

Form 3160-3  
(April 2004)**R-111-POTASH**

OCD Artesia

FORM APPROVED  
OMB No. 1004-0137  
Expires March 31, 2007UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. BHL:NMLC 0068905, SL: 0068545	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name 705 2/4/2013	
2. Name of Operator BOPCO, L. P.		7. If Unit or CA Agreement, Name and No. Poker Lake Unit NMNM 71016X	
3a. Address P. O. Box 2760 Midland, TX 79702		8. Lease Name and Well No. Poker Lake Unit 331H <306402>	
3b. Phone No. (include area code) 432-683-2277		9. API Well No. 30-015-41039	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface NWNW-UL-D, 620' FNL & 1320' FWL, Lat: N32.252242, Long: W103.872817 At proposed prod. zone 120' FNL & 1200' FWL, Sec 11-T24S-R30E, Lat: N32.23915, Lg: W103.855867		10. Field and Pool, or Exploratory Nash Draw (Del, BS, AV Sand) <47545>	
11. Sec., T. R. M. or Blk. and Survey or Area Sec 3, T24S-R30E, Mer, NMP		12. County or Parish Eddy	
13. State NM		14. Distance in miles and direction from nearest town or post office* 20 miles East of Malaga	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 620' (Lease line) 620' (Unit line)		16. No. of acres in lease Fed 3803.32/ Sta. 5446.10	
17. Spacing Unit dedicated to this well 320		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1,105'	
19. Proposed Depth 7,795' TVD/14,513' MD		20. BLM/BIA Bond No. on file COB 000050	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,448' GL		22. Approximate date work will start* 01/01/2013	
23. Estimated duration 30 Days		24. Attachments	

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature <i>Jeremy Braden</i>	Name (Printed/Typed) Jeremy Braden	Date 10/15/12
Title Engineering Assistant		
Approved by (Signature) <i>William Merhege</i>	Name (Printed/Typed)	Date JAN 16 2013
Title STATE DIRECTOR	Office NM STATE OFFICE	

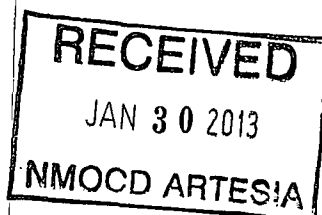
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\*(Instructions on page 2)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements  
& Special Stipulations AttachedSEE ATTACHED FOR  
CONDITIONS OF APPROVAL



# **BOPCO, L.P.**

P. O. Box 2760  
Midland, Texas 79702

**432-683-2277**

**FAX-432-687-0329**

October 10, 2012

Bureau of Land Management  
Carlsbad Field Office  
620 East Green Street  
Carlsbad, New Mexico 88220-6292

Attn: Mr. Don Peterson – Assistant Field Manager, Minerals

RE: APPLICATION FOR PERMIT TO DRILL  
POKER LAKE UNIT #331H  
620' FNL, 1320'FWL, SEC. 3, T24S, R30E, EDDY COUNTY, NM

Dear Mr. Peterson,

In reference to the above captioned well, I hereby certify that I, or persons under my direct supervision have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in the attached eight point drilling plan and multi-use surface plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by BOPCO, L.P. and it's contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Executed this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

If you have any questions regarding the accuracy of the plan provided herein, please do not hesitate to contact me at (432) 683-2277.

Sincerely,

Jeremy Braden  
Engineering Tech

**BOPCO, L.P.**

P. O. Box 2760  
Midland, Texas 79702

**432-683-2277****FAX-432-687-0329**

October 19, 2012

Bureau of Land Management  
Carlsbad Field Office  
620 East Green Street  
Carlsbad, New Mexico 88220-6292

Attn: Mr. Don Peterson – Assistant Field Manager, Minerals

RE: APPLICATION FOR PERMIT TO DRILL  
POKER LAKE UNIT #331H  
620' FNL, 1320' FWL, SEC. 3, T24S, R30E, EDDY COUNTY, NM


Dear Mr. Peterson,

In reference to the above captioned well, I hereby certify that I, or persons under my direct supervision have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in the attached eight point drilling plan and multi-use surface plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by BOPCO, L.P. and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Executed this 16<sup>th</sup> day of October, 2012.

If you have any questions regarding the accuracy of the plan provided herein, please do not hesitate to contact me at (432) 683-2277.

Sincerely,

  
Jeremy Braden  
Engineering Tech

Form NM 8140-9  
(March 2008)

United States Department of the Interior  
Bureau of Land Management  
New Mexico State Office

Permian Basin Cultural Resource Mitigation Fund

The company shown below has agreed to contribute funding to the Permian Basin Cultural Resource Fund in lieu of being required to conduct a Class III survey for cultural resources associated with their project. This form verifies that the company has elected to have the Bureau of Land Management (BLM) follow the procedures specified within the Memorandum of Agreement (MOA) concerning improved strategies for managing historic properties within the Permian Basin, New Mexico, for the undertaking rather than the Protocol to meet the agency's Section 106 obligations.

Company Name: BOPCO, L.P.

Address: P. O. Box 2760

Midland, Texas 79702

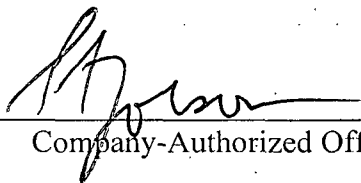
Project description: Poker Lake Unit #331H Location, Road, and Flowline.

T, 24S, R 30E, Section 3 NMPM, Eddy County, New Mexico

Amount of contribution: \$ \$2,159.00

Provisions of the MOA:

- A. No new Class III inventories are required of industry within the Project Area for those projects where industry elects to contribute to the mitigation fund.
- B. The amount of funds contributed was derived from the rate schedule established within Appendix B of the MOA. The amount of the funding contribution acknowledged on this form reflects those rates.
- C. The BLM will utilize the funding to carry out a program of mitigation at high-priority sited whose study is needed to answer key questions identified within the Regional Research Design.
- D. Donating to the fund is voluntary. Industry acknowledges that it is aware it has the right to pay for Class III survey rather than contributing to the mitigation fund, and that it must avoid or fund data recovery at those sites already recorded that are eligible for nomination to the National Register or whose eligibility is unknown and that any such payments are independent of the mitigation funds established by this MOA.
- E. Previously recorded archeological sites determined eligible for nomination to the National Register or whose eligibility remains undetermined must be avoided or mitigated.
- F. If any skeletal remains that might be human or funerary objects are discovered by any activities, the land-use applicant will cease activities in the area of discovery, protect the remains, and notify the BLM within 24 hours. The BLM will determine the appropriate treatment of the remains in consultation with culturally affiliated Indian Tribe(s) and lineal descendents. Applicants will be required to pay for treatment of the cultural items independent and outside of the mitigation fund.



Company-Authorized Officer

10/10/12  
Date

BLM-Authorized Officer

Date

# **EIGHT POINT DRILLING PROGRAM BOPCO, L.P.**

**NAME OF WELL: Poker Lake Unit 331H**

LEGAL DESCRIPTION - SURFACE: 620' FNL, 1320' FWL, Section 3, T24S, R30E, Eddy County, NM.

BHL: 120' FNL, 1200' FWL, Section 11, T24S, R30E, Eddy County, New Mexico.

**POINT 1: ESTIMATED FORMATION TOPS (See No. 2 Below)**

**POINT 2: WATER, OIL, GAS AND/OR MINERAL BEARING FORMATIONS**

Anticipated Formation Tops: KB 3470' (estimated)  
GL 3448'

Formation Description	Est from KB (TVD)	Est (MD)	SUB-SEA TOP	BEARING
T/Fresh Water	400'	400'	+ 3,070'	Fresh Water
T/Rustler	420'	420'	+ 3,050'	Barren
T/Salado	720'	720'	+ 2,750'	Barren
Base/Salt	3,730'	3,730'	- 260'	Oil/Gas
T/Lamar	3,950'	3,950'	- 480'	Oil/Gas
T/Ramsey	3,988'	3,988'	- 518'	Oil/Gas
Cherry Canyon	4,850'	4,850'	- 1,380'	Oil/Gas
Brushy Canyon	6,145'	6,145'	- 2,675'	Oil/Gas
KOP	7,130'	7,130'	- 3,660'	Oil/Gas
LBC "8A" Sand	7,518'	7,582'	- 4,048'	Oil/Gas
EOC	7,720'	8,122'	- 4,250'	Oil/Gas
Target #1	7,720'	8,122'	- 4,250'	Oil/Gas
TD Horizontal Hole	7,795'	14,513'	- 4,325'	Oil/Gas

**POINT 3: CASING PROGRAM**

TYPE	INTERVAL MD	HOLE SIZE	PURPOSE	INSTALLATION TYPE
20"	0' - 120'	26"	Conductor	Contractor Discretion
13-3/8", 48 ppf, H-40, or 54.5#, J-55 8rd, ST&C*	0' - 710'	17-1/2"	Surface	New
9-5/8", 40 ppf, N-80, 8rd, LT&C or 9-5/8" 40 ppf, J-55, 8rd, LT&C*	0' - 3,960'	12-1/4"	Intermediate	New
7", 26 ppf, N-80, Buttress or 8rd LTC*	0' - 7,830'	8-3/4"	Production	New

Completion System				
4-1/2", 11.6 ppf, HCP-110 8rd LT&C, BTC	7,780' - 14,513'	6-1/8"	Completion System	New

\* Depending on availability.

**CASING DESIGN SAFETY FACTORS:**

TYPE	TENSION	COLLAPSE	BURST
13-3/8", 48 ppf, H-40, 8rd, ST&C*	10.99	2.11	1.13
13-3/8", 54.5 ppf, J-55, 8rd, STC*	25.56	3.28	1.78
9-5/8", 40 ppf, N-80, 8rd, LT&C*	5.51	1.36	3.05
9-5/8", 40 ppf, J-55, 8rd, LT&C*	4.71	1.22	2.09
7", 26 ppf, N-80, Buttress*	3.65	2.10	2.51
7", 26 ppf, N-80, 8rd, LTC*	4.80	2.20	2.51

Completion System			
4-1/2", 11.6 ppf, HCP-110 8rd. LT&C	3.58	2.05	2.46
4-1/2", 11.6 ppf, HCP-110 BTC	4.71	2.15	2.46

\* Depending on availability.



## DESIGN CRITERIA AND CASING LOADING ASSUMPTIONS:

### SURFACE CASING - (13-3/8")

Tension	A 1.6 design factor utilizing the effects of buoyancy (9.2 ppg).
Collapse	A 1.0 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.
Burst	A 1.3 design factor with a surface pressure equal to the fracture gradient at setting depth less a gas gradient to the surface. Internal burst force at the shoe will be fracture pressure at that depth. Backup pressure will be formation pore pressure. In all cases a conservative fracture pressure will be used such that it represents the upper limit of potential fracture resistance up to a 1.0 psi/ft gradient. The effects of tension on burst will not be utilized.

### PROTECTIVE CASING - (9-5/8")

Tension	A 1.6 design factor utilizing the effects of buoyancy (10.2 ppg).
Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.  In the case of development drilling, collapse design should be analyzed using internal evacuation equal to 1/3 the proposed total depth of the well. This criterion will be used when there is absolutely no potential of the protective string being used as a production casing string.
Burst	A 1.0 surface design factor and a 1.3 downhole design factor with a surface pressure equivalent to the fracture gradient at setting depth less a gas gradient to the surface. Internal burst force at the shoe will be fracture pressure at that depth. Backup pressure will be formation pore pressure. In all cases a conservative fracture pressure will be used such that it represents the upper limit of potential fracture resistance up to a 1.0 psi/ft gradient.

### Production CASING - (7")

Tension	A 1.6 design factor utilizing the effects of buoyancy (9.0 ppg).
Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.
Burst	A 1.25 design factor with anticipated maximum tubing pressure (5000 psig) on top of the maximum anticipated packer fluid gradient. (0.433 psi/ft) Backup on production strings will be formation pore pressure. (0.433 psi/ft) The effects of tension on burst will not be utilized.

