

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

HOBBS OCD

OCT 19 2015

ATS-15-358

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

RECEIVED

5. Lease Serial No.

NMNM108503

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.

Vaca 11 Fed 401H

9. API Well No.

30-025- 42900

10. Field and Pool, or Exploratory

RED HILLS LWR 135

11. Sec., T. R. M. or Blk. and Survey or Area

Section 11, T25S, R33E

12. County or Parish

Lea

13. State

NM

1a. Type of work: ☒ DRILL

☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other

☒ Single Zone ☐ Multiple Zone

2. Name of Operator EOG Resources, Inc.

3a. Address P.O. Box 2267 Midland, TX 79702

3b. Phone No. (include area code)

432-686-3689

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 170' FSL & 1200' FWL, SWSW (M), Sec 11, 25S, 33E

At proposed prod. zone 230' FSL & 1900' FWL, SESW (N), Sec 14

UNORTHODOX
LOCATION

14. Distance in miles and direction from nearest town or post office*

Approximately +/- 30 miles Southwest from Jal, NM

15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)

170' SL, 330' PP

16. No. of acres in lease

1480.00

17. Spacing Unit dedicated to this well

160 ac.

18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.

660' frm 404H

19. Proposed Depth

15296' MD, 10500' TVD

20. BLM/BIA Bond No. on file

NM 2308

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3369' GL

22. Approximate date work will start*
07/01/2015

23. Estimated duration
25 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.

2. A Drilling Plan.

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).

4. Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above).

5. Operator certification

6. Such other site specific information and/or plans as may be required by the
BLM.

25. Signature

Stan Wagner

Name (Printed/Typed)

Stan Wagner

Date

01/21/2015

Title

Regulatory Specialist

Approved by (Signature)

Steve Caffey

Name (Printed/Typed)

Date

OCT 13 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

K2
10/27/15

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

OCT 27 2015

K2

EOG RESOURCES, INC.
VACA 11 FED NO. 401H

HOBBS OCD

OCT 19 2015

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

RECEIVED

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	1,121'
Top of Salt	1,462'
Base of Salt / Top Anhydrite	4,810'
Base Anhydrite	5,054'
Lamar	5,054'
Bell Canyon	5,082'
Cherry Canyon	6,149'
Brushy Canyon	7,768'
Bone Spring Lime	9,236'
1 st Bone Spring Sand	10,179'
2 nd Bone Spring Shale	10,400'
TD	10,500'

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

Upper Permian Sands	0- 400'	Fresh Water
Cherry Canyon	6,149'	Oil
Brushy Canyon	7,768'	Oil
Bone Spring Lime	9,236'	Oil
1 st Bone Spring Sand	10,179'	Oil
2 nd Bone Spring Shale	10,400'	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 1,145' and circulating cement back to surface.

4. CASING PROGRAM - NEW

See COA

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF _{min} Collapse	DF _{min} Burst	DF _{min} Tension
17.5"	0 - 1,145'	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' - 4,900'	9.625"	40#	HCK55	LTC	1.125	1.25	1.60
8.75"	0'-15,296'	5.500"	17#	P110 or HCP110	LTC	1.125	1.25	1.60

EOG RESOURCES, INC.
VACA 11 FED NO. 401H

Cementing Program:

Depth	No. Sacks	Wt. lb/gal	Yld Ft ³ /ft	Mix Water Gal/sk	Slurry Description
13-3/8" 1,145' 1200'	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" 4,900'	900	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)
	450	14.8	1.32	6.33	Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
5-1/2" 15,296'	400	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 @ 4400')
	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
	1600	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:

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 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.

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

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.

EOG RESOURCES, INC.
VACA 11 FED NO. 401H

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 – 1,145' 1200	Fresh Water Gel	8.6-8.8	28-34	N/c
1,145' – 4,900'	Saturated Brine	10.0-10.2	28-34	N/c
4,900' – 9,999'	Fresh Water	8.4-8.6	28-34	N/c
9,999' – 15,296' Lateral	Cut Brine Water	9.0-9.5	28-34	N/c

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.
VACA 11 FED NO. 401H

See COA
8. LOGGING, TESTING AND CORING PROGRAM:

Open-hole logs are not planned for this well.

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

See COA
9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND POTENTIAL HAZARDS:

The estimated bottom-hole temperature (BHT) at TD is 163 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 4546 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:

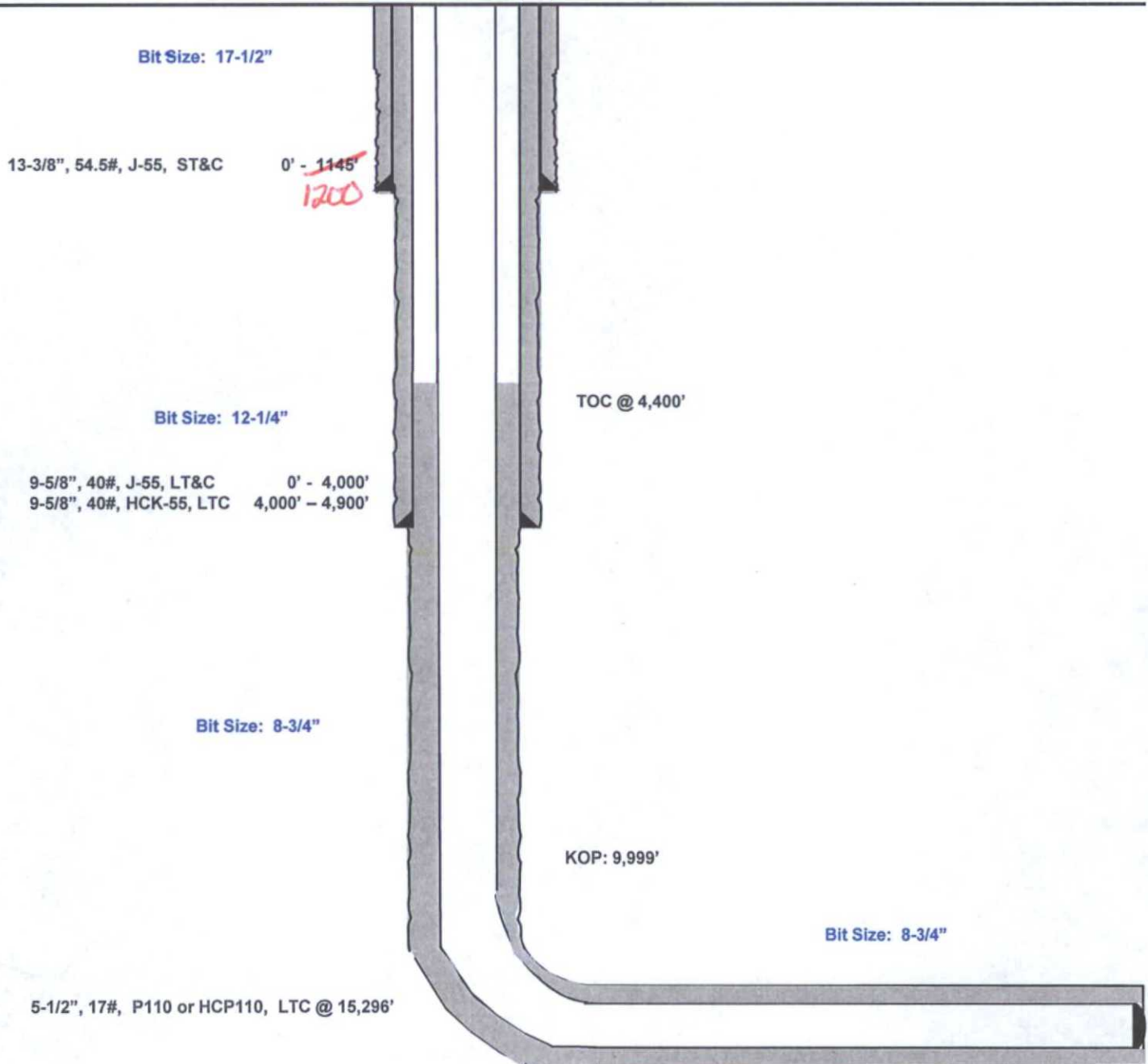
The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

Vaca 11 Fed #401H
Lea County, New Mexico
Proposed Wellbore

170' FSL
1200' FWL
Section 11
T-25-S, R-33-E

API: 30-025-*****

KB: 3,399'
GL: 3,369'



Lateral:
15,296' MD, 10,500' TVD
Upper Most Perf:
330' FNL & 1900' FWL
Lower Most Perf:
330' FSL & 1900' FWL
BH Location: 230' FSL & 1900' FWL
Section 14
T-25-S, R-33-E



Lea County, NM (NAD 27 NME)

Vaca 11 Fed #401H

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 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level



Azimuths to Grid North
 True North: -0.42°
 Magnetic North: 6.71°
 Magnetic Field
 Strength: 48211.2nT
 Dip Angle: 60.02°
 Date: 1/6/2015
 Model: IGRF201014

To convert a Magnetic Direction to a Grid Direction, Add 6.71°
 To convert a Magnetic Direction to a True Direction, Add 7.13° East
 To convert a True Direction to a Grid Direction, Subtract 0.42°

