

HOBSOCD

FEB 28 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Hobbs

FORM APPROVED
OMB NO. 1004-0137
Expires October 31, 2014

14-490

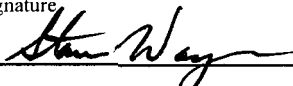
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM19858
1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator EOG Resources, Inc.		7. Unit or CA Agreement Name and No.
3a. Address P.O. Box 2267 Midland, TX 79702		8. Lease Name and Well No. Haw 35 Fed 5H (314178)
3b. Phone No. (include area code) 432-686-3689		9. API Well No. 30-025-42408
4. Location of Well (Report location clearly and in accordance with any State requirements)* At surface 500' FNL & 2390' FEL, NWNE (B), Sec 35 24S 33E At proposed prod. zone 230' FNL & 2389' FWL, NENW (C), Sec 26 24S 33E		10. Field and Pool, or Exploratory Red Hills; Upper BS Shale (197900)
14. Distance in miles and direction from nearest town or post office* Approximately +/- 21 miles WNW from Jal NM		11. Sec., T., R., M., or Blk. and Survey or Area Sec 35, T24S, R33E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 500' OL, 50' LL	16. No. of Acres in lease 1440	17. Spacing Unit dedicated to this well 160 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30' to 6H	19. Proposed Depth 14954 M - 9525 V	20. BLM/BIA Bond No. on file NM 2308
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3517' GL	22. Approximate date work will start* 8/1/2014	23. Estimated duration 20 days

24. Attachments

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

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM |

25. Signature 	Name (Printed/Typed) Stan Wagner	Date 1/29/14
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) Steve Caffey	Date JAN 26 2015
Title FIELD MANAGER		
Office CARLSBAD FIELD 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.

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

KZ
02/02/15

Approval Subject to General Requirements
& Special Stipulations Attached

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

FEB 03 2015

EOG RESOURCES, INC.
HAWK 35 FED NO. 5H

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	1,210'
Top of Salt	1,460'
Base of Salt	4,962'
Base Anhydrite	5,150'
Lamar	5,223'
Bell Canyon	5,253'
Cherry Canyon	6,350'
Brushy Canyon	7,760'
Bone Spring Lime	9,260'
TD	9,480'

3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Upper Permian Sands	0- 400'	Fresh Water
Cherry Canyon	6,350'	Oil
Brushy Canyon	7,760'	Oil
Bone Spring Lime	9,260'	Oil

No other Formations are expected to give up oil, gas or fresh water in measurable quantities.
 Surface fresh water sands will be protected by setting 13.375" casing at 1,300' and circulating cement back to surface.

4. CASING PROGRAM - NEW

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF _{min} Collapse	DF _{min} Burst	DF _{min} Tension
17.5"	0 – 1,300'	13.375"	54.5#	J55	STC	1.125	1.25	1.60
12.25"	0-4,000'	9.625"	40#	J55	LTC	1.125	1.25	1.60
12.25"	4,000' – 5,100'	9.625"	40#	HCK55	LTC	1.125	1.25	1.60
8.75"	0'-14,954'	5.500"	17#	P110 or HCP110	LTC	1.125	1.25	1.60

EOG RESOURCES, INC.
HAWK 35 FED NO. 5H

Cementing Program:

Depth	No. Sacks	Wt. lb/gal	Yld Ft ³ /ft	Mix Water Gal/sk	Slurry Description
13-3/8" 1,300'	600	13.5	1.73	9.13	Lead: Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl ₂ + 0.25 lb/sk Cello-Flake (TOC @ surface)
	300	14.8	1.34	6.34	Tail: Class C + 0.005 pps Static Free + 2% CaCl ₂ + 0.25 pps CelloFlake + 0.005 gps FP-6L
9-5/8" 5,100'	1000	12.7	2.22	12.38	Lead: Class 'C' + 1.50% R-3 + 0.25 lb/sk Cello-Flake + 2.0% Sodium Metasilicate + 10% Salt + 0.005 lb/sk Static Free (TOC @ surface)
	200	14.8	1.32	6.33	Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
5-1/2" 14,954'	375	10.8	3.67	21.7	Lead: 60:40:0 Class 'C' + 15.00 lb/sk BA-90 + 4.00% MPA-5 + 3.00% SMS + 5.00% A-10 + 1.00% BA-10A + 0.80% ASA-301 + 2.90% R-21 + 8.00 lb/sk LCM-1 + 0.005 lb/sk Static Free (TOC @ 4600')
	400	11.8	2.38	13.25	Middle: 50:50:10 Class 'H' + 0.80% FL-52 + 0.45% ASA-301 + 0.40% SMS + 2.00% Salt + 3.00 lb/sx LCM-1 + 0.20% R-21 + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
	1450	14.2	1.28	5.75	Tail: 50:50:2 Class 'H' + 0.65% FL-52 + 0.20% CD-32 + 0.15% SMS + 2.00% Salt + 0.10% R-3 + 0.005 lb/sk Static Free

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

5. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line).

The minimum blowout preventer equipment (BOPE) shown in Exhibit #1 will consist of a double ram-type (10,000 psi WP) preventer and an annular preventer (5000-psi WP). Both units will be hydraulically operated and the ram-type will be equipped with blind rams on bottom and drill pipe rams on top. All BOPE will be tested in accordance with Onshore Oil & Gas order No. 2.

3000 psi BOPE is adequate for this application. Due to the 3000 psi BOPE requirement no FIT tests are planned.

EOG RESOURCES, INC.
HAWK 35 FED NO. 5H

Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 2000/ 250 psig and the annular preventer to 2000/ 250 psig. The surface casing will be tested to 1500 psi for 30 minutes.

Before drilling out of the intermediate casing, the ram-type BOP and accessory equipment will be tested to 3000/ 250 psig and the annular preventer to 3000/ 250 psig. The intermediate casing will be tested to 2000 psi for 30 minutes.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe.

