submitted in lieu of Form 3160-5

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Sundry Notices and Reports on Wells

RECEIVED
MAY 1 1 1998
OIL CON. DIV.
DIST. 3

1. **Type of Well**
GAS

5. **Lease Number**
I-22-IND-2772

6. **If Indian, All. or Tribe Name**
Ute Mountain Ute

7. **Unit Agreement Name**

2. **Name of Operator**
BURLINGTON RESOURCES OIL & GAS COMPANY

8. **Well Name & Number**
Ute Mountain Ute #50

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

9. **API Well No.**
30-045-29548

4. **Location of Well, Footage, Sec., T, R, M**
1800'FNL, 1850'FWL, Sec.22, T-32-N, R-14-W, NMPM

10. **Field and Pool**
Wildcat Hermosa,
Barker Dome Ismay,
Barker Dome Desert Creek,
Barker Dome Akah/Upr BarkerCr
Barker Dome Paradox

11. **County and State**
San Juan Co, NM

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

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

13. **Describe Proposed or Completed Operations**

It is intended to complete the Barker Dome Paradox (lower Barker Creek, upper Alkali Gulch, lower Alkali Gulch) according to the attached procedure.

SEE ATTACHED CONDITIONS OF APPROVAL

RECEIVED
MAY 0 1 1998
Bureau of Land Management
Durango, Colorado

14. **I hereby certify that the foregoing is true and correct.**

Signed [signature] Title Regulatory Administrator Date 4/29/98

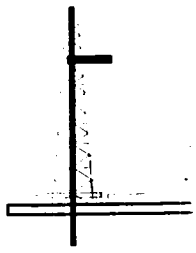
no

(This space for Federal or State Office use)
APPROVED BY (s) Dan Rabinowitz Title AREA MANAGER ACTING Date MAY 7 1998
CONDITION OF APPROVAL, if any:

NMOCD

BURLINGTON RESOURCES

April 29, 1998



Ute Mountain Ute #50
Completion Procedure

Sec. 22, T-32-N, R-14-W
Lat. 36-58.6', Long 108-17.9'
San Juan County, New Mexico

KB 6,245'
GL 6,231'

****Comply with all Federal, State, Tribal, and local rules and regulations relating to oil and gas operations at all times****

DIST LIST: JPH RDC
FAS CEL
PWB ORIGINAL - WELL FILE
SCP PAB
GPZ
MGK

Objective:

1. Drillout DV tool and cleanout 5-1/2" Production Casing to the float collar @ 8607' MD.

2. Run CBL-GR-CCL log

3. Make scraper run to PBTD and perform wellbore cleanup. Circulate hole clean with filtered 2% KCL completion fluid.

4. Perforate L. Alkali Gulch and L. Barker Creek utilizing TCP Shoot & Pull Assy @ approx. 1000 psi underbalance (not enough rat hole for Shoot & Drop assy.). Flow well until steady flow is reached, shut in well for twice the flow period and record BHP with downhole gauges installed in bundle carriers. Kill well with 2% KCL Filtered completion fluid and retrieve TCP guns.

Interval	(FT)	Formation
8318' – 8396'	(78')	Lower Barker Creek
8472' – 8480'	(08')	Upper Alkali Gulch
8505' – 8521'	(16')	Lower Alkali Gulch
	102' Net (203' Gross)	

5. Run 2-7/8" completion.

6. Swab well in and place on production. Acidize with 15% HCL if required.

Pertinent Data:

1. Expected reservoir pressure in L. Alkali Gulch and Lower Barker Creek formation is 1800 psi @ midperfs of 8421' MD (4.1 ppg EMW).

2. Static bottom hole temperature is 190 degrees F. at mid perfs.

3. 8.5 ppg completion fluid (2% KCL) gives a 1927 psi overbalance @ midperfs.

4. Production casing is 5-1/2", 17 ppf, L-80, LTC.

OD (in)	Weight (lb./ft)	Grade	ID (in)	Drift (in)	Burst Pres. (psi)	Collapse Pres. (psi)	Capacity (bbl/1000')	Yield Strength (lb.)
5 ½	17	L-80	4.892	4.767	7,740	6,280	23.2	
2 7/8	6.5	L-80	2.441	2.347	10,570	11,160	5.8	144,960
5.5*2.875							15.2	

5. Estimated Frac gradient of 0.7 psi/ft gives a maximum surface pressure of 2175 psi assuming a full column of 8.5 ppg 2% KCL filtered completion fluid.

Procedure

1. Move in and rig up Drake #28 rig. Rig up safety equipment (H2S Safety engineer should be on location during all operations). Rig up flow lines to pit and flare line. Stake down all flow lines. Test BOP's to 5000 psi. Well could produce as much as 10mmcf/day with significant amounts of H2S (20,000 ppm). Refer to attached H2S Contingency Plan.

   Note: Notify BLM & Ute Mountain Tribe prior to starting operations.
   All vendors vehicles must have current Ute Permit displayed

2. Pick up 4-3/4" bit on 2 7/8" L-80 6.5# EUE tubing and run in hole to drill up stage tool at 6409' and clean out casing to float collar @ 8607' (86' of rathole bottom perf @ 8521'). Pump 40 bbl High Visc (polymer) sweep and circulate hole clean. POOH.

3. Rig up Schlumberger with pack-off to run CBL. Run CBL/CCL from PBTD to 2000' with 1,000 psi on casing.

4. POOH and pick up 5-1/2" casing scraper and clean out to PBTD. Work scraper across packer setting depths. Pump 40 bbl high visc (polymer) sweep and circulate hole clean. Pickle the wellbore tubulars by pumping the following at +/- 5 BPM:

   200 Gallons Xylene
   2,000 Gallons 15% FE Acid with following additives
   15% HCL Acid
   10 gal/M FE-1A (Acetic Acid)
   10 gal/M FE-2A (Citric)
   3 gal/M HAI-85M (Inhibitor)
   2 gal/M Lo Surf 300 (Non-ionic Surfactant)

   Pump Xylene and Acid down tubing and follow with a 30 bbl high visc polymer pill. Displace all acid out the annulus and monitor returns for acid return strength. Once acid is out of annulus, increase rate to maximum rate and circulate with water until returns are clean. Displace hole with clean filtered (<5 micron) 2% KCL water. POOH.

   Note: See attached MSDS sheet for Xylene. Need to have flowback tank to recover Xylene from wellbore.

5. Hold Pre-job safety meeting. MU Schlumberger 3-1/2" TCP guns loaded with 37JHMX Charges at 4 SPF 60° Phasing. MU Schlumberger "Shoot & Test" assy. Complete with Differential Pressure Firing Head, 5-1/2" Positrieve packer, MVEV (Tester Valve), circulating valve and bundle carrier with gauges. See attached gun diagram for tool details. RIH and fill tubing with 1000' of filtered 2% KCL fluid

above firing head.

Note: Caliper and record all OD's and ID's of the TCP string. Rabbit all pipe prior to RIH.

6. After reaching approximate perforating depth, RIH an extra 10'. P/U to a tool joint so that string will be in tension while running correlation log. Correlate guns with Schlumberger and position on depth. Set the 5-1/2" Positrieve packer with ¼ turn to the right. Slack off 10,000 lbs, to confirm the packer is set. This will also open the Tester valve.

7. Set the slips in the rotary and secure same. Close the pipe rams and rig up circulating head with pump-in sub above the safety valve. Rig up lines and test same to 3,000 psi.

8. Pressure up on annulus (without stopping) to a maximum of 2,000 psi to fire the guns. Stop pumping on the annulus if the guns fire at less than 2,000 psi.

   Note: a) Use an acoustic listening device and a bubble bucket to confirm that guns fired.

9. Flow well for at least 1-2 hours for inflow to stabilize. Well could flow as high as 10 mmcf/day with H2S as high as 20,000 ppm.

   Note: Be prepared to ignite immediately

10. PU string approx. 12" above neutral pt. to shut-in well downhole w/MFEV. Leave well shut-in for 2 times the flow period for a buildup.

11. Drop bar to open reversing valve. Reverse circulate until returns are free of oil and gas. Reverse at least 1-1/2 times the [redacted] pipe volume.

    Note: Test manifold to 5000 psi prior to utilizing.