WELL DETAILS: #401H

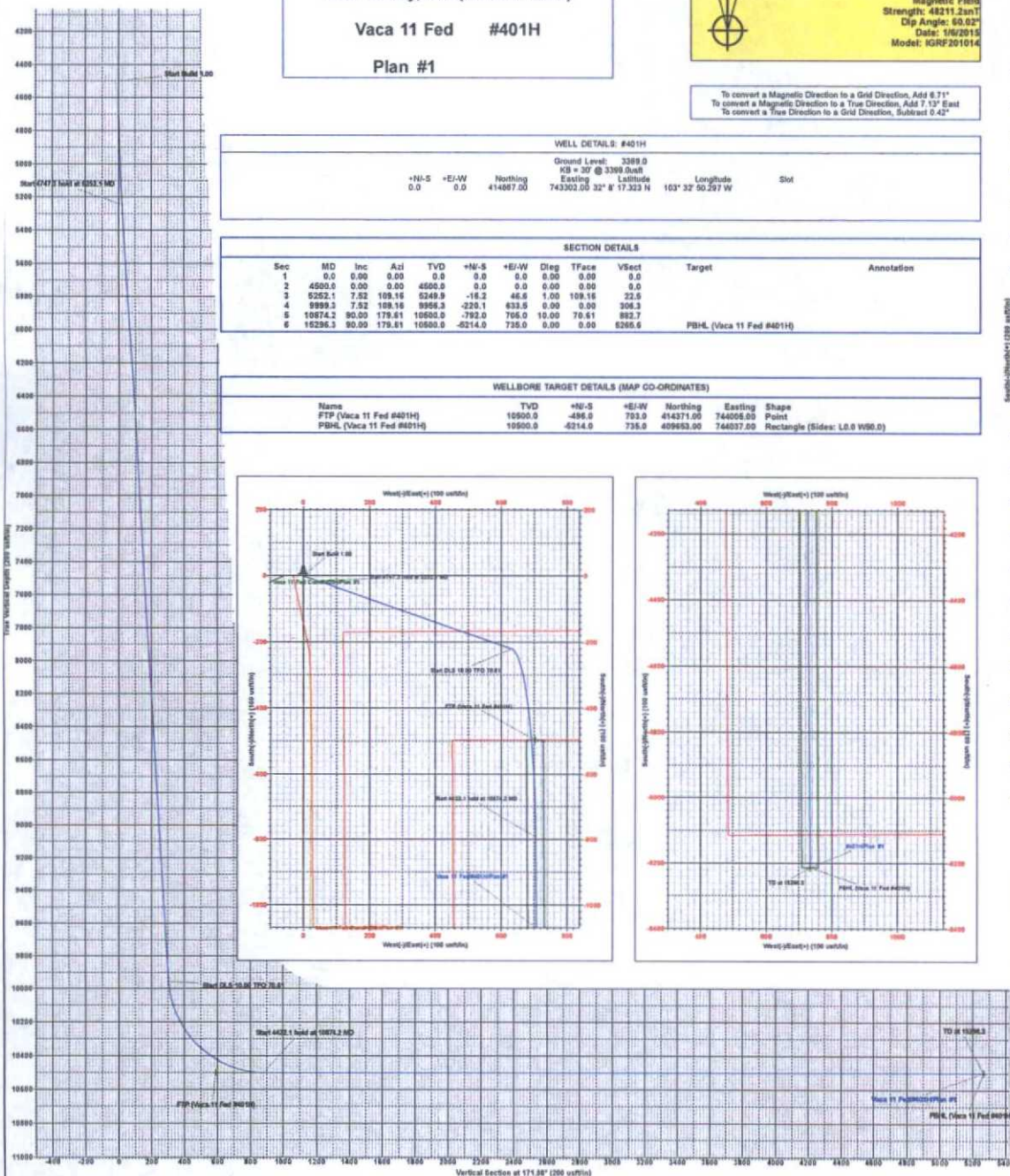
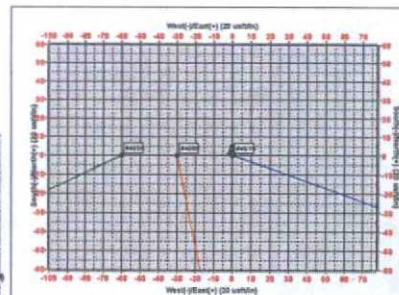
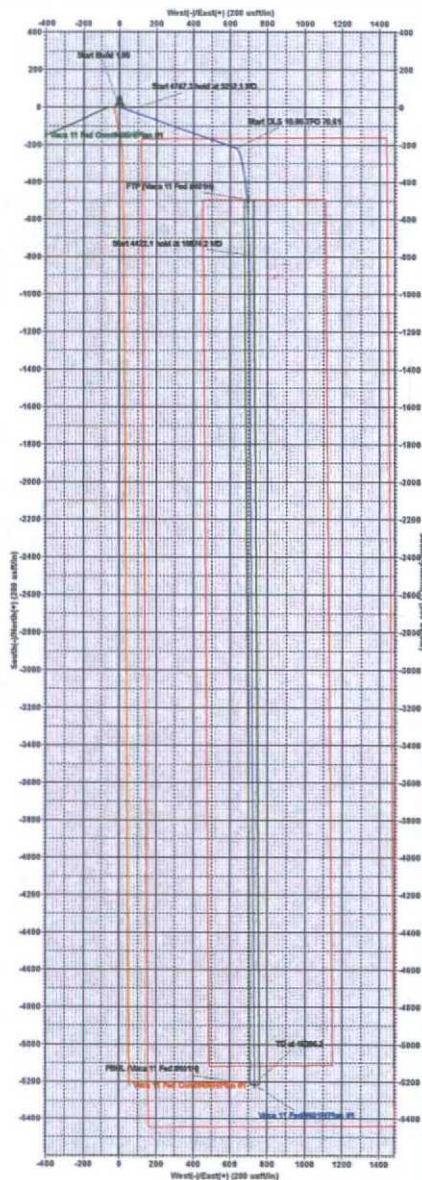
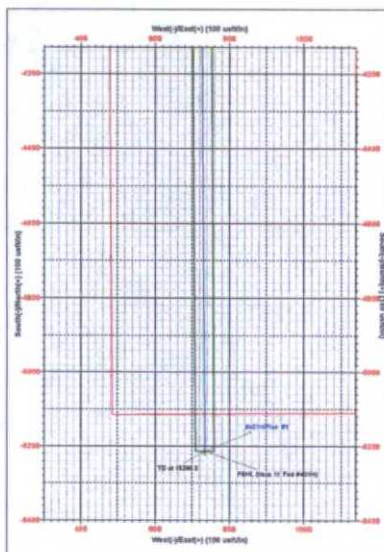
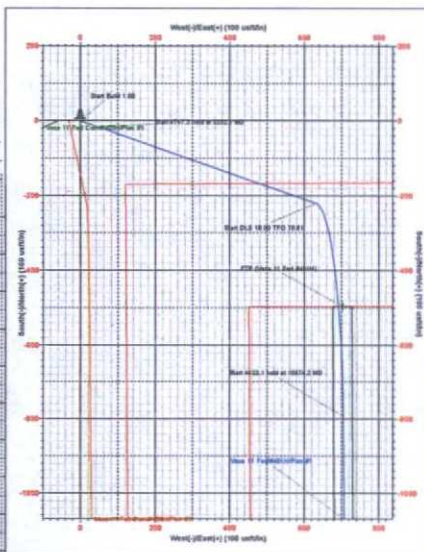
		Ground Level: 3389.0		
		KB = 30' @ 3399.0'ash		
+N-S	+E-W	Northing	Easting	Latitude
0.0	0.0	414887.00	743302.00	32° 8' 17.323 N
				163° 32' 50.297 W

SECTION DETAILS

Sec	MD	Inc	Axis	TVD	+N-S	+E-W	Dip	TFace	VFace	Target	Annotation
1	0.0	0.00	9.03	0.0	0.0	0.00	0.00	0.00	9.0		
2	4500.0	0.00	0.00	4500.0	0.0	0.00	0.00	0.00	0.0		
3	8252.1	7.52	109.16	5249.9	-16.2	46.6	1.00	109.16	22.6		
4	8993.1	7.52	109.16	5958.3	-226.1	633.0	0.00	0.00	109.3		
5	10672.3	90.00	179.81	10560.0	-706.0	706.0	0.00	70.61	892.7		
6	15236.3	90.00	179.81	10560.0	-5214.0	735.0	0.00	0.00	6266.6		FBM (Vca 11 Fed #401)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
FTP (Vaca 11 Fed #401H)	10900.0	-496.0	703.0	414371.00	744006.00	Point
PBHL (Vaca 11 Fed #401H)	10900.0	-6214.0	735.0	409652.00	746037.00	Rectangle (Sides: L0.0 W90.0)





EOG Resources - Midland

Lea County, NM (NAD 27 NME)

Vaca 11 Fed

#401H

OH

Plan: Plan #1

Standard Survey Report

07 January, 2015



EOG Resources, Inc.

Survey Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Well:	#401H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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	Vaca 11 Fed		
Site Position:		Northing:	414,888.00 usft
From:	Map	Easting:	746,178.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 8' 17.322 N
		Longitude:	103° 32' 16.849 W
		Grid Convergence:	0.42 °

Well	#401H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 8' 17.323 N
		Longitude:	103° 32' 50.297 W
		Ground Level:	3,369.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF201014	1/6/2015	7.13
			Dip Angle (°)
			60.02
			Field Strength (nT)
			48,211

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			171.98

Survey Tool Program	Date 1/7/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.0	15,296.3	Plan #1 (OH)	MWD
			Description
			MWD - Standard

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	



EOG Resources, Inc.
Survey Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Well:	#401H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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)	
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	
4,600.0	1.00	109.16	4,600.0	-0.3	0.8	0.4	1.00	1.00	0.00	
4,700.0	2.00	109.16	4,700.0	-1.1	3.3	1.6	1.00	1.00	0.00	
4,800.0	3.00	109.16	4,799.9	-2.6	7.4	3.6	1.00	1.00	0.00	
4,900.0	4.00	109.16	4,899.7	-4.6	13.2	6.4	1.00	1.00	0.00	
5,000.0	5.00	109.16	4,999.4	-7.2	20.6	10.0	1.00	1.00	0.00	
5,100.0	6.00	109.16	5,098.9	-10.3	29.6	14.3	1.00	1.00	0.00	
5,200.0	7.00	109.16	5,198.3	-14.0	40.3	19.5	1.00	1.00	0.00	
5,252.1	7.52	109.16	5,249.9	-16.2	46.6	22.5	1.00	1.00	0.00	



EOG Resources, Inc.

Survey Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Well:	#401H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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	7.52	109.16	5,297.4	-18.2	52.5	25.4	0.00	0.00	0.00
5,400.0	7.52	109.16	5,396.6	-22.5	64.8	31.4	0.00	0.00	0.00
5,500.0	7.52	109.16	5,495.7	-26.8	77.2	37.3	0.00	0.00	0.00
5,600.0	7.52	109.16	5,594.8	-31.1	89.6	43.3	0.00	0.00	0.00
5,700.0	7.52	109.16	5,694.0	-35.4	101.9	49.3	0.00	0.00	0.00
5,800.0	7.52	109.16	5,793.1	-39.7	114.3	55.3	0.00	0.00	0.00
5,900.0	7.52	109.16	5,892.3	-44.0	126.7	61.3	0.00	0.00	0.00
6,000.0	7.52	109.16	5,991.4	-48.3	139.0	67.2	0.00	0.00	0.00
6,100.0	7.52	109.16	6,090.5	-52.6	151.4	73.2	0.00	0.00	0.00
6,200.0	7.52	109.16	6,189.7	-56.9	163.8	79.2	0.00	0.00	0.00
6,300.0	7.52	109.16	6,288.8	-61.2	176.1	85.2	0.00	0.00	0.00
6,400.0	7.52	109.16	6,388.0	-65.5	188.5	91.1	0.00	0.00	0.00
6,500.0	7.52	109.16	6,487.1	-69.8	200.8	97.1	0.00	0.00	0.00
6,600.0	7.52	109.16	6,586.2	-74.1	213.2	103.1	0.00	0.00	0.00
6,700.0	7.52	109.16	6,685.4	-78.4	225.6	109.1	0.00	0.00	0.00
6,800.0	7.52	109.16	6,784.5	-82.7	237.9	115.1	0.00	0.00	0.00
6,900.0	7.52	109.16	6,883.7	-87.0	250.3	121.0	0.00	0.00	0.00
7,000.0	7.52	109.16	6,982.8	-91.2	262.7	127.0	0.00	0.00	0.00
7,100.0	7.52	109.16	7,081.9	-95.5	275.0	133.0	0.00	0.00	0.00
7,200.0	7.52	109.16	7,181.1	-99.8	287.4	139.0	0.00	0.00	0.00
7,300.0	7.52	109.16	7,280.2	-104.1	299.8	145.0	0.00	0.00	0.00
7,400.0	7.52	109.16	7,379.4	-108.4	312.1	150.9	0.00	0.00	0.00
7,500.0	7.52	109.16	7,478.5	-112.7	324.5	156.9	0.00	0.00	0.00
7,600.0	7.52	109.16	7,577.6	-117.0	336.8	162.9	0.00	0.00	0.00
7,700.0	7.52	109.16	7,676.8	-121.3	349.2	168.9	0.00	0.00	0.00
7,800.0	7.52	109.16	7,775.9	-125.6	361.6	174.8	0.00	0.00	0.00
7,900.0	7.52	109.16	7,875.1	-129.9	373.9	180.8	0.00	0.00	0.00
8,000.0	7.52	109.16	7,974.2	-134.2	386.3	186.8	0.00	0.00	0.00
8,100.0	7.52	109.16	8,073.3	-138.5	398.7	192.8	0.00	0.00	0.00
8,200.0	7.52	109.16	8,172.5	-142.8	411.0	198.8	0.00	0.00	0.00
8,300.0	7.52	109.16	8,271.6	-147.1	423.4	204.7	0.00	0.00	0.00
8,400.0	7.52	109.16	8,370.8	-151.4	435.8	210.7	0.00	0.00	0.00
8,500.0	7.52	109.16	8,469.9	-155.7	448.1	216.7	0.00	0.00	0.00
8,600.0	7.52	109.16	8,569.0	-160.0	460.5	222.7	0.00	0.00	0.00
8,700.0	7.52	109.16	8,668.2	-164.3	472.8	228.7	0.00	0.00	0.00
8,800.0	7.52	109.16	8,767.3	-168.6	485.2	234.6	0.00	0.00	0.00
8,900.0	7.52	109.16	8,866.5	-172.9	497.6	240.6	0.00	0.00	0.00
9,000.0	7.52	109.16	8,965.6	-177.1	509.9	246.6	0.00	0.00	0.00
9,100.0	7.52	109.16	9,064.7	-181.4	522.3	252.6	0.00	0.00	0.00
9,200.0	7.52	109.16	9,163.9	-185.7	534.7	258.5	0.00	0.00	0.00
9,300.0	7.52	109.16	9,263.0	-190.0	547.0	264.5	0.00	0.00	0.00
9,400.0	7.52	109.16	9,362.2	-194.3	559.4	270.5	0.00	0.00	0.00
9,500.0	7.52	109.16	9,461.3	-198.6	571.8	276.5	0.00	0.00	0.00



