



Oxy USA Inc.

Lea County, NM
North Hobbs G/SA Unit
NHU 25-675

Wellbore #1

Design: Surveys

Standard Survey Report

21 February, 2019

HOBBS OCD

MAY 01 2019

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Project: Lea County, NM
 Site: North Hobbs G/SA Unit
 Well: NHU 25-675
 Depth Reference: GL 3669.9' + 12.5' KB @ 3682.40usft (Precision 194)
 SHL Northing: 629019.65
 SHL Easting: 845669.75
 Rig: Precision 194
 Plan: plan2



SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TD at 4582.40' MD
4582.40	0.00	0.00	4582.40	0.00	0.00	0.00	0.00	0.00	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1596.11	1596.11	Rustler
1658.63	1658.63	Salt
2842.81	2842.81	Yates
3070.76	3070.76	Seven Rivers
3617.42	3617.42	Queen
3911.45	3911.45	Grayburg
4165.79	4165.79	San Andres 1

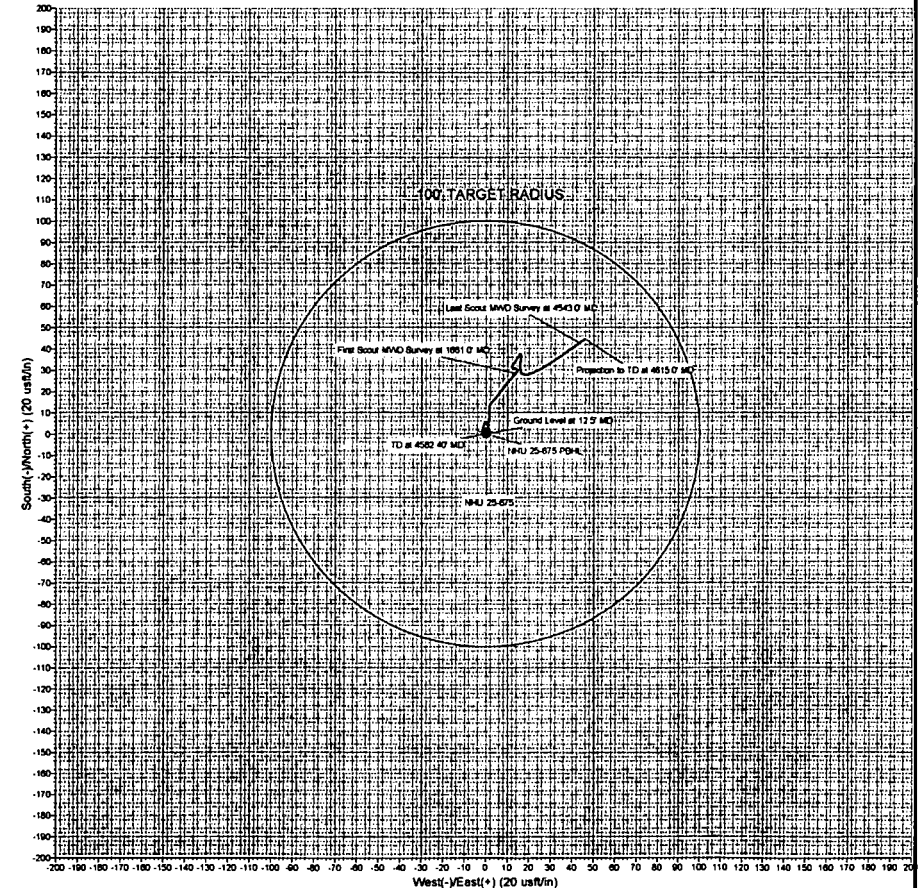
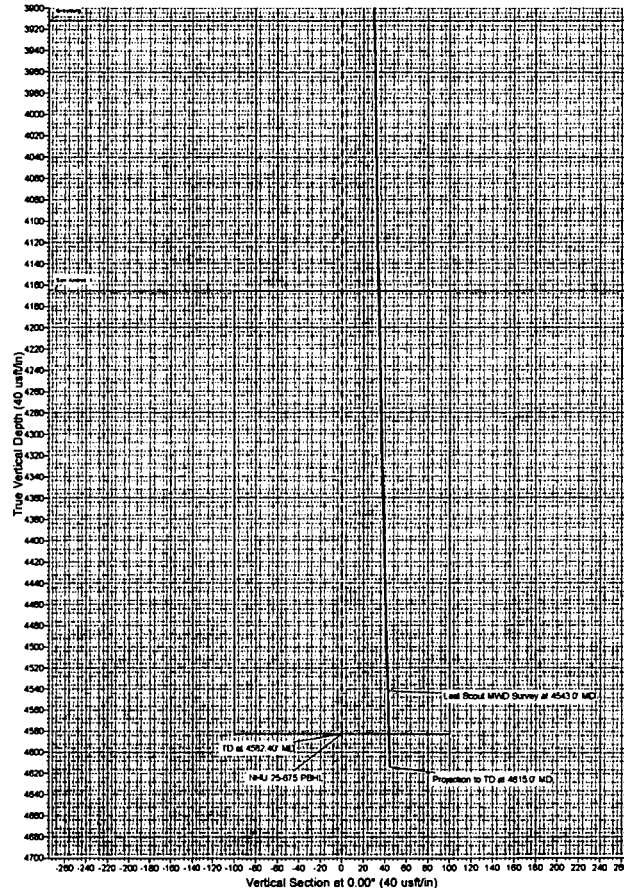
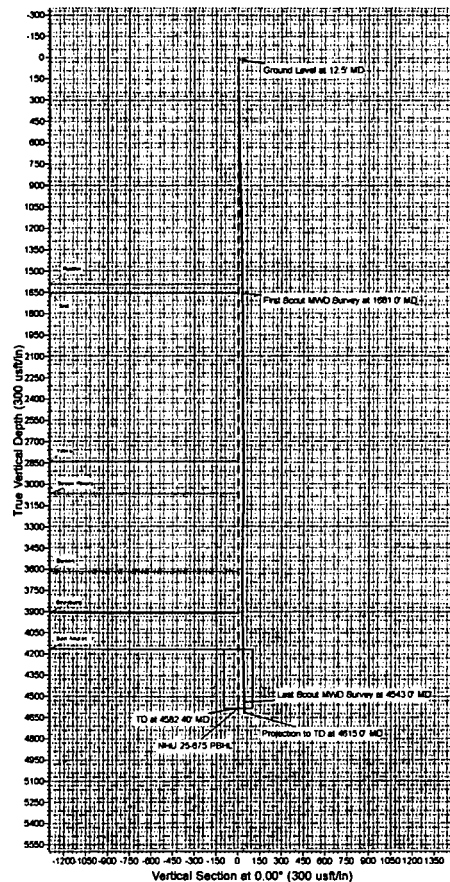
DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
NHU 25-675 PBHL	4582.40	0.00	0.00	629019.65	845669.75	Cirde (Radius: 100.00)



