

15-640

OCD Hobbs

SEP 29 2015

RECEIVED

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

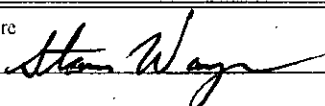
1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM02965A
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator EOG Resources, Inc (7377)		7. If Unit or CA Agreement, Name and No.
3a. Address P.O. Box 2267 Midland, TX 79702	3b. Phone No. (include area code) 432-686-3689	8. Lease Name and Well No. Thor 21 Fed Com 703H (315282)
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 170' FSL & 1640' FEL, SWSE (O), Sec 21, 26S, 33E At proposed prod. zone 230' FNL & 1675' FEL, NWNE (B), Sec 21		9. API Well No. 30-025- 42815 (98897)
14. Distance in miles and direction from nearest town or post office* Approximately +/- 23 miles Southwest from Jal, New Mexico		10. Field and Pool, or Exploratory WC-025 G-09 S263327G; Upper WC
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 170' SL, 330' PP		11. Sec., T. R. M. or Blk. and Survey or Area Section 21, T26S, R33E
16. No. of acres in lease 2174.12		12. County or Parish Lea
17. Spacing Unit dedicated to this well 160 ac.		13. State NM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 631' frm 704H		
19. Proposed Depth 17166' MD, 12420' TVD		20. BLM/BIA Bond No. on file NM 2308
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3256' GL		22. Approximate date work will start* 01/01/2016
		23. Estimated duration 25 days

UNORTHODOX
LOCATION

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 5/22/15
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Title
Regulatory Specialist

Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date SEP 24 2015
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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)

Ka
09/29/15

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

EOG RESOURCES, INC.
THOR 21 FED COM NO. 703H

HOBBS/OCD

SEP 29 2015

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

RECEIVED

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	830'
Top of Salt	1,180'
Base of Salt / Top Anhydrite	4,770'
Base Anhydrite	4,950'
Lamar	4,950'
Bell Canyon	4,980'
Cherry Canyon	5,990'
Brushy Canyon	7,750'
Bone Spring Lime	9,135'
1 st Bone Spring Sand	10,070'
2 nd Bone Spring Lime	10,500'
2 nd Bone Spring Sand	10,664'
3 rd Bone Spring Carb	11,520'
3 rd Bone Spring Sand	11,775'
Wolfcamp	12,163'
TD	12,420'

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

Upper Permian Sands	0- 400'	Fresh Water
Cherry Canyon	5,990'	Oil
Brushy Canyon	7,750'	Oil
1 st Bone Spring Sand	10,070'	Oil
2 nd Bone Spring Lime	10,500'	Oil
2 nd Bone Spring Sand	11,664'	Oil
3 rd Bone Spring Carb	11,520'	Oil
3 rd Bone Spring Sand	11,775'	Oil
Wolfcamp	12,163'	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 855' and circulating cement back to surface.

**EOG RESOURCES, INC.
THOR 21 FED COM NO. 703H**

See COA

4. CASING PROGRAM - NEW

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF _{min} Collapse	DF _{min} Burst	DF _{min} Tension
17.5"	0 - 855' 900'	13.375"	54.5#	J55	STC	1.125	1.25	1.60
12.25"	0-4,000' 4950	9.625"	40#	J55	LTC	1.125	1.25	1.60
12.25"	4,000' - 5,000'	9.625"	40#	HCK55	LTC	1.125	1.25	1.60
8.75"	0'-17,166'	5.5"	17#	HCP-110	BTC	1.125	1.25	1.60

Cementing Program:

Depth	No. Sacks	Wt. ppg	Yld Ft ³ /ft	Mix Water Gal/sk	Slurry Description
13-3/8" 855	400	13.5	1.73	9.13	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	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
9-5/8" 5,000' 4950	1000	12.7	2.22	2.38	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" 17,166'	775	9.0	2.79	10.12	Lead: LiteCRETE + 0.10% D-065 + 0.20% D-046 + 0.40% D-167 + 0.20% D-198 + 0.04% D-208 + 2.0% D-174 (TOC @ 4,500' 4450)
	2100	14.4	1.28	5.69	Tail: Class H + 47.01 pps D-909 + 37.01 pps + 5.0% D-020 + 0.30% D-013 + 0.20% D-046 + 0.10% D-065 + 0.50% D-167 + 2.0% D-174

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:

See COA

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 single ram, mud cross and 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.

EOG RESOURCES, INC.
THOR 21 FED COM NO. 703H

Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 5000/ 250 psig and the annular preventer to 5000/ 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 5000/ 250 psig and the annular preventer to 5000/ 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 - 855' 900'	Fresh - Gel	8.6-8.8	28-34	N/c
855' - 5,000' 4950'	Oil Base	8.7-9.4	58-68	N/c - 6
5,000' - 11,839'	Oil Base	8.7-9.4	58-68	N/c - 6
11,839' - 17,166' Lateral	Oil Base	10.0-10.5	58-68	N/c - 6

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.
THOR 21 FED COM NO. 703H**

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:**

*See
COA*

The estimated bottom-hole temperature (BHT) at TD is 180 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 5377 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.

*See
COA*

(A) EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and cement on the subject well. If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

