

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

HOBBS OGD
JAN 20 2014
RECEIVED

State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

FORM C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025- 41667	² Pool Code 97900	³ Pool Name Red Hills; Upper Bone Spring Shale
⁴ Property Code 40402	⁵ Property Name THOR 21	⁶ Well Number #1H
⁷ OGRID No. 7377	⁸ Operator Name EOG RESOURCES, INC.	⁹ Elevation 3252'

¹⁰Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	21	26-S	33-E	-	230'	SOUTH	380'	EAST	LEA

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	21	26-S	33-E	-	230'	NORTH	380'	EAST	LEA

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

¹⁶ 21	BOTTOM HOLE LOCATION NEW MEXICO EAST NAD 1927 X=736704 Y=377466 LAT.: N 32.0354677 LONG.: W 103.5694756	LOWER MOST PERF. NEW MEXICO EAST NAD 1927 X=736704 Y=377366 LAT.: N 32.0351928 LONG.: W 103.5694756	UPPER MOST PERF. NEW MEXICO EAST NAD 1927 X=736737 Y=372744 LAT.: N 32.0224882 LONG.: W 103.5694759	SURFACE LOCATION NEW MEXICO EAST NAD 1927 X=736738 Y=372644 LAT.: N 32.0222132 LONG.: W 103.5694757	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Stan Wagner</i> 2/20/14 Signature Date Stan Wagner Printed Name E-mail Address 18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true to the best of my belief. Date of Survey 2/17/2014 Signature and Seal of Professional Surveyor MICHAEL BROWN NEW MEXICO 18329 PROFESSIONAL SURVEYOR Certificate Number
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FEB 24 2014

Permit Information:

Well Name: Thor 21 No. 1H

Location:

SL: 230' FSL & 380' FEL, Section 21, T-26-S, R-33-E, Lea Co., N.M.

BHL: 230' FNL & 380' FEL, Section 21, T-26-S, R-33-E, Lea Co., N.M.

Casing Program:

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF _{min} Collapse	DF _{min} Burst	DF _{min} Tension
17.5"	0 - 855'	13.375"	54.5#	J55	STC	1.125	1.25	1.60
12.25"	0-4000'	9.625"	40#	J55	LTC	1.125	1.25	1.60
12.25"	4000' - 5100'	9.625"	40#	HCK-55	LTC	1.125	1.25	1.60
8.75"	0'-14,047'	5.5"	17#	HCP-110	LTC	1.125	1.25	1.60

Cement Program:

Depth	No. Sacks	Wt. ppg	Yld Ft ³ /ft	Slurry Description
855'	300	13.5	1.73	Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl ₂ + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	200	14.8	1.34	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
5,100'	800	12.7	2.22	Class 'C' + 1.50% R-3 + 0.25 lb/sk Cello-Flake + 2.0% Sodium Metasilicate + 10% Salt + 0.005 lb/sk Static Free
	200	14.8	1.32	Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
14,047'	375	10.8	3.67	60:40:0 Class C + 15.0 pps BA-90 + 4% MPA-5 + 3.0% SMS + 5.0% A-10 + 1.0% BA-10A + 0.80% ASA-301 + 2.55% R-21 + 8.0 pps LCM-1
	400	11.8	2.38	50:50:10 Class H + 0.80% FL-52 + 0.30% ASA-301 + 0.40% SMS + 2.0% Salt + 0.30% R-21 + 3.0 pps LCM-1 + 0.25 pps Celloflake
	1300	14.2	1.28	50:50:2 Class H + 0.65% FL-52 + 0.45% CD-32 + 0.10% SMS + 2.0% Salt

Mud Program:

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0 - 855'	Fresh - Gel	8.6-8.8	28-34	N/c
900' - 5,100'	Brine	10.0-10.2	28-34	N/c
5,100' - 8,952'	Cut Brine	8.4-9.0	28-34	N/c
8,952' - 14,047' Lateral	Cut Brine	9.0-9.5	40-42	8-10