12. Close safety valve and rig down surface lines.

13. Unset the 5-1/2" Positrieve packer and wait 15 minutes to allow the packer rubber to collapse.

14. Bullhead the annulus volume from the Positrieve Packer to bottom of perfs (if the well is not on a vacuum) by pumping filtered KCL Water down the annulus. Do not exceed 2,175 psi maximum surface press, while bullheading (equivalent to 0.70 psi/ft frac. Gradient.).

14. Observe the well 1/2 hour to be sure it is dead.

15. Pooh with the shoot and pull assembly.

    Note: a) If the well is static, keep the hole full and monitor for correct fill up, while pooh.
    b) If the well is on a vacuum, fill the hole with metal displacement only.

16. Pick up expendable check, 1 joint 2 7/8" L-80 6.5# EUE tubing, "F" profile 2.25" nipple, 3 joints tubing, Baker Model "R" big bore 2 7/8" by 5.5" 17# packer and remainder of tubing to land packer at +/-8068'. Tubing TD should be at 8168' (tubing should be +/- 150' above top perforation). Spot packer fluid (1% by volume (55 gallons) CRW37F in 2% KCl lubricate down backside (5495 gal annular capacity)) on backside and land packer with 18,000# compression. ND BOPE and NU 5,000 psi tree with 2 2-9/16" master valves, production block, 2 2-1/16" wing valves and one 2-9/16" swab valve. Test tree to 5000 psi.

17. Rig up flow line and pump off check. Swab well if it does not flow.

    Note: Be sure that swab line is in good condition and treat for H2S prior to RIH.

18. Release rig and turn well over to production.

    Note: If after well is flowing and pressure/flow data show that stimulation is required, pump the following acid treatment down the tubing:

    1500 gallons 15% SWIC II

Acid to contain:	15% HCL Acid
	3 gal/M FE-5A (Iron Reducing Agent)
	2 lbs/M HII-124C (Intensifier for Fe-5A)
	20 gal/M SCA-130 (Sulfide Scavenger)
	5 gal/M HAI-85M (Inhibitor)
	2 gal/M LoSurf 300 (Non-Ionic Surfactant)

    Flush acid with filtered completion fluid. Flow / Swab well as required.

Recommended by
John P. Hosford 327-7358 (home)
599-4008 (office)
564-1703 (pager)
320-2569 (cellular)

NW Basin Asset Team Leader 4/30/98

Drilling Superintendent 4/29/98

Sr. Drlg. Engr. 4/24/98

Drilling Manager 4/30/98

Attachments: Pertinent Data Sheet
Schlumberger Gun Diagram
Wellbore Sketch
Schlumberger SPAN Perf Penetration Analysis
H2S Contingency Plan
Vendor List

CC: Halliburton
Schlumberger
Drake Well Services

Pertinent Data Sheet - Ute Mountain Ute #50

Location: Section 22, T-32-N, R-14-W, San Juan County, New Mexico
1800' FNL, 1850' FWL

Latitude: 36 degrees, 58.6 minutes **Longitude:** 108 degrees, 17.9 minutes

Field: Barker Creek Paradox **Elevation:** 6245' GL **TD:** 8692'
6231' KB **PBTD:** 8607'

Spud: 4/10/98

Status: Waiting for completion

Casing Record:

Hole Size	Casing Size	Wt & Grade	Depth Set	Cement	Top/Cement
12-1/4"	8-5/8"	24.00#, K-55	385 '	270 sx	Surface
7-7/8"	5-1/2"	17.00#, L-80	8690'	3166 sx	Surface

Stage tool at 6409'

Tubing Record: None

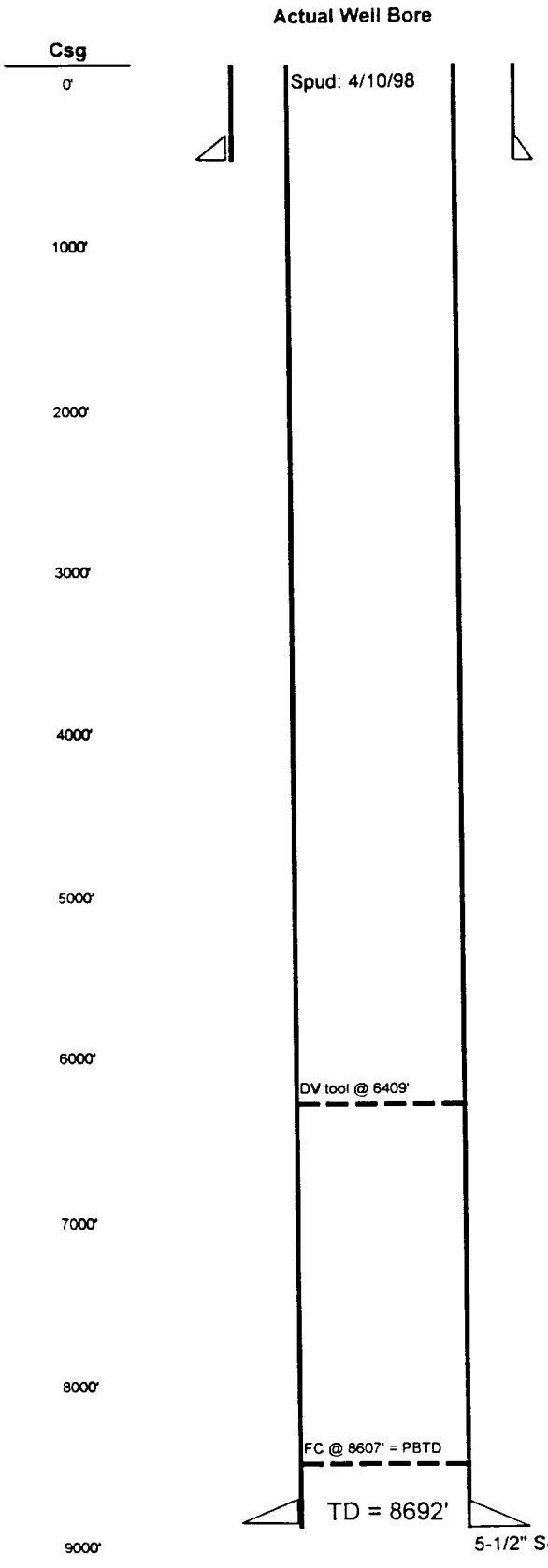
Formation Tops:

Geenhorn	2175'	DeChelly	4674'
Graneros	2224'	Cutler	4972'
Dakota	2293'	Hermosa	6528'
Morrison	2500'	Upper Ismay	7612'
Junction Creek	3046'	Lower Ismay	7710'
Summerville	3390'	Desert Creek	7864'
Todilto	3479'	Akah	7999'
Entrada	3488'	U. Barker Creek	8167'
Carmel	3590'	L. Barker Creek	8299'
Wingate	3644'	U. Alkali Gulch	8398'
Chinle	4075'	L. Alkali Gulch	8505'
Shinarump	4632'	Pinkerton Trail	8597'

Logging Record: Platform Express, BHC Sonic / AIT, FMI

Well Name: Ute Mountain Ute #50
Field: Barker Dome
Location: Section 22, T-32-N, R-14-W
Budget Year: 1998
Rig: Big A Well Service #54
GL: 6231
KB: 6245
Spud To Rig Release: 16.5 Days

Latitude: 36 degrees, 58.6 minutes
Longitude: 108 degrees, 17.9 minutes



Geology		
0'		
Mancos Sh		
Niobrara		
2175'	Greenhorn ls	
2224'	Graneros sh	
2293'	Dakota ss	
2500'	Morrison	
3390'	Summerville	
3488'	Entrada ss	
4075'	Chinle	
4972'	Cutler	
6528'	Hermosa	
7612'	Ismay	
7864'	Desert Creek	
7999'	Akah Anyh	
8167'	Barker Creek	
8299'	L. Barker Ck.	
8398'	Alkali Gulch	

Surface Casing Cement

Lead Cmt = 270 sks (53.8 bbls) Class "B"
+ 2% Calcium Chlonde
+ 0.25 pps flocele

Density = 15.6 ppg
Yield = 1.18 cuft/sk
Water = 4.97 gal/sk

* 8 bbls of returns

Production Casing Cement

1st Stage: **(8690' - 6409')**

Lead Cmt = 820 sks (168.9 bbls) Class "G"
+ 0.2% CFR-3
+ 0.25 pps Flocele
+ 0.3% Halad-344

