submitted in lieu of Form 3160-5

RECEIVED

JUN 28 1991

Bureau of Land Management
Durango, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 17 1991

Bureau of Land Management
Durango, Colorado

Sundry Notices and Reports on Wells

1. Type of Well
GAS

2. Name of Operator
Meridian Oil Inc.

3. Address & Phone No. of Operator
Box 4289, Farmington, NM 87499 (505)326-9700

4. Location of Well, Footage, Sec, T, R, M.
1100'S, 1000'W Sec.17, T-32-N, R-14-W, NMPM

5. Lease Number
~~NM-189~~ I-22-IND-2622

6. If Indian, All.or Tribe Name
Ute Mt. Ute

7. Unit Agreement Name

8. Well Name & Number
Ute #6

9. API Well No.

10. Field and Pool
Paradox

11. County and State
San Juan County, NM

12. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OTHER DATA

Type of Submission	Type of Action	
X Notice of Intent	__ Abandonment	__ Change of Plans
	__ Recompletion	__ New Construction
__ Subsequent Report	__ Plugging Back	__ Non-Routine Fracturing
	__ Casing Repair	__ Water Shut Off
__ Final Abandonment	__ Altering Casing	__ Conversion to Injection
	__ Other	

13. Describe Proposed or Completed Operations

It is intended to test the second sour and then plug the second sour; to open and stimulate with acid the first sour; segregate the third sweet by squeezing with cement above and below, and then open and stimulate the third sweet with acid.

Attached is a copy of the proposed procedure.

RECEIVED
JUL 17 1991
OIL CON. DIV.
DIST. 3

RECEIVED
91 JUN 19 AM 11:41
070 FARMINGTON, NM

14. I hereby certify that the foregoing is true and correct
Signed [signature] (MP) Title Regulatory Affairs Date 6-14-91

(This space for Federal or State office use)

APPROVED BY (s) Kent Hoffman TITLE ACTING AREA MANAGER DATE JUN 18 1991

CONDITION OF APPROVAL, IF ANY:

NMOCD

Recommended Procedure

UTE #6 Paradox
UNIT M SECTION 17 T32N R14W
San Juan County, N.M.
Expense Workover

All wirelines to be treated w/corrosion inhibitor.

1. Test location anchors, dig blow pit, and set blow tank.

2. **Rig up for H2S safety & train all personnel that will be on location.** Comply with all NMOCD, BLM, & MOI, rules and regulations. MI Swabbing unit. Swab 2-7/8" tbg for two days recording all information on each run: fluid level, water volume, gas volume, etc. RD Swabbing unit.

3. MOL and RU completion rig. NU 6" 900 series BOP (w/H2S trim) and stripping head. Test operation of rams. NU 2-7/8" relief line with 3000 psi gate valves on tubing head.

4. All water pumped into well should contain 2% KCL and heated to 100 degrees F. Drop 2-7/8" profile plug to seat on S.N. @ 8480' & test tbg to 3000 psi & backside to 1500 psi. TOH w/2-7/8" tbg and Baker R-3 Double grip pkr. Remove standing valve.

5. MI wireline w/ full lubricator. Run 7" gauge ring to 8510'.

6. Assuming swabbed zone (2nd Sour) tested wet, set 7" cmt ret @ 8510'. Load hole. Run 2-7/8" tbg & sting into cmt ret @ 8510' & sq 2nd Sour w/50 sx cmt (100% excess). PU, CO short way, TOH.

7. Run Multifrequenc Electromagnetic Thickness Tool (METT) 8500'-350' & Casing Protection & Evaluation Tool (CPET) 4360'-2668'.

8. Perf Paradox 1st Sour w/4 spf 8440'-80'. Use 4" casing gun w/shots phased @ 90 degrees, 23 gr charges which will give a 0.66" diameter hole and a penetration of 16" in concrete.

