

30-025-43579

Oxy USA Inc.

Lea County, NM
North Hobbs G/SA Unit
NHU 24-678

HOBBS OCD

FEB 12 2018

RECEIVED

Wellbore #1

Survey: Scout MWD

Standard Survey Report

18 December, 2017



30-025-43579

Survey Report



Company:	Oxy USA Inc.	Local Co-ordinate Reference:	Well NHU 24-678
Project:	Lea County, NM	TVD Reference:	GL 3672.9' + 17.5' KB @ 3690.40usft (Trinidad 435)
Site:	North Hobbs G/SA Unit	MD Reference:	GL 3672.9' + 17.5' KB @ 3690.40usft (Trinidad 435)
Well:	NHU 24-678	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
From:	Map	Easting:	847,524.56 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 44' 22.880 N
		Longitude:	103° 12' 11.270 W
		Grid Convergence:	0.61 °

Well	NHU 24-678		
Well Position	+N-S	0.00 usft	Northing: 631,654.14 usft
	+E-W	0.00 usft	Easting: 845,834.55 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 43' 53.283 N
		Longitude:	103° 12' 31.427 W
		Ground Level:	3,672.90 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	2017/10/25	6.90
			Dip Angle (°)
			60.77
			Field Strength (nT)
			48,200.20000000

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)
	0.00	0.00	0.00
			Direction (°)
			272.40

Survey Program	Date 2017/12/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
175.00	5,300.00	Scout MWD (Wellbore #1)	MWD+HRGM
			Description
			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	
175.00	0.44	343.60	175.00	0.64	-0.19	0.22	0.25	0.25	0.00	
360.00	0.53	68.51	359.99	1.64	0.41	-0.34	0.36	0.05	45.90	
545.00	0.92	42.58	544.98	3.05	2.21	-2.08	0.27	0.21	-14.02	
727.00	1.05	53.83	726.95	5.11	4.54	-4.32	0.13	0.07	6.18	
909.00	0.57	81.34	908.93	6.23	6.78	-6.52	0.33	-0.26	15.12	
1,096.00	0.70	38.54	1,095.92	7.26	8.41	-8.10	0.26	0.07	-22.89	
1,284.00	1.05	288.67	1,283.91	8.71	7.50	-7.13	0.77	0.19	-58.44	
1,472.00	1.27	292.80	1,471.87	10.07	3.95	-3.52	0.13	0.12	2.20	

Provide signature page for
directional survey

Survey Report



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Well:	NHU 24-678	North Reference:	Grid
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)
1,633.00	0.97	303.44	1,632.84	11.51	1.16	-0.68	0.23	-0.19	6.61
1,822.00	0.75	310.47	1,821.82	13.20	-1.11	1.87	0.13	-0.12	3.72
2,010.00	0.66	335.25	2,009.81	14.98	-2.50	3.13	0.17	-0.05	13.18
2,198.00	0.88	354.59	2,197.79	17.40	-3.09	3.82	0.18	0.12	10.29
2,387.00	1.10	26.93	2,386.76	20.46	-2.41	3.26	0.31	0.12	17.11
2,576.00	0.79	13.05	2,575.74	23.35	-1.29	2.27	0.20	-0.16	-7.34
2,765.00	0.26	290.52	2,764.73	24.77	-1.40	2.44	0.42	-0.28	-43.67
2,953.00	0.26	3.12	2,952.73	25.34	-1.77	2.84	0.16	0.00	38.62
3,141.00	0.35	22.63	3,140.73	26.30	-1.53	2.63	0.07	0.05	10.38
3,329.00	0.79	49.26	3,328.72	27.67	-0.33	1.49	0.27	0.23	14.16
3,518.00	0.75	217.39	3,517.71	27.54	-0.09	1.25	0.81	-0.02	88.96
3,707.00	0.18	151.83	3,706.70	26.30	-0.70	1.80	0.37	-0.30	-34.69
3,897.00	0.48	67.28	3,896.70	26.34	0.17	0.93	0.26	0.16	-44.50
4,084.00	1.93	228.03	4,083.67	24.54	-1.45	2.47	1.28	0.78	85.96
4,273.00	1.67	228.29	4,272.58	20.58	-5.87	6.73	0.14	-0.14	0.14
4,461.00	1.76	228.29	4,460.49	16.83	-10.07	10.77	0.05	0.05	0.00
4,581.00	1.85	228.20	4,580.44	14.32	-12.89	13.48	0.08	0.08	-0.08
4,737.00	1.76	233.74	4,736.36	11.22	-16.70	17.15	0.13	-0.06	3.55
4,926.00	2.24	227.94	4,925.24	7.03	-21.78	22.06	0.28	0.25	-3.07
5,114.00	0.84	203.24	5,113.17	3.30	-25.05	25.17	0.81	-0.74	-13.14
5,248.00	0.79	218.18	5,247.16	1.67	-26.01	26.06	0.16	-0.04	11.15