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM:

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal.

The applicable depths and properties of the drilling fluid systems are as follows.

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0 – 1,300'	Fresh Water Gel	8.6-8.8	28-34	N/c
1,300' – 5,100'	Saturated Brine	10.0-10.2	28-34	N/c
5,100' – 9,002'	Fresh Water	8.4-8.6	28-34	N/c
9,002' – 14,954'	Cut Brine Water	9.0-9.5	28-34	N/c
Lateral				

An electronic pit volume totalizer (PVT) will be utilized on the circulating system, to monitor pit volume, flow rate, pump pressure and stroke rate.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times.

7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:

- (A) A kelly cock will be kept in the drill string at all times.
- (B) A full opening drill pipe-stabbing valve (inside BOP) with proper drill pipe connections will be on the rig floor at all times.
- (C) H₂S monitoring and detection equipment will be utilized from surface casing point to TD.

EOG RESOURCES, INC.
HAWK 35 FED NO. 5H

8. LOGGING, TESTING AND CORING PROGRAM:

*See
COA*

Open-hole logs are not planned for this well.

GR-CCL Will be run in cased hole during completions phase of operations.

**9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND
POTENTIAL HAZARDS:**

The estimated bottom-hole temperature (BHT) at TD is 155 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 4124 psig. No hydrogen sulfide or other hazardous gases or fluids have been encountered, reported or are known to exist at this depth in this area. No major loss circulation zones have been reported in offsetting wells.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

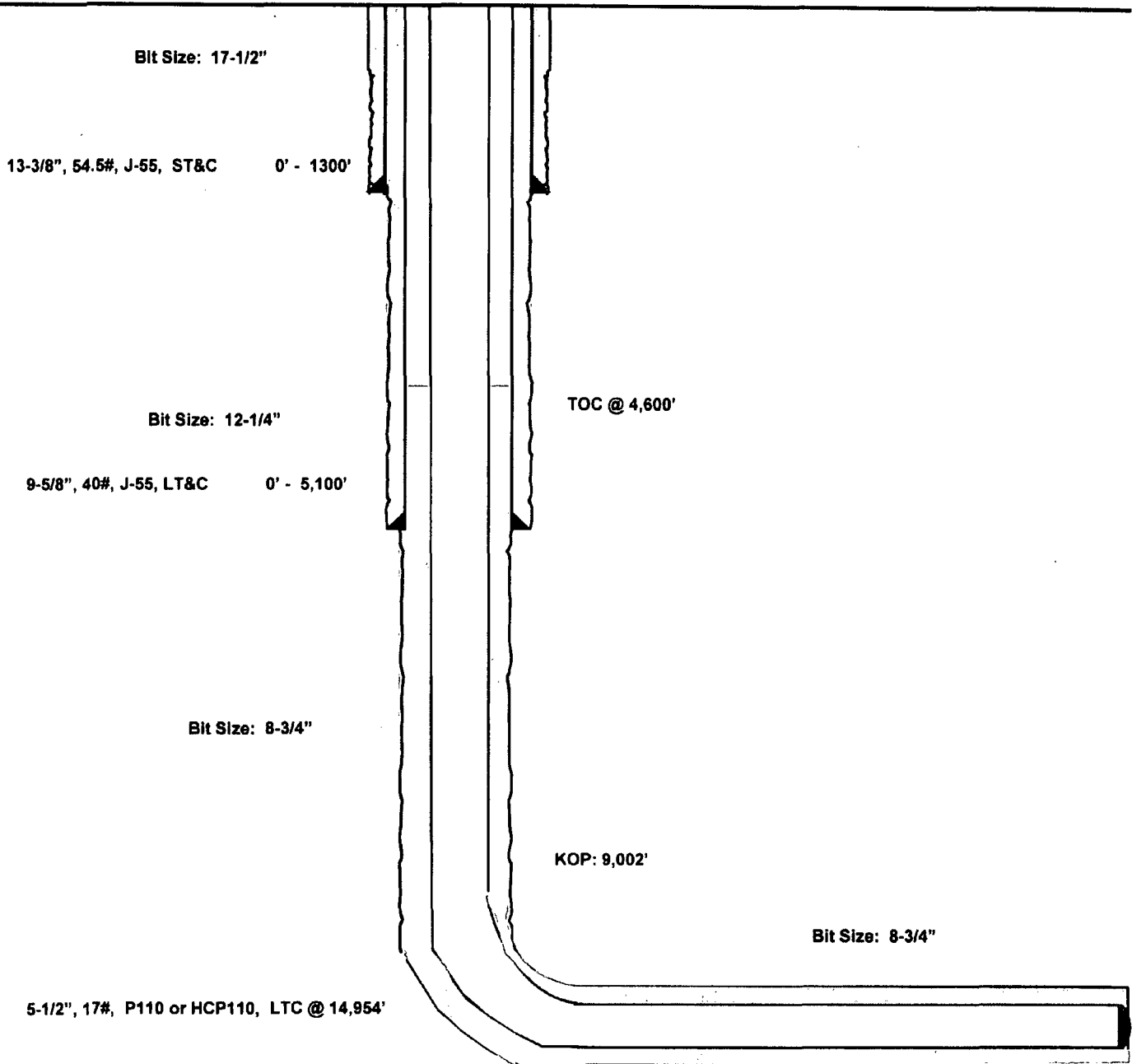
The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

Hawk 35 Fed #5H
Lea County, New Mexico
Proposed Wellbore

500' FNL
2390' FEL
Section 35
T-24-S, R-33-E

API: 30-025-*****

KB: 3,547'
GL: 3,517'



