CONTINGENCY PLAN
FOR
TEXACO INC.

THORN HILL FARM INC. WELL NO. 1

PERMIT NO.
KING GEORGE PROSPECT
KING GEORGE COUNTY, VIRGINIA

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PURPOSE

The purpose of this contingency plan is to provide an organized plan of action to follow in the event an emergency condition develops during the drilling and completion of the well. The primary objective is to provide for the safety of the wellsite personnel, the general public, and to protect the environment.

Our operation is being conducted in a highly sensitive environment area. We can not over emphasize the need to follow all necessary procedures and practices to prevent an environmental incident.

However if an incident should occur, we must be prepared to act immediately. This plan is provided to aid in a quick response. It contains helpful guides to control various conditions, and a list of people that can provide assistance.

GENERAL INSTRUCTIONS

A copy of this plan shall be kept in the Drilling Supervisor's trailer and be available for inspection at all times. A copy shall also be kept in the rig doghouse and at the safe briefing area or any other location appropriate to best activate the plan immediately should an emergency condition develop.

All personnel working at the wellsite should be familiar with the Contingency Plan and their responsibilities so they can be prepared in the event an emergency condition exists.

Two cleared areas located at least 200' from the well shall be designated as safe assembly areas. All personnel working at the wellsite shall be made aware of the location of the safe assembly area, and an up-to-date list of all personnel location shall be readily available. During an emergency, all personnel will assemble at the designated upwind safe assembly area so a head count can be made and instructions can be received from the person in charge.

In preparing this contingency plan, not all conditions can be preplanned. The procedures and instructions are intended as a guide and should not supplant good judgment decisions during an emergency conditions.

AUTHORITY AND CHAIN OF COMMAND

EMERGENCY ACTION - AUTHORITY

In the event an emergency condition occurs, personnel at the site will take immediate action. The Texaco Drilling Supervisor has complete authority, without any prior approval, to do what is outlined in this Contingency Plan or whatever is necessary to protect the safety of the public and the environment. This includes evacuation of residents and settling the well on fire in the event of a blowout.

CHAIN OF COMMAND

1. Texaco Drilling Supervisor -

   He is first in command and is responsible for assessing the situation and initiating a plan of action. He will assign responsibilities to others so he can supervise the operations as needed.

2. Contract Supervisor -

   He is second in command and will assume responsibilities as directed by the Texaco personnel. If they are incapacitated, he will take action as needed. He will alert Texaco personnel as to emergency conditions as soon as possible. He is also responsible for accounting for Contract personnel on location and providing emergency assistance to all personnel.

3. Driller -

   He will assume the responsibilities of the Contractor Pusher if that person is unable to perform his duties. He is also responsible in helping secure the location in the event of a emergency.

WELL CONTROL

The Texaco Drilling Supervisor shall insure that all members of the crew have been properly instructed in performing their functions. He will conduct informal rig site classes to instruct each crew in their respective duties related to well control. Specific attention should be paid to (1) barite supplies, (2) establishment of the kill pumping rates, (3) shut-in procedures, and (4) blowout preventer testing.

He shall insure that all government rules and regulations with respect to drilling and well control are understood, and that these requirements are followed at all times.

WELL CONTROL RESPONSIBILITIES

There are a fewer number of well control responsibilities as compared to drilling responsibilities that the drilling crew and servicemen must meet. However, each responsibility must be met in order to safely kill any potential blowout. Some, but not all, of these duties are listed according to each specific crew member's job classification.

Floorhand (Roughneck)

1. The floorhand should aid in maintaining and mixing the mud, either in the mud room or at the shaker, as directed by the Company Representative.

2. He should routinely check and observe the pumps, degassers, and preventers during the kill operations.

Derrickman

1. The Derrickman should maintain the mud system as directed and immediately report any problems to the Company Representative.

Driller (or Assistant Driller)

1. The Driller should direct the crew according to the Company Representative's orders and insure that previously defined responsibilities are carried out.

2. He should insure that the preventers and choke manifold are routinely monitored to detect any leaks that may occur during the kill operations.

3. The Driller must operate the pumps as directed.

4. He should rotate and reciprocate the drill pipe as necessary to prevent pipe sticking, if so directed by the Company Representative.

Toolpusher (or Assistant Toolpusher)

1. The Toolpusher should insure that all crew members execute their assigned responsibilities during the kick killing procedures. If a crew tour change occurs during the operations, he should inform the new crew of all prevailing conditions.

2. The Toolpusher should aid the Company Representative when requested to do so.

Mud Technician

1. The Mud Technician should monitor the mud density throughout the kill operation and make the proper records.

2. He should make any calculations requested by the Company Representative.

Texaco Supervisor

1. The Texaco Supervisor shall assume full kick killing responsibilities and direct the crew as necessary according to kick killing guidelines.

WELL BLOWOUT

In the event of a well blowout, the Drilling Supervisor will immediately assess the situation and direct his course of action to minimize the threat to public safety and prevention of environmental damage.