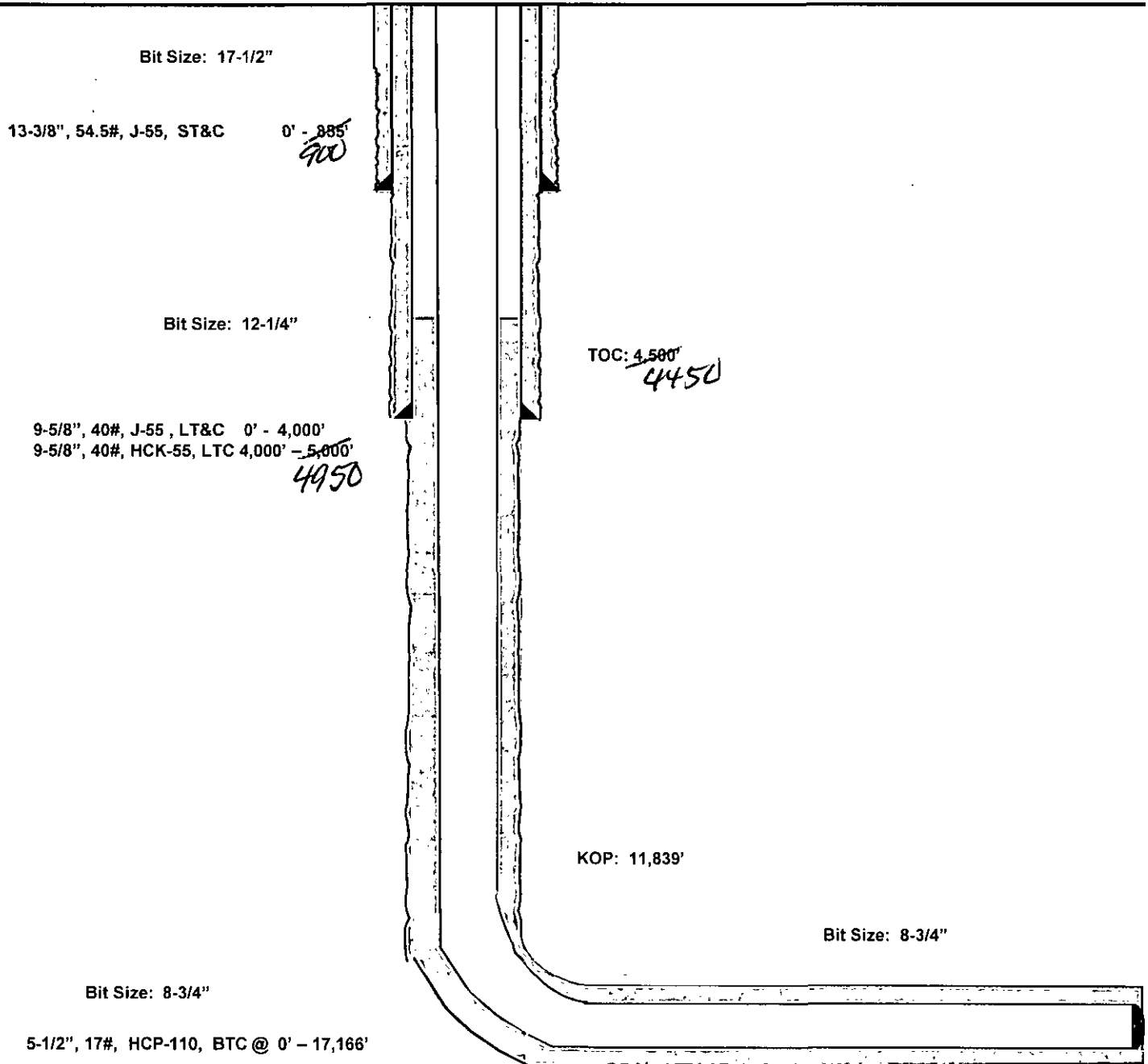
Thor 21 Fed Com #703H

Lea County, New Mexico
Proposed Wellbore

170' FSL
1640' FEL
Section 21
T-26-S, R-33-E

API: 30-025-

KB: 3,286'
GL: 3,256'



Lateral: 17,166' MD, 12,420' TVD
Upper Most Perf:
330' FSL & 1675' FEL Sec. 21
Lower Most Perf:
330' FNL & 1675' FEL
BH Location: 230' FNL & 1675' FEL
Section 21
T-26-S, R-33-E



Lea County, NM (NAD 27 NME)

Thor 21 Fed Com #703H

H&P 651

Plan #1

PROJECT DETAILS: Lea County, NM (NAD 27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1966
Zone: New Mexico East 3001
System Datum: Mean Sea Level

WELL DETAILS: #703H

Ground Level: 3256.0
KB = 25 @ 3281.0usft (H&P 651)
Northing: 372581.00 Easting: 735478.00
Latitude: 32° 1' 19.428 N Longitude: 103° 54' 24.750 W

Altitude to Grid North
True North: -8.40°
Magnetic North: 8.78°

Magnetic Field
Strength: 48031.8nT
Dip Angle: 68.90°
Date: 5/21/2015
Model: IGRF2015

To convert a Magnetic Direction to a Grid Direction, Add 8.78°
To convert a Magnetic Direction to a True Direction, Add 7.18° East
To convert a True Direction to a Grid Direction, Subtract 0.40°