### Completion System - (4-1/2")

Tension	A 1.6 design factor utilizing the effects of buoyancy (9.0 ppg).
Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.
Burst	A 1.25 design factor with anticipated maximum tubing pressure (5000 psig) on top of the maximum anticipated packer fluid gradient. (0.433 psi/ft) Backup on production strings will be formation pore pressure. (0.433 psi/ft) The effects of tension on burst will not be utilized.

#### POINT 4: PRESSURE CONTROL EQUIPMENT (SEE ATTACHED DIAGRAM 2)

After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed, used, maintained and tested as per Onshore Order 2. In addition to the high pressure test, a low pressure (250-300 psig) test will be performed.

After running the 9-5/8" intermediate casing, a 13-5/8" or 11" BOP/BOPE system with a minimum rating of 3M will be installed on the 9-5/8" intermediate casing spool (8-3/4" open hole), used, maintained and tested as per Onshore Order 2. In addition to the high pressure test, a low pressure (250-300 psig) test will be performed.

After running the 7" intermediate casing, a 13-5/8" or 11" BOP/BOPE system with a minimum rating of 3M will be installed on the 9-5/8" intermediate casing spool (8-3/4" open hole), used, maintained and tested as per Onshore Order 2. In addition to the high pressure test, a low pressure (250-300 psig) test will be performed.

#### H2S contingency

H2S monitors shall be installed prior to drilling out the surface shoe. If H2S is encountered in quantities greater than 10 PPM, the well will be shut in and H2S equipment will be installed, including a flare line that will be extended pursuant to onshore oil and gas order #6.

These tests will be performed:

- a) Upon installation
- b) After any component changes
- c) Thirty days after a previous test
- d) As required by well conditions

A function test to insure that the preventers are operating correctly will be performed on each trip.

BOPCO, L.P. would like to request a variance to use an armored, 3", 5000 psi WP flex hose for the choke line in the drilling of the well if the rig is equip with hose. (See specification for hose that might be used, attached with APD exhibits). This is rig equipment and will help quicken nipple up time thus saving money without a safety problem. The hose itself is rated to 5000 psi, and has 5000 psi flanges on each end. This well is to be drilled to 15,370 MD (7,722' TVD) and max surface pressure should be +/- 1915 psi as prescribed in onshore order #2 shown as max BHP minus 0.22 psi/ft. Thus, 3000 psi BOPE is all that is needed for this well. **Please refer to diagram 2 for choke manifold and closed loop system layout. If an armored flex hose is utilized, the company man will have all of the proper certified paper work for that hose available on location.**

#### POINT 5: MUD PROGRAM

DEPTH		MUD TYPE	WEIGHT	FV	PV	YP	FL	Ph
0 - 710'	FW Spud Mud	8.5 - 9.2	38-70	NC	NC	NC	10.0	
710' - 3,960'	Brine Water	9.8 - 10.2	28-30	NC	NC	NC	9.5 - 10.5	
3,960' - 7,830'	FW/Gel	8.7 - 9.0	28-36	NC	NC	NC	9.5 - 10.0	
7,830' - 14,513'	FW/Gel/Starch	8.7 - 9.0	28-36	NC	NC	<100	9.5 - 10.0	

**NOTE:** May increase vis for logging purposes only.

#### POINT 6: TECHNICAL STAGES OF OPERATION

## POINT 6: TECHNICAL STAGES OF OPERATION

A) TESTING  
None anticipated.

B) LOGGING

*See COA*  
Run #1: GR with MWD during drilling of build and horizontal portions of 8-3/4" and 6-1/8" hole.

Run #2: Shuttle log w/GR, PE, Density, Neutron, Resistivity in lateral leg open hole.

Mud Logger: Rigged up at 100'

C) CONVENTIONAL CORING

None anticipated

D) CEMENT

INTERVAL	AMOUNT SXS	FT OF FILL	TYPE	GALS/SX	PPG	FT <sup>3</sup> /SX
SURFACE:						
Lead: 0' – 410'	330	410	Class C +2% CACL + 4% Bentonite + 0.25 LB/SK Cello Flake + 3 lb/sk LCM-1	8.69	13.50	1.75
Tail: 410' – 710'	340	300	Class C + 2% CACL + 0.25 LB/SK CF	6.35	14.80	1.35
INTERMEDIATE:						
Lead: 0' – 3,460'	1080	3,460	0.25LB/SK Cello Flake + 3 lb/sk LCM-1 EconoCEM HLC + 5% CaCl + 5#/sk Gilsonite	9.32	12.90	1.85
Tail: 3,460' – 3,960'	270	500	HalCem C	6.34	14.80	1.33
Production Stage 1:						
Lead: 5,000' – 7,130'	170	2014	Tuned Light + 0.75% + CFR-3 + 1.5#/sk CaCl	12.41	10.20	2.76
Tail: 7,130' – 7,830'	110	700	VersaCem-PBSH2 + 0.4% Halad-9	8.76	13.0	1.65
DV Tool @ 5,000'						
Stage 2:						
Lead: 0' – 4,500'	380	4500	EconCem HLC + 1% Econolite + 5% CaCl + 5#/sk Gilsonite	10.71	12.60	2.04
Tail: 4,500' – 5,000'	100	500	HalCem C	6.34	14.80	1.33

Cement excesses will be as follows:

Surface – 100% excess with cement circulated to surface.

1<sup>st</sup> Intermediate – 50% excess above fluid caliper with cement circulated to surface.

Production – 50% above gauge hole or 35% above electric log caliper with cement circulated 500' up into the 9-5/8" 1<sup>st</sup> intermediate casing in areas outside the SOPA. Cement will be circulated to surface on areas inside the SOPA.

Cement volumes will be adjusted proportionately for depth changes of the multi stage tool.

#### E) COMPLETIONS SYSTEM

A 4-1/2" completion system with open hole packers will be run in the producing lateral to a depth of 14,513'. The top of the Completion System will be set at approximately 7,795'. Cement will not be required for this system.

#### F) DIRECTIONAL DRILLING

BOPCO, L.P. plans to drill out the 9-5/8" intermediate casing with a 8-3/4" bit to a TVD of approximately 7,130' at which point a directional hole will be kicked off and drilled at an azimuth of 132.015 degrees, building angle at 12.00 deg/100' to 60 degrees at a TVD of 7,543' (MD 7,630'). This angle and azimuth will be maintained for 200' to a measured depth of 7,830 (7,643' TVD). At this depth 7", 26#, N80, Buttress, or 8rd LTC casing will be installed and cemented in two stages (DV Tool @ approximately 5000') with cement circulated to surface. A 6-1/8" open hole lateral will then be drilled out from 7" casing at an azimuth of 132.015 degrees, inclination of 89.328 degrees to a measured depth of 14,513', TVD 7,780'. At this depth a 4-1/2" Completion System with packers installed for zone isolation will be run into the producing lateral.

#### G) H<sub>2</sub>S SAFETY EQUIPMENT

As stated in the BLM Onshore Order 6, for wells located inside the H<sub>2</sub>S area, H<sub>2</sub>S equipment will be rigged up after setting surface casing. For the wells located inside the H<sub>2</sub>S area the flare pit will be located 150' from the location. For wells located outside the H<sub>2</sub>S area flare pit will be located 100' away from the location. **(See page 6 of Survey plat package and diagram 2)** There is not any H<sub>2</sub>S anticipated in the area, although in the event that H<sub>2</sub>S is encountered, the H<sub>2</sub>S contingency plan attached will be implemented. **(Please refer to diagram 2 for choke manifold and closed loop system layout.) Please refer to H<sub>2</sub>S location diagram for location of important H<sub>2</sub>S safety items.**

#### H) CLOSED LOOP AND CHOKE MANIFOLD

**Please see diagram 2.**

**POINT 7: ANTICIPATED RESERVOIR CONDITIONS**

Normal pressures are anticipated throughout Delaware section. A BHP of 3648 psi (max) or MWE of 9.0 ppg is expected. Lost circulation may exist in the Delaware Section from 3,730'-7,795' TVD.

**POINT 8: OTHER PERTINENT INFORMATION****A) Auxiliary Equipment**

Upper and lower kelly cocks. Full opening stab in valve on the rig floor.

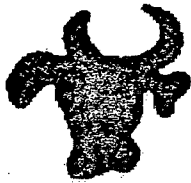
**B) Anticipated Starting Date**

Upon approval

30 days drilling operations

14 days completion operations

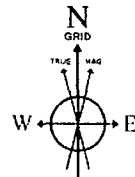
JDB/BTC



# BOPCO, L.P.

Location: Eddy County, NM  
Field: Poker Lake Unit  
Facility: Poker Lake Unit No. 331H

Slot: No. 331H SHL  
Well: No. 331H  
Wellbore: No. 331H PWB



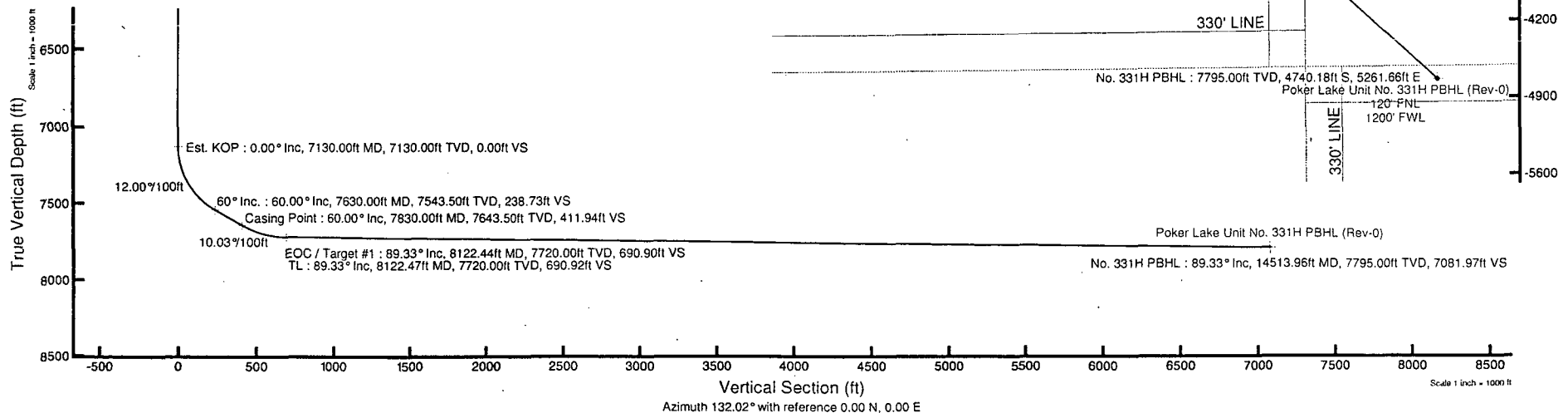
BGGM (1945.0 to 2014.0) Dip: 60.09° Field: 48473.4 nT  
Magnetic North is 7.68 degrees East of True North (at 8/15/2012)  
Grid North is 0.25 degrees East of True North

To correct azimuth from True to Grid subtract 0.25 degrees  
To correct azimuth from Magnetic to Grid add 7.44 degrees

For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth =  $90 + 7.44 = 97.44$

Plot reference wellbore is Rev-A.0	
True vertical depths are referenced to Rig on No. 331H SHL (KB)	Grid System: NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 331H SHL (KB)	North Reference: Grid north
Rig on No. 331H SHL (KB) to Mean Sea Level: 3470 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: No. 331H SHL): -3448 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: harrick on 8/17/2012

Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	22.00	0.000	132.015	22.00	0.00	0.00	0.00	0.00
Est. KOP	7130.00	0.000	132.015	7130.00	0.00	0.00	0.00	0.00
60° Inc.	7630.00	60.000	132.015	7543.50	-159.79	177.37	12.00	238.73
Casing Point	7830.00	60.000	132.015	7643.50	-275.72	306.06	0.00	411.94
EOC / Target #1	8122.44	89.328	132.015	7720.00	-462.44	513.32	10.03	690.90
TL	8122.47	89.328	132.015	7720.00	-462.45	513.34	2.00	690.92
No. 331H PBHL	14513.96	89.328	132.015	7795.00	-4740.18	5261.66	0.00	7081.97



Azimuth 132.02° with reference 0.00 N, 0.00 E

Rev-A.0



# Planned Wellpath Report

Rev-A.0

Page 1 of 5



## REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, L.P.	Slot	No. 331H SHL
Area	Eddy County, NM	Well	No. 331H
Field	Poker Lake Unit	Wellbore	No. 331H PWB
Facility	Poker Lake Unit No. 331H		

## REPORT SETUP INFORMATION

Projection System	NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Harrkol
Scale	0.999932	Report Generated	8/17/2012 at 4:14:06 PM
Convergence at slot	0.25° East	Database/Source file	WA Midland/No. 331H_PWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W
Facility Reference Pt			642366.40	455789.39	32°15'08.074"N	103°52'22.138"W
Field Reference Pt			630272.49	405347.85	32°06'49.387"N	103°54'45.266"W

## WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 331H SHL (KB) to Facility Vertical Datum	22.00ft
Horizontal Reference Pt	Slot	Rig on No. 331H SHL (KB) to Mean Sea Level	3470.00ft
Vertical Reference Pt	Rig on No. 331H SHL (KB)	Rig on No. 331H SHL (KB) to Mud Line at Slot (No. 331H SHL)	22.00ft
MD Reference Pt	Rig on No. 331H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	132.02°



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## REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, L.P.	Slot	No. 331H SHL
Area	Eddy County, NM	Well	No. 331H
Field	Poker Lake Unit	Wellbore	No. 331H PWB
Facility	Poker Lake Unit No. 331H		

## WELLPATH DATA (159 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	132.015	0.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
22.00	0.000	132.015	22.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	Tie On
122.00†	0.000	132.015	122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
222.00†	0.000	132.015	222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
322.00†	0.000	132.015	322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
400.00†	0.000	132.015	400.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	T/Fresh Water
420.00†	0.000	132.015	420.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	T/Rustler
422.00†	0.000	132.015	422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
522.00†	0.000	132.015	522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
622.00†	0.000	132.015	622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
720.00†	0.000	132.015	720.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	T/Salado
722.00†	0.000	132.015	722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
822.00†	0.000	132.015	822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
922.00†	0.000	132.015	922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1022.00†	0.000	132.015	1022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1122.00†	0.000	132.015	1122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1222.00†	0.000	132.015	1222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1322.00†	0.000	132.015	1322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1422.00†	0.000	132.015	1422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1522.00†	0.000	132.015	1522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1622.00†	0.000	132.015	1622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1722.00†	0.000	132.015	1722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1822.00†	0.000	132.015	1822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
1922.00†	0.000	132.015	1922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2022.00†	0.000	132.015	2022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2122.00†	0.000	132.015	2122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2222.00†	0.000	132.015	2222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2322.00†	0.000	132.015	2322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2422.00†	0.000	132.015	2422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2522.00†	0.000	132.015	2522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2622.00†	0.000	132.015	2622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2722.00†	0.000	132.015	2722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2822.00†	0.000	132.015	2822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
2922.00†	0.000	132.015	2922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3022.00†	0.000	132.015	3022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3122.00†	0.000	132.015	3122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3222.00†	0.000	132.015	3222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3322.00†	0.000	132.015	3322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3422.00†	0.000	132.015	3422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3522.00†	0.000	132.015	3522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3622.00†	0.000	132.015	3622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3722.00†	0.000	132.015	3722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3822.00†	0.000	132.015	3822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3922.00†	0.000	132.015	3922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
3950.00†	0.000	132.015	3950.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	T/Lamar





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## REFERENCE WELL PATH IDENTIFICATION

Operator	BOPCO, L.P.	Slot	No. 331H SHL
Area	Eddy County, NM	Well	No. 331H
Field	Poker Lake Unit	Wellbore	No. 331H PWB
Facility	Poker Lake Unit No. 331H		

## WELLPATH DATA (159 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
3988.00†	0.000	132.015	3988.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	T/Ramsey
4022.00†	0.000	132.015	4022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4122.00†	0.000	132.015	4122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4222.00†	0.000	132.015	4222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4322.00†	0.000	132.015	4322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4422.00†	0.000	132.015	4422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4522.00†	0.000	132.015	4522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4622.00†	0.000	132.015	4622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4722.00†	0.000	132.015	4722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4822.00†	0.000	132.015	4822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
4850.00†	0.000	132.015	4850.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	Cherry Canyon
4922.00†	0.000	132.015	4922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5022.00†	0.000	132.015	5022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5122.00†	0.000	132.015	5122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5222.00†	0.000	132.015	5222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5322.00†	0.000	132.015	5322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5422.00†	0.000	132.015	5422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5522.00†	0.000	132.015	5522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5622.00†	0.000	132.015	5622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5722.00†	0.000	132.015	5722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5822.00†	0.000	132.015	5822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
5922.00†	0.000	132.015	5922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6022.00†	0.000	132.015	6022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6122.00†	0.000	132.015	6122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6222.00†	0.000	132.015	6222.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6322.00†	0.000	132.015	6322.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6422.00†	0.000	132.015	6422.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6522.00†	0.000	132.015	6522.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6622.00†	0.000	132.015	6622.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6722.00†	0.000	132.015	6722.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6822.00†	0.000	132.015	6822.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
6922.00†	0.000	132.015	6922.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
7022.00†	0.000	132.015	7022.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
7122.00†	0.000	132.015	7122.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	
7130.00	0.000	132.015	7130.00	0.00	0.00	0.00	642366.40	455789.39	32°15'08.074"N	103°52'22.138"W	0.00	Est KOP
7222.00†	11.040	132.015	7221.43	8.84	-5.91	6.56	642372.97	455783.47	32°15'08.015"N	103°52'22.061"W	12.00	
7322.00†	23.040	132.015	7316.87	38.09	-25.49	28.30	642394.70	455763.90	32°15'07.820"N	103°52'21.809"W	12.00	
7422.00†	35.040	132.015	7404.14	86.54	-57.92	64.30	642430.69	455731.47	32°15'07.498"N	103°52'21.392"W	12.00	
7522.00†	47.040	132.015	7479.42	152.08	-101.79	112.99	642479.38	455687.60	32°15'07.062"N	103°52'20.827"W	12.00	
7582.94†	54.353	132.015	7518.00	199.20	-133.33	148.00	642514.40	455656.06	32°15'06.748"N	103°52'20.421"W	12.00	LBC "8A" Sand
7622.00†	59.040	132.015	7539.44	231.84	-155.18	172.25	642538.64	455634.22	32°15'06.531"N	103°52'20.140"W	12.00	
7630.00	60.000	132.015	7543.50	238.73	-159.79	177.37	642543.76	455629.61	32°15'06.485"N	103°52'20.080"W	12.00	60° Inc.
7722.00†	60.000	132.015	7589.50	318.41	-213.12	236.57	642602.95	455576.28	32°15'05.955"N	103°52'19.394"W	0.00	
7822.00†	60.000	132.015	7639.50	405.01	-271.08	300.91	642667.29	455518.32	32°15'05.378"N	103°52'18.647"W	0.00	
7830.00	60.000	132.015	7643.50	411.94	-275.72	306.06	642672.44	455513.69	32°15'05.332"N	103°52'18.588"W	0.00	Casing Point



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REFERENCE WELLPATH IDENTIFICATION			
Operator	BOPCO, L.P.	Slot	No. 331H SHL
Area	Eddy County, NM	Well	No. 331H
Field	Poker Lake Unit	Wellbore	No. 331H PWB
Facility	Poker Lake Unit No. 331H		