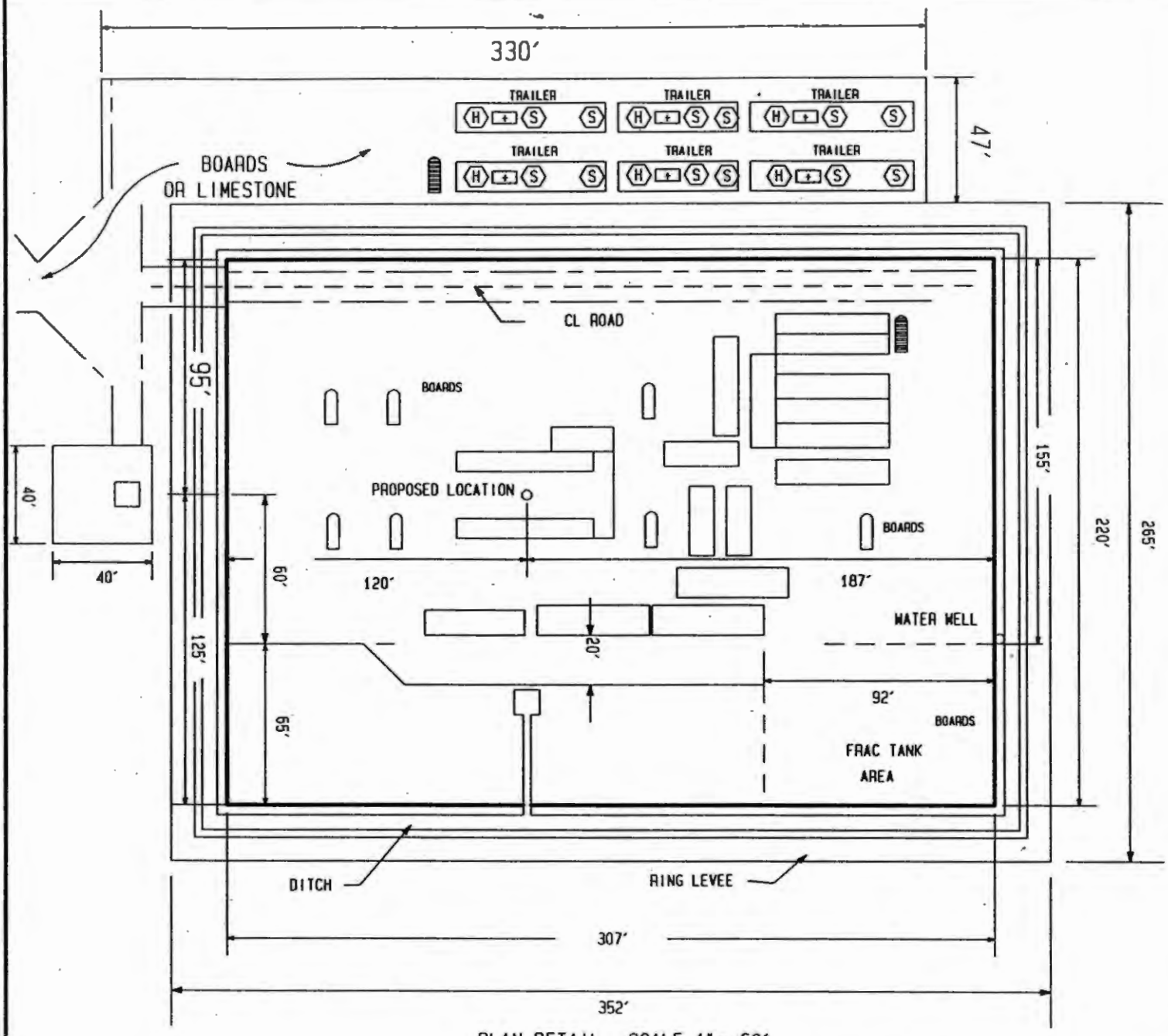
FIRE CONTROL

All personnel on location should be made aware of Texaco's fire prevention policy. The Drilling Supervisor is in charge of fire protection and control. He is responsible for insuring that all fire protection equipment is operational and located as outlined below in the fire protection equipment list and on the fire equipment legend.

In the event of a fire, the Drilling Supervisor is responsible for fire control and containment. The Drilling Supervisor is responsible for notifying the Fire Department and evacuation of the wellsite personnel to the safety assembly area. The Mud Engineer is responsible for equipment gathering to control the fire and watering down of equipment etc. to prevent the fire from spreading. The Contractor's Supervisor is responsible for assisting the Texaco Drilling Supervisor as required and account for personnel on location.

FIRE PROTECTION EQUIPMENT

1. Smoke alarm is kitchen and bedroom (test weekly)
2. Halon fire extinguisher in all trailers (3) "Halon 1211 stored pressure 13# 16 seconds."
3. Escape plan on wall in trailers.
4. Fire, C.P.R. - First Aid Training Company Employer.
5. First aid and burn kits in trailer.
6. No smoking sign in proper areas.
7. Follow company fire prevention guidelines as set forth in Texaco's Safety Manual.
8. Fire extinguishers, 150# wheel units and 30# hand units with purple K Dry chemical to be placed in proper areas.
9. Inspection, maintenance, and record keeping to be done on monthly basis.



PLAN DETAIL SCALE 1" = 60'

FIRE EQUIPMENT LEGEND

- 30 # UNIT
- 150 # UNIT
- (H) HALON KIT
- [+] FIRST AID KIT
- (S) SMOKE ALARM

TEXACO
EXPLORATION AND PRODUCTION INC

NEW ORLEANS, LOUISIANA

PROPOSED FIRE EQUIPMENT LAYOUT TO SERVE
THORN HILL FARM INC WELL NO. 1
LOCATED IN KING GEORGE CO., VIRGINIA
APPROX. 4 MILES SOUTH FROM
DAHLGREN IN KING GEORGE CO., VIRGINIA

DRAWN BY WJE	DATE 04-09-91	DRILLING/REMEDIAL
TRACED	SCALE 1" = 60'	SHEET OF

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN

KING GEORGE PROSPECT FIELD

THORN HILL FARMS, INC. WELL NO. 1

TEXACO INC.

The SPCC Plan for this facility is maintained at the Drilling Supervisor's living quarters and at Texaco's New Orleans, Louisiana Office.

(Prior to completing Part I, refer to regulations and instructions page 5.)

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

PART I
GENERAL INFORMATION

1. Name of facility: King George Prospect
2. Type of facility: Oil Gas Drilling Facility
3. Location of facility: Lat. 58 16' 30"
   Long. 77 04' 17"
   King George County, Virginia
4. Name and address of owner or operator:
   Name: Texaco Inc.
   Address: P.O. Box 60252
   New Orleans, LA 70160
5. Designated person accountable for oil spill prevention at facility:
   Name and title: Drilling Supervisor
6. Facility experienced a reportable oil spill event during the twelve months prior to Jan. 10, 1974 (effective date of 40 CFR, Part 112). (If YES, complete Attachment =1.) _____