Density = 15.8 ppg
Yield = 1.15 cuft/sk
Water = 4.93 gal/sk

* 20 bbls of returns

2nd Stage: **(6409' - surface)**

Lead Cmt = 446 sks (147 bbls) 65/35 B-POZ
+ 6% gel
+ 1/4 pps Flocele
+ 5 pps Gilsonite

Density = 12.6 ppg
Yield = 1.77 cuft/sk
Water = 9.9 gal/sk

Tail Cmt = 1900 sks (450 bbls) 50/50 Poz
+ 1/4 pps Flocele
+ 5 pps Gilsonite
+ Halad 9
+ 2% Gel

Density = 15.6 ppg
Yield = 1.18 cuft/sk
Water = 4.97 gal/sk

* 195 bbls of returns

BURLINGTON RESOURCES UTE MOUNTAIN
TCP/BHF/PORTED SUB/RATIOACTIVE SUB/ PACKER/CONTROL HEAD FLOOR MANIFOLD/ DST TOOLS

CONNECTIONS	TOOL DESCRIPTION	OD	ID	LENGTH
2 7/8 EUE	CONTROL HEAD		2.25	2.0
2 7/8 EUE				
2 7/8 EUE	TUBING TO SURFACE	2.875	2.44	
2 7/8 EUE	RADIOACTIVE MARKER SUB	3.60	2.44	.54
2 7/8 EUE	BREAKOFF PIN REVERSING VALVE	3.75	1.62	1.17
2 7/8 EUE	TUBING	2.875	2.44	31.0
2 7/8 EUE 2 7/8 REG	CROSS OVER SUB	3.68	1.99	.75
2 7/8 REG	MULTI-FLOW EVALUATOR VALVE	3.75	0.75	12.2
2 7/8 REG	MFE BIAS SUB	3.75	0.75	3.6
2 7/8 REG	J-200 RECORDER CARRIER	3.88	1.75	8.1
2 7/8 REG 2 7/8 EUE	CROSS OVER SUB	23.60	1.99	1.0
2 7/8 EUE	PUP JOINT W/HPR RECORDER	2.875	2.44	6.0
2 7/8 EUE 2 3/8 EUE	CROSS OVER SUB	3.60	1.25	1.0
2 3/8 EUE	5 1/2-6 POSITRIEVE PACKER	4.37	1.93	6.8
2 7/8 EUE	PERFORATED ANCHOR	3.13	2.44	5.0
2 3/8 EUE GUN	DIFFERENTIAL PRESSURE FIRING HEAD	3.13		1.75
	SAFETY SPACER	3.5		10.0
GUN	GUNS W/37J ULTRAJET	3.50		?
GUN	BLANK GUNS			?
GUN	GUNS W/37J ULTRAJET	3.50	-0-	?
GUN 2 3/8 EUE	CROSS OVER SUB	3.50	-0-	.75
2 3/8 EUE	PUP JOINT W/HRP GAUGE.	2.375	1.99	10.0
2 3/8 EUE	PORTED BULLNOSE	2.375	1.99	.45
2 7/8 REG 2 7/8 EUE	CROSS OVER SUB	3.68	1.25	1.0

28-APR-1998

Schlumberger

SPAN

PENETRATION ANALYSIS

Company : Burlington Resources Inc.

Well : Ute Mountain Ute #50

Field : Barker Dome

Schlumberger Engineer : Bill Kelt

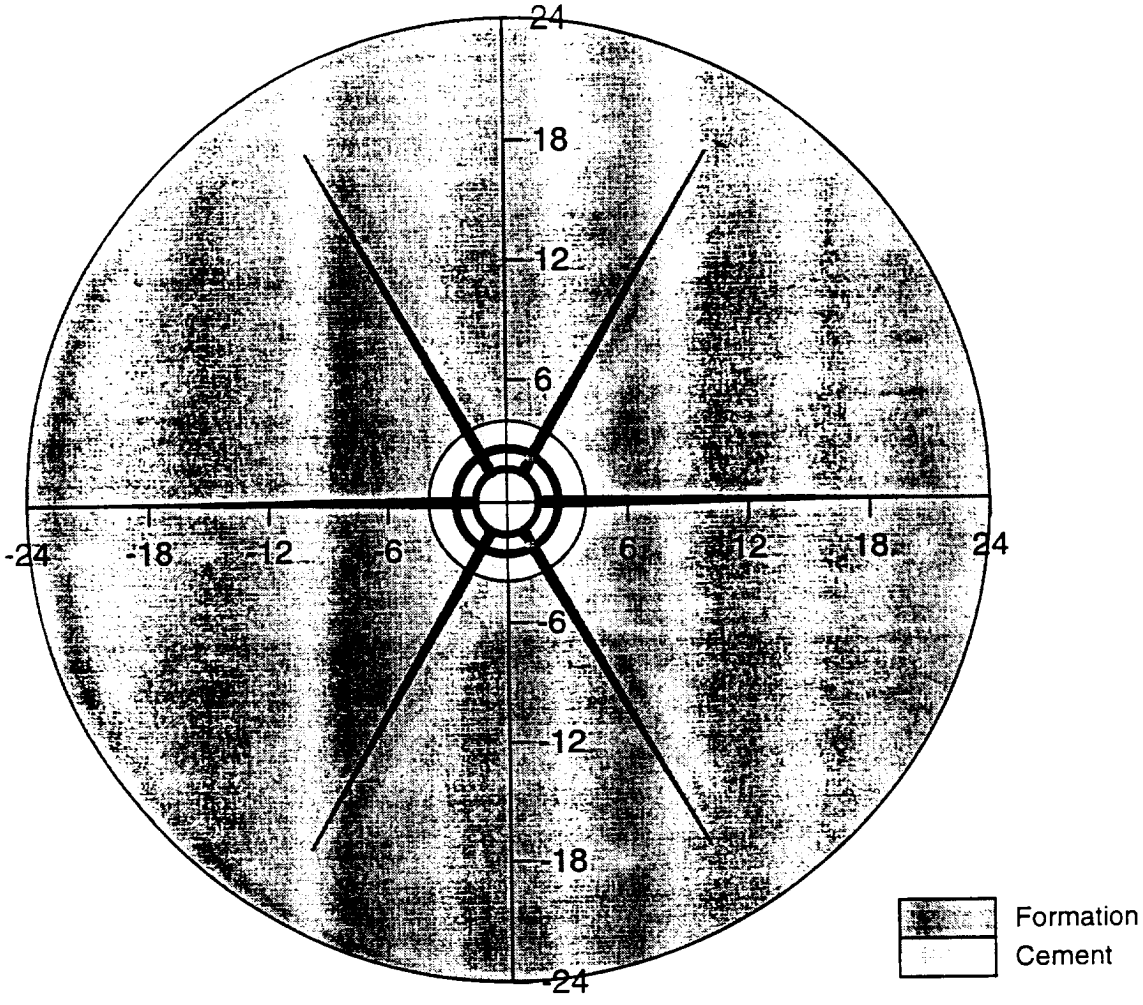
Date Analysis Performed : April 29th 1998

Schlumberger

Company: Burlington Resources Inc.