WELLPATH DATA (159 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7922.00†	69.226	132.015	7682.90	494.96	-331.29	367.74	642734.12	455458.12	32°15'04.780"N	103°52'17.872"W	10.03	
8022.00†	79.255	132.015	7710.02	591.08	-395.63	439.16	642805.53	455393.79	32°15'04.140"N	103°52'17.044"W	10.03	
8122.00†	89.284	132.015	7719.99	690.46	-462.14	512.99	642879.35	455327.28	32°15'03.479"N	103°52'16.188"W	10.03	
8122.44	89.328	132.015	7720.00	690.90	-462.44	513.32	642879.68	455326.98	32°15'03.476"N	103°52'16.184"W	10.03	EOC / Target #1
8122.47	89.328	132.015	7720.00	690.92	-462.45	513.34	642879.70	455326.97	32°15'03.476"N	103°52'16.183"W	2.00	TL
8222.00†	89.328	132.015	7721.17	790.45	-529.07	587.28	642953.64	455260.36	32°15'02.813"N	103°52'15.326"W	0.00	
8322.00†	89.328	132.015	7722.34	890.44	-596.00	661.57	643027.93	455193.43	32°15'02.148"N	103°52'14.464"W	0.00	
8422.00†	89.328	132.015	7723.52	990.43	-662.92	735.86	643102.21	455126.51	32°15'01.482"N	103°52'13.603"W	0.00	
8522.00†	89.328	132.015	7724.69	1090.43	-729.85	810.15	643176.50	455059.59	32°15'00.817"N	103°52'12.741"W	0.00	
8622.00†	89.328	132.015	7725.86	1190.42	-796.78	884.44	643250.79	454992.66	32°15'00.152"N	103°52'11.879"W	0.00	
8722.00†	89.328	132.015	7727.04	1290.41	-863.71	958.74	643325.07	454925.74	32°14'59.486"N	103°52'11.018"W	0.00	
8822.00†	89.328	132.015	7728.21	1390.41	-930.64	1033.03	643399.36	454858.81	32°14'58.821"N	103°52'10.156"W	0.00	
8922.00†	89.328	132.015	7729.38	1490.40	-997.57	1107.32	643473.64	454791.89	32°14'58.155"N	103°52'09.294"W	0.00	
9022.00†	89.328	132.015	7730.56	1590.39	-1064.49	1181.61	643547.93	454724.97	32°14'57.490"N	103°52'08.433"W	0.00	
9122.00†	89.328	132.015	7731.73	1690.39	-1131.42	1255.90	643622.22	454658.04	32°14'56.824"N	103°52'07.571"W	0.00	
9222.00†	89.328	132.015	7732.90	1790.38	-1198.35	1330.19	643696.50	454591.12	32°14'56.159"N	103°52'06.709"W	0.00	
9322.00†	89.328	132.015	7734.08	1890.37	-1265.28	1404.48	643770.79	454524.19	32°14'55.493"N	103°52'05.848"W	0.00	
9422.00†	89.328	132.015	7735.25	1990.37	-1332.21	1478.77	643845.07	454457.27	32°14'54.828"N	103°52'04.986"W	0.00	
9522.00†	89.328	132.015	7736.42	2090.36	-1399.14	1553.07	643919.36	454390.35	32°14'54.162"N	103°52'04.124"W	0.00	
9622.00†	89.328	132.015	7737.60	2190.35	-1466.07	1627.36	643993.65	454323.42	32°14'53.497"N	103°52'03.263"W	0.00	
9722.00†	89.328	132.015	7738.77	2290.35	-1532.99	1701.65	644067.93	454256.50	32°14'52.831"N	103°52'02.401"W	0.00	
9822.00†	89.328	132.015	7739.94	2390.34	-1599.92	1775.94	644142.22	454189.58	32°14'52.166"N	103°52'01.540"W	0.00	
9922.00†	89.328	132.015	7741.12	2490.33	-1666.85	1850.23	644216.51	454122.65	32°14'51.501"N	103°52'00.678"W	0.00	
10022.00†	89.328	132.015	7742.29	2590.32	-1733.78	1924.52	644290.79	454055.73	32°14'50.835"N	103°51'59.816"W	0.00	
10122.00†	89.328	132.015	7743.46	2690.32	-1800.71	1998.81	644365.08	453988.80	32°14'50.170"N	103°51'58.955"W	0.00	
10222.00†	89.328	132.015	7744.64	2790.31	-1867.64	2073.11	644439.36	453921.88	32°14'49.504"N	103°51'58.093"W	0.00	
10322.00†	89.328	132.015	7745.81	2890.30	-1934.56	2147.40	644513.65	453854.96	32°14'48.839"N	103°51'57.232"W	0.00	
10422.00†	89.328	132.015	7746.98	2990.30	-2001.49	2221.69	644587.94	453788.03	32°14'48.173"N	103°51'56.370"W	0.00	
10522.00†	89.328	132.015	7748.16	3090.29	-2068.42	2295.98	644662.22	453721.11	32°14'47.508"N	103°51'55.508"W	0.00	
10622.00†	89.328	132.015	7749.33	3190.28	-2135.35	2370.27	644736.51	453654.19	32°14'46.842"N	103°51'54.647"W	0.00	
10722.00†	89.328	132.015	7750.50	3290.28	-2202.28	2444.56	644810.80	453587.26	32°14'46.177"N	103°51'53.785"W	0.00	
10822.00†	89.328	132.015	7751.68	3390.27	-2269.21	2518.85	644885.08	453520.34	32°14'45.511"N	103°51'52.924"W	0.00	
10922.00†	89.328	132.015	7752.85	3490.26	-2336.14	2593.15	644959.37	453453.41	32°14'44.846"N	103°51'52.062"W	0.00	
11022.00†	89.328	132.015	7754.02	3590.26	-2403.06	2667.44	645033.65	453386.49	32°14'44.180"N	103°51'51.200"W	0.00	
11122.00†	89.328	132.015	7755.20	3690.25	-2469.99	2741.73	645107.94	453319.57	32°14'43.515"N	103°51'50.339"W	0.00	
11222.00†	89.328	132.015	7756.37	3790.24	-2536.92	2816.02	645182.23	453252.64	32°14'42.849"N	103°51'49.477"W	0.00	
11322.00†	89.328	132.015	7757.54	3890.23	-2603.85	2890.31	645256.51	453185.72	32°14'42.184"N	103°51'48.616"W	0.00	
11422.00†	89.328	132.015	7758.72	3990.23	-2670.78	2964.60	645330.80	453118.80	32°14'41.518"N	103°51'47.754"W	0.00	
11522.00†	89.328	132.015	7759.89	4090.22	-2737.71	3038.89	645405.08	453051.87	32°14'40.853"N	103°51'46.893"W	0.00	
11622.00†	89.328	132.015	7761.06	4190.21	-2804.63	3113.19	645479.37	452984.95	32°14'40.187"N	103°51'46.031"W	0.00	
11722.00†	89.328	132.015	7762.24	4290.21	-2871.56	3187.48	645553.66	452918.02	32°14'39.522"N	103°51'45.169"W	0.00	
11822.00†	89.328	132.015	7763.41	4390.20	-2938.49	3261.77	645627.94	452851.10	32°14'38.856"N	103°51'44.308"W	0.00	
11922.00†	89.328	132.015	7764.59	4490.19	-3005.42	3336.06	645702.23	452784.18	32°14'38.191"N	103°51'43.446"W	0.00	
12022.00†	89.328	132.015	7765.76	4590.19	-3072.35	3410.35	645776.52	452717.25	32°14'37.525"N	103°51'42.585"W	0.00	
12122.00†	89.328	132.015	7766.93	4690.18	-3139.28	3484.64	645850.80	452650.33	32°14'36.860"N	103°51'41.723"W	0.00	



# Planned Wellpath Report

Rev-A.0  
Page 5 of 5



## REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, L.P.	Slot	No. 331H SHL
Area	Eddy County, NM	Well	No. 331H
Field	Poker Lake Unit	Wellbore	No. 331H PWB
Facility	Poker Lake Unit No. 331H		

## WELLPATH DATA (159 stations) † = interpolated/extrapolated station

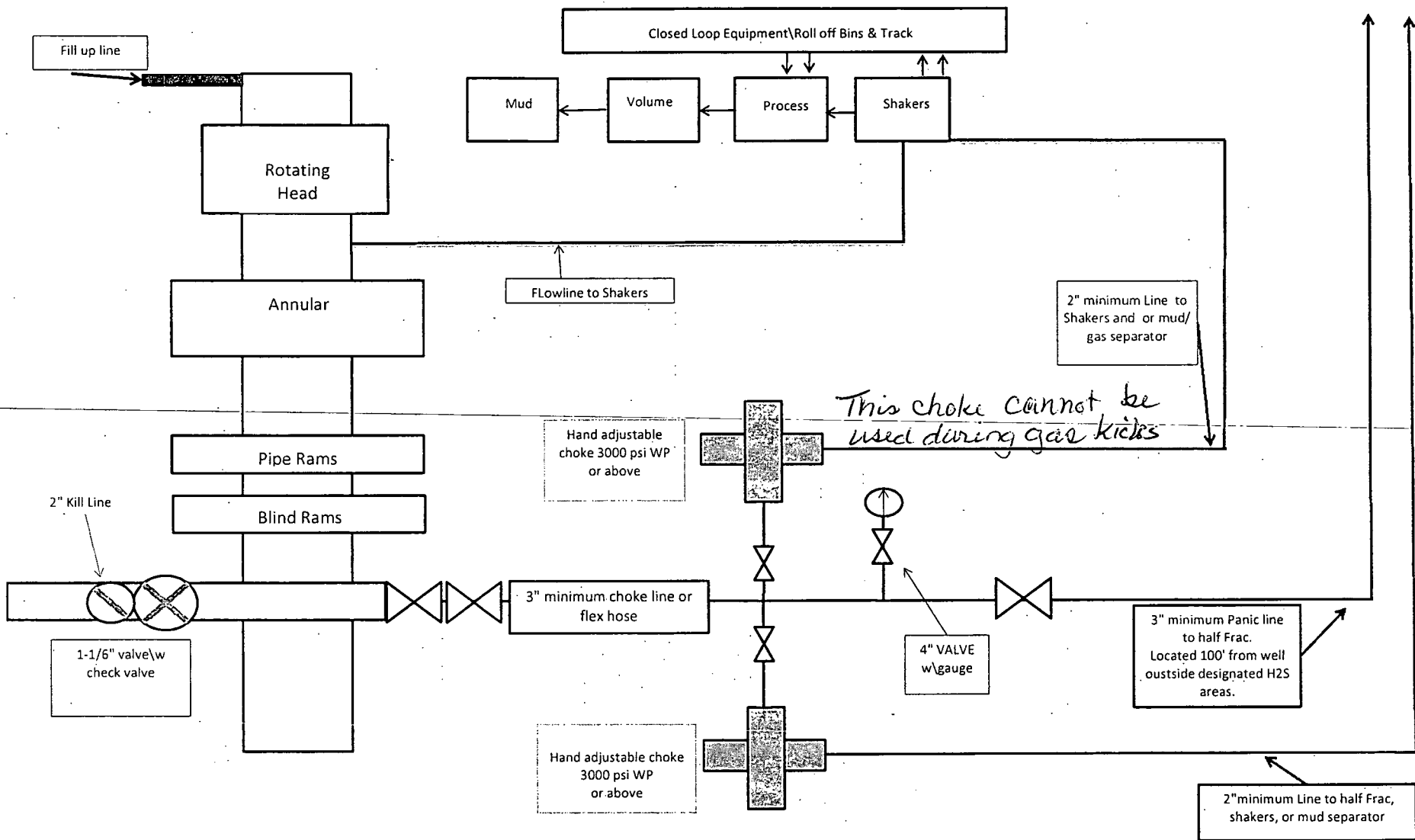
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12222.00†	89.328	132.015	7768.11	4790.17	-3206.21	3558.93	645925.09	452583.41	32°14'36.194"N	103°51'40.862"W	0.00	
12322.00†	89.328	132.015	7769.28	4890.17	-3273.13	3633.22	645999.37	452516.48	32°14'35.529"N	103°51'40.000"W	0.00	
12422.00†	89.328	132.015	7770.45	4990.16	-3340.06	3707.52	646073.66	452449.56	32°14'34.863"N	103°51'39.139"W	0.00	
12522.00†	89.328	132.015	7771.63	5090.15	-3406.99	3781.81	646147.95	452382.63	32°14'34.198"N	103°51'38.277"W	0.00	
12622.00†	89.328	132.015	7772.80	5190.15	-3473.92	3856.10	646222.23	452315.71	32°14'33.532"N	103°51'37.416"W	0.00	
12722.00†	89.328	132.015	7773.97	5290.14	-3540.85	3930.39	646296.52	452248.79	32°14'32.867"N	103°51'36.554"W	0.00	
12822.00†	89.328	132.015	7775.15	5390.13	-3607.78	4004.68	646370.81	452181.86	32°14'32.201"N	103°51'35.693"W	0.00	
12922.00†	89.328	132.015	7776.32	5490.12	-3674.70	4078.97	646445.09	452114.94	32°14'31.536"N	103°51'34.831"W	0.00	
13022.00†	89.328	132.015	7777.49	5590.12	-3741.63	4153.26	646519.38	452048.02	32°14'30.870"N	103°51'33.970"W	0.00	
13122.00†	89.328	132.015	7778.67	5690.11	-3808.56	4227.56	646593.66	451981.09	32°14'30.205"N	103°51'33.108"W	0.00	
13222.00†	89.328	132.015	7779.84	5790.10	-3875.49	4301.85	646667.95	451914.17	32°14'29.539"N	103°51'32.247"W	0.00	
13322.00†	89.328	132.015	7781.01	5890.10	-3942.42	4376.14	646742.24	451847.24	32°14'28.874"N	103°51'31.385"W	0.00	
13422.00†	89.328	132.015	7782.19	5990.09	-4009.35	4450.43	646816.52	451780.32	32°14'28.208"N	103°51'30.524"W	0.00	
13522.00†	89.328	132.015	7783.36	6090.08	-4076.27	4524.72	646890.81	451713.40	32°14'27.542"N	103°51'29.662"W	0.00	
13622.00†	89.328	132.015	7784.53	6190.08	-4143.20	4599.01	646965.09	451646.47	32°14'26.877"N	103°51'28.801"W	0.00	
13722.00†	89.328	132.015	7785.71	6290.07	-4210.13	4673.30	647039.38	451579.55	32°14'26.211"N	103°51'27.939"W	0.00	
13822.00†	89.328	132.015	7786.88	6390.06	-4277.06	4747.60	647113.67	451512.62	32°14'25.546"N	103°51'27.078"W	0.00	
13922.00†	89.328	132.015	7788.05	6490.06	-4343.99	4821.89	647187.95	451445.70	32°14'24.880"N	103°51'26.216"W	0.00	
14022.00†	89.328	132.015	7789.23	6590.05	-4410.92	4896.18	647262.24	451378.78	32°14'24.215"N	103°51'25.355"W	0.00	
14122.00†	89.328	132.015	7790.40	6690.04	-4477.85	4970.47	647336.53	451311.85	32°14'23.549"N	103°51'24.493"W	0.00	
14222.00†	89.328	132.015	7791.57	6790.04	-4544.77	5044.76	647410.81	451244.93	32°14'22.884"N	103°51'23.632"W	0.00	
14322.00†	89.328	132.015	7792.75	6890.03	-4611.70	5119.05	647485.10	451178.01	32°14'22.218"N	103°51'22.770"W	0.00	
14422.00†	89.328	132.015	7793.92	6990.02	-4678.63	5193.34	647559.38	451111.08	32°14'21.553"N	103°51'21.909"W	0.00	
14513.96	89.328	132.015	7795.00†	7081.97	-4740.18	5261.66	647627.70	451049.54	32°14'20.941"N	103°51'21.117"W	0.00	No. 331H PBHL