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name: R. D. Biddle

Title: Safety & Regulatory Compliance Manager

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

R. D. Biddle
Printed Name of Registered Professional Engineer

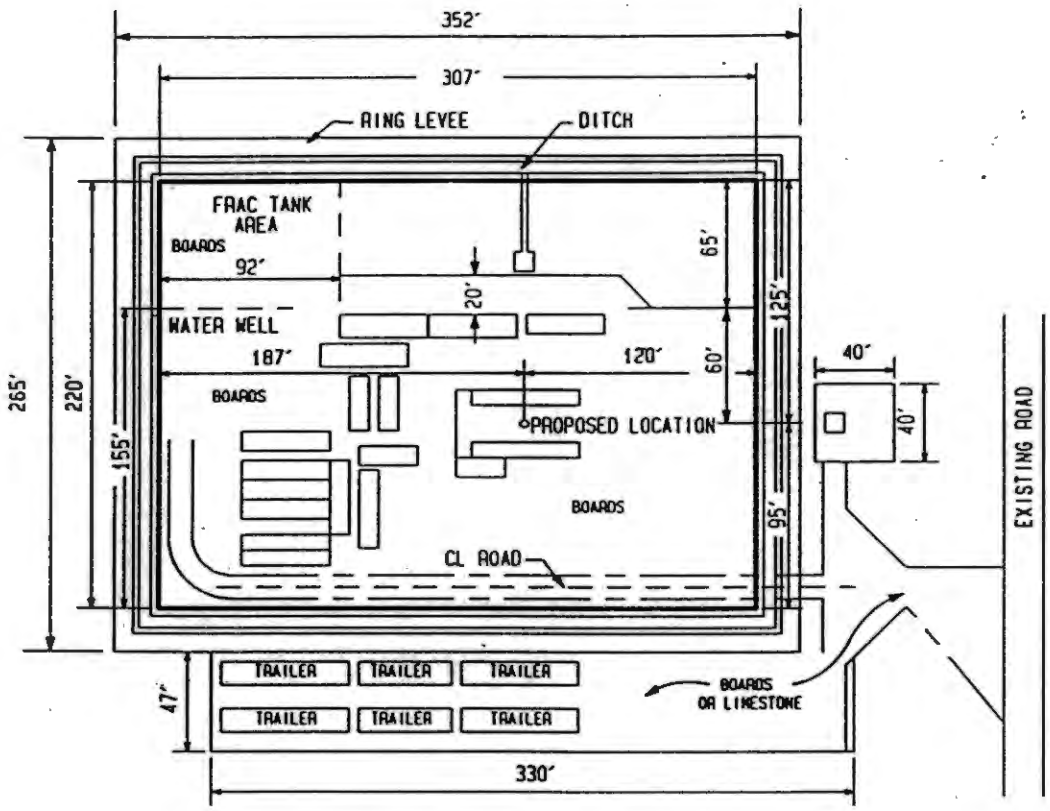
(Seal)

Signature of Registered Professional Engineer

Date _____

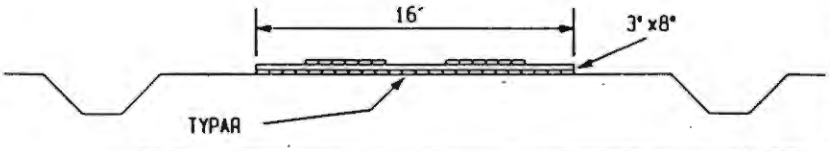
Registration No. 37948 State Texas

PROPOSED TEXACO INC. LOCATION
KING GEORGE COUNTY, VA.
DAHLGREN 7½' QUAD
1" = 2000'

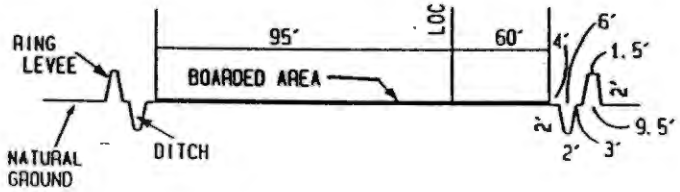


PLAN DETAIL
SCALE 1" = 100'

TYPICAL ROADWAY
SCALE 1" = 10'



NOTE:
TURNAROUND LUMBER- 3 PLY SOLID
FURNISH NEW LUMBER FOR TOP LAYER
STRONGBACK LAID AS PER RIG NEEDS.



TEXACO
EXPLORATION AND PRODUCTION INC

NEW ORLEANS, LOUISIANA

PROPOSED WELL SITE TO SERVE
THORN HILL FARM INC WELL NO. 1
LOCATED IN KING GEORGE COUNTY
APPROX. MILES FROM
IN KING GEORGE COUNTY, VIRGINIA

DRAWN BY WJE	DATE 02-18-91	DRILLING/REMEDIAL
TRACED	SCALE	

PART I
GENERAL INFORMATION

[Response to statements should be: YES, NO, or NA (Not Applicable).]

8. Containment or diversionary structures or equipment to prevent oil from reaching navigable waters are practicable. (If NO, complete Attachment #2.) Yes

9. **Inspections and Records**
   A. The required inspections follow written procedures. Yes
   B. The written procedures and a record of inspections, signed by the appropriate supervisor or inspector, are attached. Yes
   Discussion: The rig will normally operate continuously so that all systems (dikes, tanks, pump, lines, etc.) which could cause pollution will be regularly attended and watched.

10. **Personnel Training and Spill Prevention Procedures**
   A. Personnel are properly instructed in the following:
   (1) operation and maintenance of equipment to prevent oil discharges, and Yes
   (2) applicable pollution control laws, rules, and regulations. Yes
   Describe procedures employed for instruction: The Drilling Supervisors in charge have been given instructions on the regulations and to maintain all equipment to prevent pollution. They are responsible for the instruction of all crews and/or employees of the drilling contractor.

   B. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. Yes
   Describe briefing program: Briefings are held by the Drilling Supervisor in conjunction with the safety meetings. Spill events and spill prevention methods are discussed.

Name of facility King George Prospect

Operator Texaco Inc.

(Prior to completing Part II, Alternate B, refer to regulations and instructions page 7.)

PART II. ALTERNATE B
DESIGN AND OPERATING INFORMATION
ONSHORE OIL PRODUCTION FACILITY

[Response to statements should be: YES, NO, or NA (Not Applicable).]

A. Facility Drainage

1. Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc.): There is no drainage from the diked area. Any accumulation of liquids that must be removed from the diked area will be disposed of at an approved commercial disposal facility.