9. TIH w/7" retrievamatic pkr on 2-7/8" tbg & set @ 8300'. Establish rate & acidize 1st Sour w/4000 gal. 20% HCL acid in two stages separated by 1000# diverting agent (85:15 mixture rocksalt & wax beads). Flush to top perf. All acid & flush to have 1000 scf/bbl Nitrogen. Pump liquid @ 1-1/2 to 2 BPM. Acid to contain the following additives per 1000 gal.:

   3 gal aquaflow
   3 gal corrosion inhibitor I17
   2 gal surfactant & de-emulsifier LT22
   3 gal silt suspending agent LT21
   5 gal Fe control XR2L

10. Let acid set for one hour, then allow well to flow back through choke manifold. Obtain gas ,water, and oil rates and appropriate samples. Swab test if necessary.

11. When interval has been sufficiently tested, TOH w/tbg & pkr. Set RBP @ 8420' on wireline & top w/20' sand. Pressure test to 1000 psi.

12. Perf 2 sq holes @ 8170' & 2 sq holes @ 8050'. Set cmt ret @ 8160'.

13. TIH w/2-7/8" tbg & sting into cmt ret. Attempt to establish rate down tbg, through both sets of squeeze holes and up casing. Cmt as required.

14. Sting out of cmt ret & raise tbg to 8000'. Clean out short way w/1.5 tbg volumes, (70 bbl).
    a. If cmt flag is observed during circ, repressure & allow cmt to set.
    b. If no cmt flag, TOH. TIH w/ pkr on 2-7/8" tbg. Set pkr @ 7800'. Establish rate into upper sq perfs & sq w/cmt as required.

15. TIH w/6-1/8" bit on 2-7/8" tbg. Drill & CO to cmt ret @ 8160'. Pressure test to 1000#, resqueeze if necessary.

16. When upper sq perfs @ 8050' hold 1000# pressure test, drill cmt ret @ 8160' & drill & clean out cmt to below lower sq holes @ 8170'. TOH.

17. Run CBL 8200'-7800'. Pressure test to 1000 psi. Resqueeze, if necessary.

18. When pressure test holds & CBL indicates 50' of good bonding above & below prospective interval, perf 3rd Sweet 8120'-70' w/4 spf using 4" casing gun, 90 degree phasing, w/32 gr charges. Total 200 holes. Perfs should have an average 0.66" hole diameter and a penetration of 16" in concrete.

19. TIH w/7" retrievamatic pkr on 2-7/8" tbg & set @ 8080'. Establish rate & acidize 3rd Sweet w/5000 gal. 20% HCL acid in two stages separated by 1000# diverting agent (85:15 rocksalt & wax beads. Flush to top perf. All acid & flush to have 1000 scf/bbl Nitrogen. Pump liquid @ 1-1/2 to 2 BPM. Acid to contain the following additives per 1000 gal.:
    3 gal aquaflow
    3 gal corrosion inhibitor I17
    2 gal surfactant & deemulsifier LT22
    3 gal silt suspending agent LT21
    5 gal Fe control XR2L

20. Let acid set for one hour, then allow well to flow back through choke manifold. <u>Obtain gas, water, and oil rates and appropriate samples.</u> Swab, if necessary.

21. When interval has been sufficiently tested, TOH w/ pkr. The decision to squeeze off one of these two tested intervals and produce the other one will be made at this time along with an amended procedure.

Approve: _____
D. C. Walker

H_2S CONTINGENCY PLAN

UTE #6
Well Name & Number

BARKER DOME FIELD
San Juan County, New Mexico

P. M. Pippin
Production Engineer

G. T. Dunn
Regional Production Engineer

J. A. Howieson
Drilling Superintendent

G. D. Morris
Drilling Superintendent

D. C. Walker
Drilling Manager

Introduction

Meridian Oil Inc. is permitting to recomplete the Ute #6, an 8993 feet Barker Creek and Desert Creek test in the Barker Dome Field in San Juan County, New Mexico for the purpose of evaluating/exploiting reservoirs. The Barker Creek 1st Sour formation is intended as the primary objective. Production data indicates that hydrogen sulfide (H_2S) and carbon dioxide (CO_2) may be present from the Paradox formation to total depth. Production data further indicates that the present open interval, the 2nd Sour in the Barker Creek formation contains 2% H_2S and 13.5% CO_2. Hydrogen sulfide (H_2S) is a flammable and highly toxic gas which, in relatively small concentrations, can have adverse effects on people and equipment (refer to the section - Effects of H_2S). Carbon dioxide (CO_2) is a nonflammable, odorless, colorless, and tasteless gas. Because of carbon dioxide's higher density (it is 1 1/2 times as heavy as air), it may settle to the ground and be dangerous. The carbon dioxide is not poisonous, but it cuts off the necessary supply of oxygen.