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) Poker Lake Unit No. 331H PBHL (Rev-0)	14513.96	7795.00	-4740.18	5261.66	647627.70	451049.54	32°14'20.941"N	103°51'21.117"W	point

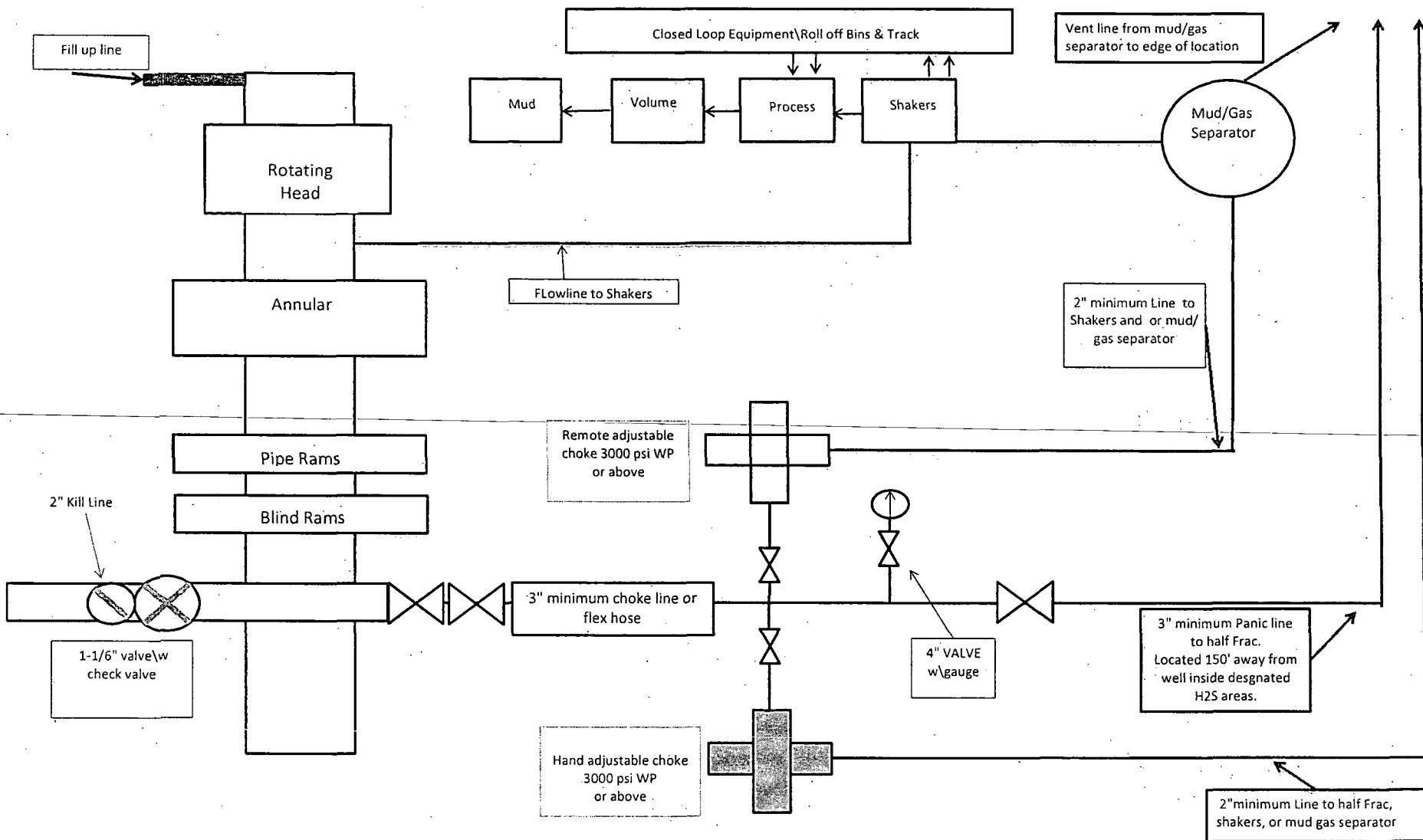
## SURVEY PROGRAM - Ref Wellbore: No. 331H PWB Ref Wellpath: Rev-A.0

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
22.00	14513.96	NaviTrak (Standard)		No. 331H PWB



**13-5/8" X 3-M BOPE (2 Rams and Rotating Head) & Closed Loop System Equipment Schematic Diagram 2**

Note: all valves & lines on choke manifold are 3" unless otherwise noted. Exact manifold configuration may vary.



**13-5/8" X 3-M BOPE (2 Rams and Rotating Head) & Closed Loop System Equipment Schematic**  
**H2S contingency**  
**Diagram 2**

Note: all valves & lines on choke manifold are 3" unless otherwise noted. Exact manifold configuration may vary.

**MIDWEST**  
**HOSE AND SPECIALTY INC.**

**INTERNAL HYDROSTATIC TEST REPORT**

<b>Customer:</b> LATSHAW DRILLING		<b>P.O. Number:</b> RIG#4	
<b>HOSE SPECIFICATIONS</b>			
<b>Type:</b> CHOK & KILL		<b>Length:</b> 30'	
<b>I.D.</b> 3"	<b>INCHES</b>	<b>O.D.</b> 6-1/2"	
<b>WORKING PRESSURE</b> 5,000 PSI	<b>TEST PRESSURE</b> 10,000	<b>BURST PRESSURE</b>	
<b>COUPLINGS</b>			
<b>Stem Part No.</b> D3.0X64WB		<b>Ferrule No.</b> D3.0X64WB	
<b>Type of Coupling:</b> 4-1/16 5K FLANGE		<b>Die Size:</b>	
<b>PROCEDURE</b>			
<i>Hose assembly pressure tested with water at ambient temperature.</i>			
<b>TIME HELD AT TEST PRESSURE</b> 15 MIN.		<b>ACTUAL BURST PRESSURE:</b> 0 PSI	
<b>COMMENTS:</b> SER#81610			
<b>Date:</b> 3/1/2011	<b>Tested By:</b> DONNIE MCLEMORE	<b>Approved:</b> BRENT BURNETT	



Midwest Hose  
& Specialty, Inc.

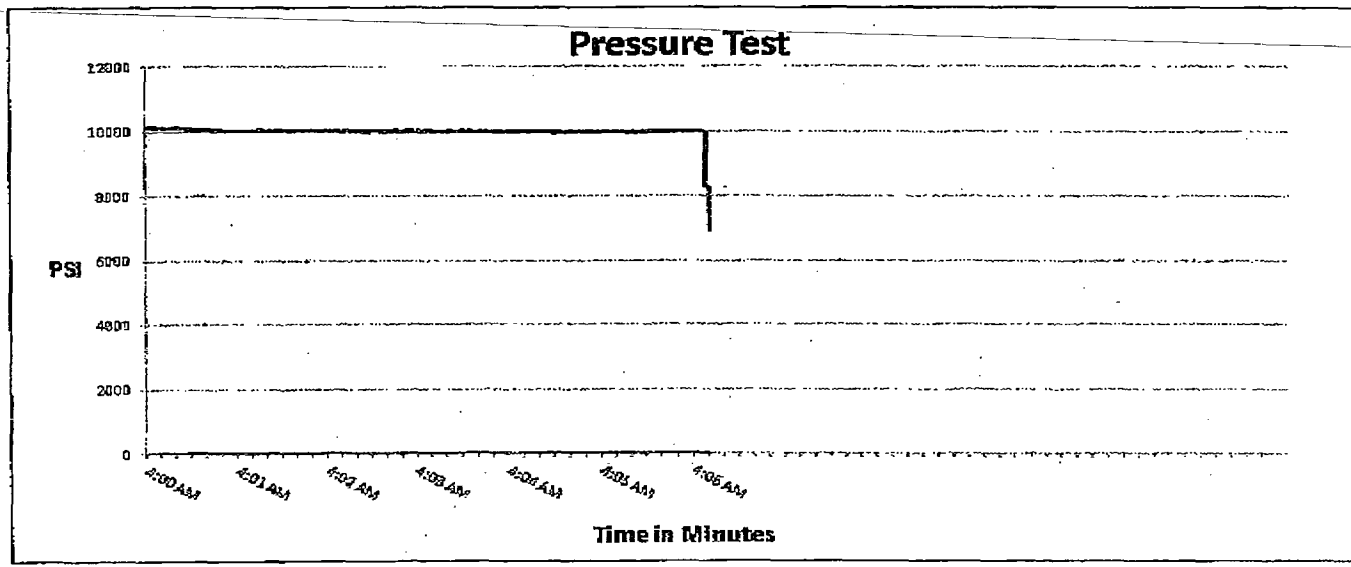
# Internal Hydrostatic Test Graph

April 4, 2012

Customer: Latshaw

Pick Ticket #: 81610

Hose Specifications		Verification	
<u>Hose Type</u>	<u>Length</u>	<u>Type of Fitting</u>	<u>Coupling Method</u>
D	30'	41/16 SK	Swage
<u>I.D.</u>	<u>O.D.</u>	<u>Die Size</u>	<u>Final O.D.</u>
3"	4 15/32	5.12"	5.16"
<u>Working Pressure</u>	<u>Burst Pressure</u>	<u>Hose Serial #</u>	<u>Hose Assembly Serial #</u>
5000 PSI	Standard Safety Multiplier Applies	6884	81610



<u>Test Pressure</u>	<u>Time Held at Test Pressure</u>	<u>Actual Burst Pressure</u>	<u>Peak Pressure</u>
10000 PSI	6 1/4 Minutes		10195 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Donnie Mclemore