Well: Ute Mountain Ute #50

Cross Section Showing Charge Penetration Depth



PERFORATOR CHARACTERISTICS

Gun/Charge Type		:	3.5 HPG 4spf 37J UJ HMX
Gun Position		:	Centralized
Shot Phasing	DEG	:	60
Gun Offset	DEG	:	0

PERFORATION CHARACTERISTICS

Orientation	DEG	:	0	60	120	180
Total Penetration	IN	:	17.565	17.565	17.565	17.565
Formation Penetration	IN	:	16.073	16.073	16.073	16.073
Entrance Hole Dia.,1st csg	IN	:	0.4319	0.4319	0.4319	0.4319

Orientation	DEG	:	240	300
Total Penetration	IN	:	17.565	17.565
Formation Penetration	IN	:	16.073	16.073
Entrance Hole Dia.,1st csg	IN	:	0.4319	0.4319

Perforated Completion

File: C:\Program Files\S P A N\BRUteMUte50.spw

SPAN Version 4.12

PENETRATION ANALYSIS

GENERAL DATA

Borehole Diameter	IN	:	7.875
Formation Bulk Density	GM/CC	:	2.71
Formation Compressive Strength	PSI	:	7000
Formation Effective Stress	PSI	:	3000
Wellbore Fluid Density	LBM/GAL	:	8.35

PERFORATOR CHARACTERISTICS

Gun/Charge Type		:	3.5 HPG 4spf 37J UJ HMX
Gun Position		:	Centralized
Shot Phasing	DEG	:	60
Gun Offset	DEG	:	0

CASING CHARACTERISTICS

Collar Diameter	IN	:	6.375
Outer Diameter	IN	:	5.5
Inner Diameter	IN	:	4.892
Casing Material Density	GM/CC	:	7.9021
Casing Grade Mnemonic		:	J55
Casing Weight	LB/FT	:	17
Casing Position/Standoff		:	Centralized
Inter-Casing Material	LBM/GAL	:	15.02

PERFORATION CHARACTERISTICS

Orientation	DEG	:	0	60	120	180
Total Penetration	IN	:	17.565	17.565	17.565	17.565
Formation Penetration	IN	:	16.073	16.073	16.073	16.073
Entrance Hole Dia.,1st csg	IN	:	0.4319	0.4319	0.4319	0.4319

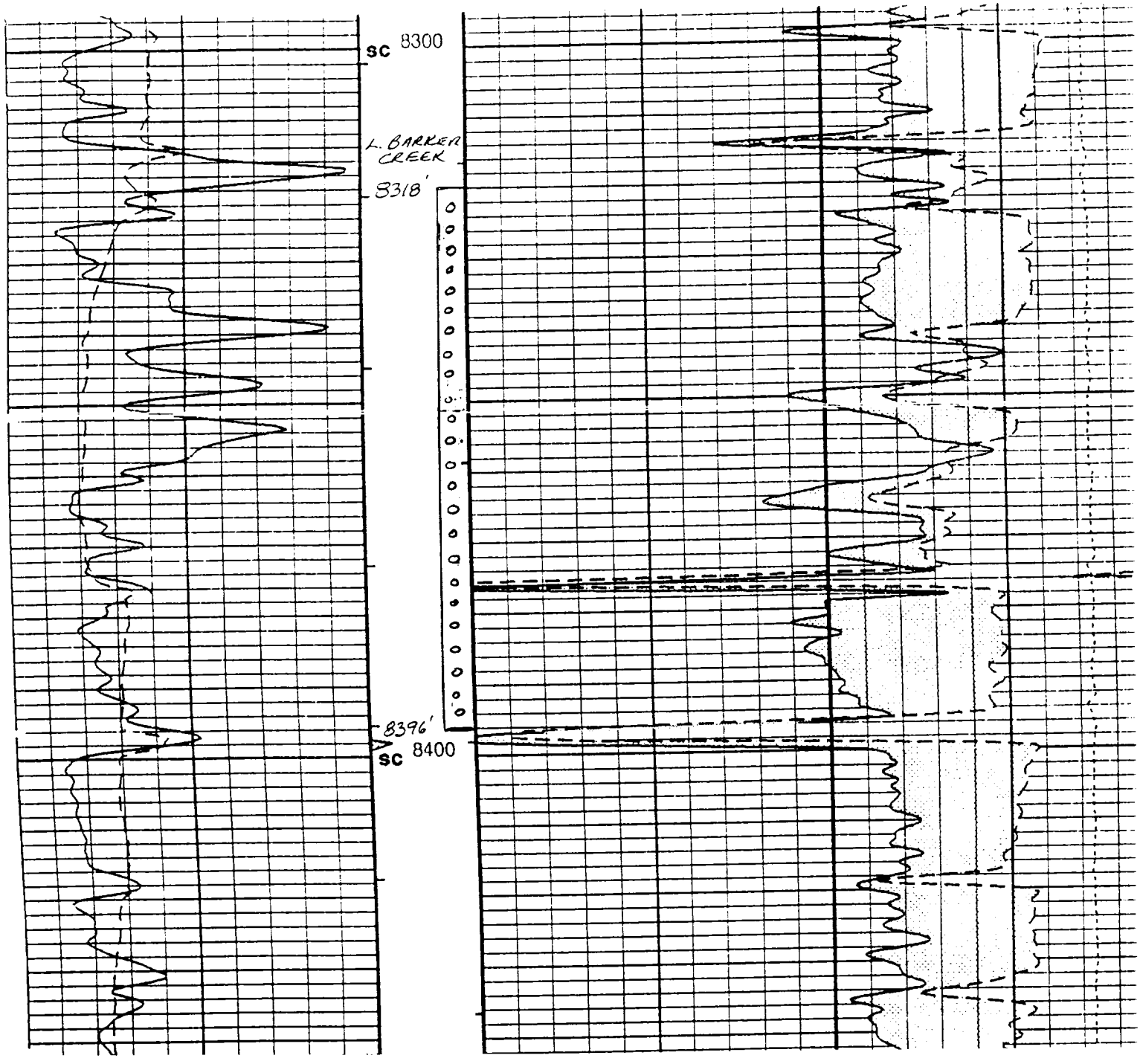
Orientation	DEG	:	240	300
Total Penetration	IN	:	17.565	17.565
Formation Penetration	IN	:	16.073	16.073
Entrance Hole Dia..1st csg	IN	:	0.4319	0.4319

API 5th Edition Section 1

Total Target Penetration	IN	:	32.7
Entrance Hole Diameter	IN	:	0.43

BURLINGTON RESOURCES OIL AND GAS COMPANY
PERSONNEL / VENDOR SUMMARY

Burlington Resources (Office)	Hours	(7:00 PM-4:30 PM)		(505) 326-9700
Drilling Department				
	Rig Supervisor	Darren Randall	mobile	(505) 320-2618
			home	(505) 632-0913
			pager	(505) 324-4285
	Drilling Superintendent	P.W. Bent	office	(505) 326-9887
			mobile	(505) 320-1696
			home	(505) 325-3752
	Drilling Superintendent	R. desCognets	office	(505) 326-9755
			mobile	(505) 320-8368
			home	(505) 564-3699
	Regional Drilling Engineer	F.A. Seidel	office	(505) 599-4019
			mobile	(505) 320-2896
			home	(505) 327-4097
	Project Drilling/Completion Engineer	J.P. Hosford	office	(505) 599-4008
			pager	(505) 564-1703
			home	(505) 327-7358
	Reservoir Engineer	Chip Lane	Office	(505) 326-9740
Purchasing / Materials		M.G. Brown	office	(505) 326-9838
			pager	(505) 326-8378
District Tools		Anthony Smith	office	(505) 326-9869
			pager	(505) 326-8818
Regulatory Agency		**BLM Durango**		**(970) 247-4082**
		Bo Brown	home	**(505) 334-2545**
		NMOCD Aztec		(505) 334-6178
		Ute Mtn Ute Tribe		**(970) 565-3751**
Emergency Services		San Juan County Sheriff		(505) 334-6107
		Aero-Medical Services		
		St. Mary's Airlife		(800) 525-4224 or 911
		Air Care -1		(800) 452-9990
Emergency Services				
		San Juan County Sheriff		(505) 334-6107
		Air Care -1		911
Service Contractors:				
	Rig Contractor	Drake Well Service		(505) 327-7301
	Logging / Perforting	Schlumberger		(505) 325-5006
	Stimulation	Halliburton		(505) 325-3575
	Wellhead/Tree	WSI		(505) 327-3402
	Water Hauling / Filtration	Ladd		(505) 334-3320
	H2S Safety	Safety Alliance		(505) 325-7233


SC
8300
L. BARKER CREEK
8318'
8396'
SC
8400

BURLINGTON RESOURCES

H_2S CONTINGENCY PLAN

Ute Mountain Ute #50
1800' FNL & 1850' FWL, Section 22, T-32-N, R-14-W
Hermosa, Ismay, Desert Creek, Akah, Barker Creek
San Juan County, New Mexico
Latitude 36 Degrees, 58.6 Minutes, Longitude 108 Degrees, 17.9 Minutes

John P. Hosford 4/29/98
John P. Hosford
Senior Drilling Engineer

F.A. Seidel 4/29/98
F. A. Seidel
Drilling Engineering Advisor

Pat Bent
Drilling Superintendent

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INTRODUCTION

Burlington Resources is permitting to drill and complete the Ute Mountain Ute #50, a 8620' Hermosa, Ismay, Desert Creek, Akah, Barker Creek for the purpose of evaluating and exploiting hydrocarbon reservoirs.