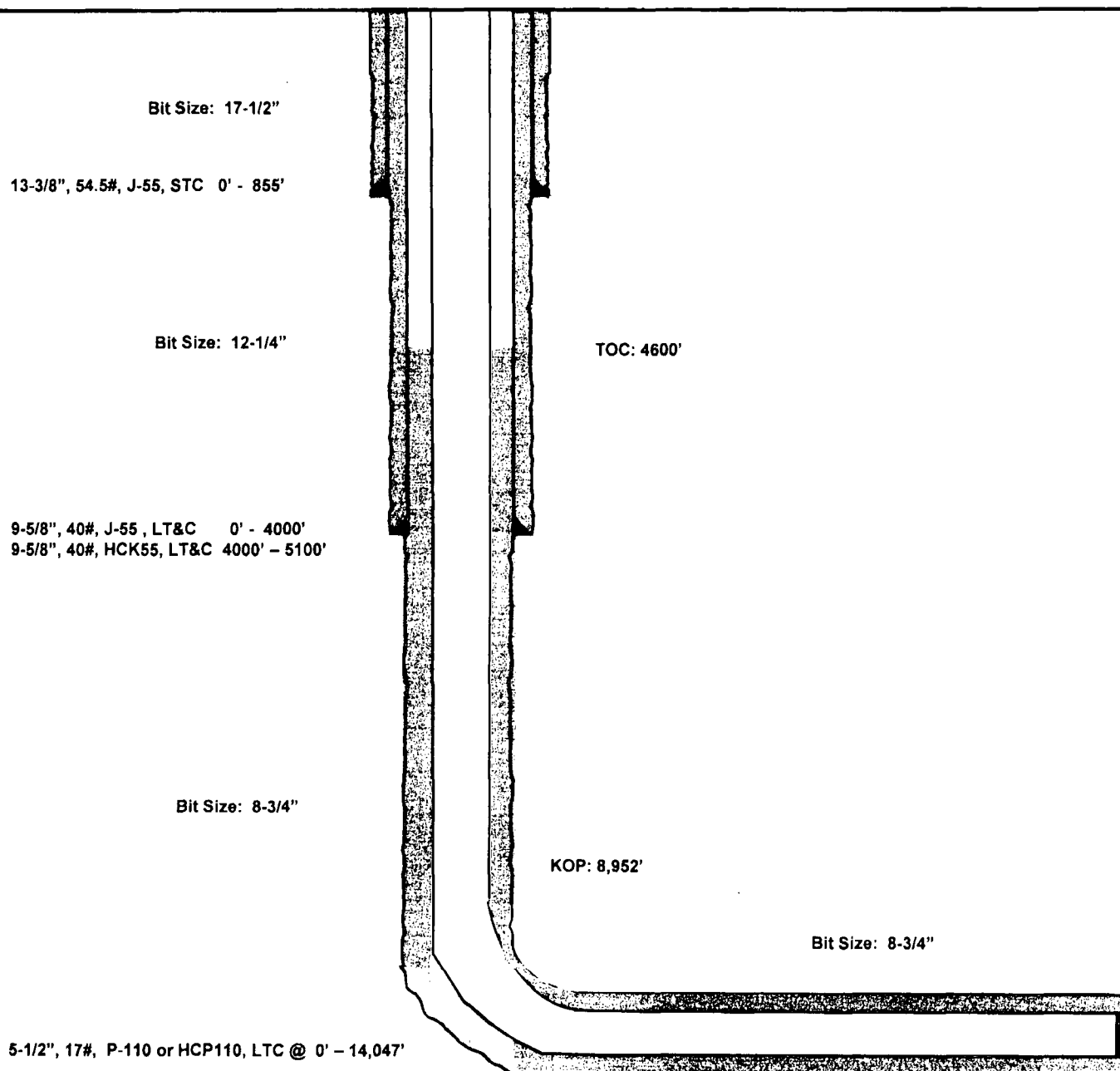
Thor 21 #1H
Lea County, New Mexico

230' FSL
380' FEL
Section 21
T-26-S, R-33-E

Proposed Wellbore

API: 30-025-

KB: 3,379'
GL: 3,252'



Lateral: 14,047' MD, 9,430' TVD

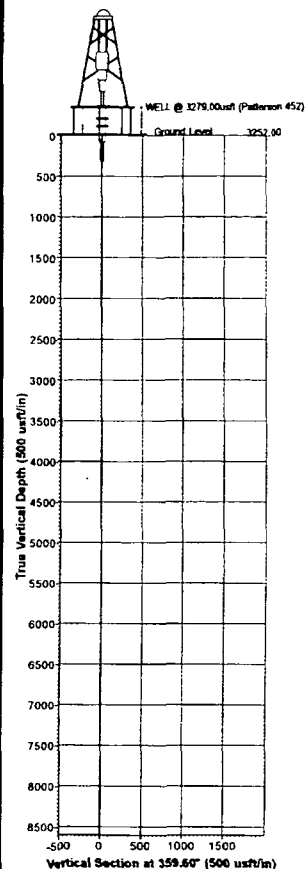
BH Location: 230' FNL & 380' FEL
Section 21
T-26-S, R-33-E



Project: Lea County, NM (NAD27 NME)
 Site: Thor 21
 Well: #1H
 Wellbore: Wellbore #1 Job #1410305
 Design: Plan #1 02-19-14
 Rig: Patterson 452



T G M
 Azimuths to Grid North
 True North: -0.41°
 Magnetic North: 6.84°
 Magnetic Field
 Strength: 48227.7nT
 Dip Angle: 59.93°
 Date: 02/19/2014
 Model: IGRF2010_14