Azimuths to Grid North
 True North: -0.61°
 Magnetic North: 6.19°

Magnetic Field
 Strength: 48070.4snT
 Dip Angle: 60.72°
 Date: 12/3/2018
 Model: HDGM





Survey Report



Company:	Oxy USA Inc.	Local Co-ordinate Reference:	Well NHU 25-675
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Site:	North Hobbs G/SA Unit	MD Reference:	GL 3669.9' + 12.5' KB @ 3682.40usft (Precision 194)
Well:	NHU 25-675	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM		
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	North Hobbs G/SA Unit				
Site Position:		Northing:	634,663.65 usft	Latitude:	32° 44' 22.880 N
From:	Map	Easting:	847,524.56 usft	Longitude:	103° 12' 11.270 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.61 °

Well	NHU 25-675					
Well Position	+N/-S	0.00 usft	Northing:	629,019.65 usft	Latitude:	32° 43' 27.236 N
	+E/-W	0.00 usft	Easting:	845,669.75 usft	Longitude:	103° 12' 33.683 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,669.90 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/3/2018	6.80	60.72	48,070.40000000

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.00	

Survey Program	Date 12/17/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
12.50	1,551.32	Gyrodata Gyro (Wellbore #1)	GYD_G003_GC+DROP+	Gyrodata Stationary Tool drop on BHA on open h	
1,661.00	4,615.00	Scout MWD Surveys (Wellbore #1)	B001Mb_MWD+HRGM	OWSG MWD + HRGM	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.50	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00
Ground Level at 12.5' MD									
45.18	0.42	44.54	45.18	0.09	0.08	0.09	1.29	1.29	0.00
169.91	0.48	22.48	169.91	0.89	0.60	0.89	0.15	0.05	-17.69
292.82	0.76	7.71	292.81	2.18	0.91	2.18	0.26	0.23	-12.02
418.33	0.99	358.52	418.30	4.09	0.99	4.09	0.21	0.18	-7.32
539.63	1.27	9.91	539.58	6.46	1.20	6.46	0.29	0.23	9.39



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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single User Db

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)
663.19	1.26	358.50	663.11	9.16	1.40	9.16	0.20	-0.01	-9.23
783.19	1.50	2.33	783.08	12.05	1.43	12.05	0.21	0.20	3.19
902.82	1.84	45.28	902.66	14.97	2.86	14.97	1.06	0.28	35.90
1,022.62	1.35	35.26	1,022.41	17.47	5.04	17.47	0.47	-0.41	-8.36
1,201.03	1.24	36.10	1,200.78	20.75	7.39	20.75	0.06	-0.06	0.47
1,379.75	1.17	38.17	1,379.46	23.75	9.66	23.75	0.05	-0.04	1.16
1,551.32	1.44	44.80	1,550.98	26.65	12.26	26.65	0.18	0.16	3.86
1,661.00	1.10	39.31	1,660.64	28.45	13.89	28.45	0.33	-0.31	-5.01
First Scout MWD Survey at 1661.0' MD									
1,840.00	0.26	302.72	1,839.62	30.00	14.64	30.00	0.65	-0.47	-53.96
2,019.00	0.44	302.90	2,018.62	30.59	13.72	30.59	0.10	0.10	0.10
2,198.00	0.40	277.41	2,197.62	31.04	12.53	31.04	0.11	-0.02	-14.24
2,377.00	0.18	2.75	2,376.61	31.40	11.92	31.40	0.24	-0.12	47.68
2,555.00	0.79	36.59	2,554.61	32.67	12.67	32.67	0.36	0.34	19.01
2,734.00	0.97	30.53	2,733.59	34.96	14.17	34.96	0.11	0.10	-3.39
2,913.00	1.10	30.70	2,912.56	37.75	15.82	37.75	0.07	0.07	0.09
3,092.00	1.67	188.73	3,091.54	36.65	16.30	36.65	1.52	0.32	88.28
3,271.00	1.36	184.51	3,270.47	31.95	15.74	31.95	0.18	-0.17	-2.36
3,450.00	0.92	153.57	3,449.44	28.55	16.21	28.55	0.41	-0.25	-17.28
3,628.00	0.92	77.90	3,627.42	27.57	18.24	27.57	0.63	0.00	-42.51
3,807.00	1.54	67.88	3,806.38	28.77	21.88	28.77	0.37	0.35	-5.60
3,985.00	1.71	59.18	3,984.31	31.03	26.37	31.03	0.17	0.10	-4.89
4,164.00	1.89	56.54	4,163.22	34.03	31.13	34.03	0.11	0.10	-1.47
4,343.00	2.29	54.34	4,342.10	37.74	36.50	37.74	0.23	0.22	-1.23
4,543.00	2.55	53.38	4,541.92	42.73	43.31	42.73	0.13	0.13	-0.48
Last Scout MWD Survey at 4543.0' MD									
4,580.76	2.55	53.38	4,579.64	43.73	44.66	43.73	0.00	0.00	0.00
NHU 25-675 PBHL									
4,615.00	2.55	53.38	4,613.85	44.64	45.88	44.64	0.00	0.00	0.00
Projection to TD at 4615.0' MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12.50	12.50	0.00	0.00	Ground Level at 12.5' MD
1,661.00	1,660.64	28.45	13.89	First Scout MWD Survey at 1661.0' MD
4,543.00	4,541.92	42.73	43.31	Last Scout MWD Survey at 4543.0' MD
4,615.00	4,613.85	44.64	45.88	Projection to TD at 4615.0' MD

Checked By: _____ Approved By: _____ Date: _____