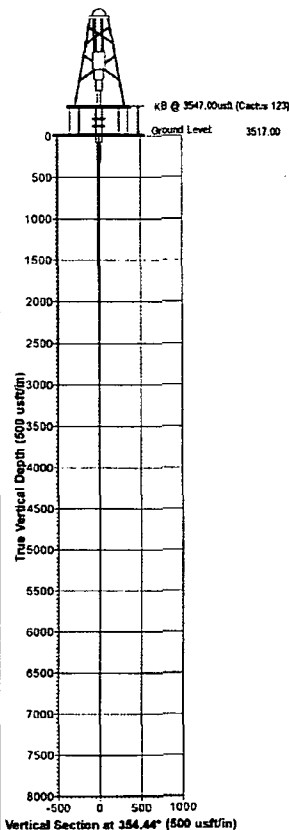
Lateral:
14,954' MD, 9,525' TVD
Upper Most Perf:
50' FSL & 2392' FWL
Lower Most Perf:
330' FNL & 2389' FWL
BH Location: 230' FNL & 2389' FWL
Section 26
T-24-S, R-33-E



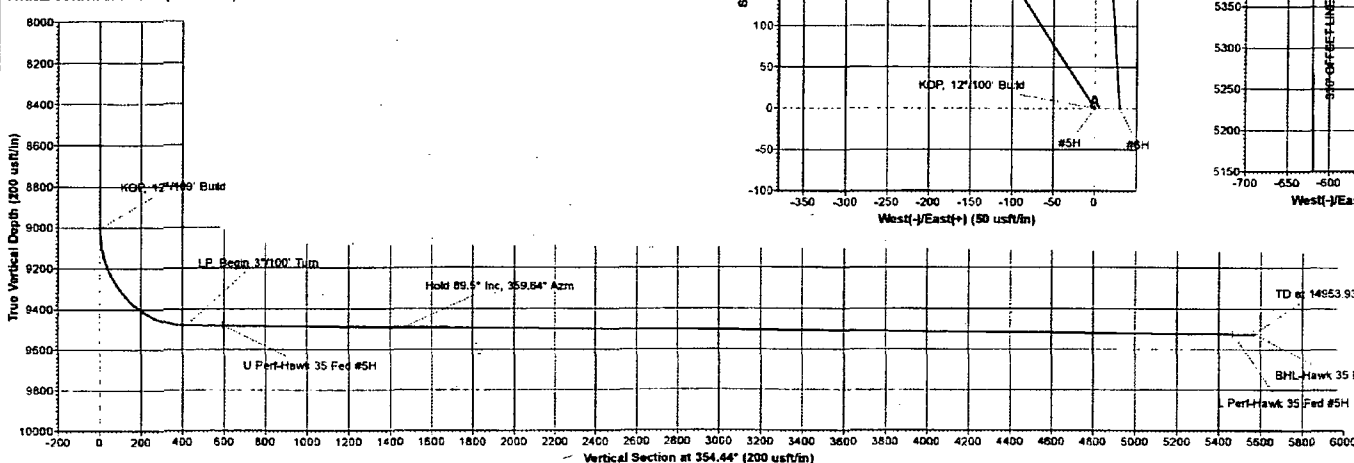
Project: Lea County, NM (NAD27 NME)
 Site: Hawk 35 Fed
 Well: #5H
 Wellbore: WB1/Job #1410056
 Design: Plan #1 01-07-14
 Rig: Cactus 123



Map System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone Name: New Mexico East 3001
 Local Origin: Well #5H, Grid North
 Latitude: 32° 10' 47.43287 N
 Longitude: 103° 32' 30.58931 W
 Grid East: 744885.00
 Grid North: 430048.00
 Scale Factor: 1.000
 Geomagnetic Model: IGRF2010_14
 Sample Date: 07-Jan-14
 Magnetic Declination: 7.25°
 Dip Angle from Horizontal: 60.09°
 Magnetic Field Strength: 48335



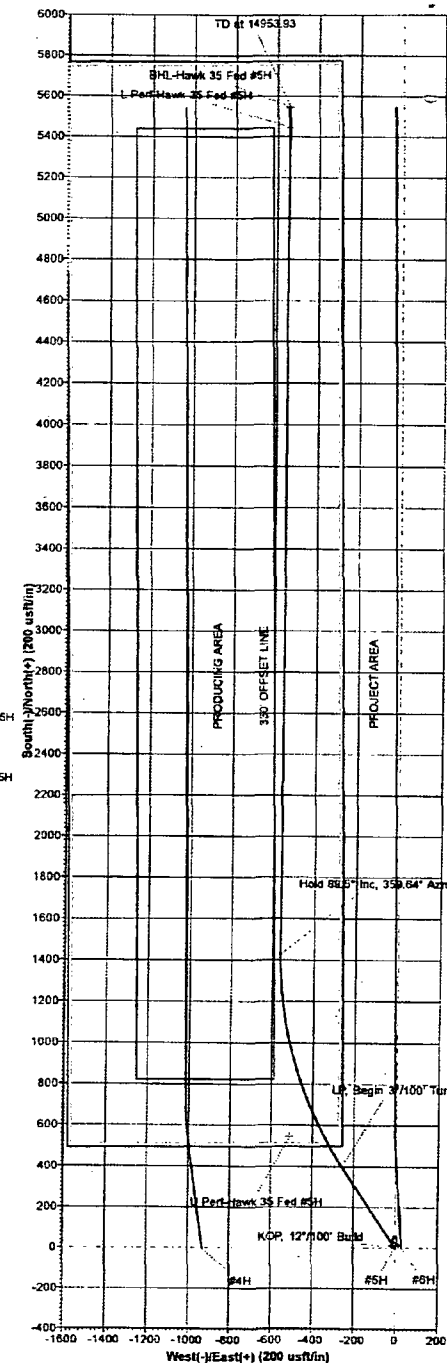
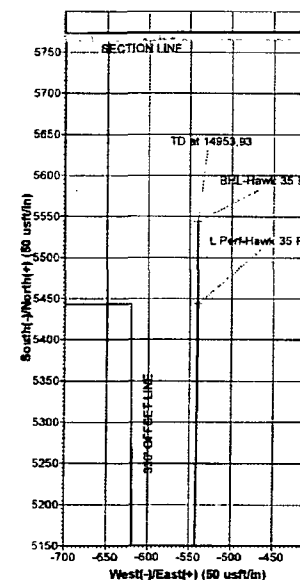
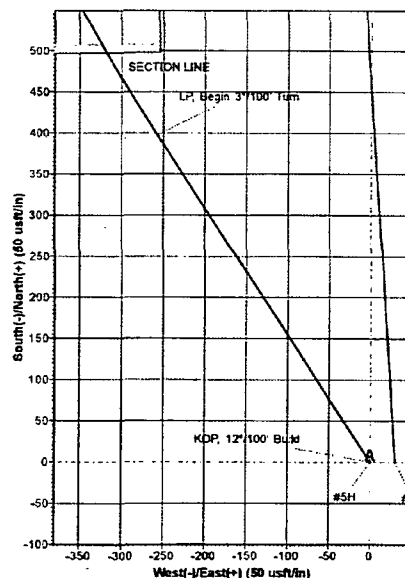
Vertical Section at 354.44° (500 usf/in)