EOG Resources, Inc.
Survey Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Well:	#401H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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)
9,600.0	7.52	109.16	9,560.4	-202.9	584.1	282.5	0.00	0.00	0.00
9,700.0	7.52	109.16	9,659.6	-207.2	596.5	288.4	0.00	0.00	0.00
9,800.0	7.52	109.16	9,758.7	-211.5	608.8	294.4	0.00	0.00	0.00
9,900.0	7.52	109.16	9,857.9	-215.8	621.2	300.4	0.00	0.00	0.00
9,999.3	7.52	109.16	9,956.3	-220.1	633.5	306.3	0.00	0.00	0.00
10,050.0	10.36	136.75	10,006.4	-224.5	639.7	311.6	10.00	5.61	54.44
10,100.0	14.41	150.65	10,055.2	-233.2	645.9	321.1	10.00	8.09	27.81
10,150.0	18.91	158.32	10,103.1	-246.1	651.9	334.7	10.00	9.00	15.33
10,200.0	23.61	163.07	10,149.7	-263.3	657.8	352.5	10.00	9.39	9.51
10,250.0	28.41	166.31	10,194.7	-284.4	663.6	374.3	10.00	9.59	6.48
10,300.0	33.26	168.68	10,237.6	-309.4	669.1	399.8	10.00	9.70	4.73
10,350.0	38.14	170.50	10,278.2	-338.1	674.3	428.9	10.00	9.77	3.64
10,400.0	43.05	171.96	10,316.1	-370.3	679.3	461.5	10.00	9.82	2.92
10,450.0	47.98	173.17	10,351.1	-405.6	683.9	497.1	10.00	9.85	2.43
10,500.0	52.91	174.21	10,383.0	-443.9	688.1	535.6	10.00	9.87	2.08
10,550.0	57.86	175.13	10,411.4	-484.9	691.9	576.7	10.00	9.89	1.83
10,600.0	62.81	175.95	10,436.1	-528.2	695.3	620.1	10.00	9.90	1.64
10,650.0	67.76	176.70	10,457.0	-573.5	698.2	665.3	10.00	9.91	1.50
10,700.0	72.72	177.39	10,473.9	-620.5	700.6	712.2	10.00	9.91	1.40
10,750.0	77.67	178.05	10,486.7	-668.8	702.5	760.3	10.00	9.92	1.32
10,800.0	82.64	178.69	10,495.2	-718.0	703.9	809.2	10.00	9.92	1.27
10,850.0	87.60	179.31	10,499.5	-767.8	704.8	858.7	10.00	9.92	1.24
10,874.2	90.00	179.61	10,500.0	-792.0	705.0	882.7	10.00	9.92	1.24
10,900.0	90.00	179.61	10,500.0	-817.8	705.2	908.2	0.00	0.00	0.00
11,000.0	90.00	179.61	10,500.0	-917.8	705.9	1,007.3	0.00	0.00	0.00
11,100.0	90.00	179.61	10,500.0	-1,017.8	706.5	1,106.4	0.00	0.00	0.00
11,200.0	90.00	179.61	10,500.0	-1,117.8	707.2	1,205.5	0.00	0.00	0.00
11,300.0	90.00	179.61	10,500.0	-1,217.8	707.9	1,304.7	0.00	0.00	0.00
11,400.0	90.00	179.61	10,500.0	-1,317.8	708.6	1,403.8	0.00	0.00	0.00
11,500.0	90.00	179.61	10,500.0	-1,417.8	709.3	1,502.9	0.00	0.00	0.00
11,600.0	90.00	179.61	10,500.0	-1,517.8	709.9	1,602.0	0.00	0.00	0.00
11,700.0	90.00	179.61	10,500.0	-1,617.8	710.6	1,701.1	0.00	0.00	0.00
11,800.0	90.00	179.61	10,500.0	-1,717.8	711.3	1,800.2	0.00	0.00	0.00
11,900.0	90.00	179.61	10,500.0	-1,817.8	712.0	1,899.3	0.00	0.00	0.00
12,000.0	90.00	179.61	10,500.0	-1,917.8	712.6	1,998.5	0.00	0.00	0.00
12,100.0	90.00	179.61	10,500.0	-2,017.8	713.3	2,097.6	0.00	0.00	0.00
12,200.0	90.00	179.61	10,500.0	-2,117.8	714.0	2,196.7	0.00	0.00	0.00
12,300.0	90.00	179.61	10,500.0	-2,217.7	714.7	2,295.8	0.00	0.00	0.00
12,400.0	90.00	179.61	10,500.0	-2,317.7	715.4	2,394.9	0.00	0.00	0.00
12,500.0	90.00	179.61	10,500.0	-2,417.7	716.0	2,494.0	0.00	0.00	0.00
12,600.0	90.00	179.61	10,500.0	-2,517.7	716.7	2,593.1	0.00	0.00	0.00
12,700.0	90.00	179.61	10,500.0	-2,617.7	717.4	2,692.2	0.00	0.00	0.00
12,800.0	90.00	179.61	10,500.0	-2,717.7	718.1	2,791.4	0.00	0.00	0.00



EOG Resources, Inc.

Survey Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Well:	#401H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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)
12,900.0	90.00	179.61	10,500.0	-2,817.7	718.7	2,890.5	0.00	0.00	0.00
13,000.0	90.00	179.61	10,500.0	-2,917.7	719.4	2,989.6	0.00	0.00	0.00
13,100.0	90.00	179.61	10,500.0	-3,017.7	720.1	3,088.7	0.00	0.00	0.00
13,200.0	90.00	179.61	10,500.0	-3,117.7	720.8	3,187.8	0.00	0.00	0.00
13,300.0	90.00	179.61	10,500.0	-3,217.7	721.5	3,286.9	0.00	0.00	0.00
13,400.0	90.00	179.61	10,500.0	-3,317.7	722.1	3,386.0	0.00	0.00	0.00
13,500.0	90.00	179.61	10,500.0	-3,417.7	722.8	3,485.2	0.00	0.00	0.00
13,600.0	90.00	179.61	10,500.0	-3,517.7	723.5	3,584.3	0.00	0.00	0.00
13,700.0	90.00	179.61	10,500.0	-3,617.7	724.2	3,683.4	0.00	0.00	0.00
13,800.0	90.00	179.61	10,500.0	-3,717.7	724.9	3,782.5	0.00	0.00	0.00
13,900.0	90.00	179.61	10,500.0	-3,817.7	725.5	3,881.6	0.00	0.00	0.00
14,000.0	90.00	179.61	10,500.0	-3,917.7	726.2	3,980.7	0.00	0.00	0.00
14,100.0	90.00	179.61	10,500.0	-4,017.7	726.9	4,079.8	0.00	0.00	0.00
14,200.0	90.00	179.61	10,500.0	-4,117.7	727.6	4,179.0	0.00	0.00	0.00
14,300.0	90.00	179.61	10,500.0	-4,217.7	728.2	4,278.1	0.00	0.00	0.00
14,400.0	90.00	179.61	10,500.0	-4,317.7	728.9	4,377.2	0.00	0.00	0.00
14,500.0	90.00	179.61	10,500.0	-4,417.7	729.6	4,476.3	0.00	0.00	0.00
14,600.0	90.00	179.61	10,500.0	-4,517.7	730.3	4,575.4	0.00	0.00	0.00
14,700.0	90.00	179.61	10,500.0	-4,617.7	731.0	4,674.5	0.00	0.00	0.00
14,800.0	90.00	179.61	10,500.0	-4,717.7	731.6	4,773.6	0.00	0.00	0.00
14,900.0	90.00	179.61	10,500.0	-4,817.7	732.3	4,872.7	0.00	0.00	0.00
15,000.0	90.00	179.61	10,500.0	-4,917.7	733.0	4,971.9	0.00	0.00	0.00
15,100.0	90.00	179.61	10,500.0	-5,017.7	733.7	5,071.0	0.00	0.00	0.00
15,200.0	90.00	179.61	10,500.0	-5,117.7	734.3	5,170.1	0.00	0.00	0.00
15,296.3	90.00	179.61	10,500.0	-5,214.0	735.0	5,265.6	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL (Vaca 11 Fed #40 - hit/miss target - Shape - Rectangle (sides W50.0 H0.0 D4,718.4)	90.00	179.61	10,500.0	-5,214.0	735.0	409,653.00	744,037.00	32° 7' 25.675 N	103° 32' 42.193 W
FTP (Vaca 11 Fed #401H - plan misses target center by 72.0usft at 10600.0usft MD (10436.1 TVD, -528.2 N, 695.3 E) - Point	0.00	0.00	10,500.0	-496.0	703.0	414,371.00	744,005.00	32° 8' 12.364 N	103° 32' 42.164 W

Checked By: _____ Approved By: _____ Date: _____

Extra Copy



EOG Resources - Midland

Lea County, NM (NAD 27 NME)

Vaca 11 Fed

#401H

OH

Plan #1

Anticollision Report

08 October, 2015

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 2,000.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	10/8/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	15,296.3	Plan #1 (OH)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Vaca 11 Fed Com						
#405H - OH - Plan #1	4,500.0	4,500.0	60.0	40.1	3.010	CC, ES, SF
#406H - OH - Plan #1	4,500.0	4,500.0	30.0	10.1	1.505	CC, ES, SF
Vaca 14 Fed						
#1 P&A - OH - OH	13,882.0	10,456.3	41.0	-11,666.9	0.003	Level 1, CC, ES, SF