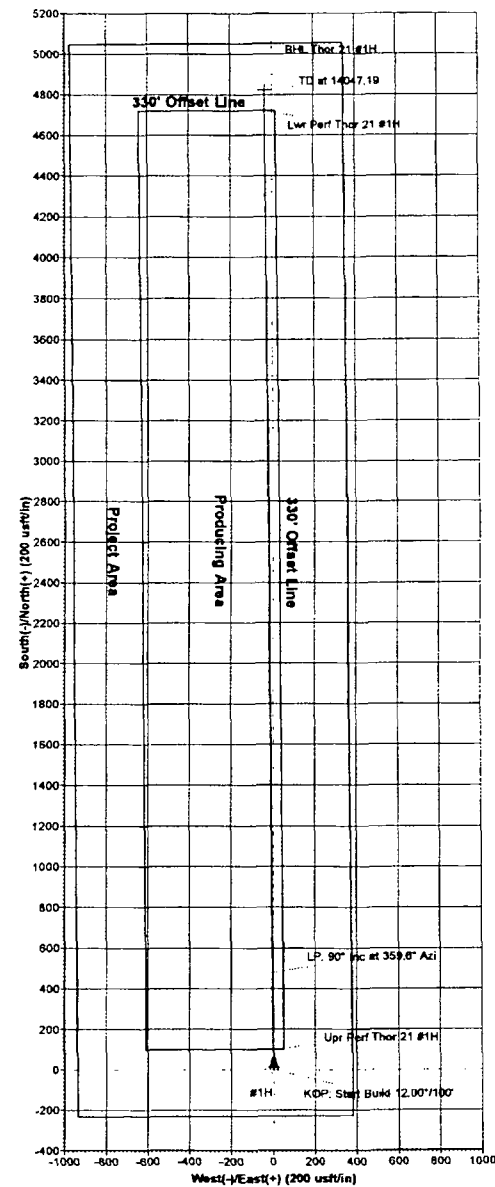
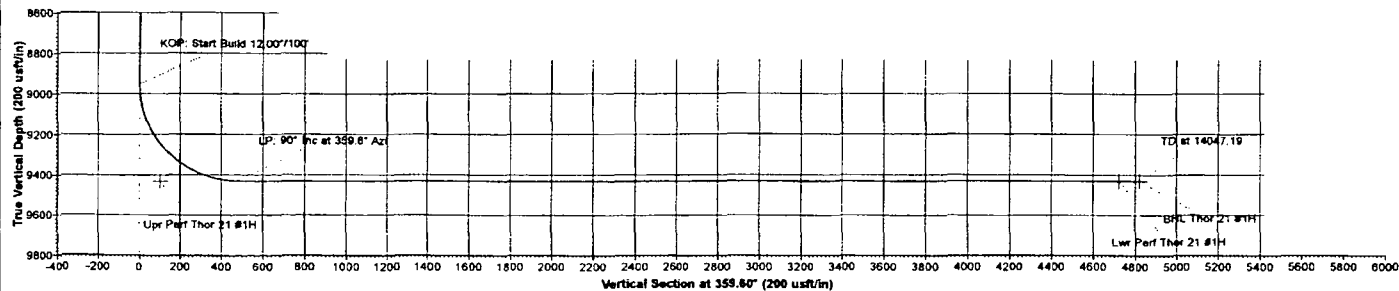
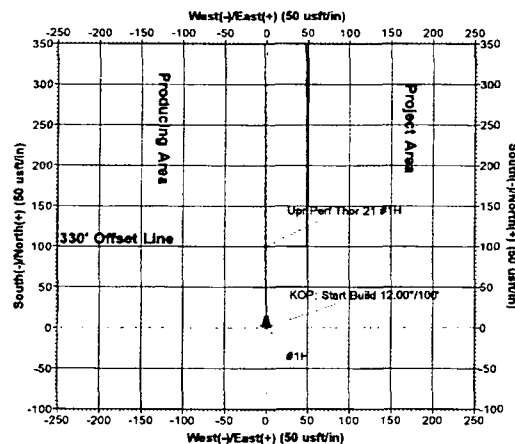
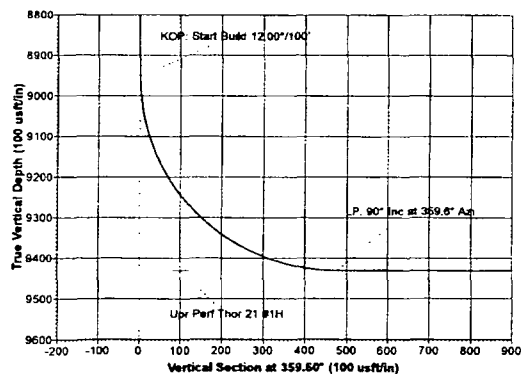
WELL DETAILS											
	+N-S	+E-W	North	Ground Level	Easting	3252.00	Latitude	Longitude			
	0.00	0.00	372644.00	736738.00	32° 1' 19.96378 N	103° 34' 10.11014 W					

