



30-025-43842

Oxy USA Inc.

Lea County, NM
North Hobbs G/SA Unit
NHU 24-658

Wellbore #1

Survey: Scout MWD

Standard Survey Report

05 March, 2018





Project: Lea County, NM
Site: North Hobbs G/SA Unit
Well: NHU 24-658
Depth Reference: GL 3674.8' + 17.5' KB @ 3692.30usft (Trinidad 435)
SHL Northing: 634664.18
SHL Easting: 847594.56
Rig: Trinidad 435
Plan: plan1



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.00	Start Build 3.00
2400.91	18.03	82.66	2391.05	11.98	92.99	3.00	82.66	93.76	Start 1648.85 hold at 2400.91 MD
4049.76	18.03	82.66	3958.95	77.15	599.08	0.00	0.00	604.03	Start Drop -3.00
4650.68	0.00	0.00	4550.00	89.13	692.07	3.00	180.00	697.79	Start 50.00 hold at 4650.68 MD
4700.68	0.00	0.00	4600.00	89.13	692.07	0.00	0.00	697.79	TD at 4700.68' MD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
282.30	282.30	Triassic Red Beds
1512.30	1512.30	Rustler
1632.30	1632.30	SALT
2722.30	2749.27	Yates
2952.30	2991.14	Seven Rivers
3472.30	3537.99	Queen
3782.30	3863.99	Grayburg
4042.30	4136.80	San Andres (Zone 1)
4212.30	4311.19	San Andres (Zone 3 upper)
4512.30	4612.97	San Andres (Zone 3 lower)

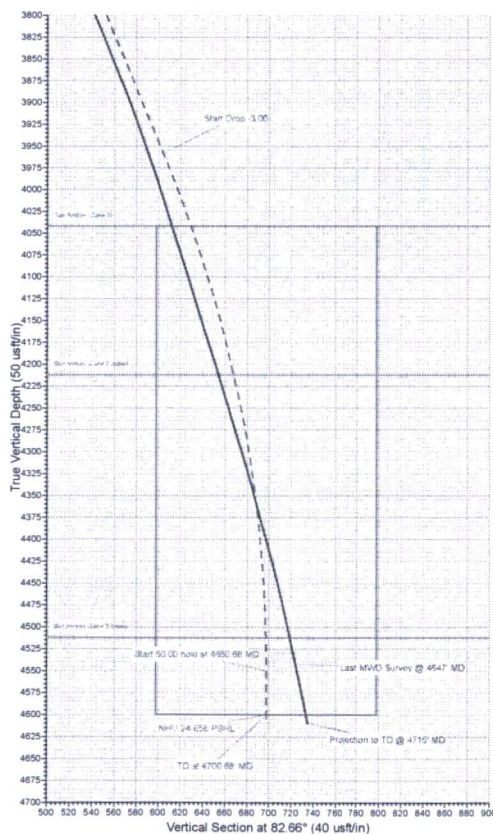
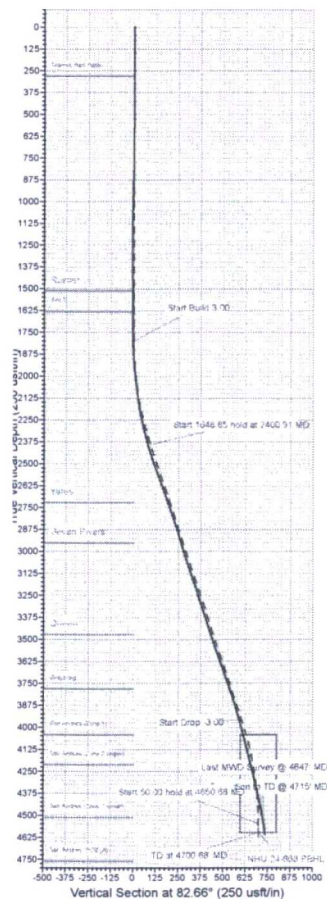
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
NHU 24-658 PBHL	4600.00	89.13	692.07	634753.31	848266.63