SECTION DETAILS

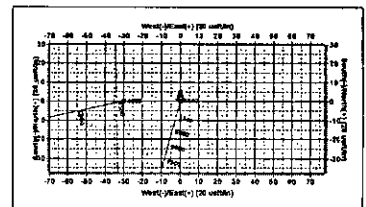
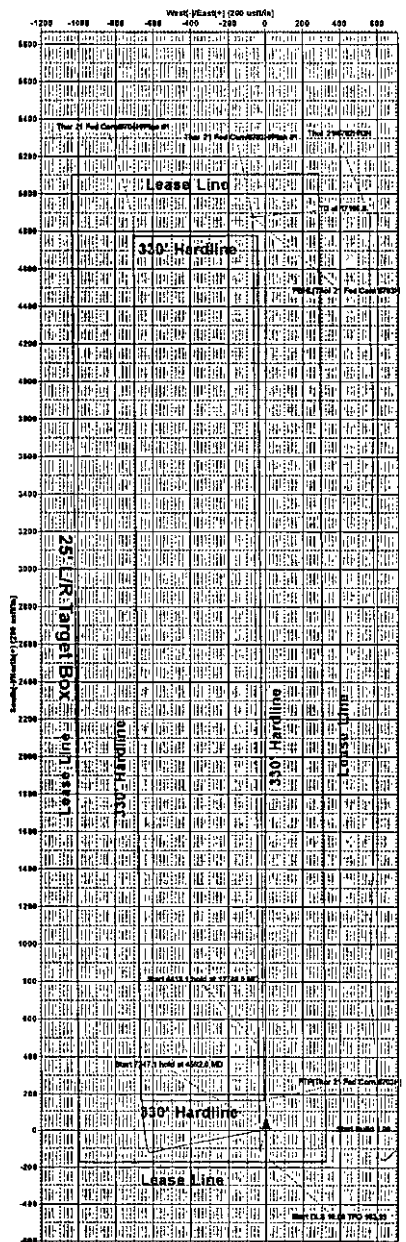
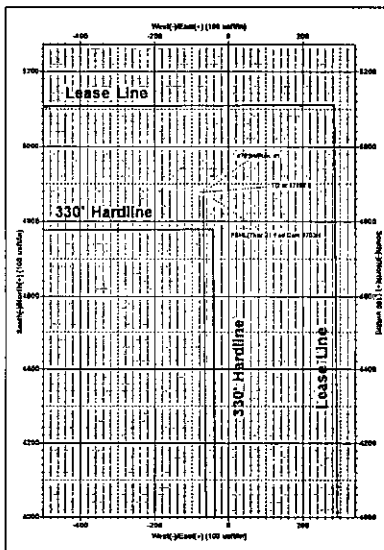
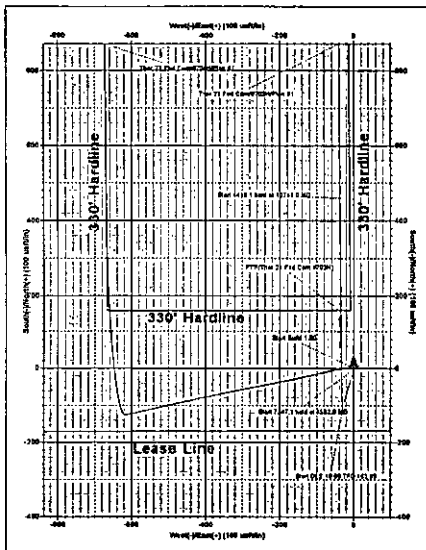
Sec	MD	Inc	Alt	TVD	+N-S	+E-W	Dleg	TFace	VSecl	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	4990.0	0.00	0.00	4990.0	0.0	0.0	0.00	0.00	0.0		
3	4992.0	0.92	195.61	4992.0	-0.7	-0.2	1.00	195.61	-0.7		
4	11639.1	0.92	195.61	11639.2	-112.9	-31.6	0.00	0.00	-112.9		
5	12749.0	50.00	359.60	12420.0	480.1	-38.1	10.00	163.89	480.5		
6	17166.0	50.00	359.60	12420.0	4878.0	-48.0	0.00	0.00	4878.0		PBHL(Thor 21 Fed Com #703H)

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
PBHL(Thor 21 Fed Com #703H)	12420.0	4878.0	-48.0	377459.00	735468.00
FTP(Thor 21 Fed Com #703H)	12420.0	160.0	-36.0	372741.00	735442.00



Vertical Section at 339.18° (200 usft)



EOG Resources - Midland

Lea County, NM (NAD 27 NME)

Thor 21 Fed Com

#703H

OH

Plan: Plan #1

Standard Planning Report

21 May, 2015



EOG Resources, Inc.

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #703H
Company:	EOG Resources - Midland	TVD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Project:	Lea County, NM (NAD 27 NME)	MD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Site:	Thor 21 Fed Com	North Reference:	Grid
Well:	#703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project Lea County, NM (NAD 27 NME)

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

Site Thor 21 Fed Com

Site Position:	Map	Northing:	372,581.00 usft	Latitude:	32° 1' 19.428 N
From:		Easting:	735,478.00 usft	Longitude:	103° 34' 24.750 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.40°

Well #703H

Well Position	+N/-S	0.0 usft	Northing:	372,581.00 usft	Latitude:	32° 1' 19.428 N
	+E/-W	0.0 usft	Easting:	735,478.00 usft	Longitude:	103° 34' 24.750 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,256.0 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/21/2015	7.16	59.90	48,032

Design Plan #1

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.19

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,592.0	0.92	195.61	4,592.0	-0.7	-0.2	1.00	1.00	0.00	195.61	
11,839.1	0.92	195.61	11,838.2	-112.8	-31.5	0.00	0.00	0.00	0.00	
12,748.0	90.00	359.60	12,420.0	460.1	-38.1	10.00	9.80	18.04	163.99	
17,166.0	90.00	359.60	12,420.0	4,878.0	-69.0	0.00	0.00	0.00	0.00	PBHL(Thor 21 Fed Co



EOG Resources, Inc.

Planning Report

Database: EDM 5000.1 Single User Db
 Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 27 NME)
 Site: Thor 21 Fed Com
 Well: #703H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #703H
 TVD Reference: KB = 25 @ 3281.0usft (H&P 651)
 MD Reference: KB = 25 @ 3281.0usft (H&P 651)
 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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,592.0	0.92	195.61	4,592.0	-0.7	-0.2	-0.7	1.00	1.00	0.00	
4,600.0	0.92	195.61	4,600.0	-0.8	-0.2	-0.8	0.00	0.00	0.00	
4,700.0	0.92	195.61	4,700.0	-2.4	-0.7	-2.4	0.00	0.00	0.00	
4,800.0	0.92	195.61	4,800.0	-3.9	-1.1	-3.9	0.00	0.00	0.00	
4,900.0	0.92	195.61	4,900.0	-5.5	-1.5	-5.5	0.00	0.00	0.00	
5,000.0	0.92	195.61	4,999.9	-7.0	-2.0	-7.0	0.00	0.00	0.00	
5,100.0	0.92	195.61	5,099.9	-8.6	-2.4	-8.5	0.00	0.00	0.00	
5,200.0	0.92	195.61	5,199.9	-10.1	-2.8	-10.1	0.00	0.00	0.00	



EOG Resources, Inc.