Offset Design													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.0 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-60.0	60.0				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-60.0	60.0	59.8	0.16	361.348	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-60.0	60.0	59.4	0.61	98.868	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-60.0	60.0	58.9	1.06	56.797	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-60.0	60.0	58.5	1.51	39.842	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-60.0	60.0	58.0	1.96	30.683	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-60.0	60.0	57.6	2.40	24.948	
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-60.0	60.0	57.1	2.85	21.019	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-60.0	60.0	56.7	3.30	18.159	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-60.0	60.0	56.2	3.75	15.985	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-60.0	60.0	55.8	4.20	14.275	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-90.00	0.0	-60.0	60.0	55.3	4.65	12.896	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	0.0	-60.0	60.0	54.9	5.10	11.760	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-60.0	60.0	54.4	5.55	10.807	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-60.0	60.0	54.0	6.00	9.998	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-90.00	0.0	-60.0	60.0	53.5	6.45	9.301	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-90.00	0.0	-60.0	60.0	53.1	6.90	8.695	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-90.00	0.0	-60.0	60.0	52.7	7.35	8.163	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-90.00	0.0	-60.0	60.0	52.2	7.80	7.693	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-90.00	0.0	-60.0	60.0	51.8	8.25	7.274	
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	-90.00	0.0	-60.0	60.0	51.3	8.70	6.898	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-90.00	0.0	-60.0	60.0	50.9	9.15	6.559	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #405H - OH - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N-S (usft)	+E-W (usft)						
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-90.00	0.0	-60.0	60.0	50.4	6.252			
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	-90.00	0.0	-60.0	60.0	50.0	5.972			
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	-90.00	0.0	-60.0	60.0	49.5	5.716			
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-90.00	0.0	-60.0	60.0	49.1	5.481			
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-90.00	0.0	-60.0	60.0	48.6	5.265			
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	-90.00	0.0	-60.0	60.0	48.2	5.065			
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	-90.00	0.0	-60.0	60.0	47.7	4.880			
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-90.00	0.0	-60.0	60.0	47.3	4.708			
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-90.00	0.0	-60.0	60.0	46.8	4.548			
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	-90.00	0.0	-60.0	60.0	46.4	4.398			
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	-90.00	0.0	-60.0	60.0	45.9	4.257			
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-90.00	0.0	-60.0	60.0	45.5	4.126			
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-90.00	0.0	-60.0	60.0	45.0	4.002			
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	-90.00	0.0	-60.0	60.0	44.6	3.886			
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	-90.00	0.0	-60.0	60.0	44.1	3.776			
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-90.00	0.0	-60.0	60.0	43.7	3.672			
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-90.00	0.0	-60.0	60.0	43.2	3.574			
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	-90.00	0.0	-60.0	60.0	42.8	3.480			
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	-90.00	0.0	-60.0	60.0	42.3	3.392			
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-90.00	0.0	-60.0	60.0	41.9	3.308			
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-90.00	0.0	-60.0	60.0	41.4	3.228			
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	-90.00	0.0	-60.0	60.0	41.0	3.152			
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	-90.00	0.0	-60.0	60.0	40.5	3.079			
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-90.00	0.0	-60.0	60.0	40.1	3.010 CC, ES, SF			
4,600.0	4,600.0	4,599.0	4,599.0	10.2	10.2	160.78	-0.4	-60.8	61.6	41.3	3.029			
4,700.0	4,700.0	4,697.9	4,697.9	10.4	10.4	160.59	-1.4	-63.1	66.4	45.7	3.210			
4,800.0	4,799.9	4,796.5	4,796.3	10.6	10.5	160.33	-3.1	-67.0	74.5	53.4	3.537			
4,900.0	4,899.7	4,894.6	4,894.3	10.7	10.7	160.05	-5.6	-72.4	85.7	64.3	4.004			
5,000.0	4,999.4	4,992.1	4,991.5	10.9	10.9	159.77	-8.7	-79.3	100.2	78.4	4.602			
5,100.0	5,098.9	5,088.8	5,087.8	11.1	11.2	159.51	-12.4	-87.6	117.8	95.6	5.325			
5,200.0	5,198.3	5,186.5	5,184.9	11.4	11.4	159.38	-16.6	-96.9	137.9	115.5	6.140			
5,252.1	5,249.9	5,237.4	5,235.5	11.5	11.5	159.41	-18.8	-101.8	149.1	126.4	6.583			
5,300.0	5,297.4	5,284.1	5,282.0	11.6	11.6	159.50	-20.8	-106.3	159.5	136.7	6.988			
5,400.0	5,398.6	5,381.7	5,379.1	11.8	11.9	159.84	-25.0	-115.6	181.3	158.1	7.809			
5,500.0	5,495.7	5,479.3	5,476.1	12.0	12.1	159.75	-29.2	-124.9	203.1	179.5	8.601			
5,600.0	5,594.8	5,576.9	5,573.2	12.3	12.4	159.84	-33.4	-134.3	224.9	200.9	9.365			
5,700.0	5,694.0	5,674.5	5,670.2	12.5	12.6	159.92	-37.6	-143.6	246.7	222.3	10.102			
5,800.0	5,793.1	5,772.1	5,767.3	12.7	12.9	159.98	-41.8	-153.0	268.5	243.7	10.813			
5,900.0	5,892.3	5,869.7	5,864.4	13.0	13.2	160.03	-46.0	-162.3	290.4	265.1	11.500			
6,000.0	5,991.4	5,967.3	5,961.4	13.2	13.5	160.08	-50.2	-171.7	312.2	286.5	12.162			
6,100.0	6,090.5	6,064.9	6,058.5	13.5	13.7	160.12	-54.4	-181.0	334.0	307.9	12.801			
6,200.0	6,189.7	6,162.5	6,155.5	13.7	14.0	160.15	-58.7	-190.4	355.8	329.3	13.418			
6,300.0	6,288.8	6,260.1	6,252.6	14.0	14.3	160.18	-62.9	-199.7	377.6	350.6	14.014			
6,400.0	6,388.0	6,357.7	6,349.6	14.2	14.6	160.21	-67.1	-209.1	399.4	372.0	14.589			
6,500.0	6,487.1	6,455.3	6,446.7	14.5	14.9	160.24	-71.3	-218.4	421.2	393.4	15.145			
6,600.0	6,586.2	6,552.9	6,543.7	14.8	15.2	160.26	-75.5	-227.8	443.0	414.8	15.682			
6,700.0	6,685.4	6,650.4	6,640.8	15.0	15.6	160.28	-79.7	-237.1	464.8	436.1	16.201			
6,800.0	6,784.5	6,748.0	6,737.8	15.3	15.9	160.30	-83.9	-246.4	486.6	457.5	16.703			
6,900.0	6,883.7	6,845.6	6,834.9	15.6	16.2	160.31	-88.1	-255.8	508.4	478.9	17.189			
7,000.0	6,982.8	6,943.2	6,931.9	15.9	16.5	160.33	-92.3	-265.1	530.3	500.2	17.658			
7,100.0	7,081.9	7,040.8	7,029.0	16.1	16.8	160.34	-96.5	-274.5	552.1	521.6	18.113			
7,200.0	7,181.1	7,138.4	7,126.0	16.4	17.2	160.36	-100.7	-283.8	573.9	542.9	18.552			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #405H - OH - Plan #1														Offset Site Error:	0.0 usft
Survey Program: 0-MWD														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
7,300.0	7,280.2	7,236.0	7,223.1	16.7	17.5	160.37	-104.9	-293.2	595.7	564.3	31.39	18.978			
7,400.0	7,379.4	7,333.6	7,320.1	17.0	17.8	160.38	-109.1	-302.5	617.5	585.6	31.84	19.391			
7,500.0	7,478.5	7,431.2	7,417.2	17.3	18.1	160.39	-113.3	-311.9	639.3	607.0	32.30	19.790			
7,600.0	7,577.6	7,528.8	7,514.3	17.5	18.5	160.40	-117.5	-321.2	661.1	628.3	32.76	20.177			
7,700.0	7,676.8	7,626.4	7,611.3	17.8	18.8	160.41	-121.7	-330.6	682.9	649.7	33.23	20.553			
7,800.0	7,775.9	7,724.0	7,708.4	18.1	19.2	160.42	-125.9	-339.9	704.7	671.0	33.69	20.917			
7,900.0	7,875.1	7,821.6	7,805.4	18.4	19.5	160.43	-130.1	-349.3	726.5	692.4	34.16	21.270			
8,000.0	7,974.2	7,919.1	7,902.5	18.7	19.8	160.43	-134.3	-358.6	748.3	713.7	34.63	21.612			
8,100.0	8,073.3	8,016.7	7,999.5	19.0	20.2	160.44	-138.5	-367.9	770.2	735.1	35.10	21.945			
8,200.0	8,172.5	8,114.3	8,096.6	19.3	20.5	160.45	-142.7	-377.3	792.0	756.4	35.57	22.267			
8,300.0	8,271.6	8,211.9	8,193.6	19.6	20.9	160.46	-147.0	-386.6	813.8	777.7	36.04	22.581			
8,400.0	8,370.8	8,309.5	8,290.7	19.9	21.2	160.46	-151.2	-396.0	835.6	799.1	36.51	22.885			
8,500.0	8,469.9	8,407.1	8,387.7	20.2	21.6	160.47	-155.4	-405.3	857.4	820.4	36.99	23.181			
8,600.0	8,569.0	8,504.7	8,484.8	20.5	21.9	160.47	-159.6	-414.7	879.2	841.7	37.46	23.469			
8,700.0	8,668.2	8,602.3	8,581.8	20.8	22.3	160.48	-163.8	-424.0	901.0	863.1	37.94	23.748			
8,800.0	8,767.3	8,699.9	8,678.9	21.1	22.6	160.48	-168.0	-433.4	922.8	884.4	38.42	24.020			
8,900.0	8,866.5	8,797.5	8,775.9	21.4	23.0	160.49	-172.2	-442.7	944.6	905.7	38.90	24.284			
9,000.0	8,965.6	8,895.1	8,873.0	21.7	23.3	160.49	-176.4	-452.1	966.4	927.1	39.38	24.542			
9,100.0	9,064.7	8,992.7	8,970.0	22.0	23.7	160.50	-180.6	-461.4	988.3	948.4	39.86	24.792			
9,200.0	9,163.9	9,090.3	9,067.1	22.3	24.1	160.50	-184.8	-470.8	1,010.1	969.7	40.34	25.036			
9,300.0	9,263.0	9,187.9	9,164.2	22.6	24.4	160.50	-189.0	-480.1	1,031.9	991.0	40.83	25.273			
9,400.0	9,362.2	9,285.4	9,261.2	22.9	24.8	160.51	-193.2	-489.4	1,053.7	1,012.4	41.31	25.504			
9,500.0	9,461.3	9,383.0	9,358.3	23.2	25.1	160.51	-197.4	-498.8	1,075.5	1,033.7	41.80	25.730			
9,600.0	9,560.4	9,480.6	9,455.3	23.5	25.5	160.52	-201.6	-508.1	1,097.3	1,055.0	42.29	25.949			
9,700.0	9,659.6	9,578.2	9,552.4	23.8	25.9	160.52	-205.8	-517.5	1,119.1	1,076.3	42.77	26.163			
9,800.0	9,758.7	9,675.8	9,649.4	24.1	26.2	160.52	-210.0	-526.8	1,140.9	1,097.7	43.26	26.372			
9,900.0	9,857.9	9,773.4	9,746.5	24.4	26.6	160.53	-214.2	-536.2	1,162.7	1,119.0	43.75	26.575			
9,999.3	9,956.3	9,870.3	9,842.9	24.7	26.9	160.53	-218.4	-545.5	1,184.4	1,140.2	44.24	26.772			
10,050.0	10,006.4	9,919.7	9,892.0	24.9	27.1	132.23	-220.5	-550.2	1,195.4	1,151.0	44.45	26.892			
10,100.0	10,055.2	9,968.1	9,940.1	25.0	27.3	117.85	-222.6	-554.8	1,206.3	1,161.6	44.69	26.990			
10,150.0	10,103.1	10,017.5	9,989.1	25.2	27.5	109.88	-225.8	-559.5	1,217.0	1,172.0	44.97	27.063			
10,200.0	10,149.7	10,068.4	10,039.2	25.4	27.7	104.86	-233.4	-564.3	1,227.5	1,182.2	45.29	27.104			
10,250.0	10,194.7	10,120.3	10,089.4	25.6	27.9	101.40	-245.7	-569.1	1,237.7	1,192.1	45.67	27.105			
10,300.0	10,237.6	10,173.4	10,139.4	25.8	28.2	98.85	-262.9	-573.8	1,247.6	1,201.5	46.11	27.060			
10,350.0	10,278.2	10,227.6	10,188.6	26.0	28.5	96.89	-285.3	-578.4	1,257.0	1,210.4	46.52	26.964			
10,400.0	10,316.1	10,283.2	10,236.5	26.2	28.8	95.35	-312.9	-582.8	1,265.9	1,218.7	47.21	26.812			
10,450.0	10,351.1	10,340.0	10,282.6	26.5	29.2	94.10	-345.8	-587.1	1,274.2	1,226.3	47.91	26.596			
10,500.0	10,383.0	10,398.0	10,326.1	26.8	29.7	93.09	-384.0	-591.0	1,281.8	1,233.0	48.72	26.311			
10,550.0	10,411.4	10,457.3	10,366.4	27.1	30.3	92.27	-427.4	-594.6	1,288.6	1,238.9	49.66	25.946			
10,600.0	10,436.1	10,517.8	10,402.6	27.4	30.9	91.60	-475.7	-597.8	1,294.5	1,243.8	50.76	25.504			
10,650.0	10,457.0	10,579.4	10,434.0	27.7	31.6	91.07	-528.5	-600.5	1,299.6	1,247.6	52.01	24.989			
10,700.0	10,473.9	10,641.9	10,460.0	28.1	32.5	90.65	-585.2	-602.6	1,303.7	1,250.3	53.41	24.409			
10,750.0	10,486.7	10,705.1	10,479.9	28.5	33.4	90.35	-645.2	-604.1	1,306.8	1,251.9	54.97	23.774			
10,800.0	10,495.2	10,768.8	10,493.2	28.9	34.4	90.14	-707.5	-605.0	1,308.9	1,252.2	56.67	23.098			
10,850.0	10,499.5	10,832.9	10,499.5	29.3	35.5	90.02	-771.2	-605.1	1,309.9	1,251.4	58.47	22.403			
10,874.2	10,500.0	10,862.5	10,500.0	29.5	36.1	90.00	-800.9	-605.0	1,310.0	1,250.7	59.35	22.075			
10,900.0	10,500.0	10,888.3	10,500.0	29.7	36.6	90.00	-826.7	-604.8	1,310.0	1,249.9	60.15	21.780			
11,000.0	10,500.0	10,988.3	10,500.0	30.7	38.5	90.00	-926.7	-604.1	1,310.0	1,246.6	63.41	20.859			
11,100.0	10,500.0	11,088.3	10,500.0	31.7	40.6	90.00	-1,026.7	-603.4	1,310.0	1,243.2	66.86	19.593			
11,200.0	10,500.0	11,188.3	10,500.0	32.8	42.9	90.00	-1,126.7	-602.8	1,310.0	1,239.5	70.47	18.589			
11,300.0	10,500.0	11,288.3	10,500.0	33.9	45.2	90.00	-1,226.7	-602.1	1,310.0	1,235.8	74.23	17.649			
11,400.0	10,500.0	11,388.3	10,500.0	35.1	47.6	90.00	-1,326.7	-601.4	1,310.0	1,231.9	78.10	16.774			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #405H - OH - Plan #1										Offset Site Error:		0.0 usft	
Survey Program: 0-MWD										Offset Well Error:		0.0 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
11,500.0	10,500.0	11,488.3	10,500.0	36.4	50.1	90.00	-1,426.6	-600.7	1,310.0	1,227.9	82.07	15.961	
11,600.0	10,500.0	11,588.3	10,500.0	37.7	52.7	90.00	-1,526.6	-600.1	1,310.0	1,223.9	86.14	15.209	
11,700.0	10,500.0	11,688.3	10,500.0	39.0	55.3	90.00	-1,626.6	-599.4	1,310.0	1,219.7	90.28	14.511	
11,800.0	10,500.0	11,788.3	10,500.0	40.4	57.9	90.00	-1,726.6	-598.7	1,310.0	1,215.5	94.49	13.865	
11,900.0	10,500.0	11,888.3	10,500.0	41.9	60.6	90.00	-1,826.6	-598.0	1,310.0	1,211.3	98.75	13.266	
12,000.0	10,500.0	11,988.3	10,500.0	43.3	63.3	90.00	-1,926.6	-597.3	1,310.0	1,207.0	103.07	12.710	
12,100.0	10,500.0	12,088.3	10,500.0	44.8	66.0	90.00	-2,026.6	-596.7	1,310.0	1,202.6	107.44	12.194	
12,200.0	10,500.0	12,188.3	10,500.0	46.3	68.8	90.00	-2,126.6	-596.0	1,310.0	1,198.2	111.84	11.713	
12,300.0	10,500.0	12,288.3	10,500.0	47.8	71.6	90.00	-2,226.6	-595.3	1,310.0	1,193.7	116.28	11.266	
12,400.0	10,500.0	12,388.3	10,500.0	49.4	74.4	90.00	-2,326.6	-594.6	1,310.0	1,189.3	120.75	10.849	
12,500.0	10,500.0	12,488.3	10,500.0	50.9	77.2	90.00	-2,426.6	-594.0	1,310.0	1,184.8	125.25	10.459	
12,600.0	10,500.0	12,588.3	10,500.0	52.5	80.1	90.00	-2,526.6	-593.3	1,310.0	1,180.2	129.78	10.094	
12,700.0	10,500.0	12,688.3	10,500.0	54.1	82.9	90.00	-2,626.6	-592.6	1,310.0	1,175.7	134.33	9.752	
12,800.0	10,500.0	12,788.3	10,500.0	55.7	85.8	90.00	-2,726.6	-591.9	1,310.0	1,171.1	138.90	9.431	
12,900.0	10,500.0	12,888.3	10,500.0	57.3	88.7	90.00	-2,826.6	-591.2	1,310.0	1,166.5	143.50	9.129	
13,000.0	10,500.0	12,988.3	10,500.0	59.0	91.6	90.00	-2,926.6	-590.6	1,310.0	1,161.9	148.10	8.845	
13,100.0	10,500.0	13,088.3	10,500.0	60.6	94.5	90.00	-3,026.6	-589.9	1,310.0	1,157.3	152.73	8.578	
13,200.0	10,500.0	13,188.3	10,500.0	62.3	97.4	90.00	-3,126.6	-589.2	1,310.0	1,152.7	157.37	8.325	
13,300.0	10,500.0	13,288.3	10,500.0	64.0	100.3	90.00	-3,226.6	-588.5	1,310.0	1,148.0	162.02	8.086	
13,400.0	10,500.0	13,388.3	10,500.0	65.6	103.2	90.00	-3,326.6	-587.9	1,310.0	1,143.3	166.68	7.859	
13,500.0	10,500.0	13,488.3	10,500.0	67.3	106.2	90.00	-3,426.6	-587.2	1,310.0	1,138.7	171.36	7.645	
13,600.0	10,500.0	13,588.3	10,500.0	69.0	109.1	90.00	-3,526.6	-586.5	1,310.0	1,134.0	176.04	7.442	
13,700.0	10,500.0	13,688.3	10,500.0	70.7	112.1	90.00	-3,626.6	-585.8	1,310.0	1,129.3	180.74	7.248	
13,800.0	10,500.0	13,788.3	10,500.0	72.4	115.0	90.00	-3,726.6	-585.1	1,310.0	1,124.6	185.44	7.064	
13,900.0	10,500.0	13,888.3	10,500.0	74.1	118.0	90.00	-3,826.6	-584.5	1,310.0	1,119.9	190.15	6.889	
14,000.0	10,500.0	13,988.3	10,500.0	75.8	120.9	90.00	-3,926.6	-583.8	1,310.0	1,115.2	194.87	6.723	
14,100.0	10,500.0	14,088.3	10,500.0	77.5	123.9	90.00	-4,026.6	-583.1	1,310.0	1,110.4	199.60	6.563	
14,200.0	10,500.0	14,188.3	10,500.0	79.3	126.8	90.00	-4,126.6	-582.4	1,310.0	1,105.7	204.33	6.411	
14,300.0	10,500.0	14,288.3	10,500.0	81.0	129.8	90.00	-4,226.6	-581.8	1,310.0	1,101.0	209.07	6.266	
14,400.0	10,500.0	14,388.3	10,500.0	82.7	132.8	90.00	-4,326.6	-581.1	1,310.0	1,096.2	213.81	6.127	
14,500.0	10,500.0	14,488.3	10,500.0	84.5	135.8	90.00	-4,426.6	-580.4	1,310.0	1,091.5	218.56	5.994	
14,600.0	10,500.0	14,588.3	10,500.0	86.2	138.7	90.00	-4,526.6	-579.7	1,310.0	1,086.7	223.32	5.866	
14,700.0	10,500.0	14,688.3	10,500.0	88.0	141.7	90.00	-4,626.6	-579.0	1,310.0	1,082.0	228.08	5.744	
14,800.0	10,500.0	14,788.3	10,500.0	89.7	144.7	90.00	-4,726.6	-578.4	1,310.0	1,077.2	232.84	5.626	
14,900.0	10,500.0	14,888.3	10,500.0	91.5	147.7	90.00	-4,826.6	-577.7	1,310.0	1,072.4	237.61	5.513	
15,000.0	10,500.0	14,988.3	10,500.0	93.2	150.7	90.00	-4,926.6	-577.0	1,310.0	1,067.6	242.38	5.405	
15,100.0	10,500.0	15,088.3	10,500.0	95.0	153.7	90.00	-5,026.6	-576.3	1,310.0	1,062.9	247.16	5.300	
15,200.0	10,500.0	15,188.3	10,500.0	96.7	156.7	90.00	-5,126.6	-575.7	1,310.0	1,058.1	251.94	5.200	
15,296.3	10,500.0	15,284.6	10,500.0	98.4	159.5	90.00	-5,222.9	-575.0	1,310.0	1,053.5	256.54	5.106	