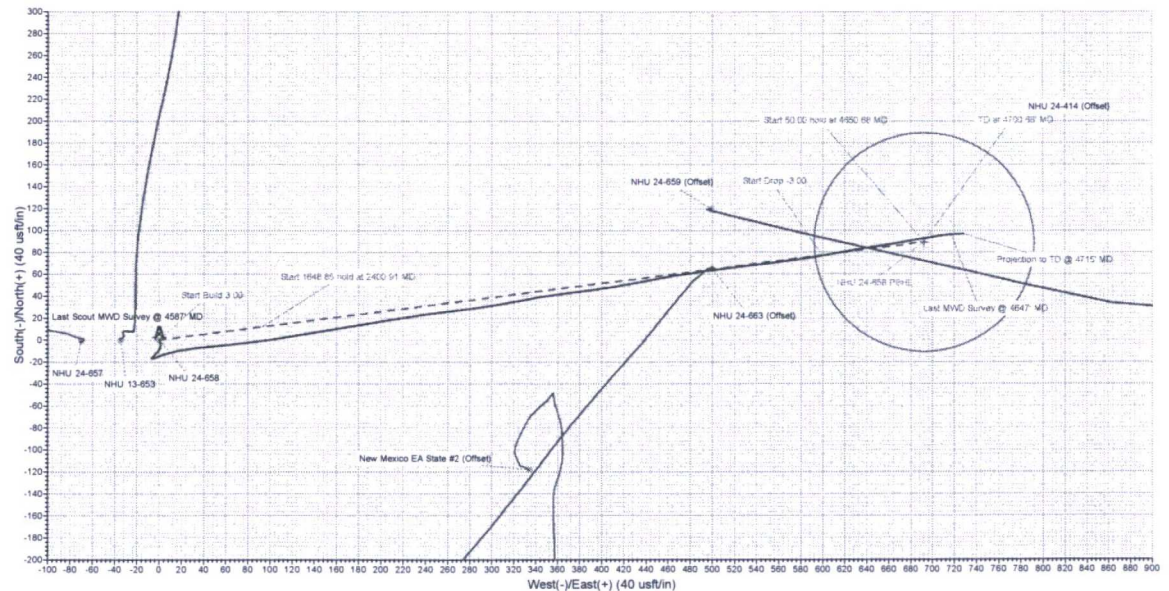
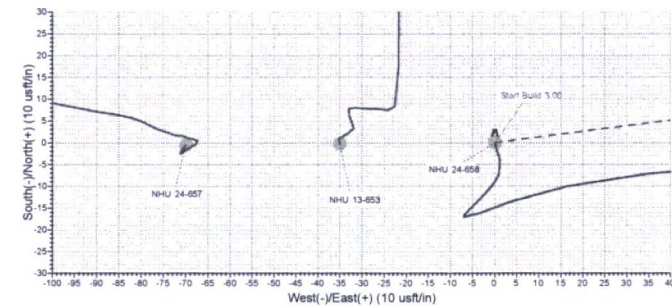


Azimuths to Grid North
True North: -0.51°
Magnetic North: 6.31°

Magnetic Field
Strength: 48205.1nT
Dip Angle: 60.77°
Date: 10/18/2017
Model: HDGM



Vertical Section at 82.66° (40 usft/in)





Survey Report



Company:	Oxy USA Inc.	Local Co-ordinate Reference:	Well NHU 24-658
Project:	Lea County, NM	TVD Reference:	GL 3674.8' + 17.5' KB @ 3692.30usft (Trinidad 435)
Site:	North Hobbs G/SA Unit	MD Reference:	GL 3674.8' + 17.5' KB @ 3692.30usft (Trinidad 435)
Well:	NHU 24-658	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 24-658					
Well Position	+N/-S	0.00 usft	Northing:	634,664.18 usf	Latitude:	32° 44' 22.878 N
	+E/-W	0.00 usft	Easting:	847,594.56 usf	Longitude:	103° 12' 10.451 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	usf	Ground Level:	3,674.80 usf

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/18/17	6.92	60.77	48,205.10000000