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #703H
Company:	EOG Resources - Midland	TVD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Project:	Lea County, NM (NAD 27 NME)	MD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Site:	Thor 21 Fed Com	North Reference:	Grid
Well:	#703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
5,300.0	0.92	195.61	5,299.9	-11.7	-3.3	-11.6	0.00	0.00	0.00
5,400.0	0.92	195.61	5,399.9	-13.2	-3.7	-13.2	0.00	0.00	0.00
5,500.0	0.92	195.61	5,499.9	-14.8	-4.1	-14.7	0.00	0.00	0.00
5,600.0	0.92	195.61	5,599.9	-16.3	-4.6	-16.2	0.00	0.00	0.00
5,700.0	0.92	195.61	5,699.9	-17.8	-5.0	-17.8	0.00	0.00	0.00
5,800.0	0.92	195.61	5,799.8	-19.4	-5.4	-19.3	0.00	0.00	0.00
5,900.0	0.92	195.61	5,899.8	-20.9	-5.9	-20.9	0.00	0.00	0.00
6,000.0	0.92	195.61	5,999.8	-22.5	-6.3	-22.4	0.00	0.00	0.00
6,100.0	0.92	195.61	6,099.8	-24.0	-6.7	-23.9	0.00	0.00	0.00
6,200.0	0.92	195.61	6,199.8	-25.6	-7.1	-25.5	0.00	0.00	0.00
6,300.0	0.92	195.61	6,299.8	-27.1	-7.6	-27.0	0.00	0.00	0.00
6,400.0	0.92	195.61	6,399.8	-28.7	-8.0	-28.6	0.00	0.00	0.00
6,500.0	0.92	195.61	6,499.7	-30.2	-8.4	-30.1	0.00	0.00	0.00
6,600.0	0.92	195.61	6,599.7	-31.8	-8.9	-31.6	0.00	0.00	0.00
6,700.0	0.92	195.61	6,699.7	-33.3	-9.3	-33.2	0.00	0.00	0.00
6,800.0	0.92	195.61	6,799.7	-34.9	-9.7	-34.7	0.00	0.00	0.00
6,900.0	0.92	195.61	6,899.7	-36.4	-10.2	-36.3	0.00	0.00	0.00
7,000.0	0.92	195.61	6,999.7	-38.0	-10.6	-37.8	0.00	0.00	0.00
7,100.0	0.92	195.61	7,099.7	-39.5	-11.0	-39.3	0.00	0.00	0.00
7,200.0	0.92	195.61	7,199.7	-41.0	-11.5	-40.9	0.00	0.00	0.00
7,300.0	0.92	195.61	7,299.6	-42.6	-11.9	-42.4	0.00	0.00	0.00
7,400.0	0.92	195.61	7,399.6	-44.1	-12.3	-44.0	0.00	0.00	0.00
7,500.0	0.92	195.61	7,499.6	-45.7	-12.8	-45.5	0.00	0.00	0.00
7,600.0	0.92	195.61	7,599.6	-47.2	-13.2	-47.0	0.00	0.00	0.00
7,700.0	0.92	195.61	7,699.6	-48.8	-13.6	-48.6	0.00	0.00	0.00
7,800.0	0.92	195.61	7,799.6	-50.3	-14.1	-50.1	0.00	0.00	0.00
7,900.0	0.92	195.61	7,899.6	-51.9	-14.5	-51.7	0.00	0.00	0.00
8,000.0	0.92	195.61	7,999.6	-53.4	-14.9	-53.2	0.00	0.00	0.00
8,100.0	0.92	195.61	8,099.5	-55.0	-15.4	-54.7	0.00	0.00	0.00
8,200.0	0.92	195.61	8,199.5	-56.5	-15.8	-56.3	0.00	0.00	0.00
8,300.0	0.92	195.61	8,299.5	-58.1	-16.2	-57.8	0.00	0.00	0.00
8,400.0	0.92	195.61	8,399.5	-59.6	-16.7	-59.4	0.00	0.00	0.00
8,500.0	0.92	195.61	8,499.5	-61.2	-17.1	-60.9	0.00	0.00	0.00
8,600.0	0.92	195.61	8,599.5	-62.7	-17.5	-62.4	0.00	0.00	0.00
8,700.0	0.92	195.61	8,699.5	-64.2	-17.9	-64.0	0.00	0.00	0.00
8,800.0	0.92	195.61	8,799.5	-65.8	-18.4	-65.5	0.00	0.00	0.00
8,900.0	0.92	195.61	8,899.4	-67.3	-18.8	-67.1	0.00	0.00	0.00
9,000.0	0.92	195.61	8,999.4	-68.9	-19.2	-68.6	0.00	0.00	0.00
9,100.0	0.92	195.61	9,099.4	-70.4	-19.7	-70.2	0.00	0.00	0.00
9,200.0	0.92	195.61	9,199.4	-72.0	-20.1	-71.7	0.00	0.00	0.00
9,300.0	0.92	195.61	9,299.4	-73.5	-20.5	-73.2	0.00	0.00	0.00
9,400.0	0.92	195.61	9,399.4	-75.1	-21.0	-74.8	0.00	0.00	0.00
9,500.0	0.92	195.61	9,499.4	-76.6	-21.4	-76.3	0.00	0.00	0.00
9,600.0	0.92	195.61	9,599.4	-78.2	-21.8	-77.9	0.00	0.00	0.00
9,700.0	0.92	195.61	9,699.3	-79.7	-22.3	-79.4	0.00	0.00	0.00
9,800.0	0.92	195.61	9,799.3	-81.3	-22.7	-80.9	0.00	0.00	0.00
9,900.0	0.92	195.61	9,899.3	-82.8	-23.1	-82.5	0.00	0.00	0.00
10,000.0	0.92	195.61	9,999.3	-84.4	-23.6	-84.0	0.00	0.00	0.00
10,100.0	0.92	195.61	10,099.3	-85.9	-24.0	-85.6	0.00	0.00	0.00
10,200.0	0.92	195.61	10,199.3	-87.4	-24.4	-87.1	0.00	0.00	0.00
10,300.0	0.92	195.61	10,299.3	-89.0	-24.9	-88.6	0.00	0.00	0.00
10,400.0	0.92	195.61	10,399.2	-90.5	-25.3	-90.2	0.00	0.00	0.00
10,500.0	0.92	195.61	10,499.2	-92.1	-25.7	-91.7	0.00	0.00	0.00
10,600.0	0.92	195.61	10,599.2	-93.6	-26.2	-93.3	0.00	0.00	0.00



EOG Resources, Inc.