Vertical Section at 354.44° (200 usf/in)

WELL DETAILS										
				Ground Level	3517.00					
				Easting	744885.00	Latitude	32° 10' 47.43287 N	Longitude	103° 32' 30.58931 W	
				North	430048.00					
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	9002.50	0.00	0.00	9002.50	0.00	0.00	0.00	0.00	0.00	KOP, 12°/100' Build
3	9743.42	89.50	327.06	9420.50	397.26	-257.39	12.00	327.06	420.34	LP, Begin 3°/100' Turn
4	10857.73	89.50	0.34	9489.91	1447.03	-584.38	3.00	90.14	1894.83	
5	14954.92	89.50	0.34	9525.33	5544.00	-540.00	0.00	5570.24	BHL-Hawk 35 Fed #5H	TD at 14953.93
DESIGN TARGET DETAILS										
Name	TVD	+N/S	+E/W	North	Easting	Latitude	Longitude	Shape		
U Perf-Hawk 35 Fed #5H	8485.00	545.00	-509.00	430504.00	744376.00	32° 10' 52.87284 N	103° 32' 36.48475 W	Point		
										plan misses target center by 147.05usf at 9895.25usf MD (9432.19 TVD, 612.69 N, -377.66 E)
L Perf-Hawk 35 Fed #5H	9524.47	5444.00	-540.00	435482.00	744345.00	32° 11' 41.34323 N	103° 32' 36.40680 W	Point		
										plan misses target center by 0.59usf at 14854.82usf MD (9524.47 TVD, 5444.00 N, -540.56 E)
BHL-Hawk 35 Fed #5H	9525.33	5544.00	-540.00	435582.00	744345.00	32° 11' 42.33273 N	103° 32' 36.38835 W	Point		
										plan hits target center

LEGEND	
—	#4H, WB1/Job #1410055, Plan #1 01-07-14 VO
—	#5H, WB1/Job #1410057, Plan #1 01-07-14 VO
—	Plan #1 01-07-14





EOG Resources

Lea County, NM (NAD27 NME)

Hawk 35 Fed

#5H

WB1/Job #1410056

Plan: Plan #1 01-07-14

Standard Planning Report

07 January, 2014





Phoenix Technology Services Planning Report



Database: GCR DB
Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Hawk 35 Fed
Well: #5H
Wellbore: WB1/Job #1410058
Design: Plan #1 01-07-14

Local Co-ordinate Reference: Well #5H
TVD Reference: KB @ 3547.00usft (Cactus 123)
MD Reference: KB @ 3547.00usft (Cactus 123)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project Lea County, NM (NAD27 NME)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Hawk 35 Fed

Site Position: Northing: 435,000.00 usft Latitude: 32° 11' 36.43427 N
From: Map Easting: 744,900.00 usft Longitude: 103° 32' 29.99070 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.42 °

Well #5H

Well Position: +N/-S -4,952.00 usft Northing: 430,048.00 usft Latitude: 32° 10' 47.43287 N
+E/-W -15.00 usft Easting: 744,885.00 usft Longitude: 103° 32' 30.58931 W
Position Uncertainty: 0.00 usft Wellhead Elevation: Ground Level: 3,517.00 usft

Wellbore WB1/Job #1410058

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	01/07/14	7.25	60.09	48,336

Design Plan #1 01-07-14

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	354.44

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,002.50	0.00	0.00	9,002.50	0.00	0.00	0.00	0.00	0.00	0.00	
9,748.42	89.50	327.06	9,480.00	397.26	-257.39	12.00	12.00	0.00	327.06	
10,857.73	89.50	0.34	9,489.92	1,447.03	-564.36	3.00	0.00	3.00	90.14	
14,954.92	89.50	0.34	9,525.33	5,544.00	-540.00	0.00	0.00	0.00	0.00	BHL-Hawk 35 Fed #5



Phoenix Technology Services Planning Report



Database: GCR DB
Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Hawk 35 Fed
Well: #5H
Wellbore: WB1/Job #1410056
Design: Plan #1 01-07-14