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #406H - OH - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-30.0	30.0					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.0	30.0	29.8	0.18	190.674		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.0	30.0	29.4	0.61	49.434		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-30.0	30.0	28.9	1.06	28.398		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-30.0	30.0	28.5	1.51	19.921		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-30.0	30.0	28.0	1.96	15.342		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-30.0	30.0	27.6	2.40	12.474		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-30.0	30.0	27.1	2.85	10.510		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-30.0	30.0	26.7	3.30	9.080		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-30.0	30.0	26.2	3.75	7.992		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-30.0	30.0	25.8	4.20	7.138		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-90.00	0.0	-30.0	30.0	25.3	4.65	6.448		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	0.0	-30.0	30.0	24.9	5.10	5.880		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-30.0	30.0	24.4	5.55	5.404		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-30.0	30.0	24.0	6.00	4.999		
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-90.00	0.0	-30.0	30.0	23.5	6.45	4.651		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-90.00	0.0	-30.0	30.0	23.1	6.90	4.348		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-90.00	0.0	-30.0	30.0	22.7	7.35	4.082		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-90.00	0.0	-30.0	30.0	22.2	7.80	3.846		
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-90.00	0.0	-30.0	30.0	21.8	8.25	3.637		
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	-90.00	0.0	-30.0	30.0	21.3	8.70	3.449		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-90.00	0.0	-30.0	30.0	20.9	9.15	3.279		
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-90.00	0.0	-30.0	30.0	20.4	9.60	3.126		
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	-90.00	0.0	-30.0	30.0	20.0	10.05	2.986		
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	-90.00	0.0	-30.0	30.0	19.5	10.50	2.858		
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-90.00	0.0	-30.0	30.0	19.1	10.95	2.741		
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-90.00	0.0	-30.0	30.0	18.6	11.40	2.633		
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	-90.00	0.0	-30.0	30.0	18.2	11.85	2.533		
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	-90.00	0.0	-30.0	30.0	17.7	12.29	2.440		
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-90.00	0.0	-30.0	30.0	17.3	12.74	2.354		
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-90.00	0.0	-30.0	30.0	16.8	13.19	2.274		
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	-90.00	0.0	-30.0	30.0	16.4	13.64	2.199		
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	-90.00	0.0	-30.0	30.0	15.9	14.09	2.129		
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-90.00	0.0	-30.0	30.0	15.5	14.54	2.063		
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-90.00	0.0	-30.0	30.0	15.0	14.99	2.001		
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	-90.00	0.0	-30.0	30.0	14.6	15.44	1.943		
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	-90.00	0.0	-30.0	30.0	14.1	15.89	1.888		
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-90.00	0.0	-30.0	30.0	13.7	16.34	1.836		
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-90.00	0.0	-30.0	30.0	13.2	16.79	1.787		
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	-90.00	0.0	-30.0	30.0	12.8	17.24	1.740		
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	-90.00	0.0	-30.0	30.0	12.3	17.69	1.696		
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-90.00	0.0	-30.0	30.0	11.9	18.14	1.654		
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-90.00	0.0	-30.0	30.0	11.4	18.59	1.614		
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	-90.00	0.0	-30.0	30.0	11.0	19.04	1.576		
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	-90.00	0.0	-30.0	30.0	10.5	19.49	1.539		
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-90.00	0.0	-30.0	30.0	10.1	19.94	1.505 CC, ES, SF		
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	161.37	0.0	-30.0	30.8	10.5	20.36	1.514		
4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	162.80	0.0	-30.0	33.3	12.5	20.77	1.604		
4,800.0	4,799.9	4,799.9	4,799.9	10.6	10.6	164.76	0.0	-30.0	37.5	16.3	21.17	1.772		
4,900.0	4,899.7	4,899.7	4,899.7	10.7	10.9	166.87	0.0	-30.0	43.4	21.9	21.56	2.014		
5,000.0	4,999.4	4,999.4	4,999.4	10.9	11.1	168.85	0.0	-30.0	51.1	29.2	21.95	2.328		
5,100.0	5,098.9	5,099.3	5,099.3	11.1	11.3	169.83	-0.8	-29.8	60.2	37.9	22.30	2.701		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #406H - OH - Plan #1														Offset Site Error:	0.0 usft
Survey Program: 0-MWD														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
5,200.0	5,198.3	5,199.2	5,199.1	11.4	11.5	169.46	-3.4	-29.3	70.4	47.8	22.62	3.115			
5,252.1	5,249.9	5,251.1	5,251.0	11.5	11.5	168.91	-5.4	-28.9	76.2	53.4	22.78	3.345			
5,300.0	5,297.4	5,298.8	5,298.7	11.6	11.6	168.28	-7.6	-28.4	81.6	58.7	22.95	3.556			
5,400.0	5,396.6	5,398.2	5,397.9	11.8	11.8	167.16	-12.2	-27.5	92.9	69.6	23.32	3.983			
5,500.0	5,495.7	5,497.5	5,497.2	12.0	12.0	166.29	-16.8	-26.5	104.2	80.5	23.70	4.398			
5,600.0	5,594.8	5,596.9	5,596.4	12.3	12.1	165.58	-21.4	-25.5	115.5	91.5	24.07	4.799			
5,700.0	5,694.0	5,696.2	5,695.7	12.5	12.3	165.00	-26.0	-24.6	126.9	102.4	24.46	5.187			
5,800.0	5,793.1	5,795.6	5,794.9	12.7	12.5	164.52	-30.6	-23.6	138.2	113.4	24.85	5.563			
5,900.0	5,892.3	5,894.9	5,894.1	13.0	12.7	164.11	-35.2	-22.6	149.6	124.3	25.24	5.926			
6,000.0	5,991.4	5,994.3	5,993.4	13.2	12.9	163.76	-39.8	-21.7	160.9	135.3	25.64	6.277			
6,100.0	6,090.5	6,093.6	6,092.6	13.5	13.1	163.45	-44.4	-20.7	172.3	146.3	26.04	6.617			
6,200.0	6,189.7	6,193.0	6,191.8	13.7	13.3	163.18	-49.0	-19.8	183.7	157.2	26.45	6.945			
6,300.0	6,288.8	6,292.3	6,291.1	14.0	13.5	162.95	-53.6	-18.8	195.1	168.2	26.86	7.262			
6,400.0	6,388.0	6,391.7	6,390.3	14.2	13.7	162.74	-58.2	-17.8	206.5	179.2	27.28	7.569			
6,500.0	6,487.1	6,491.0	6,489.5	14.5	13.9	162.55	-62.9	-16.9	217.8	190.1	27.70	7.865			
6,600.0	6,586.2	6,590.4	6,588.8	14.8	14.1	162.38	-67.5	-15.9	229.2	201.1	28.12	8.152			
6,700.0	6,685.4	6,689.7	6,688.0	15.0	14.3	162.22	-72.1	-14.9	240.6	212.1	28.54	8.429			
6,800.0	6,784.5	6,789.1	6,787.2	15.3	14.5	162.08	-76.7	-14.0	252.0	223.0	28.97	8.698			
6,900.0	6,883.7	6,888.4	6,886.5	15.6	14.7	161.96	-81.3	-13.0	263.4	234.0	29.41	8.957			
7,000.0	6,982.8	6,987.7	6,985.7	15.9	14.9	161.84	-85.9	-12.1	274.8	244.9	29.84	9.208			
7,100.0	7,081.9	7,087.1	7,085.0	16.1	15.1	161.73	-90.5	-11.1	286.2	255.9	30.28	9.451			
7,200.0	7,181.1	7,186.4	7,184.2	16.4	15.3	161.63	-95.1	-10.1	297.6	266.8	30.72	9.686			
7,300.0	7,280.2	7,285.8	7,283.4	16.7	15.5	161.54	-99.7	-9.2	309.0	277.8	31.17	9.914			
7,400.0	7,379.4	7,385.1	7,382.7	17.0	15.8	161.45	-104.3	-8.2	320.4	288.8	31.61	10.134			
7,500.0	7,478.5	7,484.5	7,481.9	17.3	16.0	161.37	-108.9	-7.2	331.8	299.7	32.06	10.348			
7,600.0	7,577.6	7,583.8	7,581.1	17.5	16.2	161.30	-113.5	-6.3	343.2	310.6	32.51	10.554			
7,700.0	7,676.8	7,683.2	7,680.4	17.8	16.4	161.23	-118.1	-5.3	354.6	321.6	32.97	10.755			
7,800.0	7,775.9	7,782.5	7,779.6	18.1	16.7	161.16	-122.8	-4.3	366.0	332.5	33.42	10.949			
7,900.0	7,875.1	7,881.9	7,878.8	18.4	16.9	161.10	-127.4	-3.4	377.4	343.5	33.88	11.138			
8,000.0	7,974.2	7,981.2	7,978.1	18.7	17.1	161.04	-132.0	-2.4	388.7	354.4	34.34	11.321			
8,100.0	8,073.3	8,080.6	8,077.3	19.0	17.3	160.99	-136.6	-1.5	400.1	365.3	34.80	11.498			
8,200.0	8,172.5	8,179.9	8,176.6	19.3	17.6	160.94	-141.2	-0.5	411.5	376.3	35.27	11.670			
8,300.0	8,271.6	8,279.3	8,275.8	19.6	17.8	160.89	-145.8	0.5	422.9	387.2	35.73	11.837			
8,400.0	8,370.8	8,378.6	8,375.0	19.9	18.0	160.84	-150.4	1.4	434.3	398.2	36.20	11.999			
8,500.0	8,469.9	8,478.0	8,474.3	20.2	18.3	160.80	-155.0	2.4	445.7	409.1	36.67	12.157			
8,600.0	8,569.0	8,577.3	8,573.5	20.5	18.5	160.76	-159.6	3.4	457.2	420.0	37.14	12.310			
8,700.0	8,668.2	8,676.7	8,672.7	20.8	18.7	160.72	-164.2	4.3	468.6	430.9	37.61	12.458			
8,800.0	8,767.3	8,776.0	8,772.0	21.1	19.0	160.68	-168.8	5.3	480.0	441.9	38.08	12.603			
8,900.0	8,866.5	8,875.4	8,871.2	21.4	19.2	160.64	-173.4	6.2	491.4	452.8	38.56	12.743			
9,000.0	8,965.6	8,974.7	8,970.4	21.7	19.5	160.61	-178.1	7.2	502.8	463.7	39.03	12.880			
9,100.0	9,064.7	9,074.0	9,069.7	22.0	19.7	160.58	-182.7	8.2	514.2	474.6	39.51	13.013			
9,200.0	9,163.9	9,173.4	9,168.9	22.3	19.9	160.55	-187.3	9.1	525.6	485.6	39.99	13.142			
9,300.0	9,263.0	9,272.7	9,268.1	22.6	20.2	160.52	-191.9	10.1	537.0	496.5	40.47	13.268			
9,400.0	9,362.2	9,372.1	9,367.4	22.9	20.4	160.49	-196.5	11.1	548.4	507.4	40.95	13.391			
9,500.0	9,461.3	9,471.4	9,466.6	23.2	20.7	160.46	-201.1	12.0	559.8	518.3	41.43	13.510			
9,600.0	9,560.4	9,570.8	9,565.9	23.5	20.9	160.43	-205.7	13.0	571.2	529.3	41.92	13.626			
9,700.0	9,659.6	9,670.1	9,665.1	23.8	21.2	160.41	-210.3	13.9	582.6	540.2	42.40	13.740			
9,800.0	9,758.7	9,769.5	9,764.3	24.1	21.4	160.38	-214.9	14.9	594.0	551.1	42.89	13.850			
9,900.0	9,857.9	9,868.8	9,863.6	24.4	21.6	160.36	-219.5	15.9	605.4	562.0	43.37	13.957			
9,999.3	9,956.3	9,967.5	9,962.1	24.7	21.9	160.33	-224.2	16.8	616.7	572.8	43.86	14.061			
10,050.0	10,006.4	10,017.8	10,012.1	24.9	22.0	132.39	-229.4	17.3	622.5	578.3	44.17	14.092			
10,100.0	10,055.2	10,067.4	10,060.8	25.0	22.2	118.17	-238.9	17.9	628.1	583.6	44.53	14.104			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #406H - OH - Plan #1														Offset Site Error:	0.0 usft
Survey Program: 0-MWD														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
10,150.0	10,103.1	10,116.9	10,108.4	25.2	22.5	110.20	-252.5	18.4	633.6	588.6	44.95	14.095			
10,200.0	10,149.7	10,166.4	10,154.6	25.4	22.8	105.17	-270.2	18.9	639.0	593.5	45.44	14.062			
10,250.0	10,194.7	10,215.8	10,199.0	25.6	23.1	101.69	-291.7	19.5	644.1	598.1	45.99	14.004			
10,300.0	10,237.6	10,265.3	10,241.5	25.8	23.5	99.13	-317.1	20.1	649.1	602.5	46.62	13.921			
10,350.0	10,278.2	10,314.7	10,281.6	26.0	23.9	97.14	-345.9	20.6	653.8	606.4	47.33	13.812			
10,400.0	10,316.1	10,364.1	10,319.0	26.2	24.4	95.56	-378.1	21.2	658.1	610.0	48.12	13.677			
10,450.0	10,351.1	10,413.5	10,353.6	26.5	25.0	94.28	-413.4	21.8	662.2	613.2	48.99	13.516			
10,500.0	10,383.0	10,462.9	10,384.9	26.8	25.7	93.23	-451.6	22.3	665.8	615.9	49.95	13.330			
10,550.0	10,411.4	10,512.3	10,412.9	27.1	26.4	92.37	-492.3	22.8	669.1	618.1	51.00	13.121			
10,600.0	10,436.1	10,561.8	10,437.2	27.4	27.2	91.66	-535.3	23.4	672.0	619.8	52.13	12.891			
10,650.0	10,457.0	10,611.2	10,457.8	27.7	28.1	91.10	-580.2	23.8	674.4	621.0	53.34	12.643			
10,700.0	10,473.9	10,660.6	10,474.4	28.1	29.0	90.66	-626.8	24.3	676.3	621.7	54.63	12.380			
10,750.0	10,488.7	10,710.1	10,487.0	28.5	30.0	90.34	-674.6	24.7	677.8	621.8	55.99	12.106			
10,800.0	10,495.2	10,759.5	10,495.4	28.9	31.1	90.12	-723.3	25.1	678.8	621.4	57.41	11.823			
10,850.0	10,499.5	10,809.0	10,499.5	29.3	32.1	90.01	-772.6	25.5	679.3	620.4	58.88	11.537			
10,874.2	10,500.0	10,832.9	10,500.0	29.5	32.7	90.00	-796.5	25.7	679.3	619.7	59.61	11.397			
10,900.0	10,500.0	10,858.7	10,500.0	29.7	33.3	90.00	-822.3	25.8	679.4	618.9	60.45	11.239			
11,000.0	10,500.0	10,958.7	10,500.0	30.7	35.6	90.00	-922.3	26.5	679.4	615.5	63.82	10.645			
11,100.0	10,500.0	11,058.7	10,500.0	31.7	38.1	90.00	-1,022.3	27.2	679.4	612.0	67.36	10.086			
11,200.0	10,500.0	11,158.7	10,500.0	32.8	40.6	90.00	-1,122.3	27.8	679.4	608.3	71.05	9.562			
11,300.0	10,500.0	11,258.7	10,500.0	33.9	43.2	90.00	-1,222.3	28.5	679.4	604.5	74.87	9.074			
11,400.0	10,500.0	11,358.7	10,500.0	35.1	45.8	90.00	-1,322.3	29.2	679.4	600.6	78.80	8.622			
11,500.0	10,500.0	11,458.7	10,500.0	36.4	48.5	90.00	-1,422.3	29.8	679.4	596.6	82.83	8.203			
11,600.0	10,500.0	11,558.7	10,500.0	37.7	51.2	90.00	-1,522.3	30.5	679.5	592.5	86.94	7.815			
11,700.0	10,500.0	11,658.7	10,500.0	39.0	54.0	90.00	-1,622.3	31.2	679.5	588.3	91.12	7.457			
11,800.0	10,500.0	11,758.7	10,500.0	40.4	56.8	90.00	-1,722.3	31.8	679.5	584.1	95.37	7.125			
11,900.0	10,500.0	11,858.7	10,500.0	41.9	59.6	90.00	-1,822.3	32.5	679.5	579.8	99.67	6.818			
12,000.0	10,500.0	11,958.7	10,500.0	43.3	62.4	90.00	-1,922.3	33.1	679.5	575.5	104.02	6.533			
12,100.0	10,500.0	12,058.7	10,500.0	44.8	65.3	90.00	-2,022.3	33.8	679.5	571.1	108.41	6.268			
12,200.0	10,500.0	12,158.7	10,500.0	46.3	68.1	90.00	-2,122.3	34.5	679.5	566.7	112.84	6.022			
12,300.0	10,500.0	12,258.7	10,500.0	47.8	71.0	90.00	-2,222.3	35.1	679.6	562.3	117.30	5.793			
12,400.0	10,500.0	12,358.7	10,500.0	49.4	73.9	90.00	-2,322.3	35.8	679.6	557.8	121.79	5.580			
12,500.0	10,500.0	12,458.7	10,500.0	50.9	76.8	90.00	-2,422.3	36.5	679.6	553.3	126.31	5.380			
12,600.0	10,500.0	12,558.7	10,500.0	52.5	79.8	90.00	-2,522.2	37.1	679.6	548.8	130.86	5.194			
12,700.0	10,500.0	12,658.7	10,500.0	54.1	82.7	90.00	-2,622.2	37.8	679.6	544.2	135.42	5.019			
12,800.0	10,500.0	12,758.7	10,500.0	55.7	85.6	90.00	-2,722.2	38.4	679.6	539.6	140.01	4.854			
12,900.0	10,500.0	12,858.7	10,500.0	57.3	88.6	90.00	-2,822.2	39.1	679.7	535.0	144.61	4.700			
13,000.0	10,500.0	12,958.7	10,500.0	59.0	91.5	90.00	-2,922.2	39.8	679.7	530.4	149.23	4.554			
13,100.0	10,500.0	13,058.7	10,500.0	60.6	94.5	90.00	-3,022.2	40.4	679.7	525.8	153.87	4.417			
13,200.0	10,500.0	13,158.7	10,500.0	62.3	97.4	90.00	-3,122.2	41.1	679.7	521.2	158.52	4.288			
13,300.0	10,500.0	13,258.7	10,500.0	64.0	100.4	90.00	-3,222.2	41.8	679.7	516.5	163.18	4.165			
13,400.0	10,500.0	13,358.7	10,500.0	65.6	103.3	90.00	-3,322.2	42.4	679.7	511.9	167.85	4.050			
13,500.0	10,500.0	13,458.7	10,500.0	67.3	106.3	90.00	-3,422.2	43.1	679.7	507.2	172.54	3.940			
13,600.0	10,500.0	13,558.7	10,500.0	69.0	109.3	90.00	-3,522.2	43.8	679.8	502.5	177.23	3.835			
13,700.0	10,500.0	13,658.7	10,500.0	70.7	112.3	90.00	-3,622.2	44.4	679.8	497.8	181.93	3.736			
13,800.0	10,500.0	13,758.7	10,500.0	72.4	115.3	90.00	-3,722.2	45.1	679.8	493.1	186.64	3.642			
13,900.0	10,500.0	13,858.7	10,500.0	74.1	118.2	90.00	-3,822.2	45.7	679.8	488.4	191.36	3.552			
14,000.0	10,500.0	13,958.7	10,500.0	75.8	121.2	90.00	-3,922.2	46.4	679.8	483.7	196.09	3.467			
14,100.0	10,500.0	14,058.7	10,500.0	77.5	124.2	90.00	-4,022.2	47.1	679.8	479.0	200.82	3.385			
14,200.0	10,500.0	14,158.7	10,500.0	79.3	127.2	90.00	-4,122.2	47.7	679.8	474.3	205.56	3.307			
14,300.0	10,500.0	14,258.7	10,500.0	81.0	130.2	90.00	-4,222.2	48.4	679.9	469.6	210.30	3.233			
14,400.0	10,500.0	14,358.7	10,500.0	82.7	133.2	90.00	-4,322.2	49.1	679.9	464.8	215.05	3.161			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 11 Fed Com - #406H - OH - Plan #1													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.0 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,500.0	10,500.0	14,458.7	10,500.0	84.5	136.2	90.00	-4,422.2	49.7	679.9	460.1	219.81	3.093	
14,600.0	10,500.0	14,558.7	10,500.0	86.2	139.2	90.00	-4,522.2	50.4	679.9	455.3	224.57	3.028	
14,700.0	10,500.0	14,658.7	10,500.0	88.0	142.2	90.00	-4,622.2	51.0	679.9	450.6	229.33	2.965	
14,800.0	10,500.0	14,758.7	10,500.0	89.7	145.2	90.00	-4,722.2	51.7	679.9	445.8	234.10	2.904	
14,900.0	10,500.0	14,858.7	10,500.0	91.5	148.2	90.00	-4,822.2	52.4	680.0	441.1	238.88	2.846	
15,000.0	10,500.0	14,958.7	10,500.0	93.2	151.2	90.00	-4,922.2	53.0	680.0	436.3	243.85	2.791	
15,100.0	10,500.0	15,058.7	10,500.0	95.0	154.2	90.00	-5,022.2	53.7	680.0	431.6	248.43	2.737	
15,200.0	10,500.0	15,158.7	10,500.0	96.7	157.2	90.00	-5,122.2	54.4	680.0	426.8	253.22	2.685	
15,246.5	10,500.0	15,205.2	10,500.0	97.6	158.6	90.00	-5,168.7	54.7	680.0	424.6	255.44	2.662	
15,296.3	10,500.0	15,254.5	10,500.0	98.4	160.1	90.00	-5,218.0	55.0	680.0	422.2	257.81	2.638	