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dog	TFace	VSeal	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	8952.54	0.00	0.00	8952.54	0.00	0.00	0.00	0.00	0.00		KOP: Start Build 12.00°/100'
3	9792.54	90.00	359.60	9430.00	477.45	-3.37	12.00	358.80	477.48		LP: 90° Inc at 359.6° Azi
4	14047.15	90.00	359.60	9430.00	4822.00	-34.00	0.00	0.00	4822.12	BHL Thor 21 #1H	TD at 14047.15

DESIGN TARGET DETAILS											
Name	TVD	+N-S	+E-W	North	Easting	Latitude	Longitude	Shape			
BHL Thor 21 #1H	9430.00	4822.00	-34.00	377466.00	736704.00	32° 2' 7.88373 N	103° 34' 10.10903 W	Point			
Lwr Perf Thor 21 #1H	9430.00	4722.00	-34.00	377366.00	736704.00	32° 2' 6.98415 N	103° 34' 10.11724 W	Point			
Upr Perf Thor 21 #1H	9430.00	100.00	-1.00	372744.00	736737.00	32° 1' 20.95341 N	103° 34' 10.11354 W	Point			

Map System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone Name: New Mexico East 3001
 Local Origin: Well #1H, Grid North
 Latitude: 32° 1' 19.96378 N
 Longitude: 103° 34' 10.11014 W
 Grid East: 736738.00
 Grid North: 372644.00
 Scale Factor: 1.000
 Geomagnetic Model: IGRF2010_14
 Sample Date: 19-Feb-14
 Magnetic Declination: 7.24°
 Dip Angle from Horizontal: 59.93°
 Magnetic Field Strength: 48228
 To convert a Magnetic Direction to a Grid Direction, Add 6.84°
 To convert a Magnetic Direction to a True Direction, Add 7.24° East
 To convert a True Direction to a Grid Direction, Subtract 0.41°

LEGEND
 — Plan #1 02-19-14





EOG Resources

Lea County, NM (NAD27 NME)

Thor 21

#1H

Wellbore #1 Job #1410305

Plan: Plan #1 02-19-14

Planning Report

19 February, 2014





Phoenix Technology Services
Planning Report



Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Thor 21
Well: #1H
Wellbore: Wellbore #1 Job #1410305
Design: Plan #1 02-19-14

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3279.00usft (Patterson 452)
MD Reference: WELL @ 3279.00usft (Patterson 452)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR DB

Project	Lea County, NM (NAD27 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		
Site Position:		Northing:	372,644.00 usft
From:	Map	Easting:	736,738.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 1' 19.96376 N
		Longitude:	103° 34' 10.11014 W
		Grid Convergence:	0.41 °

Well	#1H		
Well Position	+N/-S	0.00 usft	Northing: 372,644.00 usft
	+E/-W	0.00 usft	Easting: 736,738.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 1' 19.96376 N
		Longitude:	103° 34' 10.11014 W
		Ground Level:	3,252.00 usft

Wellbore	Wellbore #1 Job #1410305					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	IGRF2010_14	02/19/14	7.24	59.93	48,228	

Design	Plan #1 02-19-14				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	359.60	

Survey Tool Program	Date	02/19/14			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	14,047.19	Plan #1 02-19-14 (Wellbore #1 Job #1410	MWD	MWD - Standard	



Phoenix Technology Services
Planning Report



Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Thor 21
Well: #1H
Wellbore: Wellbore #1 Job #1410305
Design: Plan #1 02-19-14

Local Co-ordinate Reference: Well #1H
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MD Reference: WELL @ 3279.00usft (Patterson 452)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR DB

Planned Survey

MD (usft)	Inc (")	Azi (azimuth) (")	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLog ("/100usft)
0.00	0.00	0.00	-3,279.00	0.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
100.00	0.00	0.00	-3,179.00	100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
200.00	0.00	0.00	-3,079.00	200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
300.00	0.00	0.00	-2,979.00	300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
400.00	0.00	0.00	-2,879.00	400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
500.00	0.00	0.00	-2,779.00	500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
600.00	0.00	0.00	-2,679.00	600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
700.00	0.00	0.00	-2,579.00	700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
800.00	0.00	0.00	-2,479.00	800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
900.00	0.00	0.00	-2,379.00	900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,000.00	0.00	0.00	-2,279.00	1,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,100.00	0.00	0.00	-2,179.00	1,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,200.00	0.00	0.00	-2,079.00	1,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,300.00	0.00	0.00	-1,979.00	1,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,400.00	0.00	0.00	-1,879.00	1,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,500.00	0.00	0.00	-1,779.00	1,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,600.00	0.00	0.00	-1,679.00	1,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,700.00	0.00	0.00	-1,579.00	1,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,800.00	0.00	0.00	-1,479.00	1,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
1,900.00	0.00	0.00	-1,379.00	1,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,000.00	0.00	0.00	-1,279.00	2,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,100.00	0.00	0.00	-1,179.00	2,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,200.00	0.00	0.00	-1,079.00	2,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,300.00	0.00	0.00	-979.00	2,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,400.00	0.00	0.00	-879.00	2,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,500.00	0.00	0.00	-779.00	2,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,600.00	0.00	0.00	-679.00	2,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00