Local Co-ordinate Reference: Well #5H
TVD Reference: KB @ 3547.00usft (Cactus 123)
MD Reference: KB @ 3547.00usft (Cactus 123)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9,002.50	0.00	0.00	9,002.50	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 12°/100' Build									
9,100.00	11.70	327.06	9,099.32	8.32	-5.39	8.81	12.00	12.00	0.00
9,200.00	23.70	327.06	9,194.42	33.79	-21.89	35.75	12.00	12.00	0.00
9,300.00	35.70	327.06	9,281.12	75.29	-48.78	79.67	12.00	12.00	0.00
9,400.00	47.69	327.06	9,355.66	131.01	-84.89	138.83	12.00	12.00	0.00
9,500.00	59.69	327.06	9,414.76	198.52	-128.63	210.06	12.00	12.00	0.00
9,600.00	71.69	327.06	9,455.85	274.87	-178.09	290.84	12.00	12.00	0.00
9,700.00	83.69	327.06	9,477.13	356.71	-231.12	377.44	12.00	12.00	0.00
9,748.42	89.50	327.06	9,480.00	397.26	-257.39	420.34	12.00	12.00	0.00
LP, Begin 3°/100' Turn									
9,800.00	89.50	328.61	9,480.45	440.92	-284.85	466.46	3.00	-0.01	3.00
9,900.00	89.49	331.61	9,481.34	527.60	-334.68	557.56	3.00	-0.01	3.00
9,995.25	89.49	334.47	9,482.19	612.49	-377.86	646.23	3.00	0.00	3.00
U Perf-Hawk 35 Fed #5H									
10,000.00	89.49	334.61	9,482.23	616.77	-379.90	650.70	3.00	0.00	3.00
10,100.00	89.48	337.61	9,483.13	708.19	-420.40	745.61	3.00	0.00	3.00
10,200.00	89.48	340.61	9,484.03	801.60	-456.05	842.04	3.00	0.00	3.00
10,300.00	89.48	343.61	9,484.94	896.75	-486.77	939.72	3.00	0.00	3.00
10,400.00	89.48	346.61	9,485.85	993.38	-512.47	1,038.38	3.00	0.00	3.00
10,500.00	89.48	349.61	9,486.75	1,091.21	-533.07	1,137.75	3.00	0.00	3.00
10,600.00	89.49	352.61	9,487.65	1,190.00	-548.52	1,237.57	3.00	0.00	3.00
10,700.00	89.49	355.61	9,488.54	1,289.45	-558.79	1,337.55	3.00	0.01	3.00
10,800.00	89.50	358.61	9,489.41	1,389.31	-563.83	1,437.43	3.00	0.01	3.00
10,834.49	89.50	359.64	9,489.71	1,423.80	-564.36	1,471.80	3.00	0.01	3.00
Hold 89.5° Inc, 359.64° Azm									
10,857.73	89.50	0.34	9,489.92	1,447.03	-564.36	1,494.93	3.00	0.01	3.00
10,900.00	89.50	0.34	9,490.28	1,489.30	-564.11	1,536.97	0.00	0.00	0.00
11,000.00	89.50	0.34	9,491.14	1,589.30	-563.51	1,636.44	0.00	0.00	0.00
11,100.00	89.50	0.34	9,492.01	1,689.29	-562.92	1,735.91	0.00	0.00	0.00
11,200.00	89.50	0.34	9,492.87	1,789.29	-562.32	1,835.37	0.00	0.00	0.00
11,300.00	89.50	0.34	9,493.74	1,889.28	-561.73	1,934.84	0.00	0.00	0.00
11,400.00	89.50	0.34	9,494.60	1,989.28	-561.14	2,034.30	0.00	0.00	0.00
11,500.00	89.50	0.34	9,495.47	2,089.27	-560.54	2,133.77	0.00	0.00	0.00
11,600.00	89.50	0.34	9,496.33	2,189.26	-559.95	2,233.24	0.00	0.00	0.00
11,700.00	89.50	0.34	9,497.20	2,289.26	-559.35	2,332.70	0.00	0.00	0.00
11,800.00	89.50	0.34	9,498.06	2,389.25	-558.76	2,432.17	0.00	0.00	0.00
11,900.00	89.50	0.34	9,498.92	2,489.25	-558.16	2,531.63	0.00	0.00	0.00
12,000.00	89.50	0.34	9,499.79	2,589.24	-557.57	2,631.10	0.00	0.00	0.00
12,100.00	89.50	0.34	9,500.65	2,689.24	-556.97	2,730.57	0.00	0.00	0.00
12,200.00	89.50	0.34	9,501.52	2,789.23	-556.38	2,830.03	0.00	0.00	0.00
12,300.00	89.50	0.34	9,502.38	2,889.23	-555.78	2,929.50	0.00	0.00	0.00
12,400.00	89.50	0.34	9,503.25	2,989.22	-555.19	3,028.96	0.00	0.00	0.00
12,500.00	89.50	0.34	9,504.11	3,089.21	-554.60	3,128.43	0.00	0.00	0.00
12,600.00	89.50	0.34	9,504.97	3,189.21	-554.00	3,227.89	0.00	0.00	0.00
12,700.00	89.50	0.34	9,505.84	3,289.20	-553.41	3,327.36	0.00	0.00	0.00
12,800.00	89.50	0.34	9,506.70	3,389.20	-552.81	3,426.83	0.00	0.00	0.00
12,900.00	89.50	0.34	9,507.57	3,489.19	-552.22	3,526.29	0.00	0.00	0.00
13,000.00	89.50	0.34	9,508.43	3,589.19	-551.62	3,625.76	0.00	0.00	0.00
13,100.00	89.50	0.34	9,509.30	3,689.18	-551.03	3,725.22	0.00	0.00	0.00
13,200.00	89.50	0.34	9,510.16	3,789.18	-550.43	3,824.69	0.00	0.00	0.00
13,300.00	89.50	0.34	9,511.03	3,889.17	-549.84	3,924.16	0.00	0.00	0.00
13,400.00	89.50	0.34	9,511.89	3,989.17	-549.24	4,023.62	0.00	0.00	0.00



Phoenix Technology Services Planning Report



Database: GCR DB
Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Hawk 35 Fed
Well: #5H
Wellbore: WB1/Job #1410056
Design: Plan #1 01-07-14