Drilling data indicates that hydrogen sulfide (H2S) and carbon dioxide (CO2) may be present from the upper Pennsylvanian formation to Total Depth. Hydrogen sulfide (H2S) 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 H2S). Carbon dioxide (CO2) is a non-flammable, 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 H2S in this plan have been formulated based on the following assumptions:

1. No significant (greater than 20 ppm) H2S is expected above the Ismay at 8519'.

2. Based on 12,000 ppm H2S gas released at a rate of 6.4 MMCF/day (worse case scenario), the maximum 100 ppm H2S "radius of exposure" (ROE) expected is 1500 feet or 0.285 miles and the maximum 500 ppm H2S "radius of exposure" (ROE) expected is 700 feet or 0.133 miles. It is unlikely that the rate of a release would be as significant as 6.4 MMCF/day.

3. The 100 ppm H2S Radius of Exposure and the 500 ppm H2S Radius of Exposure do not contain public areas.

4. Safety personnel and monitoring equipment will be place on the drilling location prior to drilling to 7519' (1000' above the Ismay at 8519').

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 H2S 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 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 Burlington Resources Drilling Supervisor will assess the situation and assign duties to various persons to bring the situation under control. The Supervisor will advise the Burlington Resources 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 Burlington Resources supervisor's trailer, and in the contract safety trailer.

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

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

BURLINGTON RESOURCES

(505) 326-9700
ALL AREA CODES ARE (505) UNLESS OTHERWISE INDICATED

Drilling Department

Name	Office	Home	Pager/Cellular
Drilling Manager:			
Pugh, Steve	326-9738	327-6141	326-8834/320-2560
Drilling Operations			
Drilling Superintendents:			
Bent, Pat	326-9887	325-3752	327-8909/320-1696
Smithwick, Cash	326-9784	327-4629	324-2646/320-2578
des Cognets, Russell	326-9755	564-3699	564-1573/320-8368
Rig Supervisors:			
Lee, Joel	326-9548	325-0345	564-1108/320-2490
Terwilliger, Stan	326-9548	334-5914	324-2556/320-2501
Kirkpatrick, Morris	326-9548	334-3369	326-8023/320-1421
Angvick, John	326-9840	632-9501	326-8234/320-1070
Drilling Engineering:			
Seidel, Frank (Regional Drilling Engineer)	599-4019	327-4097	327-8097/320-2896
Hosford, John	599-4008	327-7358	564-1703/320-2569
Shipley, Kurt	326-9524	325-9361	326-8226/320-1667
Sperry, Donnie	326-9570	325-6560	324-7784/320-2537
White, Leslie	326-9717	326-0321	327-8791/320-2895
McElreath, Ann	326-9864		
Rush, Pam	326-9726		

Environmental & Safety Department

Safety/Environmental Representatives:			
Wilke, Travis	326-9502	324-0143	326-8877/320-1796
Graves, Randy	326-9538	327-3256	564-1168/320-1795
Hasely, Ed	326-9841	327-9623	564-1167/320-1803
Schoenbacher, Jeff	326-9537	564-8292	564-1169/320-2653

Contract Safety

Standby Safety Services: (Cortez, Colorado)		
Dean, Clinton	(970) 565-6391	(970) 749-2294

Well Control Companies

Red Adair/Cudd Well Control Co.	24 HR.	(713) 462-6479
Boots & Coots	24 HR.	(713) 931-8884

BURLINGTON RESOURCES
Emergency Contact Agencies (Cont.)

State Police/Sheriff/City Police:

San Juan County, NM	
State Police:	325-7547
Sheriff's Dept.	911 or 334-6622
Police Dept.	911
Ambulance	911 or 334-6622
Fire Dept.	911 or 334-6622
Medical Facilities	325-5011
Aeromedical Services	911 or (800) 452-9990
La Plata County, CO	
All Emergencies	911 or (970) 247-3232 or (970) 247-1155
Medical Facilities	(970) 247-4311
Aeromedical Services (Grand Junction)	(800) 525-4224
Montezuma County, CO	
All Emergencies	911 or (970) 565-8441
Medical Facilities	(970) 565-6666
Bureau of Land Management:	
Farmington, NM Office	505-599-8900
Mike Flanikin	505-599-6381
Jimmy Morris	505-599-6384
New Mexico Oil Conservation Division:	
Aztec, NM Office	505-334-6178
Contact: Frank Chavez	

Production Operations Department

Dispatch (505) 326-9816

Name	Office	Home	Pager/Cellular
Production Operations Manager:			
Fraser, Jim	326-9803	326-6367	326-8836
Superintendents:			
Muncrief, Rick	326-9802	326-5755	327-8147
Raybon, Ken	326-9804	327-7861	320-0104
Field Foreman:			
Rogers, Noel	326-9808	334-6887	326-8822/320-1158
Osborne, Gary	326-9821	632-2481	326-8873/320-2449
Area Regional Engineer:			

Zieche, Jerry	599-4023	327-2032

LIST OF RESIDENTS / BUSINESSES / SCHOOLS

There are no residences, businesses, schools, or other public areas located within the 100 ppm Radius of Exposure or the 500 ppm Radius of Exposure.

RESPONSIBILITIES

All Personnel

1. All Personnel who spend over one day on a Burlington Resources location shall be familiarized with the procedures outlined in this directive.

2. All personnel will attend to their personal safety first.

3. If it can be done safely, help anyone who may be injured or overcome from toxic gases by administering first aid.

4. Report to the "Safe Briefing Area" and follow the instructions of the supervisor.

Burlington Resources Drilling Supervisor

1. It is the responsibility of the Burlington Resources supervisor to see that these safety and emergency procedures are observed by all personnel on Burlington Resources's location.

2. The supervisor will advise the Drilling Superintendent whenever the procedures as specified herein are complied with or cannot be followed. One (1) completed copy of the checklist will be forwarded to the Superintendent and one copy to Randy Graves, Safety Representative.

3. The Burlington Resources rig supervisor shall keep the number of personnel on location to a minimum during hazardous operations.

4. The supervisor shall be trained in the use of all safety equipment and completely briefed on safety and emergency procedures. This shall include full knowledge of the requirements in this contingency plan.

5. It is the responsibility of the Burlington Resources supervisor to see that the Contractor has adequately trained the drilling crews in handling emergency situations. He should satisfy himself that this is the case. He should notify the Burlington Resources Superintendent if the Contract supervisor fails to fill this responsibility.

6. If an unexpected emergency occurs, or the H2S alarm sounds, the supervisor (either Burlington Resources or Contractor) will assess the situation and will advise all personnel what conditions exist. Action to be taken under each of three possible conditions is as follows:

CONDITION I - POTENTIAL DANGER TO LIFE (such as hazardous amount of toxic gasses detected at surface)

a. Order nonessential personnel out of the potential danger area and display the YELLOW CONDITION I warning sign and flag.

b. Order all essential personnel to check their safety equipment to see that it is working properly and in the proper location (see supervisor's checklist). Persons without respiratory protection cannot work in the hazard area.

c. Notify Superintendent of condition and action taken.

d. Increase gas monitoring activities and continue operations as appropriate.

CONDITION II - MODERATE DANGER TO LIFE (such as circulating out a potentially toxic gas kick). In addition to Condition I requirements:

a. Display only the ORANGE CONDITION II warning sign and flag.

b. Direct corrective action to control flow of gas.

c. Set up roadblocks and restrict personnel movements to minimum.

d. Notify other Regional personnel listed on emergency telephone list.

CONDITION III - EXTREME DANGER TO LIFE (when it appears that well control will be lost). In addition to Conditions I and II requirements:

a. Contact and request local police to evacuate people and to control traffic within the danger zone. Should the condition be immediately dangerous to the public, take necessary life saving action until local police arrive. Display only the RED CONDITION III warning sign and flag.

b. Ignite the well if necessary. (See the following section - Igniting the Well.)