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #703H
Company:	EOG Resources - Midland	TVD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Project:	Lea County, NM (NAD 27 NME)	MD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Site:	Thor 21 Fed Com	North Reference:	Grid
Well:	#703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
10,700.0	0.92	195.61	10,699.2	-95.2	-26.6	-94.8	0.00	0.00	0.00
10,800.0	0.92	195.61	10,799.2	-96.7	-27.0	-96.3	0.00	0.00	0.00
10,900.0	0.92	195.61	10,899.2	-98.3	-27.5	-97.9	0.00	0.00	0.00
11,000.0	0.92	195.61	10,999.2	-99.8	-27.9	-99.4	0.00	0.00	0.00
11,100.0	0.92	195.61	11,099.2	-101.4	-28.3	-101.0	0.00	0.00	0.00
11,200.0	0.92	195.61	11,199.1	-102.9	-28.8	-102.5	0.00	0.00	0.00
11,300.0	0.92	195.61	11,299.1	-104.5	-29.2	-104.0	0.00	0.00	0.00
11,400.0	0.92	195.61	11,399.1	-106.0	-29.6	-105.6	0.00	0.00	0.00
11,500.0	0.92	195.61	11,499.1	-107.6	-30.0	-107.1	0.00	0.00	0.00
11,600.0	0.92	195.61	11,599.1	-109.1	-30.5	-108.7	0.00	0.00	0.00
11,700.0	0.92	195.61	11,699.1	-110.6	-30.9	-110.2	0.00	0.00	0.00
11,800.0	0.92	195.61	11,799.1	-112.2	-31.3	-111.7	0.00	0.00	0.00
11,839.1	0.92	195.61	11,838.2	-112.8	-31.5	-112.3	0.00	0.00	0.00
11,850.0	0.32	308.02	11,849.1	-112.9	-31.6	-112.4	10.00	-5.48	1,035.31
11,900.0	5.21	358.81	11,899.0	-110.5	-31.8	-110.1	10.00	9.77	97.58
11,950.0	10.20	358.19	11,948.5	-103.8	-32.1	-103.4	10.00	9.99	2.75
12,000.0	15.20	358.67	11,997.3	-92.8	-32.4	-92.4	10.00	10.00	0.95
12,050.0	20.20	358.91	12,044.9	-77.6	-32.7	-77.2	10.00	10.00	0.49
12,100.0	25.20	359.06	12,091.0	-58.3	-33.0	-57.9	10.00	10.00	0.30
12,150.0	30.20	359.16	12,135.3	-35.1	-33.4	-34.6	10.00	10.00	0.21
12,200.0	35.20	359.24	12,177.3	-8.1	-33.7	-7.6	10.00	10.00	0.15
12,250.0	40.20	359.30	12,216.9	22.5	-34.1	22.9	10.00	10.00	0.12
12,300.0	45.20	359.35	12,253.6	56.4	-34.5	56.8	10.00	10.00	0.10
12,350.0	50.20	359.39	12,287.2	93.3	-34.9	93.8	10.00	10.00	0.08
12,400.0	55.20	359.42	12,317.5	133.1	-35.4	133.6	10.00	10.00	0.07
12,450.0	60.20	359.45	12,344.2	175.3	-35.8	175.8	10.00	10.00	0.06
12,471.1	62.31	359.47	12,354.4	193.9	-35.9	194.3	10.00	10.00	0.06
FTP(Thor 21 Fed Com #703H)									
12,500.0	65.20	359.48	12,367.2	219.7	-36.2	220.2	10.00	10.00	0.06
12,550.0	70.20	359.51	12,386.1	266.0	-36.6	266.5	10.00	10.00	0.05
12,600.0	75.20	359.53	12,401.0	313.7	-37.0	314.2	10.00	10.00	0.05
12,650.0	80.20	359.56	12,411.6	362.5	-37.4	363.0	10.00	10.00	0.05
12,700.0	85.20	359.58	12,418.0	412.1	-37.8	412.6	10.00	10.00	0.05
12,748.0	90.00	359.60	12,420.0	460.1	-38.1	460.5	10.00	10.00	0.04
12,800.0	90.00	359.60	12,420.0	512.1	-38.5	512.6	0.00	0.00	0.00
12,900.0	90.00	359.60	12,420.0	612.1	-39.2	612.6	0.00	0.00	0.00
13,000.0	90.00	359.60	12,420.0	712.1	-39.9	712.6	0.00	0.00	0.00
13,100.0	90.00	359.60	12,420.0	812.1	-40.6	812.6	0.00	0.00	0.00
13,200.0	90.00	359.60	12,420.0	912.1	-41.3	912.6	0.00	0.00	0.00
13,300.0	90.00	359.60	12,420.0	1,012.1	-42.0	1,012.5	0.00	0.00	0.00
13,400.0	90.00	359.60	12,420.0	1,112.1	-42.7	1,112.5	0.00	0.00	0.00
13,500.0	90.00	359.60	12,420.0	1,212.1	-43.4	1,212.5	0.00	0.00	0.00
13,600.0	90.00	359.60	12,420.0	1,312.0	-44.1	1,312.5	0.00	0.00	0.00
13,700.0	90.00	359.60	12,420.0	1,412.0	-44.8	1,412.5	0.00	0.00	0.00
13,800.0	90.00	359.60	12,420.0	1,512.0	-45.5	1,512.5	0.00	0.00	0.00
13,900.0	90.00	359.60	12,420.0	1,612.0	-46.2	1,612.5	0.00	0.00	0.00
14,000.0	90.00	359.60	12,420.0	1,712.0	-46.9	1,712.5	0.00	0.00	0.00
14,100.0	90.00	359.60	12,420.0	1,812.0	-47.6	1,812.5	0.00	0.00	0.00
14,200.0	90.00	359.60	12,420.0	1,912.0	-48.3	1,912.5	0.00	0.00	0.00
14,300.0	90.00	359.60	12,420.0	2,012.0	-49.0	2,012.5	0.00	0.00	0.00
14,400.0	90.00	359.60	12,420.0	2,112.0	-49.7	2,112.5	0.00	0.00	0.00
14,500.0	90.00	359.60	12,420.0	2,212.0	-50.4	2,212.5	0.00	0.00	0.00
14,600.0	90.00	359.60	12,420.0	2,312.0	-51.1	2,312.5	0.00	0.00	0.00



EOG Resources, Inc.