Local Co-ordinate Reference: Well #5H
TVD Reference: KB @ 3547.00usft (Cactus 123)
MD Reference: KB @ 3547.00usft (Cactus 123)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,500.00	89.50	0.34	9,512.75	4,089.16	-548.65	4,123.09	0.00	0.00	0.00
13,600.00	89.50	0.34	9,513.62	4,189.15	-548.08	4,222.55	0.00	0.00	0.00
13,700.00	89.50	0.34	9,514.48	4,289.15	-547.48	4,322.02	0.00	0.00	0.00
13,800.00	89.50	0.34	9,515.35	4,389.14	-546.87	4,421.49	0.00	0.00	0.00
13,900.00	89.50	0.34	9,516.21	4,489.14	-546.27	4,520.95	0.00	0.00	0.00
14,000.00	89.50	0.34	9,517.08	4,589.13	-545.68	4,620.42	0.00	0.00	0.00
14,100.00	89.50	0.34	9,517.94	4,689.13	-545.08	4,719.88	0.00	0.00	0.00
14,200.00	89.50	0.34	9,518.80	4,789.12	-544.49	4,819.35	0.00	0.00	0.00
14,300.00	89.50	0.34	9,519.67	4,889.12	-543.89	4,918.81	0.00	0.00	0.00
14,400.00	89.50	0.34	9,520.53	4,989.11	-543.30	5,018.28	0.00	0.00	0.00
14,500.00	89.50	0.34	9,521.40	5,089.10	-542.70	5,117.75	0.00	0.00	0.00
14,600.00	89.50	0.34	9,522.26	5,189.10	-542.11	5,217.21	0.00	0.00	0.00
14,700.00	89.50	0.34	9,523.13	5,289.09	-541.52	5,316.68	0.00	0.00	0.00
14,800.00	89.50	0.34	9,523.99	5,389.09	-540.92	5,416.14	0.00	0.00	0.00
14,854.92	89.50	0.34	9,524.47	5,444.00	-540.59	5,470.77	0.00	0.00	0.00
L Perf-Hawk 35 Fed #5H									
14,900.00	89.50	0.34	9,524.86	5,489.08	-540.33	5,515.61	0.00	0.00	0.00
14,953.93	89.50	0.34	9,525.32	5,543.01	-540.01	5,589.25	0.00	0.00	0.00
TD at 14953.93									
14,954.92	89.50	0.34	9,525.33	5,544.00	-540.00	5,570.24	0.00	0.00	0.00
BHL-Hawk 35 Fed #5H									

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
U Perf-Hawk 35 Fed #5H - plan misses target center by 147.05usft at 9995.25usft MD (9482.19 TVD, 612.49 N, -377.86 E) - Point	0.00	0.00	9,480.00	546.00	-509.00	430,594.00	744,376.00	32° 10' 52.87284 N	103° 32' 36.46476 W
L Perf-Hawk 35 Fed #5H - plan misses target center by 0.59usft at 14854.92usft MD (9524.47 TVD, 5444.00 N, -540.59 E) - Point	0.00	0.00	9,524.47	5,444.00	-540.00	435,492.00	744,345.00	32° 11' 41.34323 N	103° 32' 38.40690 W
BHL-Hawk 35 Fed #5H - plan hits target center - Point	0.00	0.00	9,525.33	5,544.00	-540.00	435,592.00	744,345.00	32° 11' 42.33278 N	103° 32' 38.39835 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,002.50	9,002.50	0.00	0.00	KOP, 12°/100' Build
9,748.42	9,480.00	397.26	-257.39	LP, Begin 3°/100' Turn
10,834.49	9,489.71	1,423.80	-564.36	Hold 89.5° Inc, 359.64° Azm
14,953.93	9,525.32	5,543.01	-540.01	TD at 14953.93

Exhibit 1

EOG Resources

10M BOPE

Rig Floor

1. 13 5/8" Rotating Head
2. Hydril 13 5/8" 5,000 PSI WP GK Annular Preventor
3. 13 5/8" Cameron Type "U" 10,000 PSI WP Ram Preventors
4. 2 1/16" - 10,000 PSI WP Check Valve
5. 10,000 PSI WP - 1502 Union to kill line
6. 2 1/16" - 10,000 PSI WP Manual Valves
7. 13 5/8" 3,000 PSI WP x 13 5/8" 5,000 PSI WP Spacer Spool
8. 4 1/16" 10,000 PSI WP HCR Valve
9. 4 1/16" 10,000 PSI WP Manual Valve
10. 8" OD x 4" ID 10,000 PSI WP Flex Choke Line
11. DSA - 13 5/8" 10,000 PSI WP x 13 5/8" 5,000 PSI WP
12. Mud Cross - 13 5/8" 10,000 PSI WP
13. Blind Rams
14. Pipe Rams
15. 13 5/8" 5,000 PSI WP Spacer Spools
16. Flow Line
17. 2" Fill Line