2. The procedure for supervising the drainage of rain water from secondary containment into a storm drain or an open watercourse is as follows (include description of (a) inspection for pollutants, and (b) method of valving security). (A record of inspection and drainage events is to be maintained on a form similar to Attachment #3): Not applicable.

3. Field drainage ditches, road ditches, and oil traps, sumps, or skimmers. if such exist, are inspected at regularly scheduled intervals for accumulations of oil. Yes
Describe inspection procedures, intervals, and methods employed to remove oil: Rig crews make several daily visual observations. Drilling Supervisors make thorough daily inspections. Liquid accumulations are removed by portable pumps, vacuum trucks or absorbent material.

B. Bulk Storage Tanks

1. Describe tank design, materials of construction, and fail-safe engineering features: Tanks are constructed of steel which is galvanized or painted for corrosion protection. Mud tanks have top equalizing lines which allow a full tank to overflow into an adjacent tank. Secondary containment is provided.

Name of facility King George Prospect.

Operator Texaco Inc.

SPCC PLAN, ATTACHMENT #2
OIL SPILL CONTINGENCY PLANS AND
WRITTEN COMMITMENT OF MANPOWER, EQUIPMENT, AND MATERIALS

Secondary containment or diversionary structures are impracticable for this facility for the following reasons (attach additional pages if necessary):

The facility will be fully equiped with primary and secondary containment.

	Yes
A strong oil spill contingency plan is attached. **(all liquid HC's)**	Yes
A written commitment of manpower, equipment, and materials is attached.	Yes

Name of facility King George Prospect

Operator Texaco Inc.

SPCC PLAN ATTACHMENT #5
OFFSHORE OIL DRILLING, PRODUCTION, OR WORKOVER FACILITY
WELL CONTROL SYSTEMS AND EQUIPMENT

List type(s) of surface and subsurface well shut-in valves and devices used to maintain control of wells, showing (a) method of activation and control, and (b) description:

Item	Method of Activation and Control	Description
Blowout Preventers		
1 - 13-5/8" Hydril	Hydraulic	Annular
2 - 13-5/8" x 10.000# Camerons	Hydraulic	Ram Type U

Name of facility King George Prospect

Operator Texaco Inc.

FORM NO. 1

ONSHORE OIL PRODUCTION

FACILITY - INTRA-FACILITY TRANSFER OPERATION

Inspection Procedure: Supervisory personnel are to make a thorough visual inspection of aboveground valves and pipelines on frequency dictated by the SPCC Plan. Inspectors should look for areas of corrosion, leaks, or other pollution hazards. A record of all flowline failures must be maintained on the "Individual Well Flowline Maintenance Record."

Record of periodic inspection of aboveground valves and pipelines on a weekly basis:

Inspection Date	Condition	If NOT OK, Action Taken	Supervisor's or Inspector's Signature

Name of Facility King George Prospect

Operator Texaco, Inc.

ATTACHMENT

INSPECTION RECORD

Inspection or Test Date	Condition	Action Taken	Supervisor's or Inspector's Signature

Name of Facility King George Prospect

Operator Texaco, Inc.

SPCC PLAN

The SPCC Plan will consist of the following items:

1) That portion of the Plan completed on forms from API Bulletin (D-16 First Edition - March, 1974)

2) Texaco Onshore Producing Division Oil Spill Contingency Plan

3) "List of Inspections and Records from 40 CFR, Part 112"

4) API Bulletin D-16 (First Edition - March 1974)

5) All written prodedures and records of inspections relative to the facility, including those mentioned in Item 3 above with the exception of No. 15 for offshore and No. 18 for onshore and offshore facilities, which are the subject of this plan are made part hereof by reference and incorporated herein as if copied in extenso. Said records and procedures are located in and available for immediate inspection at the Texaco Drilling Supervisor's living quarters located on site.

6) Records mentioned in No. 15 for offshore and No. 18 for onshore and offshore facilities are not suggested in Section 112.7 "Guidelines for the Preparation and Implementation of a Spill Prevention Control and Countermeasure Plan." However, even though these records are not required, same will be maintained at Texaco's New Orleans office, 400 Poydras Street, P. O. Box 60252, New Orleans, LA 60252.

NAME OF FACILITY King George Prospect

OPERATOR Texaco, Inc.