Precautionary measures concerning H_2S in this plan have been formulated based on the following assumptions:

1. No significant (greater than 10 ppm) H_2S is expected above the Ismay at 7959 feet.

2. Based on 20,000 ppm H_2S gas released at a rate of 80 MMCF/day, the maximum 100 ppm H_2S "radius of exposure" (ROE) expected is 10,195 feet and the maximum 500 ppm H_2S "radius of exposure" (ROE) expected is 4660 feet. It is highly unlikely that the rate of release would be as significant as 80 MMCF/day. The 500 ppm CO_2 ROE is estimated at about 15,395 feet.

3. The 100 ppm H_2S ROE does not contain a public area and the 500 ppm H_2S ROE does not contain a public road.

This plan has been designated as a guide for well requirements and special considerations to provide for safe and efficient drilling (or servicing) operations in the presence of either hydrogen sulfide or carbon dioxide.

GENERAL EMERGENCY ACTION

In the event an emergency situation occurs, the following action shall be initiated:

1. If the H_2S alarm sounds, stop the rotation of the drill pipe as time and conditions permit.

2. Evacuate quickly to the "Safe Briefing Area".

3. Those who must enter the hazard area must wear self-contained breathing apparatus and use other appropriate safety equipment. Secure rig and close well in, if necessary. (Use the "buddy system" at all times.)

4. Account for all personnel and take appropriate action as necessary for personnel safety.

5. Raise appropriate color warning flag to describe the type of emergency.

6. The above procedures will apply for CO2 situations also.

The Meridian Oil Drilling Supervisor will assess the situation and assign duties to various persons to bring the situation under control. The Supervisor will advise the Drilling Superintendent as soon as the emergency will permit. In the event of a well kick, procedures outlined in the Operations Plan for Drilling will be followed. Stations to be manned and duties to be performed will be listed on the doghouse bulletin board in the supervisor's trailer and in the safety trailer.

Notification of local law enforcement agencies, residents and emergency vehicles as per the following Communications Director will be assigned by the Meridian Oil Drilling Supervisor.

Any press inquiries are to be referred to the Drilling Manager.

Production Operations Department

Dispatch (505) 326-9816

Name	Office	Home	Pager
Production Operations Manager:			
Jones, Louis	326-9802	325-1739	
Superintendents:			
Fraser, Jim	326-9803	326-6367	326-8836
Headrick, Ron	326-9817	334-2563	326-8939
Raybon, Ken	326-9804	327-7861	326-8938
Trucking Supervisor:			
Marshall, Louie	326-9811	325-7470	327-8178
Regional Production Engineer:			
Dunn, George	326-9712	325-7365	

Safety Department

Safety Representatives:			
Dolan, John	326-9502	326-3240	326-8163
McMillan, Terry	326-9841	326-0163	326-9161

Contract Drilling supervisor

1. In the absence or incapacitation of the Meridian Oil Drilling Supervisor, the Contractor Drilling supervisor will assume all responsibilities designated herein to the Meridian Oil Drilling Supervisor.

2. Assist the Meridian Oil Supervisor and Safety Representative in training crews for handling emergency situations.

3. Will be trained for all well control or emergency situations as contained herein and how to properly use all safety equipment.

Driller

1. In the absence or incapacitation of both Drilling supervisors (Meridian Oil and Contractor), the Driller will assume their responsibilities as designated herein.

2. In the event of any emergency, the Driller will don respiratory equipment and secure the rig if time permits.

3. Assist Contract supervisor in crew preparation.

Regional Safety Department

1. Shall provide safety and environmental information and guidance as required.

2. Shall review and approve any changes in safety or environmental procedures.

3. Shall assist as appropriate with operating and maintenance procedures for the safety equipment called for in this plan.