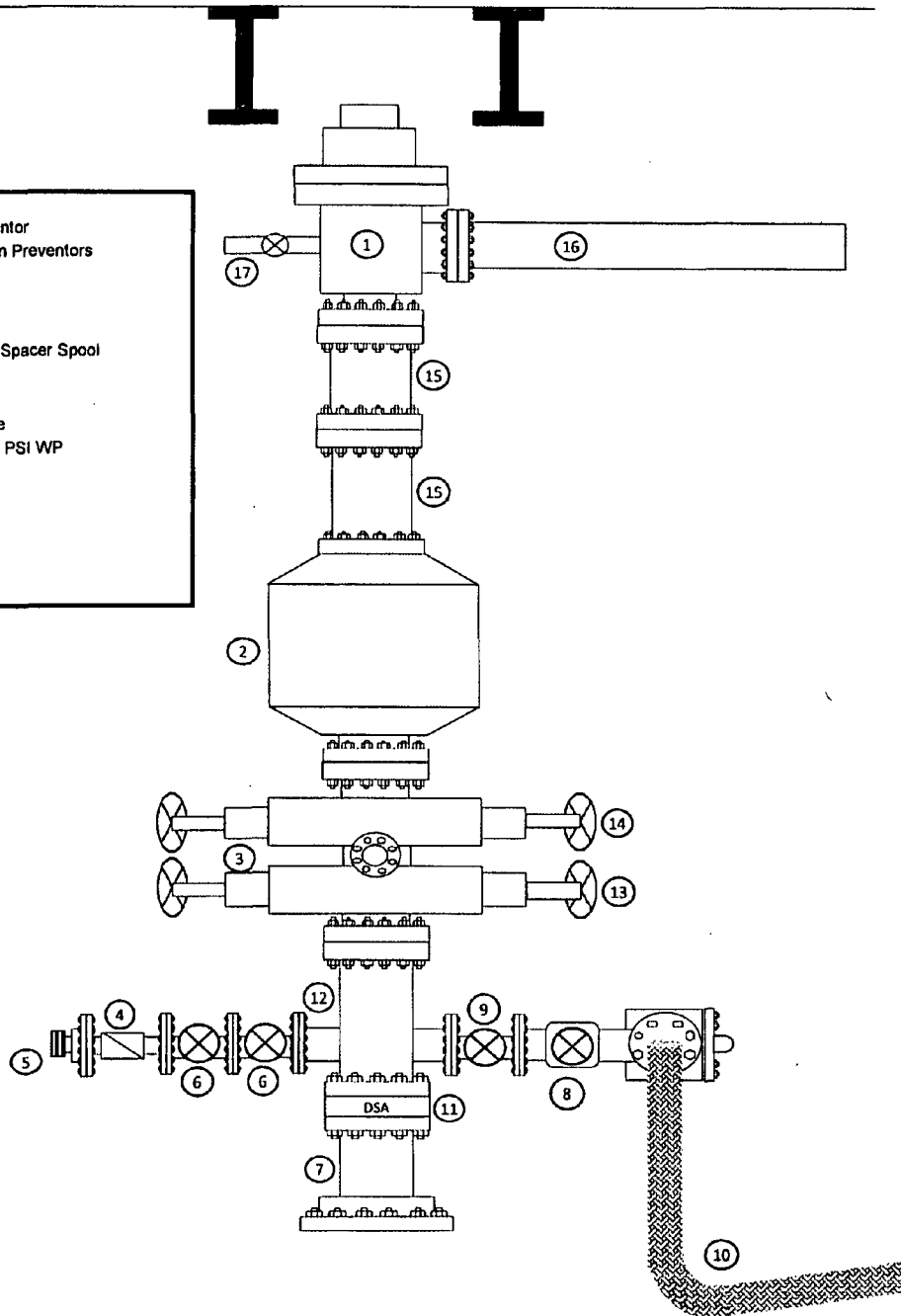
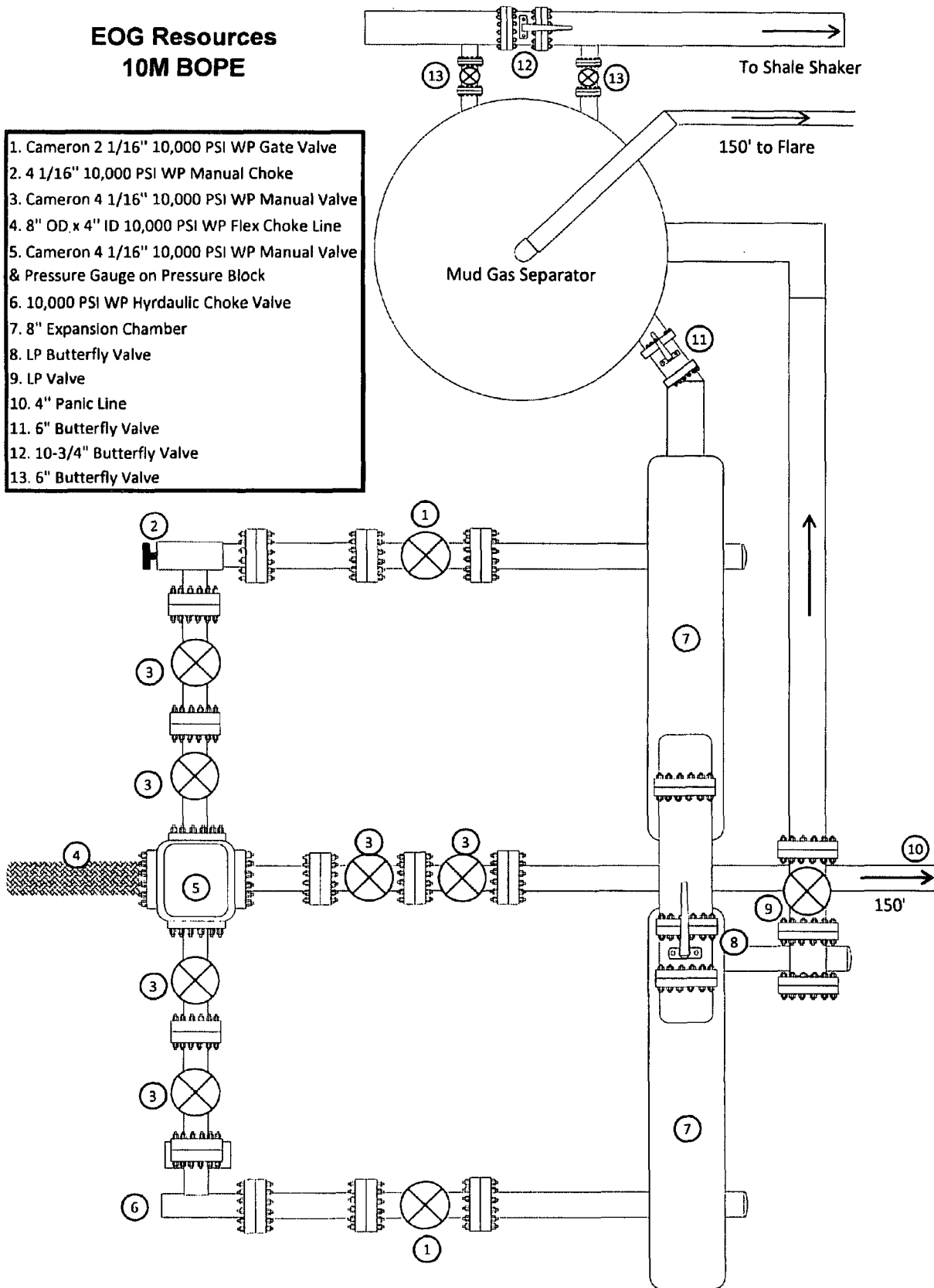


