONFIGURATION

NOT TO SCALE

Appendix B

Inspection Form and Completed Inspections

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):

Inspe[illegible] signature: **Date:**

Appendix C

Spill Records

Spill Tracking Form

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

Appendix D

Employee Training Records

Appendix E

Facility Owner/Operator and Contacts

Facility Owner
NIS Division Facility Management (FMU 75)
University of California (UC)
Los Alamos National Laboratory
Los Alamos, NM 87545

Facility Owner Contacts

Name	*Phone*	*Pager*	*Title*
Peter Bussolini	667-0370		Facility Manager
Harvey Decker	667-1616	104-7568	ES&H Generalist

Facility Operator
Dynamic Experimentation
Machine Science and Technology (DX-6)
University of California (UC)
Los Alamos National Laboratory

Facility Operator Contacts

Name	*Phone*	*Title*
Richard Boudrie	665-5833	DX-6 Group Leader

Appendix F

Certification of the Applicability of the Substantial Harm Criteria

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Facility Name: TA-35-29 (THOR)

Facility Address: TA-35-29

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 re-portable 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.

Scott Alexander — Facility Coordinator
Name (please type or print) — Title

Signature — 2/28/02
Signature — Date