4. Shall assist with arranging initial training on safety procedures and equipment. They will provide assistance as needed for follow up training.

Contractor

1. Shall have his personnel properly trained in first aid.

2. Shall keep his personnel trained in use of safety equipment and safety procedures.

b. The primary method for igniting the well will be with a 25 mm meteortype flare gun. These guns have a range of approximately 500 feet. If this method fails or well conditions are such that a safer or better method is apparent, then the alternate method should be used.

c. Always ignite the well from upwind and do not approach the well any closer than warranted.

d. Select a location to fire the flare gun which provides maximum protection to the ignition team (behind equipment).

e. Choose a location that has good accessibility and from which retreat can easily be made.

f. REMEMBER, before firing the flare gun or igniting flammable material, check the atmosphere at your location for combustible gasses with explosimeter.

PRECAUTIONARY MEASURES

These measures are to be in effect prior to initiating recompletion procedures.

General

1. Two areas shall be designated as safe briefing areas, each located, as a minimum: 150 feet from the wellhead and vent discharge area; spaced 160 degrees apart on an arc, with the wellhead as the center point; and as best suited for topographical considerations and prevailing winds. Five Scott air packs - IIa (or equivalent) shall be located as follows: one in the supervisor's office and two at each of the "Safe Briefing Areas". Packs should be readily accessible and properly protected from exposure to the elements.

2. Emergency equipment shall be on location as described in the H_2S Contingency Equipment Checklist.

3. A copy of all emergency telephone numbers shall be posted on the doghouse bulletin board, at the "Safe Briefing Area", in the Meridian Oil supervisor's office, and in the Contract supervisor's office.

4. Three wind direction streams shall be located where at least one can be viewed from any position on the location.

5. An automatic hydrogen sulfide (H_2S) monitor shall be provided, with detectors placed at the bell nipple and shale shaker. Either of these detectors shall be capable of sensing a minimum of 5 ppm H_2S in air and shall be able to independently activate visual and audio alarms. The visual alarm will be activated at 10 ppm and the audible alarm at 10 ppm. The audible alarm must be capable of alerting people at any point on the location.

6. A black and yellow sign which read, "Caution - Poisonous Gas May be Present", will be posted at the entrance to the location.

7. If conditions warrant, two (2) explosion-proof, 24 inch or larger, electric fans will be located: (a) one on the rig floor to blow fumes downwind; (b) the second under the rig floor to clear gas from the substructure.

8. The wellsite shall be equipped with commercial communications. The equipment should be located for safe access and should not be an ignition source.

9. The Meridian Oil Supervisor's vehicle should always be parked a safe distance (at least 100 feet) from the rig, and in an upwind direction when feasible.

SPECIAL SAFETY TRAINING

The minimum training for personnel working in affected areas shall include the following elements:

1. Hazards, characteristics and symptoms of hydrogen sulfide (H_2S), sulfur dioxide ($SO_)$, carbon dioxide (CO_2), carbon monoxide (CO), methane gas, and other hazardous substances as may be appropriate. Effects of these substances are discussed in a section that follows.

2. Effect on metal components of the system.

3. Safety precautions to include possible sources at the site.

4. Operation of safety equipment and life support means and systems.

5. Corrective action and shutdown procedures.

6. Detection and measurement of H_2S, CO_2, CO and combustible gas.

THE MERIDIAN OIL SUPERVISOR ON LOCATION SHALL BE RESPONSIBLE FOR THE OVERALL ON-SITE OPERATION, INCLUDING THE SAFETY AND TRAINING PROGRAM.

All personnel, contracted or employed on an unscheduled basis, shall be trained as a minimum in the severity of H_2S and other toxic gasses, safety precautions, evacuation procedures, and as appropriate, the use of respiratory protection equipment. Visitors shall also be instructed regarding these matters.

To promote efficient safety procedures, an on-site toxic gas safety program, which includes a bi-weekly drill and training session, shall be established for all crews. Records of attendance shall be maintained on the drilling facility.