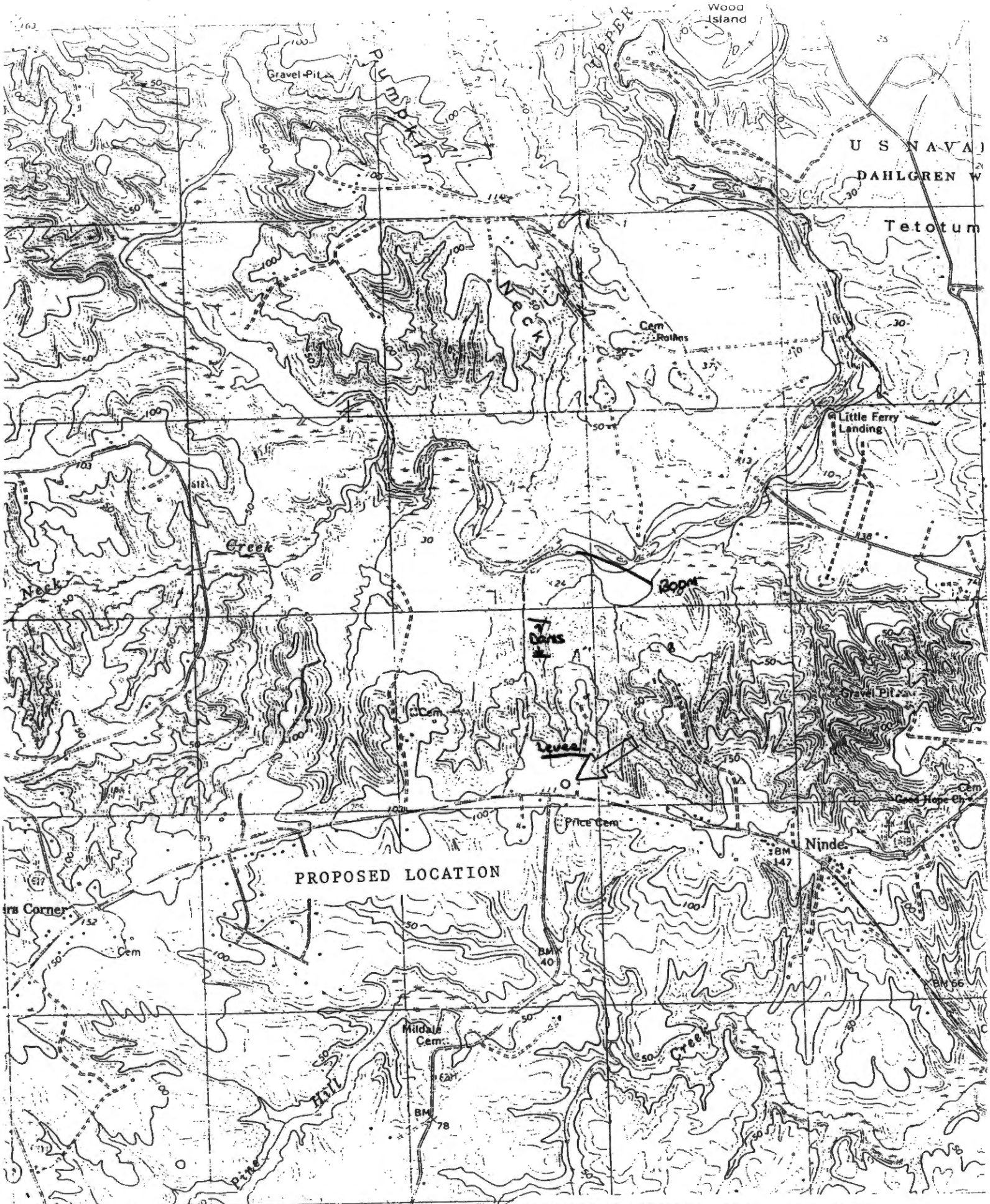
SPILL CONTAINMENT

In the event a spill occurs, we must act immediately to contain the spill. The ring levee around the location will provide protection for small spills and allow for prompt cleanup. Spills that can not be controlled by the ring levee are the primary concerns in this section.

The location is approximately 2800-3300' from Machodoc Creek. In the event of a spill, natural drainage will be in the direction of Machodoc Creek. Primary containment will be to prevent drainage into the creek. If possible, a dirt containment levee should be constructed behind the location. If this containment is not possible or is insufficient, earthen dams will be constructed approximately 1800' & 2500' from the location toward the creek. These dams will be constructed to contain any mud or liquid hydrocarbons but allow water movement.

Fifteen hundred feet of containment booms will be stored near the site and will be dispatched in the event of a major spill to ensure no contaminants reach the Upper Machodoc Creek. These will be placed in a strategic location at the natural drainage entrance into the creek. Additional booms will be sent to the locations needed. Initial boom placement will be in the area shown circled on the attached map.

Recovery of fluid spills will be by skimmers and vacuum trucks at each stage of containment as well conditions permit. Other methods will be used as circumstances dictate.



PROPOSED TEXACO INC. LOCATION
KING GEORGE COUNTY, VA.
DAHLGREN 7½' QUAD
1" = 2000'

H_2S CONTIGENCY PLAN

KING GEORGE PROSPECT

THORN HILL FARMS, INC. WELL NO. 1

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PURPOSE

I. The procedures in this plan shall be activated immediately upon encountering H_2S gas in any concentration. Drilling will be stopped until the plan is fully implemented.

As a precaution H_2S monitoring equipment will be installed at 2500' and breathing equipment will be available on location. All conventional cores will be checked for H_2S gas and the Mud Engineer will run mud checks daily to test the mud for H_2S.

II. GENERAL CRITERIA

A. Location

1. The location will be of sufficient size to accomplish each job safely, i.e., ample pipe rack and turn-around, etc.

2. Two cleared areas located at least 200' from the wellhead will be designated as safe assembly area. The assembly areas will also be positioned in such a manner that one area will always be upwind. During any emergency, personnel will assemble in the "upwind area" for instructions from the Texaco Foreman.

3. The upwind assembly areas will be designated at all times by a green pennant.

4. All assembly areas will be lighted and will have a supplied air charging station.

5. A wind streamer will be firmly anchored at the end of the catwalk positioned at all times where it can be seen from the rig floor. In addition to the wind streamer, a green, yellow or red pennant will be flown to indicate the various operating conditions.

6. A green, yellow or red pennant will be attached to a pole at the location entrance and green pennants will be located at the other assembly areas. The pennants will be displayed during operating conditions as defined in Table I.

7. All areas will be illuminated at night.

8. A list of the current emergency telephone numbers, the Evacuation Plan Resident Directory and a map of the local area with all residential areas clearly marked will be located on the rig bulletin board and the Texaco Foreman's trailer.

B. Rig Equipment

1. Two "bug blowers" with explosion-proof motors will be positioned:

   a. One on the rig floor to blow fumes downwind,

b. One under the rig floor to clear gas from substructure.

2. The mud tanks will be equipped with a vacuum degasser.

3. The rig electric power plant will be separated from the rig structure so that it may be used under conditions where it otherwise would be shut down.

4. Each site will be equipped with a commercial telephone (if available) and a 2-way radio.

5. A sufficient number of portable 2-way radios will be available in the Texaco Foreman's trailer to carry out emergency evacuation procedures.

6. One set of BOP closing equipment will be located remotely from the rig. Equipment will be tested on every trip of drill pipe.

7. BOP equipment and manifold will be pressure tested weekly.

III. SAFETY PROCEDURE, EQUIPMENT AND TRAINING

A. **General Operations**. All personnel in the working area shall utilize H_2S protective breathing apparatus when required. The normal fixed-point H_2S monitor system may be supplemented with portable H_2S detectors as conditions warrant.

1. **Drill String Trips**. Every effort shall be made to pull a dry drill string while maintaining well control. If it is necessary to pull the drill string wet after penetration of H_2S bearing zones, increased monitoring of the working area shall be provided and protective-breathing apparatus shall be worn.

2. **Circulating Bottoms-Up from a Drilling Break, Cementing Operations, Logging Operations, or Well Circulating While Not Drilling**. After penetration of an H_2S-bearing zone, increased monitoring of the working area shall be provided and protective-breathing apparatus shall be worn by those personnel in working areas where H_2S gas is present.