Phoenix Technology Services
Planning Report



Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Thor 21
Well: #1H
Wellbore: Wellbore #1 Job #1410305
Design: Plan #1 02-19-14

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3279.00usft (Patterson 452)
MD Reference: WELL @ 3279.00usft (Patterson 452)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR DB

Planned Survey

MD (usft)	Inc (")	Azi (azimuth) (")	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLog ("/100usft)
2,700.00	0.00	0.00	-579.00	2,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,800.00	0.00	0.00	-479.00	2,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
2,900.00	0.00	0.00	-379.00	2,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,000.00	0.00	0.00	-279.00	3,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,100.00	0.00	0.00	-179.00	3,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,200.00	0.00	0.00	-79.00	3,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,300.00	0.00	0.00	21.00	3,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,400.00	0.00	0.00	121.00	3,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,500.00	0.00	0.00	221.00	3,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,600.00	0.00	0.00	321.00	3,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,700.00	0.00	0.00	421.00	3,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,800.00	0.00	0.00	521.00	3,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
3,900.00	0.00	0.00	621.00	3,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,000.00	0.00	0.00	721.00	4,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,100.00	0.00	0.00	821.00	4,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,200.00	0.00	0.00	921.00	4,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,300.00	0.00	0.00	1,021.00	4,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,400.00	0.00	0.00	1,121.00	4,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,500.00	0.00	0.00	1,221.00	4,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,600.00	0.00	0.00	1,321.00	4,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,700.00	0.00	0.00	1,421.00	4,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,800.00	0.00	0.00	1,521.00	4,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
4,900.00	0.00	0.00	1,621.00	4,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,000.00	0.00	0.00	1,721.00	5,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,100.00	0.00	0.00	1,821.00	5,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,200.00	0.00	0.00	1,921.00	5,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,300.00	0.00	0.00	2,021.00	5,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00



Phoenix Technology Services
Planning Report



Company: EOG Resources
Project: Lea County, NM (NAD27 NME)
Site: Thor 21
Well: #1H
Wellbore: Wellbore #1 Job #1410305
Design: Plan #1 02-19-14

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3279.00usft (Patterson 452)
MD Reference: WELL @ 3279.00usft (Patterson 452)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR DB

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)
5,400.00	0.00	0.00	2,121.00	5,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,500.00	0.00	0.00	2,221.00	5,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,600.00	0.00	0.00	2,321.00	5,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,700.00	0.00	0.00	2,421.00	5,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,800.00	0.00	0.00	2,521.00	5,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
5,900.00	0.00	0.00	2,621.00	5,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,000.00	0.00	0.00	2,721.00	6,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,100.00	0.00	0.00	2,821.00	6,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,200.00	0.00	0.00	2,921.00	6,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,300.00	0.00	0.00	3,021.00	6,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,400.00	0.00	0.00	3,121.00	6,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,500.00	0.00	0.00	3,221.00	6,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,600.00	0.00	0.00	3,321.00	6,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,700.00	0.00	0.00	3,421.00	6,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,800.00	0.00	0.00	3,521.00	6,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
6,900.00	0.00	0.00	3,621.00	6,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,000.00	0.00	0.00	3,721.00	7,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,100.00	0.00	0.00	3,821.00	7,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,200.00	0.00	0.00	3,921.00	7,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,300.00	0.00	0.00	4,021.00	7,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,400.00	0.00	0.00	4,121.00	7,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,500.00	0.00	0.00	4,221.00	7,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,600.00	0.00	0.00	4,321.00	7,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,700.00	0.00	0.00	4,421.00	7,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,800.00	0.00	0.00	4,521.00	7,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
7,900.00	0.00	0.00	4,621.00	7,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,000.00	0.00	0.00	4,721.00	8,000.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00



Phoenix Technology Services
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Design: Plan #1 02-19-14