Last MWD Survey @ 5248' MD

5,300.00	0.79	218.18	5,299.15	1.11	-26.45	26.48	0.00	0.00	0.00
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Projection to TD @ 5300' MD

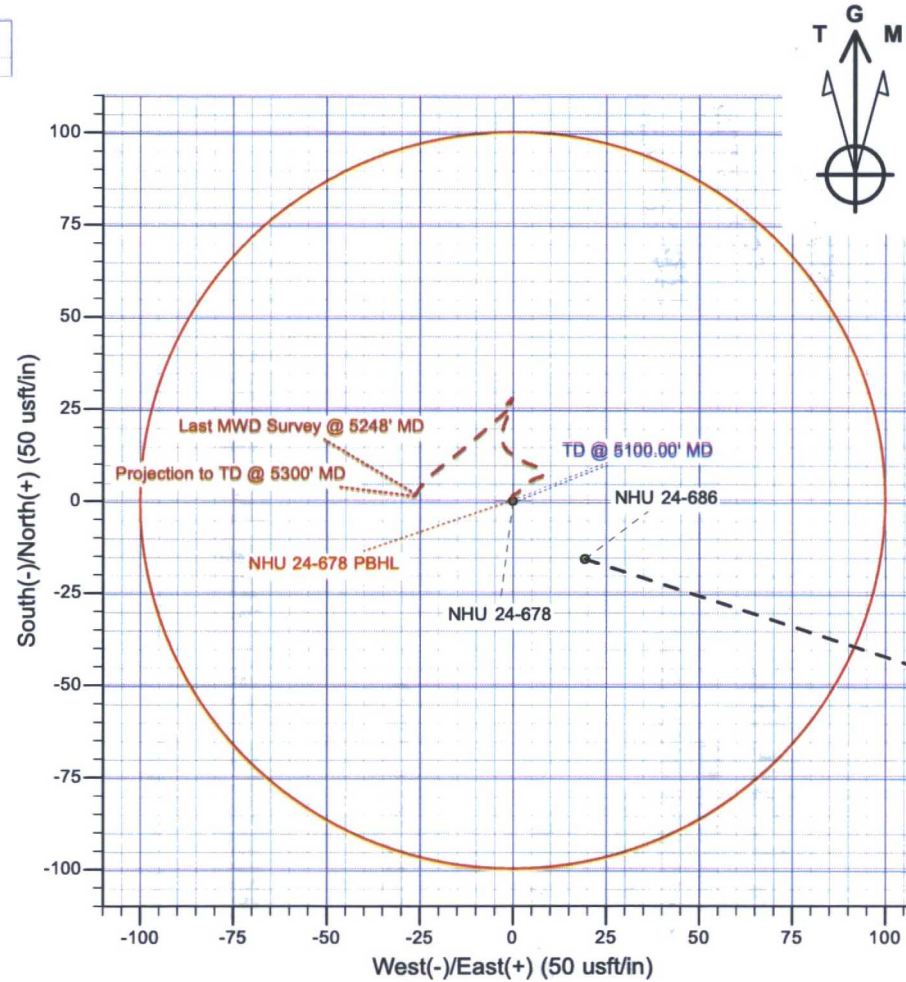
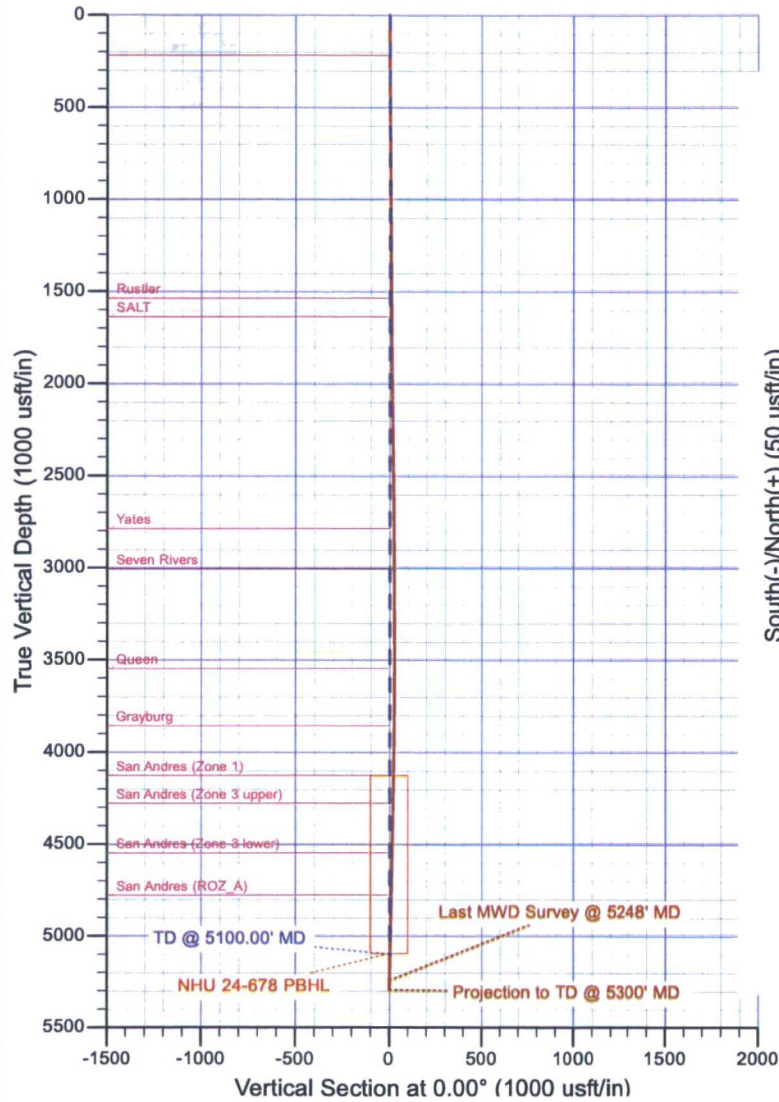
Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		
		+N/-S (usft)	+E/-W (usft)	Comment
5,248.00	5,247.16	1.67	-26.01	Last MWD Survey @ 5248' MD
5,300.00	5,299.15	1.11	-26.45	Projection to TD @ 5300' MD

Checked By: _____ Approved By: _____ Date: _____



Project: Lea County, NM
Site: North Hobbs G/SA Unit
Well: NHU 24-678
Wellbore: Wellbore #1
Design: plan2
SHL Northing: 631654.14
SHL Easting: 845834.55



Azimuths to Grid North
True North: -0.61°
Magnetic North: 6.29°

Magnetic Field
Strength: 48200.2nT
Dip Angle: 60.77°
Date: 2017/10/25
Model: HDGM

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00	TD @ 5100.00' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
NHU 24-678 PBHL	5100.00	0.00	0.00	631654.14	845834.55	32° 43' 53.283 N	103° 12' 31.427 W	Circle (Radius: 100.00)