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Vaca 14 Fed - #1 P&A - OH - OH											Offset Site Error: 0.0 usft	
Survey Program: 372-BLIND											Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance				Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
11,900.0	10,500.0	10,456.1	10,453.5	41.9	11,635.1	90.67	-3,800.0	684.5	1,982.4	-9,691.9	11,674.34	0.170 Level 1
12,000.0	10,500.0	10,456.1	10,453.5	43.3	11,635.1	90.69	-3,800.0	684.5	1,882.5	-9,793.4	11,675.90	0.161 Level 1
12,100.0	10,500.0	10,456.1	10,453.5	44.8	11,635.2	90.70	-3,800.0	684.5	1,782.5	-9,895.0	11,677.48	0.153 Level 1
12,200.0	10,500.0	10,456.1	10,453.5	46.3	11,635.2	90.72	-3,800.0	684.5	1,682.5	-9,996.6	11,679.09	0.144 Level 1
12,300.0	10,500.0	10,456.2	10,453.5	47.8	11,635.2	90.74	-3,800.0	684.5	1,582.5	-10,098.2	11,680.72	0.135 Level 1
12,400.0	10,500.0	10,456.2	10,453.5	49.4	11,635.3	90.75	-3,800.0	684.5	1,482.6	-10,199.8	11,682.36	0.127 Level 1
12,500.0	10,500.0	10,456.2	10,453.6	50.9	11,635.3	90.77	-3,800.0	684.5	1,382.6	-10,301.4	11,684.01	0.118 Level 1
12,600.0	10,500.0	10,456.2	10,453.6	52.5	11,635.3	90.79	-3,800.0	684.5	1,282.7	-10,403.0	11,685.68	0.110 Level 1
12,700.0	10,500.0	10,456.2	10,453.6	54.1	11,635.3	90.80	-3,800.0	684.5	1,182.7	-10,504.6	11,687.37	0.101 Level 1
12,800.0	10,500.0	10,456.2	10,453.6	55.7	11,635.4	90.82	-3,800.0	684.5	1,082.8	-10,606.3	11,689.06	0.093 Level 1
12,900.0	10,500.0	10,456.2	10,453.6	57.3	11,635.4	90.84	-3,800.0	684.5	982.9	-10,707.9	11,690.76	0.084 Level 1
13,000.0	10,500.0	10,456.2	10,453.6	59.0	11,635.4	90.85	-3,800.0	684.5	883.0	-10,809.5	11,692.47	0.076 Level 1
13,100.0	10,500.0	10,456.3	10,453.6	60.6	11,635.4	90.87	-3,800.0	684.5	783.1	-10,911.1	11,694.19	0.067 Level 1
13,200.0	10,500.0	10,456.3	10,453.6	62.3	11,635.5	90.89	-3,800.0	684.5	683.2	-11,012.7	11,695.92	0.058 Level 1
13,300.0	10,500.0	10,456.3	10,453.6	64.0	11,635.5	90.90	-3,800.0	684.5	583.4	-11,114.2	11,697.66	0.050 Level 1
13,400.0	10,500.0	10,456.3	10,453.7	65.6	11,635.5	90.92	-3,800.0	684.5	483.7	-11,215.7	11,699.40	0.041 Level 1
13,500.0	10,500.0	10,456.3	10,453.7	67.3	11,635.6	90.94	-3,800.0	684.5	384.2	-11,316.9	11,701.14	0.033 Level 1
13,600.0	10,500.0	10,456.3	10,453.7	69.0	11,635.6	90.95	-3,800.0	684.5	285.0	-11,417.9	11,702.89	0.024 Level 1
13,700.0	10,500.0	10,456.3	10,453.7	70.7	11,635.6	90.97	-3,800.0	684.5	186.6	-11,518.1	11,704.65	0.016 Level 1
13,800.0	10,500.0	10,456.3	10,453.7	72.4	11,635.6	90.99	-3,800.0	684.5	91.7	-11,614.7	11,706.41	0.008 Level 1
13,882.0	10,500.0	10,456.3	10,453.7	73.8	11,635.7	91.00	-3,800.0	684.5	41.0	-11,666.9	11,707.86	0.003 Level 1, CC, ES, SF
13,900.0	10,500.0	10,456.4	10,453.7	74.1	11,635.7	91.00	-3,800.0	684.5	44.7	-11,663.4	11,708.17	0.004 Level 1
14,000.0	10,500.0	10,456.4	10,453.7	75.8	11,635.7	91.02	-3,800.0	684.5	124.9	-11,585.0	11,709.94	0.011 Level 1
14,100.0	10,500.0	10,456.4	10,453.7	77.5	11,635.7	91.04	-3,800.0	684.5	221.8	-11,489.9	11,711.71	0.019 Level 1
14,200.0	10,500.0	10,456.4	10,453.8	79.3	11,635.7	91.05	-3,800.0	684.5	320.6	-11,392.9	11,713.49	0.027 Level 1
14,300.0	10,500.0	10,456.4	10,453.8	81.0	11,635.8	91.07	-3,800.0	684.5	420.0	-11,295.3	11,715.26	0.036 Level 1
14,400.0	10,500.0	10,456.4	10,453.8	82.7	11,635.8	91.09	-3,800.0	684.5	519.6	-11,197.4	11,717.04	0.044 Level 1
14,500.0	10,500.0	10,456.4	10,453.8	84.5	11,635.8	91.10	-3,800.0	684.5	619.3	-11,099.5	11,718.82	0.053 Level 1
14,600.0	10,500.0	10,456.4	10,453.8	86.2	11,635.9	91.12	-3,800.0	684.5	719.2	-11,001.4	11,720.61	0.061 Level 1
14,700.0	10,500.0	10,456.4	10,453.8	88.0	11,635.9	91.14	-3,800.0	684.5	819.0	-10,903.4	11,722.39	0.070 Level 1
14,800.0	10,500.0	10,456.5	10,453.8	89.7	11,635.9	91.15	-3,800.0	684.5	918.9	-10,805.3	11,724.18	0.078 Level 1
14,900.0	10,500.0	10,456.5	10,453.8	91.5	11,635.9	91.17	-3,800.0	684.5	1,018.8	-10,707.2	11,725.96	0.087 Level 1
15,000.0	10,500.0	10,456.5	10,453.8	93.2	11,636.0	91.19	-3,800.0	684.5	1,118.7	-10,609.0	11,727.75	0.095 Level 1
15,100.0	10,500.0	10,456.5	10,453.9	95.0	11,636.0	91.20	-3,800.0	684.5	1,218.7	-10,510.9	11,729.54	0.104 Level 1
15,200.0	10,500.0	10,456.5	10,453.9	96.7	11,636.0	91.22	-3,800.0	684.5	1,318.6	-10,412.7	11,731.34	0.112 Level 1
15,296.3	10,500.0	10,456.5	10,453.9	98.4	11,636.0	91.23	-3,800.0	684.5	1,414.9	-10,318.2	11,733.06	0.121 Level 1