NOTE: The Drilling Superintendent will dispatch additional Burlington Resources personnel and/or additional professional safety personnel to the well site as needed to assist the Drilling supervisor.

Contract Drilling Supervisor (Toolpusher)

1. In the absence or incapacitation of the Burlington Resources Drilling Supervisor, the Contractor Drilling Supervisor will assume all responsibilities designated herein to the Burlington Resources Drilling Supervisor.

2. Assist the Burlington Resources 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 (Burlington Resources 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 when 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.

Rig Contractor

1. Shall have his personnel properly trained in First Aid/CPR.

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

Visitors, Service Personnel (Vendors) and Others

1. Only personnel authorized by Burlington Resources Supervisor shall be permitted to enter area when an emergency condition exists.

2. Shall be permitted to enter area under an emergency condition only if needed and then only after being properly instructed in use of safety equipment and have necessary equipment issued or available.

3. Vendors must have all of their personnel trained in H2S procedures which will be on location from 1,000' above the expected H2S zone through rig release.

Igniting the Well

1. Responsibility

The decision to ignite the well is the responsibility of the Burlington Resources Drilling Superintendent. However, the decision should be made only as a last resort and in a situation where it is clear that:

a. Human life or property are endangered.

b. 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 Drilling Manager of the plans to ignite the well, if time permits. However, the Superintendent and Supervisor must not delay a decision if human life is threatened.

NOTE: If the CO2 content of the effluent stream is higher than anticipated, it is likely that the stream will not sustain combustion.

REMEMBER, if the well is ignited, the burning H2S will be converted to sulfur dioxide (SO2) 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.

2. Means of Ignition

a. In preparation for igniting the well, keep unnecessary persons in the "Safe Briefing Area". A two person team is required for the actual ignition. Both team members will wear self-contained breathing units and will have 200 feet retrieval ropes attached to safety harnesses. One team member is responsible for checking the atmosphere for explosive gasses with the explosimeter. The other member is responsible for igniting the well. Persons remaining in the "Safe Briefing Area" will closely watch the ignition team; and should either man be overcome, they will immediately pull him to safety by the retrieval ropes and apply revival measures.

b. The primary method for igniting the well will be with a 25 mm meteortype flare gun.
(The location of the flare gun will be in the Burlington Resources supervisor's trailer).
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) while keeping in visible site by personnel in the "Safe Briefing Area".

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 drilling out surface casing.

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. Six Niosh approved Positive Pressure SCBAs shall be located as follows: one in the Supervisor's office, one in the Tool Pusher's trailer, 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 H2S Contingency Equipment Checklist.

3. A copy of all emergency telephone numbers shall be posted on the doghouse bulletin board. at the "Safe Briefing Areas", in the Burlington Resources Supervisor's office, and in the Contract Supervisor's office.

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

5. An automatic hydrogen sulfide (H2S) 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 H2S 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 sign which reads, "Caution - Poisonous Gas May be Present", will be posted at the last intersection leading to 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 Burlington Resources Supervisor's vehicle should always be parked a safe distance (at least 100 feet) from the rig, and in an upwind direction when feasible.

10. For all well kicks, the Operations Plan (II;5) will be followed. All drilling contractor personnel shall be trained, and drills shall be conducted to insure proper well control procedures.

11. The checklist of all emergency equipment (see Drilling supervisor's checklist) shall be completed at 1000± above the suspect formation(s) as identified in the introduction. The equipment shall be inspected by the Drilling Supervisor with assistance, as needed, from Burlington Resources Safety personnel as to working condition, proper placement, etc. The inspection will be noted on the checklist. A copy of the checklist will be placed in the Drilling Supervisor's files and one copy each will be mailed to the Drilling Superintendent and Safety Department.

12. To ensure proper hole filling during tripping operations, a stroke counter and pit level sensor will be utilized at all times.

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 (H2S), sulfur dioxide (SO2), carbon dioxide (CO2), 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 measurements of H2S, CO2, CO and combustible gas.

THE BURLINGTON RESOURCES 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 H2S and other toxic gasses, safety precautions, evacuation procedures, and as appropriate, the use of respiratory protection equipment. This training shall be completed prior to entering the H2S location. 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.

EQUIPMENT AND MATERIAL SPECIFICATIONS

1. Wellhead and blowout equipment is to conform as per Operations Plan.

2. BOP equipment will be tested to pressure rating prior to drilling out from the surface casing, with all testing witnessed and recorded by the Burlington Resources Drilling Supervisor.

3. The BOP will be operationally tested on every trip. BOP drills will be held each tour prior to drilling all potential H2S bearing formations and recorded on the tour sheets.

4. The casing planned for this well is listed in the Operations Plan. This casing has been designed in accordance with Burlington Resources requirements for sour service.

Mud Requirements

1. The pH of the mud system will be maintained above 10.0 to neutralize (disassociate) any H2S encountered. The pH will be maintained with caustic soda and/or soda ash.

2. While drilling from all potential H2S bearing formations to total depth, the Mud Engineer is to test daily for filtrate sulfide using a "Hach H2S Test Kit" and following the procedures of API Standard RP13B (copy in a following section). The results of this test are to be reported on the daily report.

3. Small concentrations of sulfide are expected and can be tolerated. However, concentrations which result in "Hach Tests" of greater than 50 ppm are potentially more serious and should be treated with H2S scavenger to reduce the concentration of acceptable levels

4. The Hach Test will be routinely "doubled-checked" by means of the Garrett Gas Train.

5. Prior to dumping any significant quantities of drilling fluid (changing over, cleaning pits, cementing, etc.), it will be necessary to treat out all sulfides with H2S scavenger in order to preclude formation of H2S gas in the reserve pit.

BURLINGTON RESOURCES
H2S CONTINGENCY EQUIPMENT CHECKLIST

Well: _____ 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, located at last intersection to location so vehicles may have turn-around area.
4. ____(3) **Wind direction indicators,** located to provide visibility 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; one located on rig floor, and one located in substructure (if conditions warrant).
8. ____(1) **H2S monitor** (continuous) located in the doghouse with detectors (sensitivity of 5 ppm in air) located at the bell nipple, mud return discharge, and on the rig floor.
9. ____(1) **Alarm system** capable of individual activation by any detector with maximum settings as follows: visual and audible alarms at 10 ppm (audible must be capable of alerting personnel at any point on location).
10. ____(5) **Niosh Approved Positive Pressure SCBAs** - 30 min. self-contained breathing apparatus: one in the supervisor's office, and two at each of the "Safe Briefing Areas". Easily accessible, and protected from exposure to the elements.
11. ____(1) **Flare system** with continuous pilot and remote ignitor.
12. ____(1) **Trailer** - full enclosure, at location entrance (based on prevailing winds), containing the following items (#13 through #24, and also #25d).
13. ____(3) **Condition warning flags** (1 each yellow, orange, and red).
14. ____(1) **Length of Stain Polymetric Tube Type Detectors** with lower range tubes for CO2, H2S, and SO2.
15. ____(1) **MSHA 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; Burlington Resources Supervisor's office; Contract supervisor's office; Safe Briefing Area.

EFFECTS OF HYDROGEN SULFIDE, CARBON DIOXIDE AND OTHER GASSES ON DRILLING OPERATIONS

Toxic Effect

1. Hydrogen Sulfide - H2S

Hydrogen sulfide is a colorless, flammable, extremely poisonous gas. It is 1.2 times as heavy as air and will accumulate in low areas. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. It can be detected by smell at a concentration in air of only 0.02 ppm. Exposure to 10 ppm can be tolerated up to 8 hours without respiratory equipment. Respiratory equipment is required to protect workers should conditions exceed the foregoing allowable exposure limit. Concentrations in excess of 20 ppm has an effect on the olfactory nerve which deadens the sense of smell. Unconsciousness can occur without warning within seconds of inhalation at concentrations above 500 ppm.