3. **Coring Operations in H_2S-bearing Zone**. Personal protective-breathing apparatus shall be worn 5 stands in advance of retrieving the core barrel. Cores to be transported shall be sealed and marked for the presence of H_2S.

4. **Abandonment Operations**. Internal well-abandonment equipment shall be designed for H_2S service.

B. **Warning System**

1. A kick indicator will be located on the rig floor near the driller with the following features:

   a. Trip-Guard--The number of pump strokes necessary to fill hole while tripping will be monitored with this unit.

   b. Mud Return Rate Indicator--Permissible high and low mud return rates are pre-set into the unit. If returns deviate above or below the limits, an alarm will be triggered. If returns become too great, a means of diverting flow through the choke manifold shall be provided.

2. Pit Volume Totalizer--Continuously registers pit volume and sounds an alarm when a pre-set gain or loss in pit is indicated.

3. H_2S Detection and Alarm System

   a. A visual and audible alarm will be activated when the H_2S concentration exceeds 10 ppm.

   b. One alarm will be located in the operations office and one on the rig floor.

   c. Sensors will have a capability of sensing a minimum of 5 PPM H_2S in air.

   d. A sensor will be located at the drillers console, bell nipple, shale shaker and mud pit.

   e. A portable sniffer with cadmium acetate heads will be available to monitor for H_2S gas in areas not covered by the fixed point sensors.

   f. All personnel will attach a crushed eight (8) hour H_2S ampules to their person. The ampule will be placed where a quick glance will provide warning of H_2S contamination.

   g. Alarms will be sounded daily and the monitoring system will be calibrated weekly to verify operational condition.

4. Blowout Prevention Equipment

   a. When drilling below protective casing, the minimum blowout prevention equipment will be two ram BOP's and one bag type.

   b. All BOP equipment and choke manifolds will be designed for sour service.

   c. Whenever possible, Grade "B" seamless line pipe of proper pressure ratings will be used for all surface lines that may carry fluids containing H_2S.

   d. A 4" -- 5000 psi line will be installed

as straight as possible from the choke manifold to the burn pit.

e. The BOP and choke manifold will be pressure tested weekly according to Texaco testing procedures.

f. The BOP will be operationally tested every 24 hours.

C. **Safety and Training** - Every person who will be at the location in any capacity will be required to be familiar with emergency procedures and to participate in training program. This includes company personnel, rig personnel and service company personnel. New employees must be immediately trained in the use of protective equipment and techniques for combating H_2S. Keep untrained personnel off location. A safety meeting will be conducted a minimum of once per week per tour in which the following will be taught:

1. Explanation of seriousness of H_2S problem.

2. Explanation of prevailing winds, importance of ventilation, use of windsock and wind streamers, blowers and fans, movement upwind and evacuation routes.

3. Use care in servicing of:

   a. Protective breathing equipment (air-paks, escape air bottles, and hose line).

   b. Portable H_2S detection instruments.

   c. SO_2 detection instrument.

   d. Resuscitation equipment

   e. Portable fire extinguishers.

   f. Alarm indicators.

4. Mouth-to-mouth resuscitation and the following first aid procedure if a person is overcome by hydrogen sulfide:

   a. Wear masks if rescuing person in contaminated area.

b. Immediately move person to fresh air and if not breathing, give mouth-to-mouth resuscitation.

c. At first opportunity, replace mouth-to-mouth resuscitation with resuscitator.

d. Continue to administer oxygen when person begins breathing.

e. Treat for shock.

f. Get doctor and ambulance.

5. Explanation that before entering area suspected of being contaminated with H_2S, a test should be made.

6. Explanation that personnel should watch out for each other. Where possible, they should work in pairs. Require use of this "buddy system" to prevent anyone from entering a gas area alone.

7. Explanation to never enter an enclosed place where H_2S may have accumulated without wearing protective breathing equipment. If the worker is over an arm's length away, a safety belt should be secured to a life line and held by a responsible person in the clear. Do not remove mask after being in an enclosed area which contains H_2S until absolutely certain air is safe to breathe.

8. Explanation of the effects of H_2S on metal.

9. Emergency instructions in event of sudden gas release without warning to:

   a. Hold breath.

   b. Put on mask.

   c. Help anyone in distress.

   d. Evacuate to a protected area and follow instructions of supervisors.

   e. **DO NOT PANIC**.

10. Unannounced "blowout" drills will be held at the discretion of the Texaco Foreman. "Gas discipline" will be maintained. When the

"masks on" period exists, there will be no exceptions.

D. **Directional Surveys**

A magnetic survey will be computed for the surface hole from either single shots or a multi-shot survey. A directional survey will be run if a H_2S zone is encountered.

E. **Hydrogen Sulfide Toxicity**

1. 10 PPM, maximum concentration for 8-hour exposure with no adverse effect.

2. 50-100 PPM, 1-hour exposure will produce subacute poison symptoms (mild conjunctivitis and respiratory tract irritation).

3. 100-200 PPM, coughing, eye irritation, loss of smell, pain in eyes, drowsiness and throat irritation.

4. 200-700 PPM, 1-hour exposure will produce marked poison symptoms.

5. 700-2000 PPM, produces acute poison, ranging from rapid unconsciousness and cessation of respiration to death in a few minutes at the higher concentrations.

6. 5000 PPM - fatal.

7. 10 PPM can be detected by smell.

8. 100 PPM may produce impairment and temporary loss of the sense of smell in 3 to 15 minutes.

9. Poison symptoms:

   a. Burning of eyes, nose and throat.

   b. Coughing

   c. Conjunctivitis (inflammation of mucous membrane under eyelids).

   d. Gastritis (inflammation of mucous membrane of stomach).

   e. Dyspnea (difficult or labored breathing).

   f. Dumbness - not having the usual accompaniment of speech and sound.

g. Slow pulse.

h. Headache.

i. Perspiration.

j. Contracted pupils.

k. Convulsions (abnormal violent and involuntary contraction of muscles).

l. Paralysis.

m. Unconsciousness.