MERIDIAN OIL INC.
H_2S CONTINGENCY EQUIPMENT CHECKLIST

Well: Ute #6 _____ Rig N/N: _____

Date: _____ supervisor: _____

1.	___	(All)	**Personnel training** with attendance records on site.
2.	___	(2)	**Cleared land areas** for use as "Safe Briefing Areas", 150 from wellhead, and 160 degrees apart.
3.	___	(1)	**Warning sign** with current well condition indicator, locate near the entrance to the location.
4.	___	(3)	**Wind direction indicators,** located to provide visibilit from any place on location.
5.	___	(3)	**No Smoking signs** on drive posts.
6.	___	(3)	**Safe Briefing Area signs** on drive posts.
7.	___	(2)	**Fans** - electric motor driven and explosion proof; on located on rig floor, and one located in substructure.
8.	___	(1)	**H_2S monitor** (continuous) located in the doghouse wit detectors (sensitivity of 5 ppm in air) located at the bel nipple, mud return discharge, and on the rig floor.
9.	___	(1)	**Alarm system** capable of individual activation by an detector with maximum settings as follows: visual an audible alarms at 10 ppm (audible must be capable o alerting personnel at any point on location).
10.	___	(5)	**Scott air paks-IIa** (or equivalent) - 30 **min. self** contained breathing apparatus: one in the supervisor' office, and two at each of the "Safe Briefing Areas" Easily accessible, and protected from exposure to th elements.
11.	___	(1)	**Flare system** with continuous pilot and remote ignitor.
12.	___	(1)	**Trailer** - full enclosure, at the primary "Safe Briefin Area" (based on prevailing winds), containing the followin items (#13 through #24, and also #25d).
13.	___	(3)	**Condition warning flags** (1 each yellow, orange, and red).
14.	___	(1)	**Draeger (or equivalent) portable detection/measuring devic** with lower range tubes for CO_2, H_2S, and SO_2.
15.	___	(1)	**MSA explosimeter** (or equivalent).
16.	___	(1)	**Flare gun** - 25mm meteor type with flares.
17.	___	(2)	**Derrick safety belts** with 10' tail ropes.
18.	___	(2)	**200' retrieval ropes.**
19.	___	(3)	**Hearing protectors** - muff type.
20.	___	(1)	**First aid kit** - 25 unit.
21.	___	(3)	**Flashlights** w/batteries (explosion-proof & watertight).
22.	___	(1)	**Disinfectant, cleaner, and towels** for breathing apparatus.
23.	___	(1)	**Inspection records** for breathing apparatus and air supply.
24.	___	(1)	**Fire extinguisher** (rated 60:BC).
25.	___	(4)	**Emergency telephone numbers** in plastic weatherproof holders located at: rig bulletin board; Meridian Oil supervisor's office; Contract supervisor's office; Safe Briefing Area.

Comments: _____

2. Carbon Dioxide - CO_2

Carbon dioxide is a colorless, odorless gas which can be tolerated in relatively high concentrations. Commonly used to extinguish fires, it is 1.5 times heavier than air and will concentrate in low areas of quiet air. The primary danger from CO_2 is that it causes an oxygen deficiency and requires supplied air systems to be provided for protective measures. Humans cannot breath air containing more than 10% carbon dioxide without losing consciousness. Air containing 50,000 ppm (5%) CO_2 will cause disorientation if inhaled for 30 minutes or more. Exposure to 5000 ppm CO_2 can be tolerated for a maximum of eight hours. Continued exposure to carbon dioxide after disorientation will cause convulsions, coma and respiratory failure.

3. Sulfur Dioxide - SO_2

Sulfur dioxide is a colorless, nonflammable, intensely irritating gas and 2.2 times heavier than air. It is a by-product of combustion of hydrogen sulfide and is highly toxic. Exposure to 2 ppm can be tolerated for a maximum of 8 hours. Respiratory equipment will be available and should be used by personnel measuring SO_2 concentration downwind from a flare.

4. Methane - CH_4

Methane is the major component of natural gas and is colorless, odorless and extremely flammable. The chief danger from methane is explosion. Mixture of CO_2, H_2S and CH_4 will burn if the total H_2S and CH_4 content, in any ratio, is above 25 percent. Also the presence of methane causes an oxygen deficient environment and requires adequate ventilation for breathing.