Approved By: Bobby Fink

*Donnie Mclemore* *Bobby Fink*





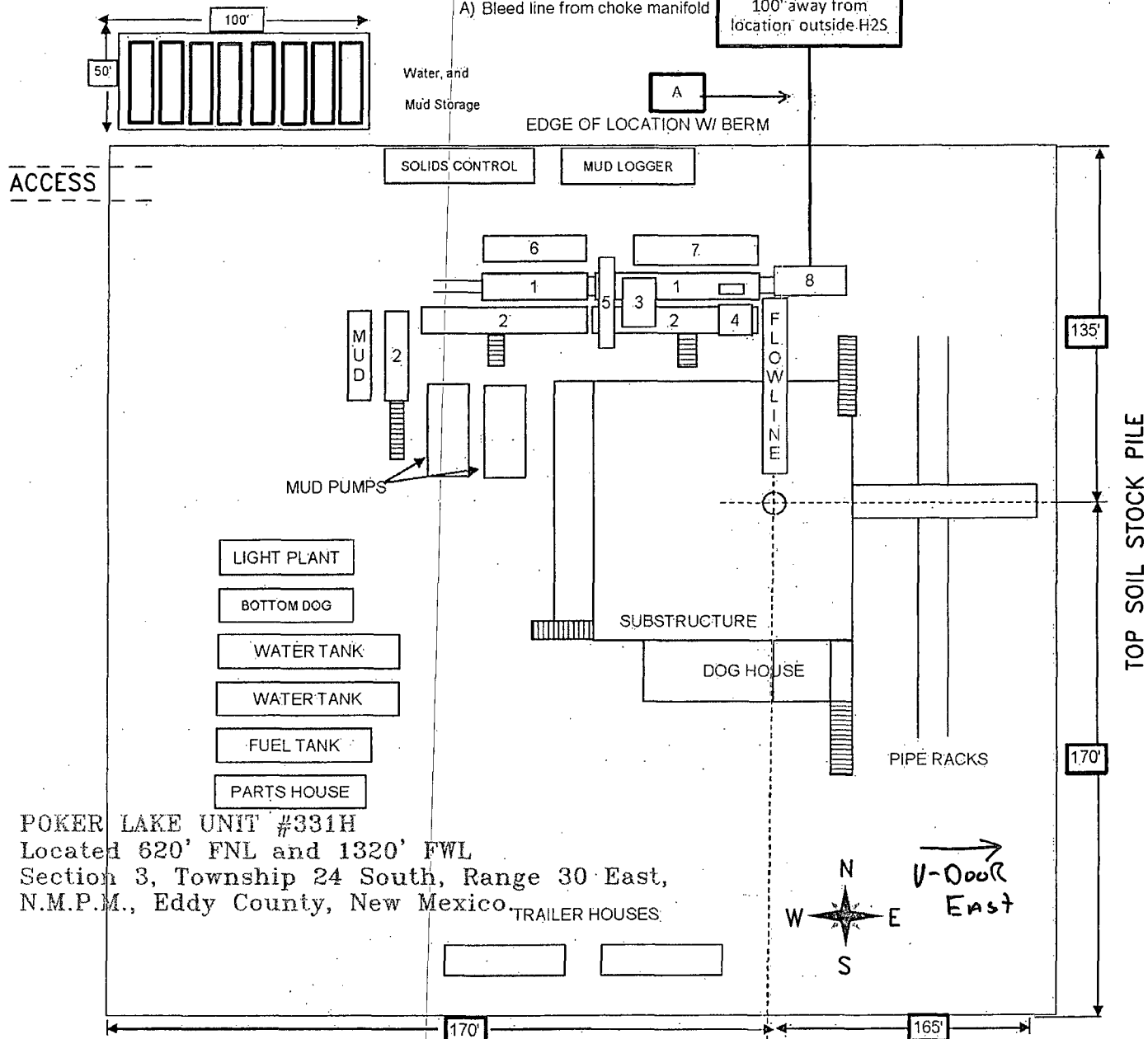
Exhibit "D"

# RIG LAYOUT

## RIG LAYOUT SCHEMATIC INCLUSIVE OF CLOSED-LOOP DESIGN PLAN Solids Control Equipment Legend

- |                                   |                    |
|-----------------------------------|--------------------|
| 1) Roll Off Bin                   | 5) Centrifuge      |
| 2) Steel Tank                     | 6) Dewatering Unit |
| 3) Mud Cleaner                    | 7) Catch Tank      |
| 4) Shaker                         | 8) Choke Manifold  |
| A) Bleed line from choke manifold |                    |

Flare Pit 150' away  
from location in H2S  
area,  
100' away from  
location outside H2S



POKER LAKE UNIT #331H  
Located 620' FNL and 1320' FWL  
Section 3, Township 24 South, Range 30 East,  
N.M.P.M., Eddy County, New Mexico

TRAILER HOUSES



focused on excellence  
in the oilfield

P.O. Box 1786  
1120 N. West County Rd.  
Hobbs, New Mexico 88241  
(575) 393-7316 - Office  
(575) 392-2206 - Fax  
basinsurveys.com

W.O. Number: JG - 26011

Survey Date: 2-23-2012

Scale: 1" = 2000'

Date: 3-5-2012

BOPCO, L.P.

Sheet 6 of 6 Sheets



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- B. Objective
- C. Discussion of Plan

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- A. Emergency Procedures and Public Protection
- B. Emergency Procedures Implementation
- C. Simulated Blowout Control Drills

### **III. Ignition Procedures**

- A. Responsibility
- B. Instructions

### **IV. Training Requirements**

### **V. Emergency Equipment**

### **VI. Evacuation Plan**

- A. General Plan
- B. Emergency Phone Lists

### **VII. General Information**

- A. H<sub>2</sub>S Toxicity Table
- B. Respirator Use
- C. Emergency Rescue

## H<sub>2</sub>S CONTINGENCY PLAN SECTION

### **Scope:**

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H<sub>2</sub>S).

### **Objective:**

Prevent any and all accidents, and prevent the uncontrolled release of H<sub>2</sub>S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

### **Discussion of Plan:**

#### ***Suspected Problem Zones:***

***Implementation:*** This plan, with all details, is to be fully implemented 500' above or three days prior to drilling into the first known sour zone

***Emergency Response and Public Protection Procedure:*** This section outlines the conditions and denotes steps to be taken in the event of an emergency.

***Emergency Equipment and Procedure:*** This section outlines the safety and emergency equipment that will be required for the drilling of this well.

***Training Provisions:*** This section outlines the training provisions that must be adhered to 500 feet above or three days prior to drilling into the first known sour zone.

***Emergency call lists:*** Included are the telephone numbers of all persons that would need to be contacted should an H<sub>2</sub>S emergency occur.

***Briefing:*** This section deals with the briefing of all persons involved with the drilling of this well.

***Public Safety:*** Public Safety Personnel will be made aware of the drilling of this well.

## EMERGENCY PROCEDURES AND PUBLIC PROTECTION SECTION

- I. In the event of any evidence of H<sub>2</sub>S levels above 10 ppm, take the following steps immediately:
  - A. Secure breathing apparatus.
  - B. Order non-essential personnel out of the danger zone.
  - C. Take steps to determine if the H<sub>2</sub>S level can be corrected or suppressed, and if so, proceed with normal operations.
- II. If uncontrollable conditions occur, proceed with the following:
  - A. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel and the New Mexico Oil & Gas of the situation.
  - B. Isolate area and prevent entry by unauthorized persons into the 100 ppm ROE.
  - C. Remove all personnel to the Safe Briefing Area.
  - D. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation. Phone number list attached.
  - E. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.
- III. Responsibility:
  - A. The Company Approved Supervisor shall be responsible for the total implementation of the plan.
  - B. The Company Approved Supervisor shall be in complete command during any emergency.
  - C. The Company Approved Supervisor shall designate a back up Supervisor in the event that he/she is not available.

## **EMERGENCY PROCEDURE IMPLEMENTATION**

### **I. Drilling or Tripping**

#### **A. All Personnel**

1. When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
2. Check status of other personnel (buddy system).
3. Secure breathing apparatus.
4. Wait for orders from supervisor.

#### **B. Drilling Foreman**

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
3. Determine the concentration of H<sub>2</sub>S.
4. Assess the situation and take appropriate control measures.

#### **C. Tool Pusher**

1. Report to the upwind Safe Briefing Area.
2. Don breathing apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).
3. Determine the concentration.
4. Assess the situation and take appropriate control measures.

#### **D. Driller**

1. Check the status of other personnel (in a rescue attempt, always use the buddy system).
2. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.

3. Assume the responsibility of the Drilling Foreman and the Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man and Floor Hands

1. Remain in the upwind Safe Briefing Area until otherwise instructed by a supervisor.

F. Mud Engineer

1. Report to the upwind Safe Briefing Area.
2. When instructed, begin check of mud for pH level and H<sub>2</sub>S level.

G. On-site Safety Personnel

1. Don Breathing Apparatus.
2. Check status of all personnel.
3. Wait for instructions from Drilling Foreman or Tool Pusher.

**II. Taking a Kick**

- A. All personnel report to the upwind Safe Briefing Area.
- B. Follow standard BOP procedures.

**III. Open Hole Logging**

- A. All unnecessary personnel should leave the rig floor.
- B. Drilling Foreman and Safety Personnel should monitor the conditions and make necessary safety equipment recommendations.

**IV. Running Casing or Plugging**

- A. Follow "Drilling or Tripping" procedures.
- B. Assure that all personnel have access to protective equipment.

## **SIMULATED BLOWOUT CONTROL DRILLS**

All drills will be initiated by activating alarm devices (air horn). Use one long blast on the air horn for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill # 1      Bottom Drilling

Drill # 2      Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.:		
Reaction Time to Shut-In:	minutes,	seconds.
Total Time to Complete Assignment:	minutes,	seconds.

### **I. Drill Overviews**

#### **A. Drill No. 1- Bottom Drilling**

1. Sound the alarm immediately.
2. Stop the rotary and hoist kelly joint above the rotary table.
3. Stop the circulatory pump.
4. Close the drill pipe rams.
5. Record casing and drill pipe shut-in pressures and pit volume increases.

#### **B. Drill No. 2 – Tripping Drill Pipe**

1. Sound the alarm immediately.
2. Position the upper tool joint just above the rotary table and set the slips.

3. Install a full opening valve or inside blowout preventor tool in order to close the drill pipe.
4. Close the drill pipe rams.
5. Record the shut-in annular pressure.

## **II. Crew Assignments**

### **A. Drill No. 1 – Bottom Drilling**

1. Driller
  - a) Stop the rotary and hoist kelly joint above the rotary table.
  - b) Stop the circulatory pump.
  - c) Check flow.
  - d) If flowing, sound the alarm immediately.
  - e) Record the shut-in drill pipe pressure.
  - f) Determine the mud weight increase needed or other courses of action.
2. Derrickman
  - a) Open choke line valve at BOP.
  - b) Signal Floor Man # 1 at accumulator that choke line is open.
  - c) Close choke and upstream valve after pipe rams have been closed.
  - d) Read the shut-in annular pressure and report readings to Driller.
3. Floor Man # 1
  - a) Close the pipe rams after receiving the signal from the Derrickman.
  - b) Report to Driller for further instructions.

4. Floor Man # 2

- a) Notify the Tool Pusher and Operator Representative of the H<sub>2</sub>S alarms.
- b) Check for open fires and, if safe to do so, extinguish them.
- c) Stop all welding operations.
- d) Turn-off all non-explosion proof lights and instruments.
- e) Report to Driller for further instructions.

5. Tool Pusher

- a) Report to the rig floor.
- b) Have a meeting with all crews.
- c) Compile and summarize all information.
- d) Calculate the proper kill weight.
- e) Ensure that proper well procedures are put into action.

6. Operator Representative

- a) Notify the Drilling Superintendent.
- b) Determine if an emergency exists and if so, activate the contingency plan.

**B. Drill No. 2 – Tripping Pipe**

1. Driller

- a) Sound the alarm immediately when mud volume increase has been detected.
- b) Position the upper tool joint just above the rotary table and set slips.
- c) Install a full opening valve or inside blowout preventor tool to close the drill pipe.
- d) Check flow.



e) Record all data reported by the crew.

f) Determine the course of action.

2. Derrickman

a) Come down out of derrick.

b) Notify Tool Pusher and Operator Representative.

c) Check for open fires and, if safe to do so, extinguish them.

d) Stop all welding operations.

e) Report to Driller for further instructions.

3. Floor Man # 1

a) Pick up full opening valve or inside blowout preventor tool and stab into tool joint above rotary table (with Floor Man # 2).

b) Tighten valve with back-up tongs.

c) Close pipe rams after signal from Floor Man # 2.

d) Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.

e) Report to Driller for further instructions.

4. Floor Man # 2

a) Pick-up full opening valve or inside blowout preventor tool and stab into tool joint above rotary table (with Floor Man # 1).

b) Position back-up tongs on drill pipe.

c) Open choke line valve at BOP.

d) Signal Floor Man # 1 at accumulator that choke line is open.

e) Close choke and upstream valve after pipe rams have been closed.

f) Check for leaks on BOP stack and choke manifold.

- g) Read annular pressure.
- h) Report readings to the Driller.

5. Tool Pusher

- a) Report to the rig floor.
- b) Have a meeting with all of the crews.
- c) Compile and summarize all information.
- d) See that proper well kill procedures are put into action.

6. Operator Representative

- a) Notify Drilling Superintendent
- b) Determine if an emergency exists, and if so, activate the contingency plan.

## IGNITION PROCEDURES

### Responsibility:

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. The State Police shall be the Incident Command on the scene of any major release. Intentional ignition must be coordinated with the NMOCD and local officials. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

### Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

**NOTE:** After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide (SO<sub>2</sub>), which is also highly toxic. Do not assume the area is safe after the well is ignited.