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #703H
Company:	EOG Resources - Midland	TVD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Project:	Lea County, NM (NAD 27 NME)	MD Reference:	KB = 25 @ 3281.0usft (H&P 651)
Site:	Thor 21 Fed Com	North Reference:	Grid
Well:	#703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
14,700.0	90.00	359.60	12,420.0	2,412.0	-51.8	2,412.5	0.00	0.00	0.00
14,800.0	90.00	359.60	12,420.0	2,512.0	-52.5	2,512.5	0.00	0.00	0.00
14,900.0	90.00	359.60	12,420.0	2,612.0	-53.2	2,612.5	0.00	0.00	0.00
15,000.0	90.00	359.60	12,420.0	2,712.0	-53.9	2,712.5	0.00	0.00	0.00
15,100.0	90.00	359.60	12,420.0	2,812.0	-54.5	2,812.5	0.00	0.00	0.00
15,200.0	90.00	359.60	12,420.0	2,912.0	-55.2	2,912.5	0.00	0.00	0.00
15,300.0	90.00	359.60	12,420.0	3,012.0	-55.9	3,012.5	0.00	0.00	0.00
15,400.0	90.00	359.60	12,420.0	3,112.0	-56.6	3,112.5	0.00	0.00	0.00
15,500.0	90.00	359.60	12,420.0	3,212.0	-57.3	3,212.5	0.00	0.00	0.00
15,600.0	90.00	359.60	12,420.0	3,312.0	-58.0	3,312.5	0.00	0.00	0.00
15,700.0	90.00	359.60	12,420.0	3,412.0	-58.7	3,412.5	0.00	0.00	0.00
15,800.0	90.00	359.60	12,420.0	3,512.0	-59.4	3,512.5	0.00	0.00	0.00
15,900.0	90.00	359.60	12,420.0	3,612.0	-60.1	3,612.5	0.00	0.00	0.00
16,000.0	90.00	359.60	12,420.0	3,712.0	-60.8	3,712.5	0.00	0.00	0.00
16,100.0	90.00	359.60	12,420.0	3,812.0	-61.5	3,812.5	0.00	0.00	0.00
16,200.0	90.00	359.60	12,420.0	3,912.0	-62.2	3,912.5	0.00	0.00	0.00
16,300.0	90.00	359.60	12,420.0	4,012.0	-62.9	4,012.5	0.00	0.00	0.00
16,400.0	90.00	359.60	12,420.0	4,112.0	-63.6	4,112.5	0.00	0.00	0.00
16,500.0	90.00	359.60	12,420.0	4,212.0	-64.3	4,212.5	0.00	0.00	0.00
16,600.0	90.00	359.60	12,420.0	4,312.0	-65.0	4,312.5	0.00	0.00	0.00
16,700.0	90.00	359.60	12,420.0	4,412.0	-65.7	4,412.5	0.00	0.00	0.00
16,800.0	90.00	359.60	12,420.0	4,512.0	-66.4	4,512.5	0.00	0.00	0.00
16,900.0	90.00	359.60	12,420.0	4,612.0	-67.1	4,612.5	0.00	0.00	0.00
17,000.0	90.00	359.60	12,420.0	4,712.0	-67.8	4,712.5	0.00	0.00	0.00
17,100.0	90.00	359.60	12,420.0	4,812.0	-68.5	4,812.5	0.00	0.00	0.00
17,166.0	90.00	359.60	12,420.0	4,878.0	-69.0	4,878.5	0.00	0.00	0.00

PBHL(Thor 21 Fed Com #703H)

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP(Thor 21 Fed Com #	0.00	0.00	12,420.0	160.0	-36.0	372,741.00	735,442.00	32° 1' 21.014 N	103° 34' 25.155 W
- hit/miss target									
- Shape									
- plan misses target center by 73.8usft at 12471.1usft MD (12354.4 TVD, 193.9 N, -35.9 E)									
- Point									
PBHL(Thor 21 Fed Com	0.00	0.00	12,420.0	4,878.0	-69.0	377,459.00	735,409.00	32° 2' 7.705 N	103° 34' 25.153 W
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Exhibit 1

EOG Resources

10M BOPE

Rig Floor

1. 13 5/8" Rotating Head
2. NOV 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. 6" OD x 3" ID 10,000 PSI WP Steel Armoured 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" Cameron Type "U" 10,000 PSI WP Pipe Rams
16. Flow Line
17. 2" Fill Line