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	82.66	

Survey Program	Date 02/06/18				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
178.00	4,715.00	Scout MWD (Wellbore #1)	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	
178.00	0.48	165.20	178.00	-0.72	0.19	0.10	0.27	0.27	0.00	
363.00	0.48	166.34	362.99	-2.22	0.57	0.28	0.01	0.00	0.62	
547.00	0.66	158.25	546.98	-3.96	1.15	0.63	0.11	0.10	-4.40	
730.00	1.41	196.75	729.95	-7.09	0.89	-0.03	0.54	0.41	21.04	
913.00	2.77	224.26	912.83	-12.41	-2.85	-4.41	0.90	0.74	15.03	
1,097.00	0.70	221.62	1,096.74	-16.44	-6.70	-8.74	1.13	-1.13	-1.43	
1,285.00	0.35	68.43	1,284.73	-17.09	-6.93	-9.05	0.55	-0.19	-81.48	
1,459.00	0.40	76.51	1,458.73	-16.75	-5.84	-7.93	0.04	0.03	4.64	



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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)
1,568.00	0.44	72.47	1,567.73	-16.53	-5.07	-7.14	0.05	0.04	-3.71
1,694.00	0.44	101.12	1,693.72	-16.48	-4.14	-6.21	0.17	0.00	22.74
1,821.00	1.01	56.30	1,820.71	-15.96	-2.73	-4.74	0.60	0.45	-35.29
1,946.00	4.88	71.86	1,945.53	-13.69	3.25	1.47	3.13	3.10	12.45
2,071.00	7.52	76.25	2,069.78	-10.09	16.25	14.82	2.14	2.11	3.51
2,196.00	9.93	84.78	2,193.33	-7.16	34.93	33.73	2.18	1.93	6.82
2,322.00	13.76	85.13	2,316.63	-4.90	60.69	59.56	3.04	3.04	0.28
2,447.00	17.41	81.26	2,437.01	-0.80	93.99	93.12	3.03	2.92	-3.10
2,573.00	19.82	80.38	2,556.41	5.64	133.69	133.32	1.93	1.91	-0.70
2,698.00	19.03	80.82	2,674.30	12.43	174.70	174.86	0.64	-0.63	0.35
2,824.00	17.76	79.94	2,793.86	19.07	213.91	214.59	1.03	-1.01	-0.70
2,949.00	16.57	83.28	2,913.29	24.48	250.38	251.46	1.24	-0.95	2.67
3,076.00	17.63	82.40	3,034.67	29.14	287.43	288.80	0.86	0.83	-0.69
3,201.00	18.77	78.54	3,153.42	35.64	325.91	327.79	1.33	0.91	-3.09
3,326.00	17.89	82.84	3,272.09	42.03	364.67	367.05	1.29	-0.70	3.44
3,452.00	17.85	81.52	3,392.01	47.29	402.97	405.71	0.32	-0.03	-1.05
3,578.00	18.29	78.80	3,511.79	53.98	441.47	444.74	0.76	0.35	-2.16
3,704.00	19.03	81.52	3,631.17	60.85	481.18	485.01	0.91	0.59	2.16
3,829.00	18.55	83.28	3,749.51	66.18	521.08	525.27	0.59	-0.38	1.41
3,956.00	17.58	83.19	3,870.25	70.82	560.19	564.65	0.76	-0.76	-0.07
4,081.00	14.24	80.21	3,990.45	75.68	594.09	598.89	2.75	-2.67	-2.38
4,205.00	13.85	79.85	4,110.74	80.88	623.73	628.96	0.32	-0.31	-0.29
4,331.00	13.71	80.56	4,233.11	85.99	653.31	658.94	0.17	-0.11	0.56
4,458.00	12.62	80.47	4,356.77	90.76	681.84	687.84	0.86	-0.86	-0.07
4,584.00	10.42	80.65	4,480.23	94.89	706.66	712.99	1.75	-1.75	0.14
4,647.00	9.19	86.97	4,542.31	96.08	717.30	723.70	2.59	-1.95	10.03
Last MWD Survey @ 4647' MD									
4,715.00	9.19	86.97	4,609.44	96.65	728.15	734.53	0.00	0.00	0.00
Projection to TD @ 4715' MD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,647.00	4,542.31	96.08	717.30	Last MWD Survey @ 4647' MD
4,715.00	4,609.44	96.65	728.15	Projection to TD @ 4715' MD

Checked By: _____ Approved By: _____ Date: _____