IV. DEFINITIONS OF OPERATING CONDITIONS

A. Condition I - No danger to human life - Warning Pennant Green

Characterized by:

1. Drilling or completion operations are normal.

2. No drilling breaks, kicks, gas cut mud, etc. have occurred to indicate that formation fluids may have entered the well bore.

3. Hydrogen sulfide (H_2S monitors is indicated to be 5 PPM or less).

General Action:

1. Periodically check safety equipment (gas masks, air tanks, H_2S detectors, etc.) to ensure proper functioning.

2. Be alert for any changes in drilling and completion conditions which may indicate intrusion of formation fluids.

B. Condition II - Potential danger to life - Warning Pennant Yellow

Characterized by:

1. Poisonous gas present near the threshold concentration (H_2S: 5-10 PPM) (SO_2: 5 PPM)

2. Drilling break, well kick, gas cut mud, etc., have occurred to indicate that formation fluids may have entered the well bore.

3. Very minor poisonous gas leaks from valves, flanges, equipment, etc.

4. When pulling a conventional core out of the hole.

General Action:

1. Air tanks with gas masks attached should be worn or placed in an area so that they are readily accessible. Do not wear face mask at this time.

2. Check all gas masks, air bottles, lines and other safety equipment for proper operation.

3. Alert all crew members and service personnel to the proper assembly area.

4. Texaco foreman is to ensure upwind assembly area is properly designated.

C. Condition III - Danger to life - Warning Pennant Red

Characterized by:

1. Poisonous gas concentration above safe limit.

H_2S: 11 PPM or greater
SO_2: 6 PPM or greater

2. Moderate gas leaks of poisonous gas (See above for concentrations) from valves, flanges, lines, etc.

3. The last 5 stands when pulling a conventional core barrel, when removing the core from the barrel and/or until such time as the area is found to be free of hydrogen sulfide (H_2S).

General Action:

1. All personnel should begin using their self-contained breathing apparatus (gas

masks).

2. The "buddy system" will immediately go into effect.

3. Personnel not essential to the operation should go to the safe assembly area.

V. **EMERGENCY CONDITIONS**

A. Without Warning - In the event an emergency situation occurs without any prior warnings (e.g., sudden gas leaks, gas in mud, H_2S alarm sounds):

1. DO NOT PANIC.

2. Hold your breath and get into your breathing equipment.

3. Help anyone who may be affected by the gas.

NOTE: Put on your BREATHING EQUIPMENT before helping anyone. THEN get him into a safe area and administer oxygen.

4. Evacuate to the safe assembly area.

5. Get instructions from drilling foreman or the safety assignee.

B. With Prior Warning - Condition II will be in effect. If the situation suddenly worsens (e.g., increase in gas leaks, high gas cut from mud, or H_2S alarm is sounded by the monitoring operator):

1. Do not panic.

2. Put on gas masks.

3. Driller stops motion of rig and close blowout preventers, if necessary.

4. Help anyone who may be affected by gas.

5. Evacuate quickly to the "upwind assembly area"

6. The foreman will assess the situation and assign duties to various persons to bring the situation under control. Follow his instructions; the success of this plan depends on your cooperation. When the severity of the situation has been determined, all persons will be advised and a pennant indicating one

of the three conditions will be displayed near the site entrance and the rig. The purpose of these pennants is to automatically apprise everyone (especially new arrivals at the site) of the severity of the situation.

VI. RESIDENT EVACUATION PLAN

A. Responsibilities and Conditions

The Texaco Drilling Foreman will initiate evacuation of the Area residents listed in the resident inventory when the following Dangers-To-Life conditions exist.

1. A well kick has occurred and poisonous gas is present at the wellsite above the threshold concentration.

   H_2S = 5-10 PPM SO_2 = 5 PPM

2. A gas leak has occurred during completion or testing operations and poisonous gas is found outside of the immediate work area (ring levee) in concentrations above the safe limit.

   H_2S = 11 PPM SO_2 = 6 PPM

3. A condition exists where loss of control of the well or the uncontrolled release of poisonous gas is likely

B. Procedures

1. Evacuate residents within the one mile radius of the well starting with down wind residents first.

2. The area residents will be notified by phone. If the residents do not have a phone or the use of the rig phone is not possible, the residents will be contacted in person. The Drilling Foreman will dispatch at least two people with safety breathing and monitoring equipment, and a residence location map to aid in the evacuation.

3. The County Sheriff's Department will be notified immediately of the emergency condition and their assistance requested to

notify and evacuate the area residents. (A copy of the contingency plan will be furnished to the Sheriff's Department by the Division Office.)

4. As soon as possible after evacuation is complete at least two people equipped with self-contained breathing equipment and a radio will be stationed in the downwind area to monitor H_2S and SO_2 concentrations.

VII. LOSS OF WELL CONTROL

A. Instruction

1. The Drilling foreman will determine if existing conditions require abandoning the location and if the well should be ignited.

2. All necessary operations will be conducted with the minimum of personnel. All unnecessary personnel will stay in the upwind or safety assembly area.

3. In the event of a blowout, the decision to ignite the well is the responsibility of the drilling foreman. However, the decision should be made only as a last resort and in a situation where it is clear that human life and property are endangered or there is no hope of controlling the blowout under the prevailing conditions at the well. In all cases an attempt should be made to notify the Division of the plans to ignite the well, if time permits. However, the foreman must not delay his decision if human life is threatened.

4. REMEMBER, if the well is ignited, the burning H_2S will be converted to sulfur dioxide (SO_2) which is also highly toxic. Do not assume that the area is safe after the well is ignited. Follow through with all plans to evacuate endangered persons. The following steps will be taken to ignite the well:

B. Igniting the Well

1. In preparation of igniting the well, keep all unnecessary persons in "upwind assembly area". Two people are required for the actual ignition. Both men will wear self-contained

breathing units and will have 400 feet retrieval ropes tied around their waists.

Persons remaining in "assembly area" will closely watch the ignition team. Should either man be overcome by fumes, they will immediately pull him to safety by the retrieval ropes.

2. The primary method for igniting the well will be with an electric arc igniter. The secondary method will be with a 25 MM meteortype flare gun. These guns have a range of approximately 500 feet. If these methods fail or well conditions are such that a safer or better method is apparent, then the alternate method should be used.