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #401H
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	KB = 30' @ 3399.0usft
Reference Site:	Vaca 11 Fed	MD Reference:	KB = 30' @ 3399.0usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#401H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB = 30' @ 3399.0usft

Offset Depths are relative to Offset Datum

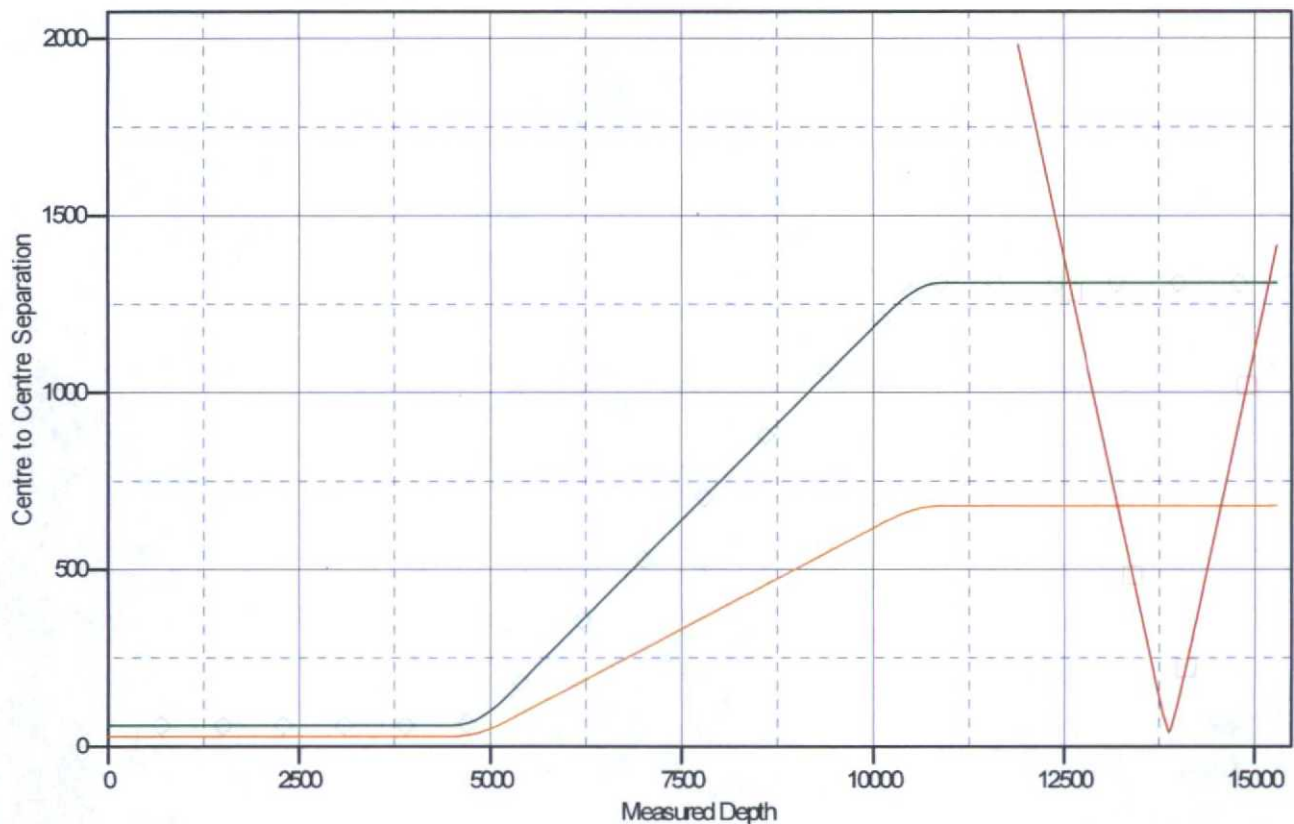
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #401H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.42°

Ladder Plot



LEGEND

◆ #405H, CH, Plan #1 V0 ✕ #406H, CH, Plan #1 V0 ▣ #1 P&A, CH, CH V0

Company: EOG Resources - Midland
Project: Lea County, NM (NAD 27 NME)
Reference Site: Vaca 11 Fed
Site Error: 0.0 usft
Reference Well: #401H
Well Error: 0.0 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well #401H
TVD Reference: KB = 30' @ 3399.0usft
MD Reference: KB = 30' @ 3399.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB = 30' @ 3399.0usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #401H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.42°