## TRAINING REQUIREMENTS

When working in an area where Hydrogen Sulfide ( $H_2S$ ) might be encountered, definite training requirements must be carried out. The Company Supervisor will ensure that all personnel at the well site, whether regularly assigned, contracted, or employed on an unscheduled basis, have had adequate training by a qualified instructor in the following:

1. Hazards and Characteristics of Hydrogen Sulfide and Sulfur Dioxide.
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4.  $H_2S$  detection, emergency alarm and sensor location.
5. Emergency rescue.
6. First aid and artificial resuscitation.
7. The effects of Hydrogen Sulfide on metals.
8. Location safety.

In addition, Supervisory Personnel will be trained in the following areas:

1. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well as well as blowout prevention and well control procedures.
3. The contents and requirements of the  $H_2S$  Drilling Operations Contingency Plan and the Public Protection Plan.

Service company personnel and visiting personnel must be notified if the zone contains  $H_2S$ , and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

## **EMERGENCY EQUIPMENT**

As stated in the BLM Onshore Order 6, for wells located in a known H<sub>2</sub>S areas, H<sub>2</sub>S equipment will be rigged up after setting surface casing. For wells located inside known H<sub>2</sub>S areas, the flare pit will be located 150' from the location and for wells located outside known H<sub>2</sub>S areas, the flare pit will be located 100' away from the location. (See page 6 of Survey plat package and diagram 2.)

**It is not anticipated that any H<sub>2</sub>S is in the area, however in the event that H<sub>2</sub>S is encountered, the attached H<sub>2</sub>S Contingency Plan will be implemented.** (Please refer to diagram 2 for choke manifold and closed loop system layout.) See H<sub>2</sub>S location layout diagram for location of all H<sub>2</sub>S equipment on location.

All H<sub>2</sub>S safety equipment and systems will be installed, tested and be operational when drilling reaches a depth of 500' above, or three days prior to penetrating a known formation containing H<sub>2</sub>S.

### **Lease Entrance Sign:**

Caution signs should be located at all roads providing direct access to the location. Signs shall have a yellow background with black lettering and contain the words "CAUTION" and "POISON GAS" that is legible from a distance of at least 50 feet.

**LEASE NAME  
CAUTION – POTENTIAL POISON GAS  
HYDROGEN SULFIDE  
NO ADMITTANCE WITHOUT AUTHORIZATION**

### **Windsocks or Wind Streamers:**

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location)

### **Hydrogen Sulfide Detector and Alarms:**

- H<sub>2</sub>S monitors with alarms will be located on the rig floor, at the cellar, and at the mud pits. These monitors will be set to alarm at 10 PPM with a red light and to alarm at 15 PPM with a red light and audible alarm.

**Well Condition Flags:**

The Well Condition flags should be located at all roads providing direct access to the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN – Normal Operating Conditions

YELLOW – Potential Danger

RED – Danger, H<sub>2</sub>S Gas Present

**Respiratory Equipment:**

- Fresh air breathing equipment should be placed at the company supervision trailer and the safe briefing areas and should include the following:
  - A minimum of two SCBA's at each briefing area and the supervisor company supervision trailer.
  - Enough air line units to operate safely, anytime the H<sub>2</sub>S concentration reaches the IDLH level (100 PPM).
  - Cascade system with enough breathing air hose and manifolds to reach the rig floor, the derrickman and the other operation areas.

**Fire Extinguishers:**

Adequate fire extinguishers shall be located at strategic locations.

**Mud Program:**

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to the surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

**Metallurgy:**

All drill strings, casing, tubing, wellhead; blowout preventer, drilling spools, kill lines, choke manifold and lines, and valves shall be suitable for H<sub>2</sub>S service.

**Well Control Equipment:**

- Flare Line (See diagram 2).
- Choke manifold (See diagram 2).
- Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing units.
- Auxiliary equipment may include, if applicable, annular preventer & rotating head.

**Communication Equipment:**

- Proper communication equipment such as cell phones or 2 – way radios should be available for communication between the company man's trailer, rig floor and tool pusher's trailer.

**Well Testing:**

- There will be no drill stem testing.

**Evacuation Plan:**

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

**Designated Areas:*****Parking and Visitor area:***

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- A smoking area will be designated at a pre-determined safe distance from the wellhead and any other possible flammable areas.

***Safe Briefing Areas:***

- Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.

- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

**NOTE:**

- Additional equipment will be available at Indian Fire and Safety in Hobbs, NM or at Total Safety in Hobbs, NM.



## **EVACUATION PLAN**

### **General Plan**

The direct lines of action to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foremen, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

5. After the discharge of gas has been controlled, Company approved safety personnel will determine when the area is safe for re-entry.

### **See Emergency Action Plan**

### **Contacting Authorities**

BOPCO L.P. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. (Operator Name)'s response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

## H<sub>2</sub>S CONTINGENCY PLAN EMERGENCY CONTACTS

BOPCO L.P. Midland Office

432-683-2277

### Key Personnel

Name	Title	Cell Phone Number
Stephen Martinez	Drilling Supt.	432-556-0262
Buddy Jenkins	Assistant Supt	432-238-3295
Bill Dannels	Engineer	432-638-9463
Pete Lensing	Engineer	432-557-7157
Charles Warne	Engineer	432-894-1392

### Artesia

Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

### Carlsbad

Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
US Bureau of Land Management	575-887-6544

New Mexico Emergency Response Commission (Santa Fe)	505-476-9600
24 Hour	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635
National Emergency Response Center (Washington, DC)	800-424-8802

### Other

Wild Well Control	432-550-6202 (Permian Basin)
Cudd PressureControl	432-580-3544 or 432-570-5300 (Permian Basin)
Flight For Life – 4000 24 <sup>th</sup> St. Lubbock, Texas	806-743-9911
Aerocare – R3, Box 49F, Lubbock, Texas	806-747-8923
Med Flight Air Amb – 2301 Yale Blvd SE #D3, Albuquerque, NM	505-842-4433
S B Air Med Service – 2505 Clark Carr Loop SE, Albuquerque, NM	505-842-4949
Indian Fire and Safety – 3317 NW Cnty Rd, Hobbs, NM	575-393-3093
Total Safety – 3229 Industrial Dr., Hobbs, NM	575-392-2973

## TOXIC EFFECTS OF HYDROGEN SULFIDE

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity = 1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen sulfide is almost as toxic as hydrogen cyanide and is between five and six times more toxic than carbon monoxide. Toxicity data for hydrogen sulfide and various other gases are compared in Table I. Physical effects at various Hydrogen Sulfide exposure levels are shown in Table II.

**Table I - TOXICITY OF VARIOUS GASES**

Common Name	Chemical Formula	Specific Gravity (SC=1)	Threshold Limit (1)	Hazardous Limit (2)	Lethal Concentration (3)
Hydrogen Cyanide	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
Hydrogen Sulfide	H <sub>2</sub> S	1.18	10 PPM	250 PPM/HR	600 PPM
Sulfur Dioxide	SO <sub>2</sub>	2.21	5 PPM	--	1000 PPM
Chlorine	CL <sub>2</sub>	2.45	1 PPM	4 PPM/HR	1000 PPM
Carbon Monoxide	CO	0.97	50 PPM	400 PPM/HR	1000 PPM
Carbon Dioxide	CO <sub>2</sub>	1.52	5000 PPM	5%	10%
Methane	CH <sub>4</sub>	0.55	90,000 PPM	Combustible in air	Above 5%

- 1) **Threshold Limit** – Concentration at which it is believed that all worker may be repeatedly exposed day after day without adverse effects.
- 2) **Hazardous Limit** – Concentration that will cause death with short-term exposure.
- 3) **Lethal Concentration** – Concentration that will cause death with short-term exposure.

**Table II – PHYSICAL EFFECTS OF HYDROGEN SULFIDE**

<b>Percent (%)</b>	<b>PPM</b>	<b>Concentration Grains 100 STD. FT3*</b>	<b>Physical Effects</b>
<b>0.001</b>	<b>&lt; 10</b>	<b>00.65</b>	<b>Obvious &amp; unpleasant odor.</b>
<b>0.002</b>	<b>10</b>	<b>01.30</b>	<b>Safe for 8 hours of exposure.</b>
<b>0.010</b>	<b>100</b>	<b>06.48</b>	<b>Kills smell in 3-15 minutes. May sting eyes &amp; throat.</b>
<b>0.020</b>	<b>200</b>	<b>12.96</b>	<b>Kills smell shortly; stings eyes &amp; throat.</b>
<b>0.050</b>	<b>500</b>	<b>32.96</b>	<b>Dizziness; Breathing ceases in a few minutes. Needs prompt artificial respiration.</b>
<b>0.070</b>	<b>700</b>	<b>45.36</b>	<b>Unconscious quickly; Death will result if not rescued promptly.</b>
<b>0.100</b>	<b>1000</b>	<b>64.30</b>	<b>Unconscious at once; Followed by death within minutes.</b>

- **At 15.00 PSIA and 60° F.**

## **USE OF SELF-CONTAINED BREATHING APPARATUS**

1. Anyone who uses an SCBA shall: Be approved by a physician or licensed health care practitioner; Pass a fit test; Be trained in donning and doffing, proper use, including how to ensure a proper face seal, conducting an inspection of the SCBA, and conduct proper maintenance.
2. Such items as facial hair (beard or sideburns) and eyeglasses will not allow a proper face mask seal.
3. Anyone reasonably expected to wear SCBA's shall have these items removed before entering a toxic atmosphere.
4. A special mask with a mount for prescription glasses must be obtained for anyone who must wear eyeglasses in order to see while using an SCBA.
5. SCBA's should be worn in H<sub>2</sub>S concentrations above 10 PPM.

## **RESCUE & FIRST AID FOR H<sub>2</sub>S POISONING**

**DO NOT PANIC – REMAIN CALM – THINK**

1. Hold your breath – do not inhale first.
2. Put on SCBA.
3. Remove victim(s) to fresh air as quickly as possible. Go upwind from source or at right angle to the wind. Do not go downwind.
4. Briefly apply chest pressure – using arm lift method of artificial respiration to clean victim's lungs and to avoid inhaling any toxic gas directly from victim's lungs.
5. Provide artificial respiration if needed.
6. Provide for prompt transportation to the hospital and continue giving artificial respiration if needed.
7. Inform hospital/medical facilities of the possibility of H<sub>2</sub>S gas poisoning before they treat.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration and CPR, as well as first aid for eyes and skin contact with liquid H<sub>2</sub>S.