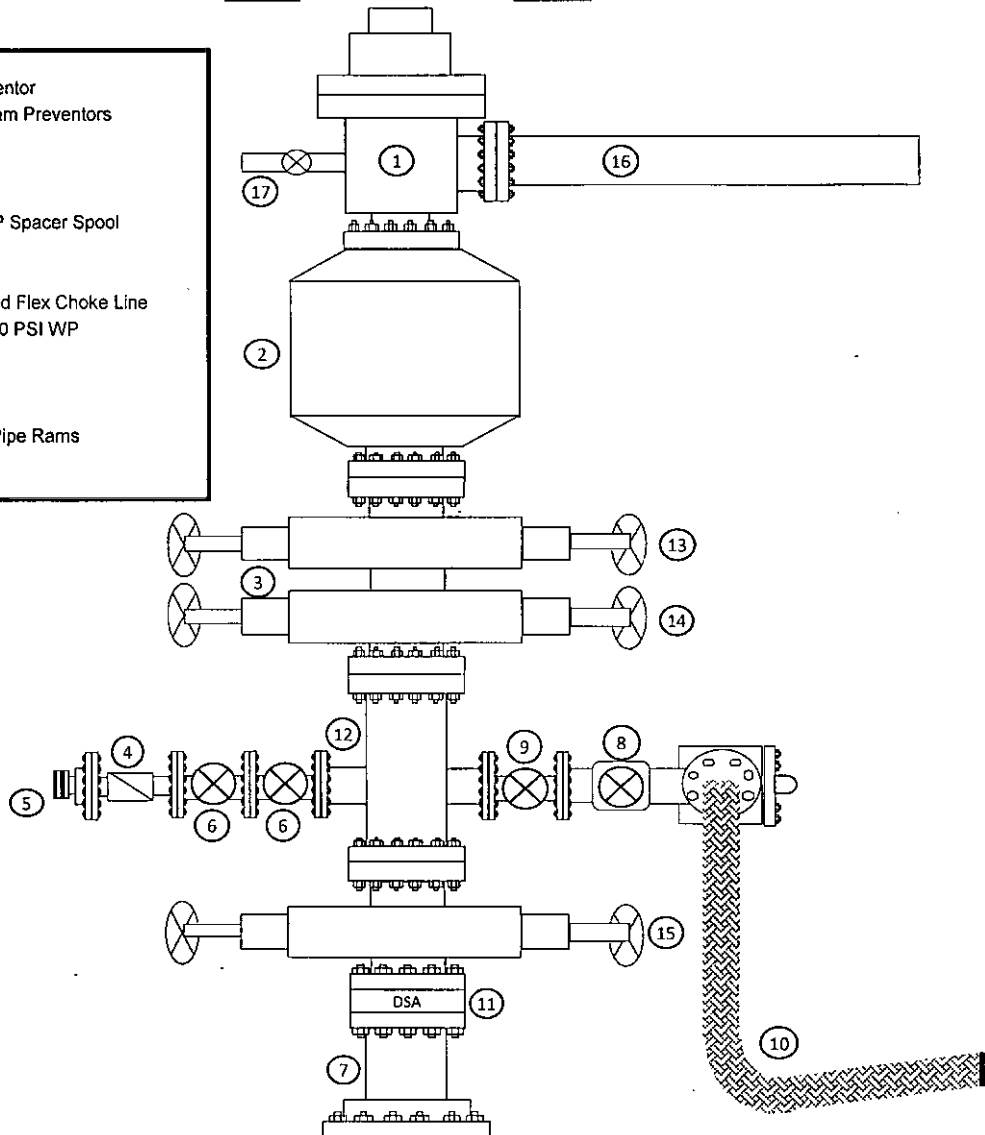
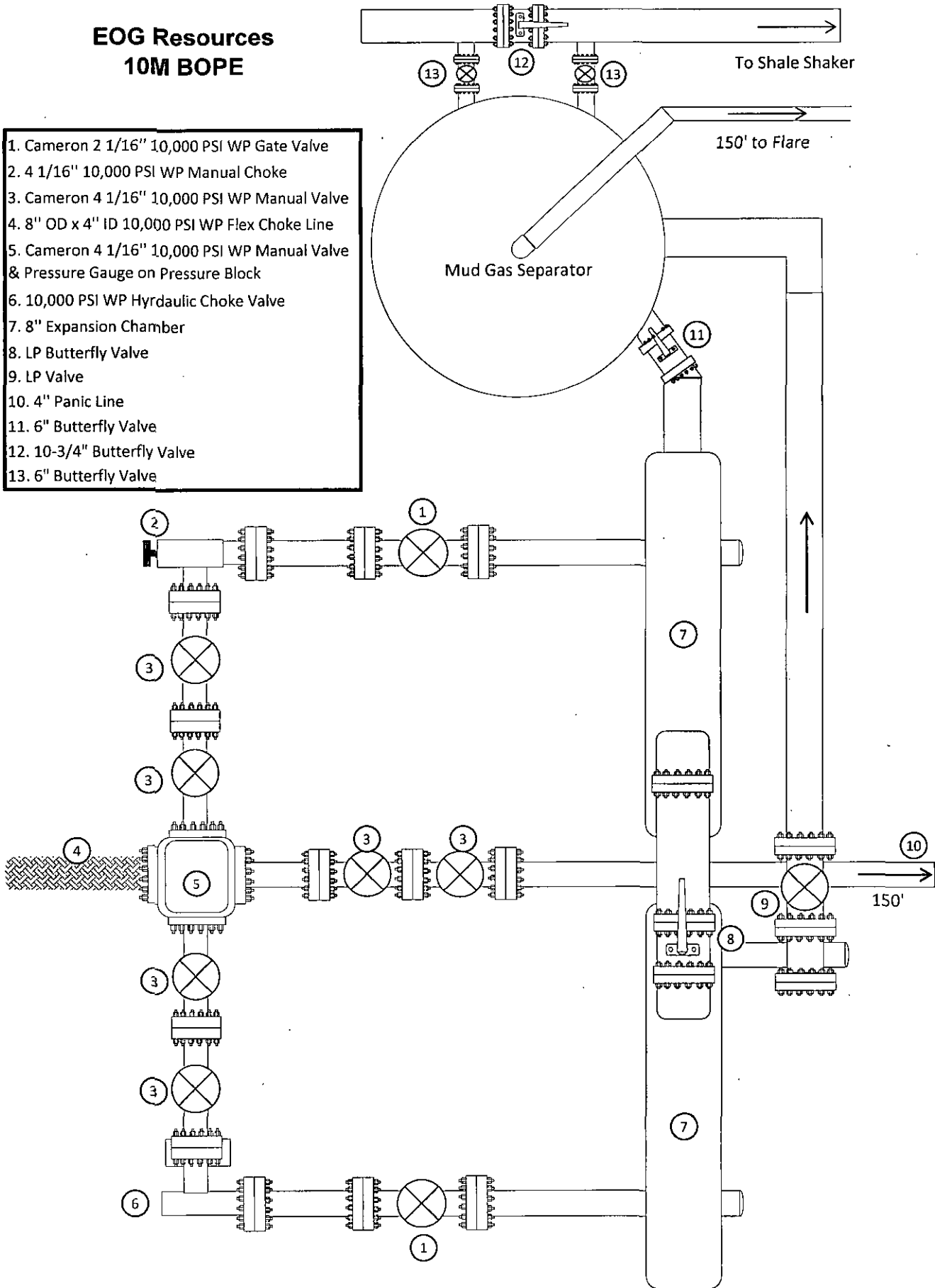


Exhibit 1a

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 Hyrdaulic 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

MIDWEST
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#90067 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

Hose Type

C & K

Length

35'

Type of Fitting

4.1/16.10K

Coupling Method

Swage

Die Size

Final O.D.