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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)
8,100.00	0.00	0.00	4,821.00	8,100.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,200.00	0.00	0.00	4,921.00	8,200.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,300.00	0.00	0.00	5,021.00	8,300.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,400.00	0.00	0.00	5,121.00	8,400.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,500.00	0.00	0.00	5,221.00	8,500.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,600.00	0.00	0.00	5,321.00	8,600.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,700.00	0.00	0.00	5,421.00	8,700.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,800.00	0.00	0.00	5,521.00	8,800.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,900.00	0.00	0.00	5,621.00	8,900.00	0.00	0.00	372,644.00	736,738.00	0.00	0.00
8,952.54	0.00	0.00	5,673.54	8,952.54	0.00	0.00	372,644.00	736,738.00	0.00	0.00
KOP: Start Build 12.00°/100'										
8,975.00	2.70	359.60	5,695.99	8,974.99	0.53	0.00	372,644.53	736,738.00	0.53	12.00
9,000.00	5.70	359.60	5,720.92	8,999.92	2.36	-0.02	372,646.36	736,737.98	2.36	12.00
9,025.00	8.70	359.60	5,745.72	9,024.72	5.49	-0.04	372,649.49	736,737.96	5.49	12.00
9,050.00	11.70	359.60	5,770.32	9,049.32	9.91	-0.07	372,653.91	736,737.93	9.91	12.00
9,075.00	14.70	359.60	5,794.66	9,073.66	15.62	-0.11	372,659.62	736,737.89	15.62	12.00
9,100.00	17.70	359.60	5,818.67	9,097.67	22.59	-0.16	372,666.59	736,737.84	22.59	12.00
9,125.00	20.70	359.60	5,842.27	9,121.27	30.81	-0.22	372,674.81	736,737.78	30.81	12.00
9,150.00	23.70	359.60	5,865.42	9,144.42	40.25	-0.28	372,684.25	736,737.72	40.25	12.00
9,175.00	26.70	359.60	5,888.04	9,167.04	50.89	-0.36	372,694.89	736,737.64	50.90	12.00
9,200.00	29.70	359.60	5,910.07	9,189.07	62.70	-0.44	372,706.70	736,737.56	62.71	12.00
9,225.00	32.70	359.60	5,931.45	9,210.45	75.65	-0.53	372,719.65	736,737.47	75.65	12.00
9,250.00	35.70	359.60	5,952.13	9,231.13	89.70	-0.63	372,733.70	736,737.37	89.70	12.00
9,275.00	38.70	359.60	5,972.04	9,251.04	104.81	-0.74	372,748.81	736,737.26	104.81	12.00
9,300.00	41.70	359.60	5,991.13	9,270.13	120.94	-0.85	372,764.94	736,737.15	120.95	12.00
9,325.00	44.70	359.60	6,009.36	9,288.36	138.05	-0.97	372,782.05	736,737.03	138.06	12.00
9,350.00	47.70	359.60	6,026.66	9,305.66	156.10	-1.10	372,800.10	736,736.90	156.10	12.00



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)
9,375.00	50.70	359.60	6,042.99	9,321.99	175.02	-1.23	372,819.02	736,736.77	175.02	12.00
9,400.00	53.70	359.60	6,058.32	9,337.32	194.77	-1.37	372,838.77	736,736.63	194.77	12.00
9,425.00	56.70	359.60	6,072.58	9,351.58	215.29	-1.52	372,859.29	736,736.48	215.30	12.00
9,450.00	59.70	359.60	6,085.76	9,364.76	236.53	-1.67	372,880.53	736,736.33	236.54	12.00
9,475.00	62.70	359.60	6,097.80	9,376.80	258.44	-1.82	372,902.44	736,736.18	258.44	12.00
9,500.00	65.70	359.60	6,108.68	9,387.68	280.94	-1.98	372,924.94	736,736.02	280.95	12.00
9,525.00	68.70	359.60	6,118.37	9,397.37	303.98	-2.14	372,947.98	736,735.86	303.99	12.00
9,550.00	71.70	359.60	6,126.84	9,405.84	327.50	-2.31	372,971.50	736,735.69	327.51	12.00
9,575.00	74.70	359.60	6,134.07	9,413.07	351.43	-2.48	372,995.43	736,735.52	351.44	12.00
9,600.00	77.70	359.60	6,140.03	9,419.03	375.71	-2.65	373,019.71	736,735.35	375.72	12.00
9,625.00	80.70	359.60	6,144.72	9,423.72	400.26	-2.82	373,044.26	736,735.18	400.27	12.00
9,650.00	83.70	359.60	6,148.11	9,427.11	425.03	-3.00	373,069.03	736,735.00	425.04	12.00
9,675.00	86.70	359.60	6,150.21	9,429.21	449.93	-3.17	373,093.93	736,734.83	449.94	12.00
9,700.00	89.70	359.60	6,150.99	9,429.99	474.92	-3.35	373,118.92	736,734.65	474.93	12.00
9,702.54	90.00	359.60	6,151.00	9,430.00	477.45	-3.37	373,121.45	736,734.63	477.46	12.00
LP: 90° Inc at 359.6° Azi										
9,800.00	90.00	359.60	6,151.00	9,430.00	574.92	-4.05	373,218.92	736,733.95	574.93	0.00
9,900.00	90.00	359.60	6,151.00	9,430.00	674.91	-4.76	373,318.91	736,733.24	674.93	0.00
10,000.00	90.00	359.60	6,151.00	9,430.00	774.91	-5.46	373,418.91	736,732.54	774.93	0.00
10,100.00	90.00	359.60	6,151.00	9,430.00	874.91	-6.17	373,518.91	736,731.83	874.93	0.00
10,200.00	90.00	359.60	6,151.00	9,430.00	974.91	-6.87	373,618.91	736,731.13	974.93	0.00
10,300.00	90.00	359.60	6,151.00	9,430.00	1,074.90	-7.58	373,718.90	736,730.42	1,074.93	0.00
10,400.00	90.00	359.60	6,151.00	9,430.00	1,174.90	-8.28	373,818.90	736,729.72	1,174.93	0.00
10,500.00	90.00	359.60	6,151.00	9,430.00	1,274.90	-8.99	373,918.90	736,729.01	1,274.93	0.00
10,600.00	90.00	359.60	6,151.00	9,430.00	1,374.90	-9.69	374,018.90	736,728.31	1,374.93	0.00
10,700.00	90.00	359.60	6,151.00	9,430.00	1,474.89	-10.40	374,118.89	736,727.60	1,474.93	0.00
10,800.00	90.00	359.60	6,151.00	9,430.00	1,574.89	-11.10	374,218.89	736,726.90	1,574.93	0.00