# Proposed H2S Safety Schematic

- 1) Location of windsocks.
- 2) Location of H2S alarms
- 3) Location of briefing areas.
- 4) Terrain of surrounding area (Please refer to page 2 of survey plat package also see point 11 of multi-surface use plan)
- 5) Location of flare line(s) and pit(s) (Please refer to diagram 2: choke manifold diagram and or page six of survey plat packet)
- 6) Location of caution and/or danger signs.
- 7) Location of Breathing Equipment

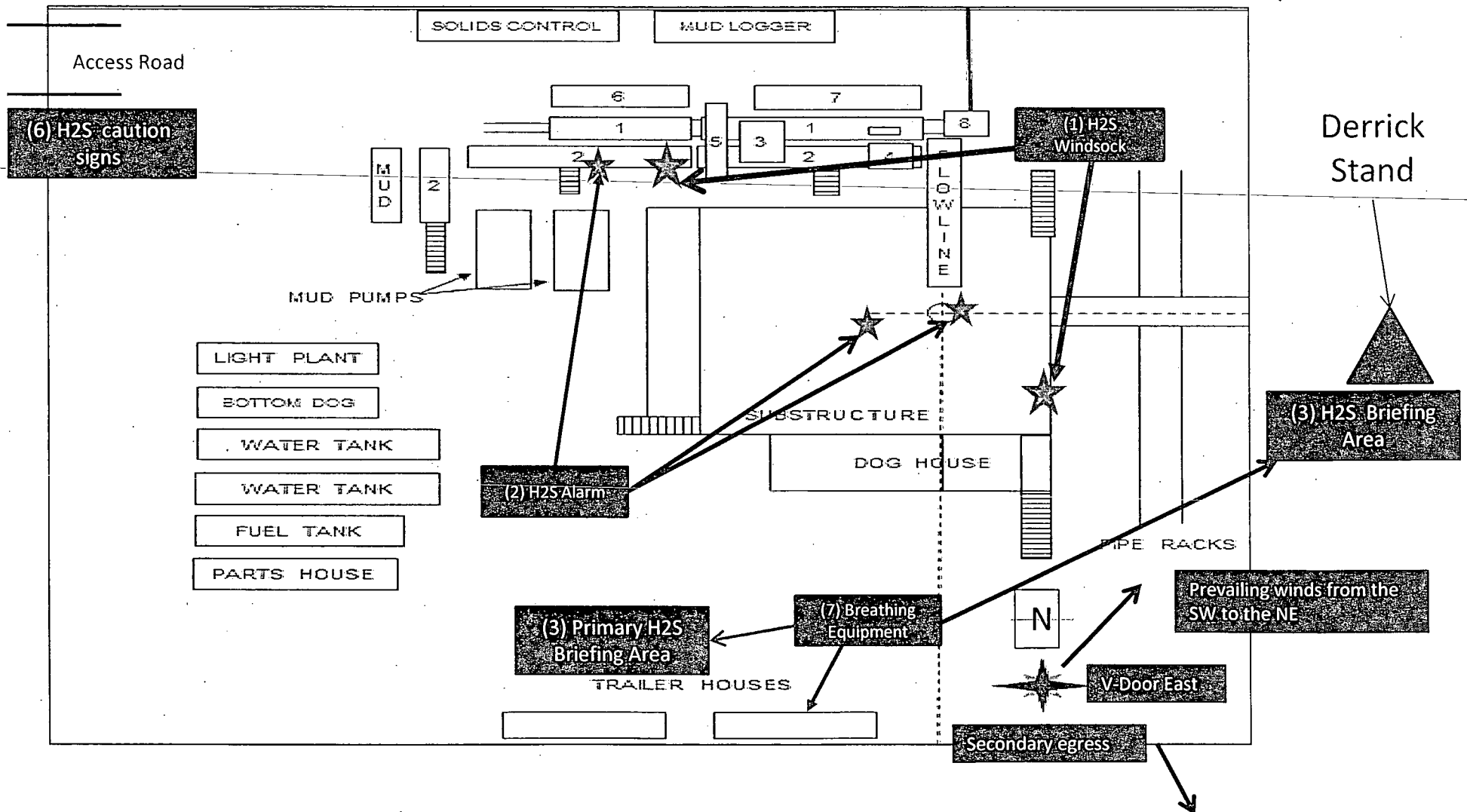
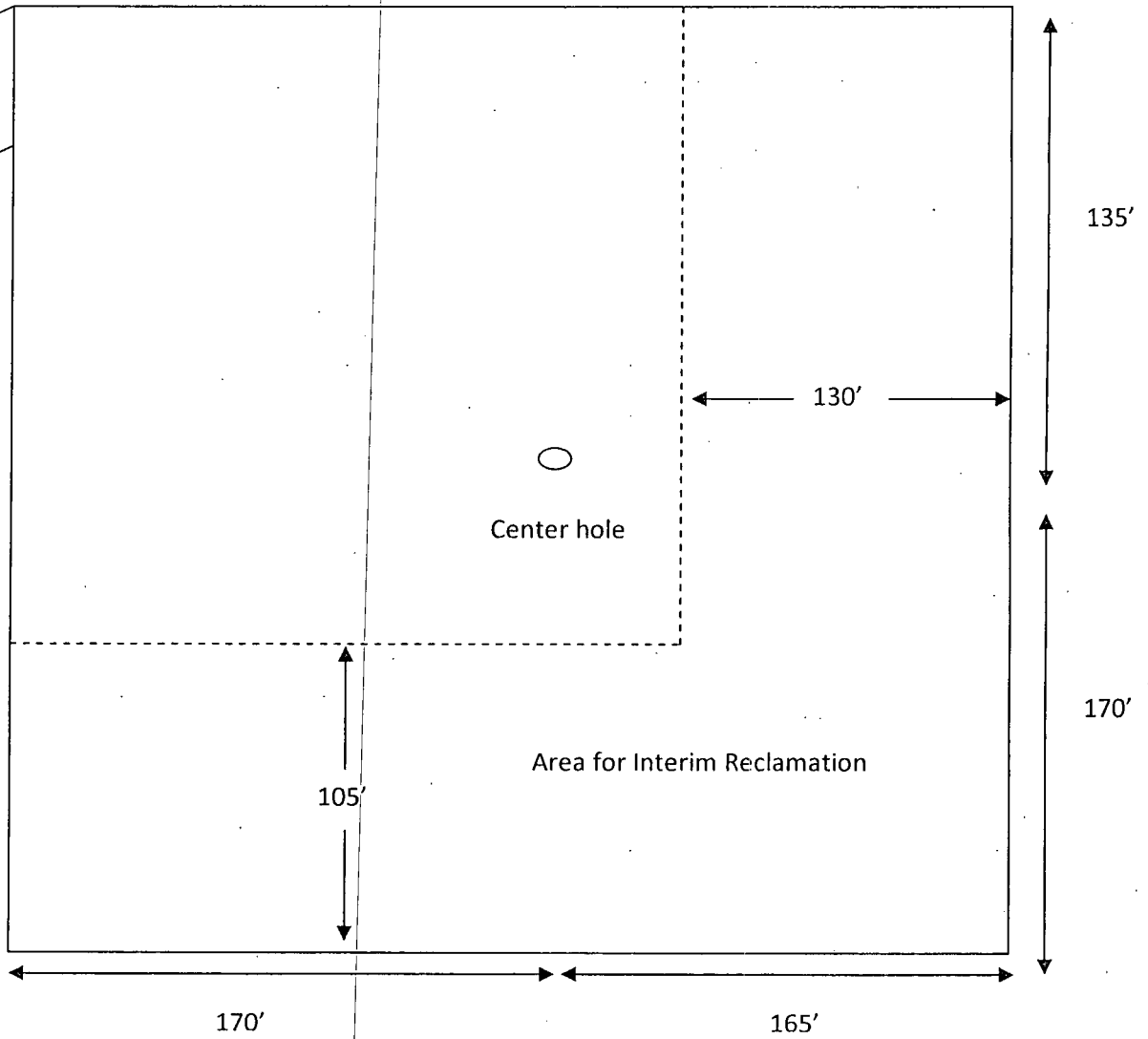


Diagram 3

BOPCO, Poker Lake Unit 331H

Interim Reclamation Well Pad Layout

North  
↑

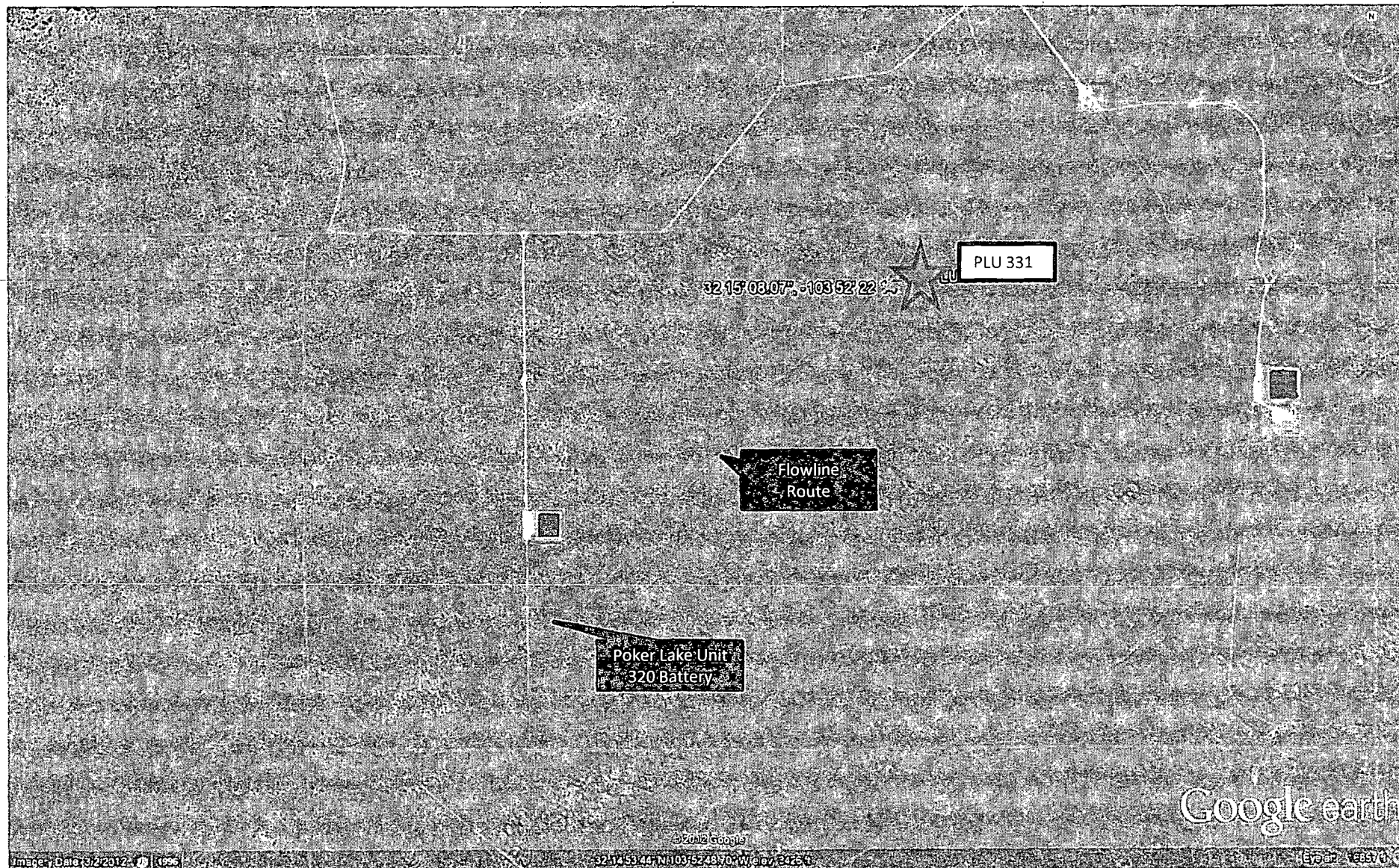


## Location On-Site Notes

Location on-site conducted by Cecil Watkins-BOPCO L.P., Randy Rust-BLM, and Robert Gomez-Basin Survey on February 23, 2012. The Poker Lake Unit 331H was moved to a new surface footage call located at 620' FNL & 1320' FWL of Sec 3-T24S-R30E to avoid sand dune ridge. Access road off rancher's water ROW to NE corner of proposed road. V-Door will face the east. Excess dirt will be stockpiled to the east of the location



# Flowline Route Diagram 4



## PECOS DISTRICT CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>BOPCO, L. P.</b>
<b>LEASE NO.:</b>	<b>NMLC-068545</b>
<b>WELL NAME &amp; NO.:</b>	<b>POKER LAKE UNIT 331H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>0620' FNL &amp; 1320' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>0120' FNL &amp; 1200' FWL Sec. 11, T. 24S., R 30 E.,</b>
<b>LOCATION:</b>	<b>Section 03, T. 24S., R 30 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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- ☐ **Production (Post Drilling)**
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- ☐ **Interim Reclamation**
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