6.62"

6.68"

Working Pressure

10000 PSI

Burst Pressure

Standard Safety Multiplier Applies

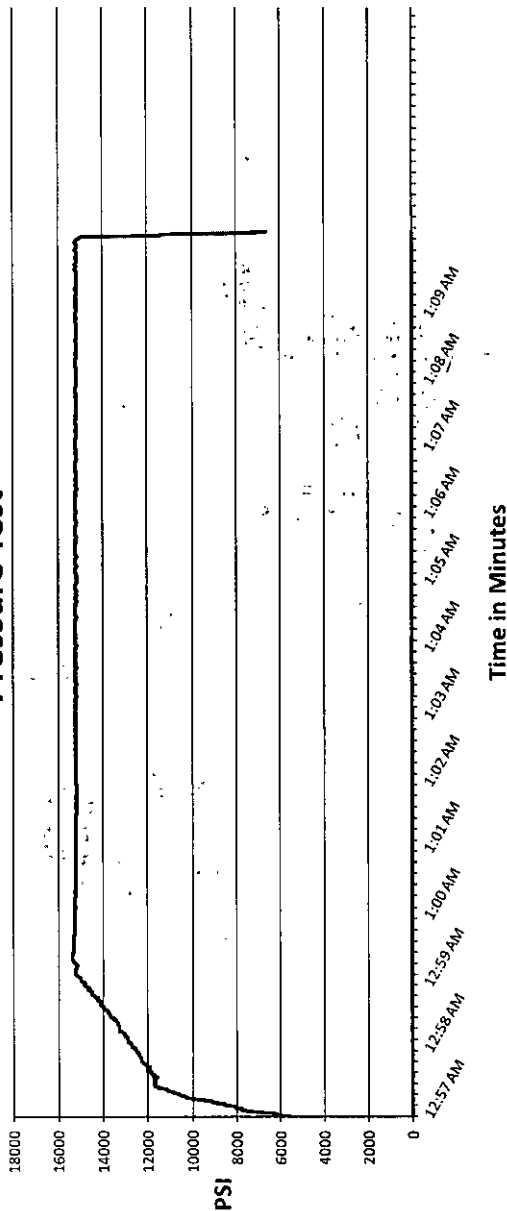
Hose Serial #

Hose Assembly Serial #

90067

Verification

Pressure Test



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

Mendi Jackson

Exhibit 4

EOG Resources

Thor 21 Fed Com #703H

Well Site Diagram

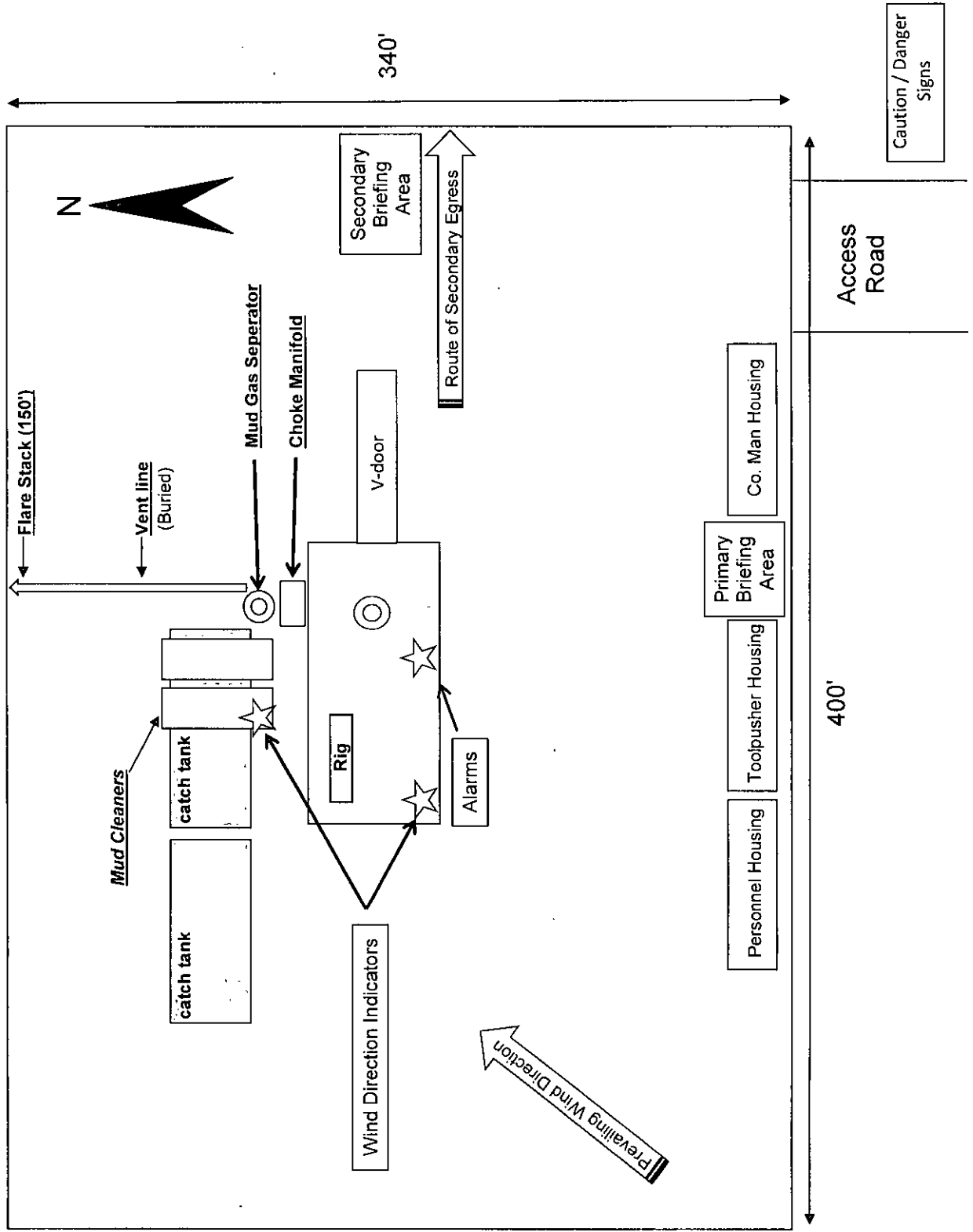


Exhibit 4 (A) Option

EOG Resources

Thor 21 Fed Com #703H

Well Site Diagram