5. Carbon Monoxide - CO

Carbon monoxide is a colorless, odorless toxic gas. It's toxicity results from preferential reaction with the hemoglobin in the blood; however, it has no unique toxic action on any of the bodily tissues. CO displaces oxygen from hemoglobin and reduces the oxygen carrying capability of the blood.

The primary danger from CO is that it causes oxygen deficiency similar to carbon dioxide (CO_2). Respiratory equipment should be used for atmospheres containing greater than 35 ppm. Exposure to 100 ppm (.0190) for three hours produces no perceptible effects; however, after nine hours will tend to cause headaches and nausea. Concentrations above 1500 ppm may be dangerous to life.

In addition to the toxic effects of CO, carbon monoxide burns readily in air. The flammability limits of CO in air change with pressure. At atmospheric pressure, however, the lower limit is $\pm$12.5% and upper limit is $\pm$74%.

Corrosion Effects of H_2S and CO_2 on Steel

1. Hydrogen Sulfide (H_2S)

The three forms of hydrogen sulfide corrosion of steel are as follows:

(a) general or weight loss,
(b) localized or pitting, and
(c) sulfide stress cracking.

In both general and localized corrosion, hydrogen sulfide reacts with the steel to produce iron sulfide. General corrosion is characterized by the formation of an iron sulfide film on the surface of the steel. After long periods of exposure, weight loss can lead to a significant reduction in strength. Localized corrosion is much more serious and predominantly occurs in the pH range below six. Chloride or similar ions must be present for pitting to occur. Iron chloride accumulates at the metal to iron sulfide film interface and promotes a localized attack. Pitting corrosion has not presented a significant problem in drilling operations.

Of foremost concern is sulfide stress cracking or hydrogen embrittlement where failure may take place without warning or significant metal loss. This problem is related to strength of the steel, hydrogen sulfide concentration, pH, exposure time, temperature and stress level of the steel. Hydrogen sulfide absorbed on the metal surface promotes the entry of atomic hydrogen into the metal. The atomic hydrogen which enters the steel matrix diffuses to positions of high stress where it can induce hydrogen embrittlement. Thus, brittle failure can occur at stress levels significantly less than normal yield stress. A high total dissolved sulfide concentration can be tolerated if the pH is high enough (9.5 or greater).

2. Carbon Dioxide - CO_2

In the presence of water, carbon dioxide dissolves and forms carbonic acid. The carbonic acid causes a reduction in pH of the drilling fluid which makes it quite corrosive to steel. Carbon dioxide contamination is possible from oil and/or gas reservoirs. Sufficient quantities of CO_2 in the wellbore under drilling or static conditions will cause high corrosion rates.

Effects of H_2S and CO_2 on Drilling Fluid

1. Hydrogen Sulfide - H_2S

When H_2S is entrained in a drilling fluid, it will disassociate to some degree depending on the pH of the system as follows:

$$H_2S \rightleftharpoons H^+ + HS^- \rightleftharpoons 2H^+ + S^=$$

Hydrogen Sulfide Gas		Hydrogen Ion	+	Bisulfide Ion		Hydrogen Ions	+	Sulfide Ion

Undisassociated hydrogen sulfide is the molecule which attacks steel surfaces and causes corrosion and embrittlement. Below pH 4, nearly all of the H_2S in a system is in this molecular state. With increasing pH, H_2S disassociation increases so that above pH 10, effectively all of the H_2S is disassociated into bisulfide and sulfide ions. These ions are relatively harmless in the mud as long as the high pH is maintained. If pH is lowered, the reaction will be reversed and hydrogen sulfide gas will be evolved.

In addition to sulfide ions, disassociation of H_2S in drilling mud produces hydrogen ions, which will react with hydroxyl ions in a high pH mud to form water. With sufficient H_2S contam- ination, excess lime, if any, can be depleted and pH will begin to drop. A sufficient decrease in pH will, as previously stated, evolve H_2S gas.

It is therefore desirable to know whether H_2S has been encountered at the least possible time. This can be accomplished by testing the mud for sulfide ions daily, as described in the sulfide testing procedures that follow (API RP 13B).