TABLE I

EMERGENCY EQUIPMENT LIST

A. Emergency safety storage trailer containing:

1. First aid kit
2. Quick air splint kit
3. Eye wash station
4. Fire blanket
5. Stokes basket
6. 2 - 400' retrieve rope
7. Flare gun w/spare shells
8. Fire extinguisher
9. Megaphone voice gun
10. Chalkboard and chalk

B. Monitoring Equipment

1. 12 - H_2S spotcheck lead acetate tape detectors
2. Bendix portable H_2S pump w/tubes for H_2S and SO_2
3. 1 - 4 channel H_2S monitor (solid state) w/explosion proof warning light and siren combination.

C. Breathing Equipment

1. 8 - Scott 30-minute back packs
2. 9 - Scott 10-minute SkaPaks w/escape cylinder and fiberglass housing.
3. 8 - 50 foot rubber work hoses; 1 - 12 foot rubber derrick hose.
4. 24 - 300 cu. ft. air cylinders cascaded w/t-blocks and stainless steel pigtails. Stainless steel hoseline with hi/lo regulator, 2 - refill hose.
5. 3 - man and 5 - man manifold outlets.

6. Resuscitator w/spare cylinder.

7. Refill hoses.

D. Other Equipment

1. 2 - Windsocks w/telescopic poles and 300 feet of pennant wind direction indicators.

2. 1 - 4' X 4' H_2S CONDITION sign w/condition flags green, yellow, red.

3. H_2S metal signs - pole mounted.

"CAUTION" - H_2S POISON GAS"
"RESTRICTED - KEEP OUT"
"NO SMOKING BEYOND THIS POINT"

4. 2 - 50 foot flare stacks w/base 8' X 14' each with automatic igniter, burner and 400 feet of 4" pipe.

EMERGENCY INCIDENT REPORTING

In the event an incident occurs that effect that safety of the general public or is a threat to the environment, one of the following should be contacted as soon as possible.

	OFFICE NUMBER	HOME NUMBER
Mr. G. F. Sandison	(504) 595-1297	(504) 391-3741
Mr. N. L. Porterfield	(504) 595-1883	(504) 889-1052
Mr. B. J. Wiley	(504) 595-1989	(504) 626-1879

This report should include the following information:

1. Name of person reporting:_____

2. Type of incident: _____

3. Date and time of incident: _____

4. Type of damage and/or injuries:

   A fire has occurred.
   An explosion has occurred.
   A spill has occurred w/_____ barrels of liquid petroleum, etc. exiting location in the _____ direction.

5. Action taken and notifications given (Agency, etc.):_____
   _____
   _____
   _____
   _____

6. Assistance needed:_____
   _____
   _____
   _____

7. Current plan of action:_____
   _____
   _____
   _____

PROCEDURE FOR REPORTING OIL/HAZARDOUS SPILLS

When reporting a spill incident to one of the following agencies, the report should include:

1. Name of person reporting

2. Location of incident

   Road, etc.
   Latitude and Longitude

3. Type of incident in addition to spill

   Fire
   Explosion
   Spill size

EMERGENCY EVACUATION PLAN

The following general plan has been developed in the event that any public evacuation becomes necessary.

1. In the event that there is a problem in the well which poses a threat to the public, Texaco's Wellsite Supervisor will notify the Sheriff's Department. If Texaco's Wellsite Supervisor is incapacitated or absent, the chain of command guidelines will go in effect and the person in command will make the necessary notifications.

2. When notified of an emergency, the Sheriff's Department will contact any additional public support personnel deemed appropriate based on the given situation.

3. If isolation and evacuation are necessary, units will be dispatched by the Sheriff's Department to set up and maintain road blocks and to aid in the evacuation.

4. The Mud Engineer at the wellsite is assigned to begin evacuation of those persons in immediate danger, based on appropriate considerations for wind conditions. He will begin by telephoning any residents in the danger zone located downwind within the likely radius of exposure. He will then proceed at once to the houses in the danger zones to make a person-to-person contact, if at all possible, with the residents who could not be contacted by telephone.

5. The Contract Driller or his assignee will be assigned to blockade the entrance to the location. All known traffic in the immediate vicinity of the wellsite will be diverted. Only authorized vehicles will be allowed entrance to the location.

6. In the event that it becomes necessary to stop busses from taking routes near the well, Texaco's Wellsite Supervisor will notify school officials, or designate someone to do so.

7. The Contractor's Pusher and his crew will remain on location and undertake measures to mitigate and eliminate the emergency situation.

8. Personnel selected by Texaco's Wellsite Supervisor will establish a safe perimeter.

9. The State Oil and Gas Board and other appropriate governmental agencies and authorities will be notified as soon as possible.

10. Other supplementary contractors will be contacted and called in as needed by Texaco's Wellsite Supervisor or the person in command.

EMERGENCY PHONE NUMBERS

Law enforcement:	
King George County Sheriff	703/775-2049
King George, VA	911
Virginia State Police	800/552-9965
Warsaw, VA	804/333-3800
Fire Dept:	
George Fire Department Co. 1	703/775-4584
King George Fire Department Co. 2	703/663-3252
	911
Medical Facilities	
Hospital:	
Mary Washington Hospital	703/899-1100
Fredericksburg, VA Emergency Room	703/899-1111
	911
Rescue and Ambulance	703/775-2222
King George, VA	703/663-2222
	911
Government Agencies:	
National Response Center	800/434-8802
Oil and Toxic Chemical Spill	
State Air Pollution Control Board	804/455-4672
Tappahannock, VA	
Safety Company:	
S.T.O.P., INC.	800/551-3158
P. O. Box 53331	318/237-5740
Lafayette, LA 70505	
National Response Center	(800) 424-8802
Washington, DC (24 hr.)	
U.S.C.G.	(301) 962-5100
Baltimore, MD (24 hr.)	(301) 962-5105
Virginia Water Control Board (office)	(804) 363-3914
Virginia Beach Office (non-office)	(804) 363-3913
Virginia Emergency Response Council (24 hr)	(800) 468-8892
King George County Administrator	(703) 775-7111
Virginia Oil & Gas Board (office)	(703) 628-6816
Abington, VA (non-office)	(703) 628-9258
	(703) 265-0092