Physical Effects of Hydrogen Sulfide

Concentration Percent (%)	ppm	Physical Effects
0.001	10	Obvious and unpleasant odor.
0.001	10	Safe for 8-hour exposure.
0.01	100	Kills smell in 3 to 15 minutes, may sting eyes & throat.
0.02	200	Kills smell shortly, stings eyes & throat.
0.05	500	Dizziness, breathing ceases in a few minutes. Needs prompt artificial respiration.
0.07	700	Unconscious quickly; death will result if not rescued promptly.
0.10	1000	Unconscious at once; followed by death within minutes.

2. Carbon Dioxide - CO2

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 CO2 is that it causes an oxygen deficiency and requires supplied air systems to be provided for deficiency and requires supplied air systems to be provided for protective measures. Humans cannot breathe air containing more than 10% carbon dioxide without losing consciousness. Air containing 50,000 ppm (5%) CO2 will cause disorientation if inhaled for 30 minutes or more. Exposure to 5000 ppm CO2 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 - SO2

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 hrs. Respiratory equipment will be available and should be used by personnel measuring SO2 concentration downwind from a flare.

4. Methane - CH4

Methane is the major component of natural gas and is colorless, odorless and extremely flammable. The chief danger from methane is explosion. Mixture of CO2, H2S and CH4 will burn if the total H2S and CH4 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 (CO2). 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 ±12.5% and upper limit is ±74%.

6. Properties of Various Gasses

Common Name & Chemical Formula	Specific Gravity Air=1	Time Weighted Average*	Hazard-ous Limit**	Lethal Concen-tration***	Flammability
Hydrogen Sulfide (H2S)	1.18	10 ppm	100 ppm	600 ppm	4.3% to 46% by volume in air
Sulfur Dioxide (SO2)	2.21	2 ppm	---	1000 ppm	
Carbon Dioxide (CO2)	1.52	5000 ppm	5%	10%	
Methane (CH4)	0.55	Simple Asphyxiant	---	-------	5.3% to 14.0% by volume in air
Carbon Monoxide (CO)	0.97	35 ppm	1500 ppm	4000 ppm	12.5% to 74% by volume in air

*Time Weighted Average (TWA) - Employee's average exposure in any eight hour work, of a 40-hour work week which shall not be exceeded.
**Hazardous - Concentration that may cause death.
***Lethal - Concentration that will cause death with short term exposure.

CORROSION EFFECTS OF H2S AND CO2 ON STEEL

1. Hydrogen Sulfide (H2S)

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 - CO2

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 CO2 in the wellbore under drilling or static conditions will cause high corrosion rates.

EFFECTS OF H2S AND CO2 ON DRILLING FLUID

1. Hydrogen Sulfide - H2S

When H2S is entrained in a drilling fluid. it will disassociate to some degree depending on the pH of the system as follows:

H2S	@ @	H+	+	HS-	@ @	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, nearly all of the H2S in a system is in this molecular state. With increasing pH, H2S disassociation increases so that above pH 10, effectively all of the H2S 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 H2S in drilling mud produces hydrogen ions, which will react with hydroxyl ions in a high pH mud to form water. With sufficient H2S contamination, excess lime, if any, can be depleted and pH will begin to drop. A sufficient decrease in pH will, as previously stated, evolve H2S gas.

It is therefore desirable to know whether H2S 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 - CO2

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 cm3 of freshly collected mud filtrate into the test vial. Dilute to the 25 cm3 with distilled water.

Add 2 cm3 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 cm3 of filtrate with 9.0 cm3 of distilled water. Use 2.5 cm3 of the diluted filtrate for the sulfide determination. Multiply the color chart value by 100 to obtain the test result.

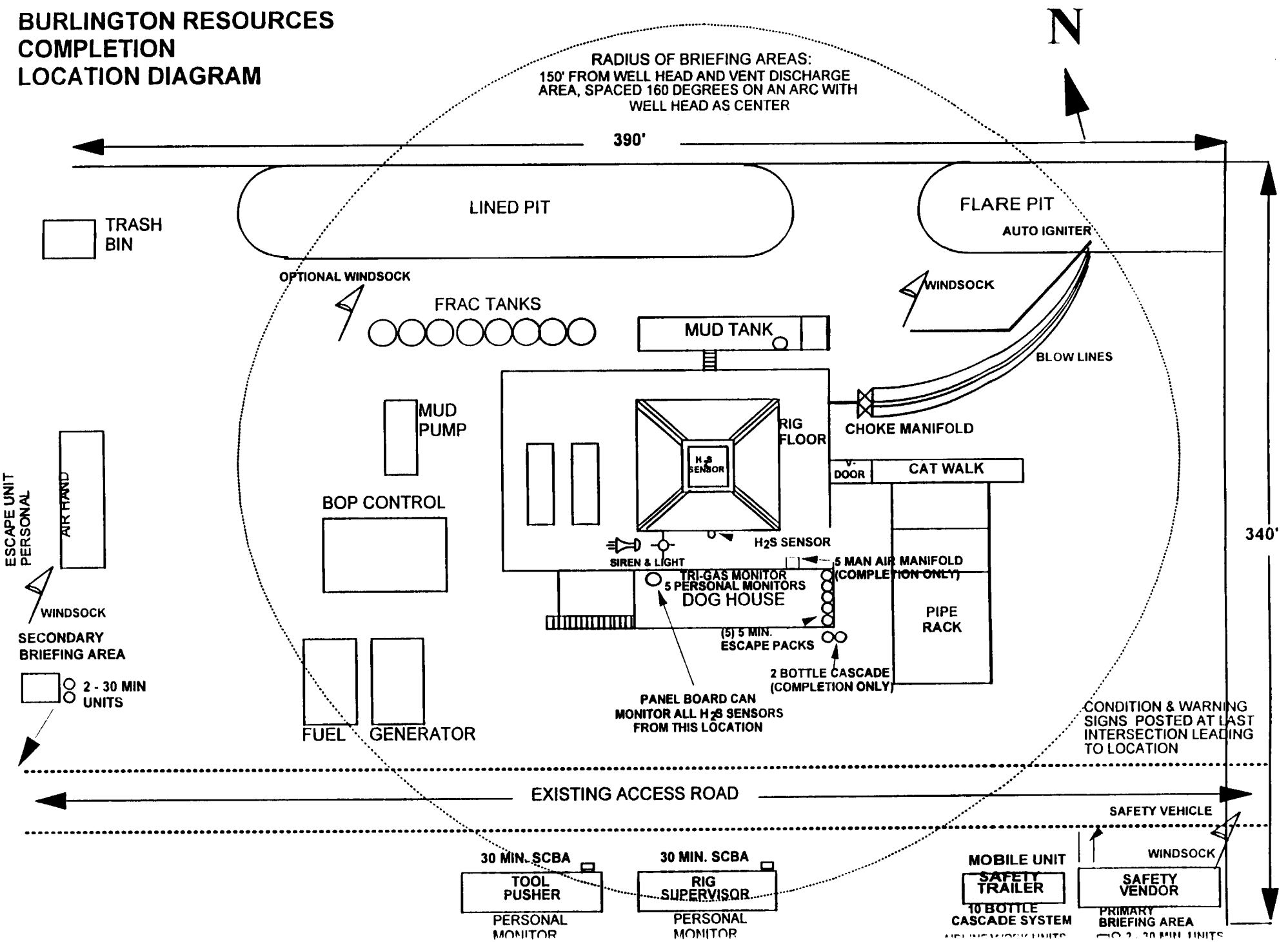
Report the test result as filtrate sulfide in ppm.

NOTE 1: IT IS IMPORTANT TO NOTE THAT THIS TEST IS NOT HIGHLY ACCURATE. THE RESULTS SHOULD BE INTERPRETED AS ROUGH ESTIMATES.

NOTE 2: THE METHOD MAY BE USED FOR WATER USING 25 CM3 SAMPLES OR THE SAME DILUTION PROCEDURE USED FOR MULLED FILTRATE. THIS METHOD MAY ALSO BE USED FOR MUD BUT THE PROBABLE MEANING OF THE RESULTS IS VERY UNCERTAIN. THERE COULD ALSO BE CONSIDERABLE DIFFICULTY IN OBTAINING A REPRESENTATIVE SAMPLE OF DILUTED MUD.