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Design: Plan #1 02-19-14

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Survey Calculation Method: Minimum Curvature
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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLog (°/100usft)
10,900.00	90.00	359.60	6,151.00	9,430.00	1,674.89	-11.81	374,318.89	736,726.19	1,674.93	0.00
11,000.00	90.00	359.60	6,151.00	9,430.00	1,774.89	-12.51	374,418.89	736,725.49	1,774.93	0.00
11,100.00	90.00	359.60	6,151.00	9,430.00	1,874.88	-13.22	374,518.88	736,724.78	1,874.93	0.00
11,200.00	90.00	359.60	6,151.00	9,430.00	1,974.88	-13.92	374,618.88	736,724.08	1,974.93	0.00
11,300.00	90.00	359.60	6,151.00	9,430.00	2,074.88	-14.63	374,718.88	736,723.37	2,074.93	0.00
11,400.00	90.00	359.60	6,151.00	9,430.00	2,174.88	-15.34	374,818.88	736,722.66	2,174.93	0.00
11,500.00	90.00	359.60	6,151.00	9,430.00	2,274.87	-16.04	374,918.87	736,721.96	2,274.93	0.00
11,600.00	90.00	359.60	6,151.00	9,430.00	2,374.87	-16.75	375,018.87	736,721.25	2,374.93	0.00
11,700.00	90.00	359.60	6,151.00	9,430.00	2,474.87	-17.45	375,118.87	736,720.55	2,474.93	0.00
11,800.00	90.00	359.60	6,151.00	9,430.00	2,574.87	-18.16	375,218.87	736,719.84	2,574.93	0.00
11,900.00	90.00	359.60	6,151.00	9,430.00	2,674.86	-18.86	375,318.86	736,719.14	2,674.93	0.00
12,000.00	90.00	359.60	6,151.00	9,430.00	2,774.86	-19.57	375,418.86	736,718.43	2,774.93	0.00
12,100.00	90.00	359.60	6,151.00	9,430.00	2,874.86	-20.27	375,518.86	736,717.73	2,874.93	0.00
12,200.00	90.00	359.60	6,151.00	9,430.00	2,974.86	-20.98	375,618.86	736,717.02	2,974.93	0.00
12,300.00	90.00	359.60	6,151.00	9,430.00	3,074.85	-21.68	375,718.85	736,716.32	3,074.93	0.00
12,400.00	90.00	359.60	6,151.00	9,430.00	3,174.85	-22.39	375,818.85	736,715.61	3,174.93	0.00
12,500.00	90.00	359.60	6,151.00	9,430.00	3,274.85	-23.09	375,918.85	736,714.91	3,274.93	0.00
12,600.00	90.00	359.60	6,151.00	9,430.00	3,374.85	-23.80	376,018.85	736,714.20	3,374.93	0.00
12,700.00	90.00	359.60	6,151.00	9,430.00	3,474.84	-24.50	376,118.84	736,713.50	3,474.93	0.00
12,800.00	90.00	359.60	6,151.00	9,430.00	3,574.84	-25.21	376,218.84	736,712.79	3,574.93	0.00
12,900.00	90.00	359.60	6,151.00	9,430.00	3,674.84	-25.91	376,318.84	736,712.09	3,674.93	0.00
13,000.00	90.00	359.60	6,151.00	9,430.00	3,774.84	-26.62	376,418.84	736,711.38	3,774.93	0.00
13,100.00	90.00	359.60	6,151.00	9,430.00	3,874.83	-27.32	376,518.83	736,710.68	3,874.93	0.00
13,200.00	90.00	359.60	6,151.00	9,430.00	3,974.83	-28.03	376,618.83	736,709.97	3,974.93	0.00
13,300.00	90.00	359.60	6,151.00	9,430.00	4,074.83	-28.73	376,718.83	736,709.27	4,074.93	0.00
13,400.00	90.00	359.60	6,151.00	9,430.00	4,174.83	-29.44	376,818.83	736,708.56	4,174.93	0.00
13,500.00	90.00	359.60	6,151.00	9,430.00	4,274.82	-30.14	376,918.82	736,707.86	4,274.93	0.00