Exhibit 1a

EOG Resources 10M BOPE

1. Cameron 2 1/16" 10,000 PSI WP Gate Valve
2. 4 1/16" 10,000 PSI WP Manual Choke
3. Cameron 4 1/16" 10,000 PSI WP Manual Valve
4. 8" OD x 4" ID 10,000 PSI WP Flex Choke Line
5. Cameron 4 1/16" 10,000 PSI WP Manual Valve & Pressure Gauge on Pressure Block
6. 10,000 PSI WP Hydraulic Choke Valve
7. 8" Expansion Chamber
8. LP Butterfly Valve
9. LP Valve
10. 4" Panic Line
11. 6" Butterfly Valve
12. 10-3/4" Butterfly Valve
13. 6" Butterfly Valve



Manufacturer: Midwest Hose & Specialty

Serial Number: SN#90067

Length: 35'

Size: OD = 8" ID = 4"

Ends: Flanges Size: 4-1/16"

WP Rating: 10,000 psi Anchors required by manufacturer: No

M I D W E S T
HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT			
Customer: CACTUS		P.O. Number: RIG #123 Asset # M10761	
HOSE SPECIFICATIONS			
Type: CHOKER LINE		Length: 35'	
I.D. 4" INCHES		O.D. 8" INCHES	
WORKING PRESSURE 10,000 PSI	TEST PRESSURE 15,000 PSI	BURST PRESSURE PSI	
COUPLINGS			
Type of End Fitting 4 1/16 10K FLANGE			
Type of Coupling: SWEDGED		MANUFACTURED BY MIDWEST HOSE & SPECIALTY	
PROCEDURE			
<i>Hose assembly pressure tested with water at ambient temperature.</i>			
TIME HELD AT TEST PRESSURE 1 MIN.		ACTUAL BURST PRESSURE: 0 PSI	
COMMENTS: SN#90087 M10761 Hose is covered with stainless steel armour cover and wrapped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes			
Date: 6/6/2011	Tested By: BOBBY FINK	Approved: MENDI JACKSON	



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Graph

Customer: CACTUS

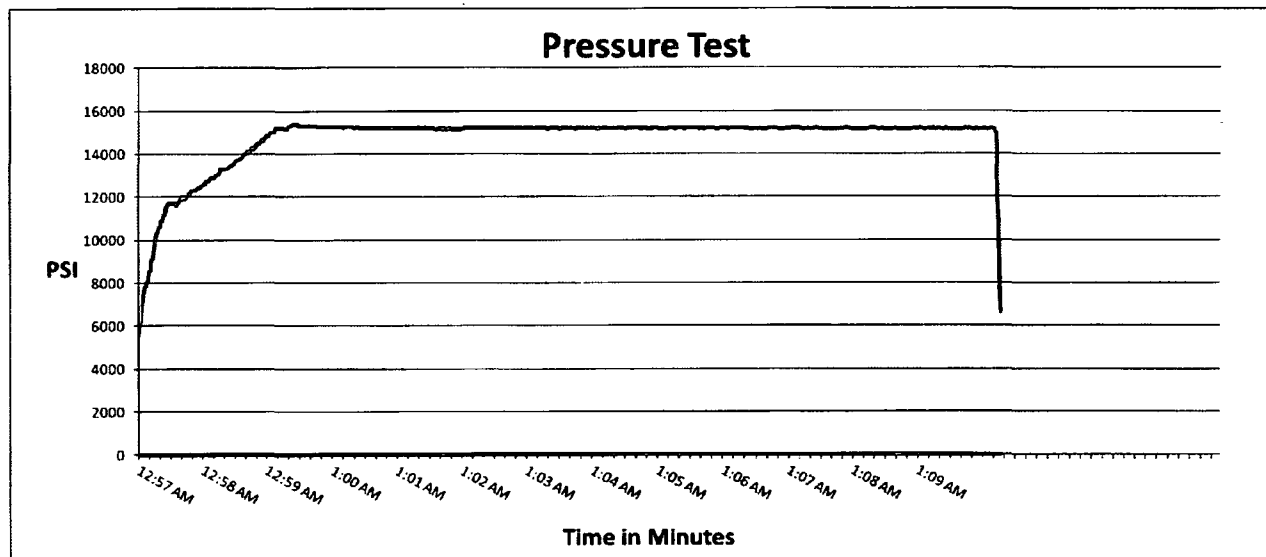
SALES ORDER# 90067

Hose Specifications

<u>Hose Type</u>	<u>Length</u>
C & K	35'
<u>I.D.</u>	<u>O.D.</u>
4"	8"
<u>Working Pressure</u>	<u>Burst Pressure</u>
10000 PSI	Standard Safety Multiplier Applies

Verification

<u>Type of Fitting</u>	<u>Coupling Method</u>
4 1/16 10K	Swage
<u>Die Size</u>	<u>Final O.D.</u>
6.62"	6.68"
<u>Hose Serial #</u>	<u>Hose Assembly Serial #</u>
	90067



Test Pressure
15000 PSI

Time Held at Test Pressure
11 1/4 Minutes

Actual Burst Pressure

Peak Pressure
15439 PSI

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

Tested By: Bobby Fink

Approved By: Mendi Jackson

Exhibit 4
EOG Resources
Hawk 35 Fed #5H

Well Site Diagram