ATTACHMENTS

BURLINGTON RESOURCES COMPLETION LOCATION DIAGRAM



BARKER DOME - H2S POTENTIALS

WELL		YR		LOCATION	ST	FORMATION	RATES (MCF/D)	H2S %	H2S PPM	CO2%	TD
UTE	12	45	SENW	16, 32N-14W	NM	LOWER BARKER CREEK	2506	0.717	7170	16.270	9008'
UTE	14	48	NWNE	21, 32N-14W	NM	LOWER BARKER CREEK	552	0.389	3890	11.592	8919'
UTE	3	49	SWSW	14, 32N-13W	CO	LOWER BARKER CREEK	642	0.000	0	0.120	9654'
UTE	4	49	SESW	10, 32N-14W	NM	UPPER ISMAY	559	0.004	40	0.789	9654'
UTE	5	50	SWSW	11, 32N-13W	CO	LOWER ISMAY & DESERT CREEK	114	1.690	16900	0.362	9841'
UTE	6	50	SWSW	17, 32N-14W	NM	DESERT CREEK	1437	0.001	10	0.285	8995'
UTE	8	51	NWSW	15, 32N-14W	NM	UPPER ISMAY	47	0.005	50	0.219	8750'
UTE	9	51	NENE	21, 32N-13W	CO	LOWER BARKER CREEK	711	1.250	12500	14.705	9553'
UTE	16	91	NESE	22, 32N-13W	CO	ISMAY	41	0.048	480	0.480	9445'
UTE COM	1	91	SENW	13, 32N-13W	CO	UPPER BARKER CREEK	11	2.000	20000	10.590	9607'
UTE	2R	93	SESW	15, 32N-13W	CO	DESERT CREEK & LOWER ISMAY	1282	1.130	11300	0.303	9010'
UTE	24	94	SWNW	20, 32N-14W	NM	DESERT CREEK	6313	0.000	8	0.309	8810'
UTE	9A	94	SENE	21, 32N-13W	CO	DESERT CREEK & LOWER ISMAY	2700	2.000	20000	0.287	9340'
UTE	19	94	NWNE	24, 32N-14W	CO	DESERT CREEK & UPPER/LOWER ISMAY	3889	0.313	3130	0.309	10,001'
MARVEL UTE COM	1	94	NENE	06, 33N-12W	CO	PARADOX	P & A'd				9575
UTE	27	95	NWSW	16, 32N-14W	NM	DESERT CREEK		0.097	970	0.229	8660'
UTE	30	95	NWNE	15, 32N-13W	CO	DESERT CREEK		1.330	13300	0.386	9385'
UTE	31	95	NWSE	10, 32N-13W	CO	DESERT CREEK	P & A'd				9420'
UTE COM	23	95	SWNE	19, 32N-14W	NM	DESERT CREEK		0.001	7	0.231	8720'
UTE COM	25	95	SESW	19, 32N-14W	NM	DESERT CREEK		0.010	100	0.223	9420'
UTE COM	26	95	NENE	18, 32N-14W	NM	DESERT CREEK	P & A'd				8900'
UTE	22	96	SWNE	17, 32N-14W	NM	DESERT CREEK		0.002	22		8532'
UTE MTN UTE	40	96	NWSE	20, 32N-14W	NM	DESERT CREEK		0.050	500		8450'
UTE MTN UTE	41	96	SWNE	30, 32N-14W	NM	DESERT CREEK		0.003	30		9340'
UTE MTN UTE	42	96	SESW	30, 32N-14W	NM	DESERT CREEK	Drilling	0.000			0

As of 10/08/96

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LIST OF REFERENCES

1. "API Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide", (API RP 49) American Petroleum Institute, Dallas, Texas, 1974.

2. "API Recommended Practice: Standard Procedure for Testing Drilling Fluids", (API RP 13B) American Petroleum Institute, Dallas, Texas, 1976.

3. Clark, R. K., "Hydrogen Sulfide in Water-Base Drilling Fluids - I: Chemistry, Corrosion and Treatment", Technical Progress Report BRC 35-77, Shell Development, Houston, Texas, 1977.

4. "Contingency Plan for Drilling, Completion and Workover, Sour Gas Wells, Safety Regulations and Emergency Procedures", Shell Oil Company, Michigan Operations, Traverse City, Michigan, 1974.

5. "Contingency Plan for the Drilling of Taylor DT 653, Ventura Avenue Field, Ventura County, California; Safety Procedures and Precautionary measures", Shell Oil Company, West Coast Division, Los Angeles, California, 1973.

6. "Drilling Contingency Plan for McElmo Dome Area", Shell Oil Company, Midland Operations, Midland, Texas, 1976.

7. "Drilling Fluid Engineering Manual", Magcobar Operations, Dresser Industries Inc., Houston, Texas, 1972.

8. "Rule 36: Oil, Gas or Geothermal Resource Operation in Hydrogen Sulfide Areas", Railroad Commission of Texas, Oil and Gas Division, Austin, Texas, 1976, as amended effective September 15, 1985.

9. "Safe Practices for Drilling and Well Servicing Operations", Volumes I and II, Shell Oil company Exploration and Production.

10. "Sulfide Stress Cracking Resistant Metallic Material for Oil Field Equipment", NACE Standard MR-01-75, National Association of Corrosion Engineers, Katy, Texas, 1978.

11. "Onshore Order No. 6, Hydrogen Sulfide Operations", Department of the Interior, Bureau of Land Management, 43 CFR Part 3160.

BURLINGTON RESOURCES UTE MOUNTAIN
TCP/BHF/PORTED SUB/RATIOACTIVE SUB/ PACKER/CONTROL HEAD FLOOR MANIFOLD/ DST TOOLS

CONNECTIONS	TOOL DESCRIPTION	OD	ID	LENGTH
2 7/8 EUE				
2 7/8 EUE	CONTROL HEAD		2.25	2.0
2 7/8 EUE	TUBING TO SURFACE	2.875	2.44	
2 7/8 EUE	RADIOACTIVE MARKER SUB	3.60	2.44	.54
2 7/8 EUE	BREAKOFF PIN REVERSING VALVE	3.75	1.62	1.17
2 7/8 EUE	TUBING	2.875	2.44	31.0
2 7/8 EUE 2 7/8 REG	CROSS OVER SUB	3.68	1.99	.75
2 7/8 REG	MULTI-FLOW EVALUATOR VALVE	3.75	0.75	12.2
2 7/8 REG	MFE BIAS SUB	3.75	0.75	3.6
2 7/8 REG	J-200 RECORDER CARRIER	3.88	1.75	8.1
2 7/8 REG 2 7/8 EUE	CROSS OVER SUB	23.60	1.99	1.0
2 7/8 EUE	PUP JOINT W/HPR RECORDER	2.875	2.44	6.0
2 7/8 EUE 2 3/8 EUE	CROSS OVER SUB	3.60	1.25	1.0
2 3/8 EUE	5 1/2-6 POSITRIEVE PACKER	4.37	1.93	6.8
2 7/8 EUE	PERFORATED ANCHOR	3.13	2.44	5.0
2 3/8 EUE GUN	DIFFERENTIAL PRESSURE FIRING HEAD	3.13		1.75
	SAFETY SPACER	3.5		10.0
GUN	GUNS W/37J ULTRAJET	3.50		?
GUN	BLANK GUNS			?
GUN	GUNS W/37J ULTRAJET	3.50	-0-	?
GUN 2 3/8 EUE	CROSS OVER SUB	3.50	-0-	.75
2 3/8 EUE	PUP JOINT W/HRP GAUGE.	2.375	1.99	10.0
2 3/8 EUE	PORTED BULLNOSE	2.375	1.88	.45
2 7/8 REG 2 7/8 EUE	CROSS OVER SUB	3.68	1.25	1.0

28-APR-1998

Schlumberger

John Dst cost #2500.00 added to other Bid.

Cliff Richards - Schlumberger Vernal rt

Burlington Resources Oil and Gas Company 3160
Lease Number: I-22-IND-2772
Well: Ute Mountain Ute #50
Location: NW/4, Sec. 22, T.32N.,R.14W.
San Juan County, New Mexico

CONDITIONS OF APPROVAL

1. Permission is granted to complete this well as per the approved procedure, and contingent upon the successful execution of the terms agreed to by Burlington Resources as required by the Ute Mountain Ute Indian Tribe and, the Ute Mountain Agency, Bureau of Indian Affairs, and the Bureau of Land Management.