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)
13,600.00	90.00	359.60	6,151.00	9,430.00	4,374.82	-30.85	377,018.82	736,707.15	4,374.93	0.00
13,700.00	90.00	359.60	6,151.00	9,430.00	4,474.82	-31.55	377,118.82	736,706.45	4,474.93	0.00
13,800.00	90.00	359.60	6,151.00	9,430.00	4,574.82	-32.26	377,218.82	736,705.74	4,574.93	0.00
13,900.00	90.00	359.60	6,151.00	9,430.00	4,674.81	-32.96	377,318.81	736,705.04	4,674.93	0.00
14,000.00	90.00	359.60	6,151.00	9,430.00	4,774.81	-33.67	377,418.81	736,704.33	4,774.93	0.00
14,047.19	90.00	359.60	6,151.00	9,430.00	4,822.00	-34.00	377,486.00	736,704.00	4,822.12	0.00
TD at 14047.19										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,952.54	8,952.54	0.00	0.00	KOP: Start Build 12.00°/100'
9,702.54	9,430.00	477.45	-3.37	LP: 90° Inc at 359.6° Azi
14,047.19	9,430.00	4,822.00	-34.00	TD at 14047.19

EOG RESOURCES, INC.
THOR 21 #1H

Hydrogen Sulfide Plan Summary

- A. All personnel shall receive proper H₂S training in accordance with Onshore Order III.C.3.a.
- B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.
- C. Required Emergency Equipment:

- Well control equipment

- a. Flare line 150' from wellhead to be ignited by flare gun.
- b. Choke manifold with a remotely operated choke.
- c. Mud/gas separator

- Protective equipment for essential personnel.

Breathing apparatus:

- a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- b. Work/Escapes packs — 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
- c. Emergency Escape Packs — 4 packs shall be stored in the doghouse for emergency evacuation.

Auxiliary Rescue Equipment:

- a. Stretcher
- b. Two OSHA full body harness
- c. 100 ft 5/8 inch OSHA approved rope
- d. 1-20# class ABC fire extinguisher

- H₂S detection and monitoring equipment:

The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.

(Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.

- a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
- c. Two wind socks will be placed in strategic locations, visible from all angles.

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- **Mud program:**
The mud program has been designed to minimize the volume of H₂S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H₂S bearing zones.
- **Metallurgy:**
All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.
- **Communication:**
Communication will be via cell phones and land lines where available.

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Emergency Assistance Telephone List

PUBLIC SAFETY: **911 or**

Lea County Sheriff's Department (575) 396-3611

Rod Coffman

Fire Department:

Carlsbad

(575) 885-3125

Artesia

(575) 746-5050

Hospitals:

Carlsbad

(575) 887-4121

Artesia

(575) 748-3333

Hobbs

(575) 392-1979

Dept. of Public Safety/Carlsbad

(575) 748-9718

Highway Department

(575) 885-3281

New Mexico Oil Conservation

(575) 476-3440

U.S. Dept. of Labor

(575) 887-1174

EOG Resources, Inc.

EOG / Midland

Office (432) 686-3600

Company Drilling Consultants:

Lonnie Byrd

Cell (432) 894-2389

Rickie Poindexter

Drilling Engineer

Robert Brosig

Office (432) 686-3737

Cell (432) 770-0705

Drilling Manager

Steve Munsell

Office (432) 686-3609

Cell (432) 894-1256

Drilling Superintendent

Ron Welch

Office (432) 686-3695

Cell (432) 386-0592

Cactus Drilling

Patterson Drilling

Office (432) 682-9401

Patterson 452 Drilling Rig

Rig (432) 894-2389

Tool Pusher:

Robert Merchant

Cell (903) 477-3751

Patrick Ford

Cell (903) 539-7889

Safety

Reggie Phillips (HSE Manager)

Office (432) 686-3747

Cell (432) 250-7507