2. Carbon Dioxide - CO_2

When carbon dioxide gas is entrained in a drilling fluid, it will combine with water to form carbonate and bicarbonate ions and will simultaneously reduce pH. If left untreated, this can result in excessive gelation of the drilling fluid. The normal treatment for this contamination is lime, which precipitates out carbonate and raise pH.

SULFIDE TESTING PROCEDURE

HACH TEST

PROCEDURE FOR ESTIMATING FILTRATE SULFIDE

Equipment

The following materials are required to estimate the sulfide concentration in the mud filtrate:

a. Special test vial with vented cap
b. Lead acetate test paper to fit cap
c. Color comparison chart

NOTE: THE HACH HYDROGEN SULFIDE TEST KIT (MODEL HS-7) CONSISTS OF ITEMS a, b, and c ABOVE.

d. Distilled water
e. Hypodermic syringe
f. Defoamer (such as octyl alcohol or sulfated castor oil)
g. 0.1N acid, sulfuric or hydrochloric

Procedure

Place one disk of dry lead acetate test paper inside the dry cap of the test vial.

Measure 2.5 cm^3 of freshly collected mud filtrate into the test vial. Dilute to the 25 cm^3 with distilled water.

Add 2 cm^3 of 0.1N acid, immediately add a fresh seltzer tablet, and quickly place the cap with the test paper on the vial. Allow the seltzer tablet to dissolve and then wait one minute.

Remove lead acetate paper and observe for brown coloration. If no coloration can be detected, then report the soluble sulfide as zero. If brown coloration is present, compare the test paper with color comparison chart. Read the appropriate ppm value (0.1, 0.3, 0.5, 1, 2, or 5) from the color chart and multiply by 10 to obtain the test result (1, 3, 5, 10, 20, or 50).

If the test paper matches the darkest color (5 ppm) on the color chart, the test result must be interpreted as greater than 50 ppm.

To extend the test range to higher concentration, dilute the filtrate as follows:

a. For a test range of 10 to 500 ppm, dilute 1.0 cm^3 of filtrate with 9.0 cm^3 of distilled water. Use 2.5 cm^3 of the diluted filtrate for the sulfide determination. Multiply the color chart value by 100 to obtain the test result.

Report the test result as filtrate sulfide in ppm.

H_2S Drilling Operations Plan

A. Training Program - Meridian Oil will ensure all personnel have bee properly H_2S trained as per API RP 49 prior to 3 days or 500 fee prior to penetrating the Upper Ismay at 8573'KB. An initia training session and weekly H_2S and well control drills for al personnel in each working crew will be conducted. Each trainin session and drill will be recorded on the drillers log. Tw briefing areas will be designated and located at least 150 feet fro the wellbore. One such briefing area will be upwind of the well a all times. John Dolan, Meridian Oil Safety Representative, will b designated and identified to all personnel on-site as responsibl for on-site safety and training programs.

B. Protective Equipment - Meridian Oil will ensure respirato protection equipment program is implemented as per ANS 2.88.2-1980. Proper breathing apparatus will be readily accessibl for all essential personnel; meaning one working breathing apparatu including a five minute escape-type SCBA for the derrickma available for all essential personnel. The following additiona safety equipment will be available for use:

1. Effective means of communication when using breathing apparatus.
2. A flare gun and flares to ignite well.
3. A telephone, radio, mobile phone or other device that provide communication from a safe area, where practical.

C. H_2S Detection and Monitoring Equipment

1. Drilling - will have three sensing points (shale shaker, ri floor, bell nipple) with rapid response sensors capable o sensing a minimum of 10 ppm of H_2S, in ambient air, whic automatically activates visible and audible alarms at levels o threshold limits of 10 and 15 ppm, respectively.

   Completion - same as above except sensors will be located at th rig floor, cellar, and shale shaker or circulating tank.

   Workover - will have one sensor operational as close to th wellbore as possible.

2. All tests on H_2S monitoring system will be recorded on drillers log.

D. Visible Warning System

1. Wind direction indicators (drilling (2); completion/workover (1)) will be located at separate elevations with one indicator clearly visible at all times from principle working areas. The wind indicator will be clearly visible from the briefing areas or additional indicators will be installed at such areas.