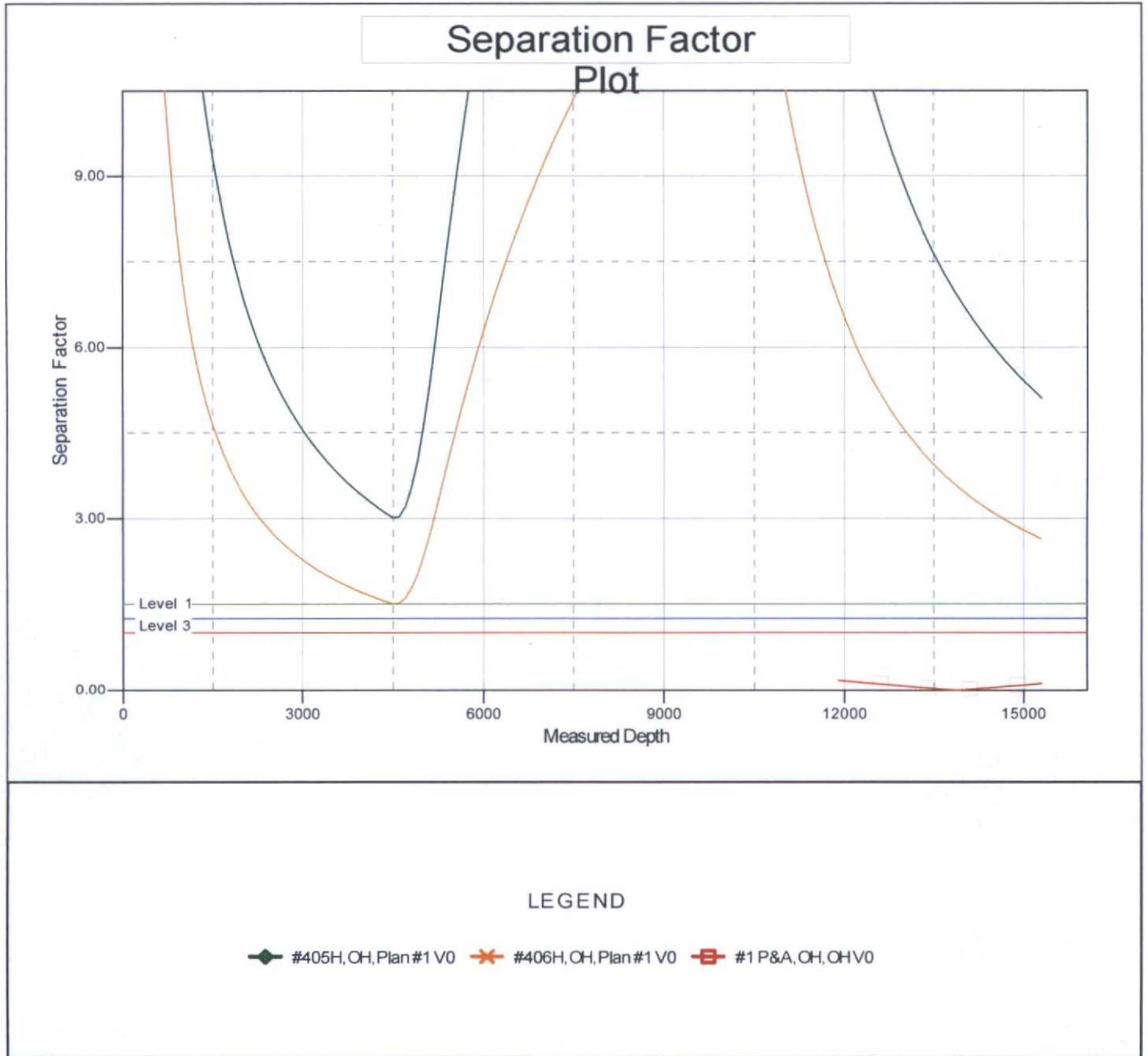


Exhibit 1

EOG Resources

5M 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

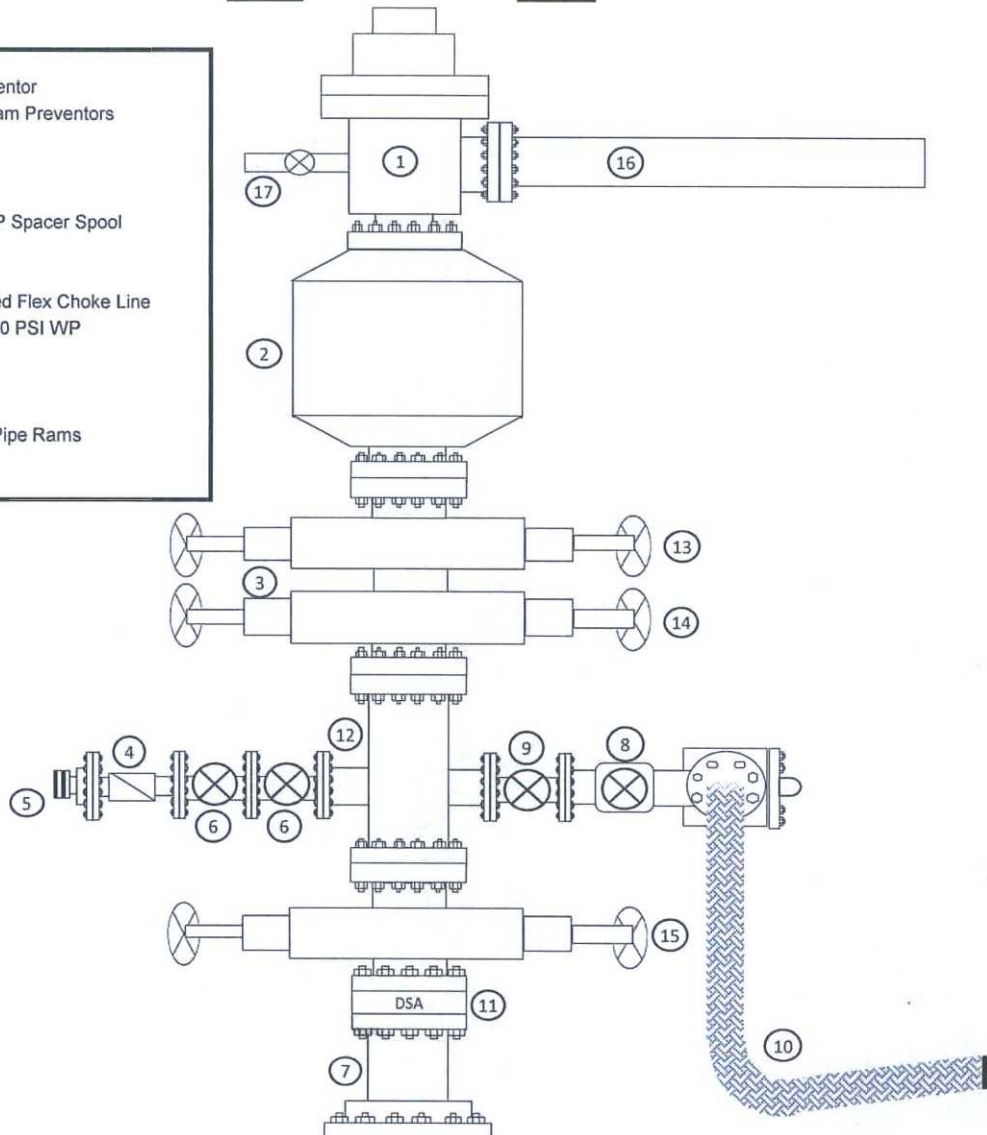
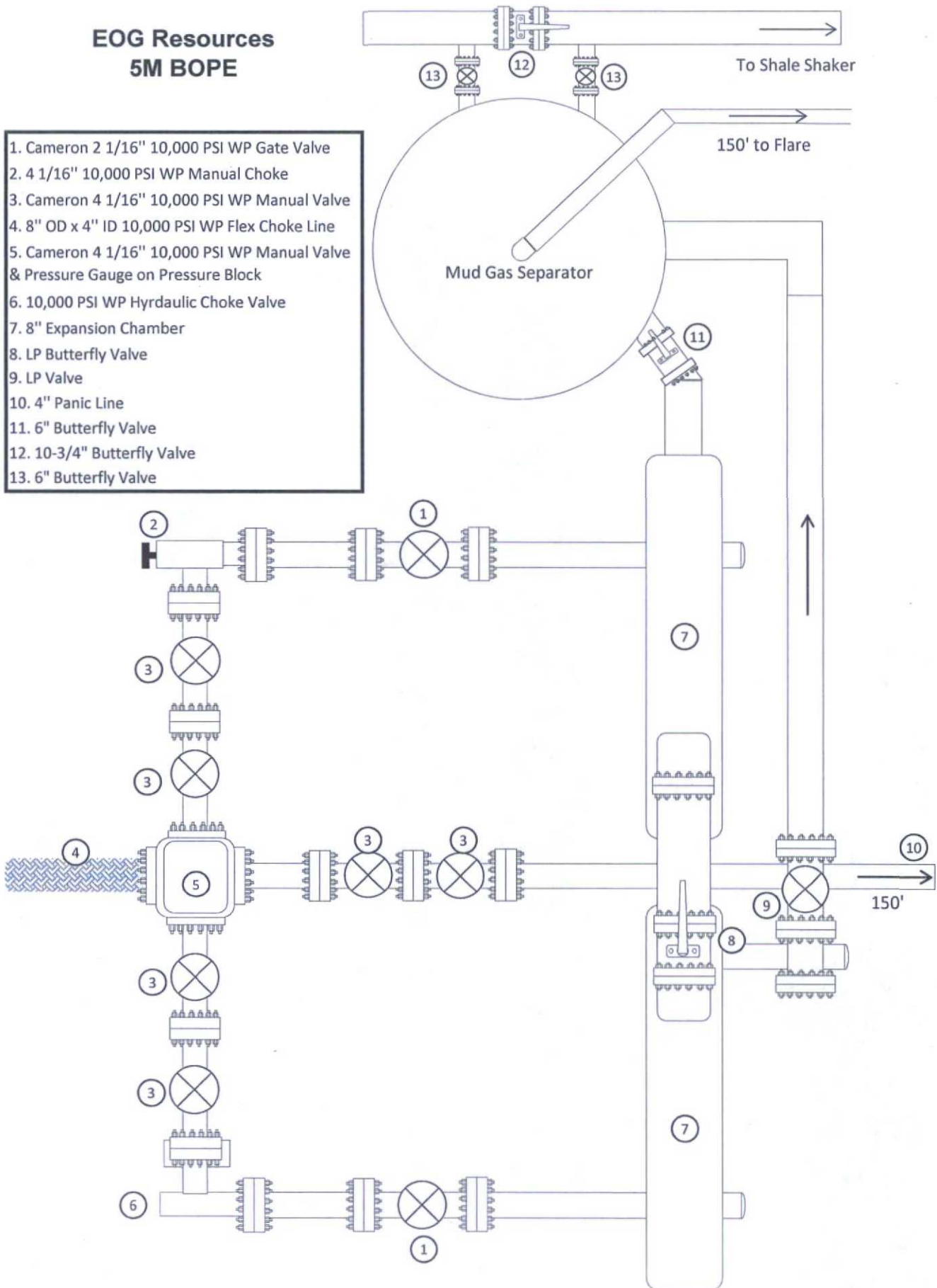


Exhibit 1a

EOG Resources 5M 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

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

Midwest Hose
& Specialty, Inc.

Hose Specifications

Hose Type

C & K

Length

35'

I.D.

4"

O.D.

8"

Verification

Type of Fitting

4 1/16 10K

Coupling Method

Swage

Final O.D.

6.68"

Working Pressure

10000 PSI

Burst Pressure

Standard Safety Multiplier Applies

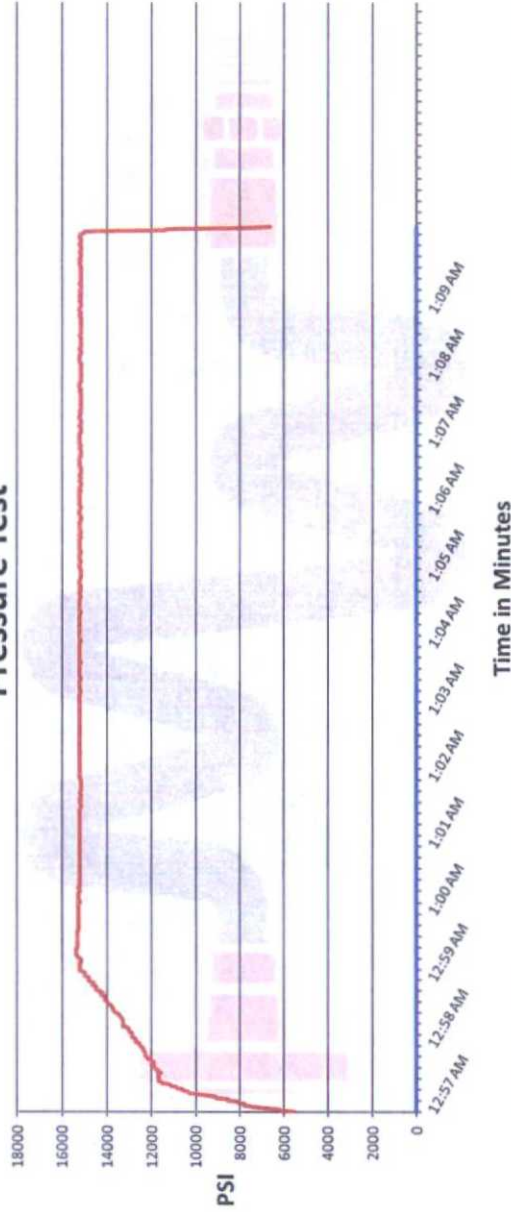
Hose Serial #

90067

Hose Assembly Serial #

90067

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

Well Site Diagram

