OXY USA PERMIAN EOR

HOBBS NORTH (LEA)
NORTH HOBBS GRAYBURG-SA UNIT
NHU (G/SA) 662-24
3002543604
ORIG HOLE

Design: NHU (G/SA) 662-24

Standard Survey Report

17 May, 2017

Oxy

Survey Report

Company:	OXY USA PERMIAN EOR	**Local Co-ordinate Reference:**	Well NHU (G/SA) 662-24
Project:	HOBBS NORTH (LEA)	**TVD Reference:**	TR435 17.5'KB @ 3693.40ft (TRINIDAD 435)
Site:	NORTH HOBBS GRAYBURG-SA UNIT	**MD Reference:**	TR435 17.5'KB @ 3693.40ft (TRINIDAD 435)
Well:	NHU (G/SA) 662-24	**North Reference:**	Grid
Wellbore:	ORIG HOLE	**Survey Calculation Method:**	Minimum Curvature
Design:	NHU (G/SA) 662-24	**Database:**	HOPSPP

Project HOBBS NORTH (LEA), North America, North West Hobbs, 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		Using geodetic scale factor

Site NORTH HOBBS GRAYBURG-SA UNIT, NORTH HOBBS G/SA UNIT

Site Position:		**Northing:**	635,270.89 usft	**Latitude:**	32° 44' 28.209035 N
From:	Map	**Easting:**	853,897.68 usft	**Longitude:**	103° 10' 56.590797 W
Position Uncertainty:	1.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.62 °

Well NHU (G/SA) 662-24, 1402020100

Well Position	**+N/-S**	0.00 ft	**Northing:**	634,022.03 usft	**Latitude:**	32° 44' 16.654662 N
	+E/-W	0.00 ft	**Easting:**	846,363.21 usft	**Longitude:**	103° 12' 24.944423 W
Position Uncertainty		5.59 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,675.90 ft

Wellbore ORIG HOLE

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/17/2017	6.95	60.78	48,250

Design NHU (G/SA) 662-24

Audit Notes:

Version:		**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	65.95

Survey Program **Date** 5/17/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
117.00	1,478.00	SURFACE MULTISHOT (ORIG HOLE)	B017Mb_EMS+IGRF	OWSG EMS + IGRF or WMM
1,633.00	4,688.00	PRODUCTION MWD (ORIG HOLE)	B001Mb_MWD+HRGM	OWSG MWD + HRGM

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117.00	0.70	294.97	117.00	0.30	-0.65	-0.47	0.60	0.60	0.00
238.00	0.30	287.97	237.99	0.71	-1.62	-1.19	0.33	-0.33	-5.79
360.00	0.90	185.57	359.99	-0.14	-2.02	-1.90	0.83	0.49	-83.93
483.00	1.30	216.87	482.97	-2.22	-2.95	-3.60	0.58	0.33	25.45
606.00	0.50	147.67	605.95	-3.79	-3.50	-4.74	0.99	-0.65	-56.26
728.00	0.40	96.57	727.95	-4.29	-2.79	-4.30	0.33	-0.08	-41.89
850.00	0.20	201.47	849.95	-4.54	-2.44	-4.08	0.40	-0.16	85.98
974.00	0.80	90.57	973.94	-4.75	-1.66	-3.45	0.72	0.48	-89.44
1,100.00	0.60	70.47	1,099.93	-4.53	-0.16	-1.99	0.25	-0.16	-15.95

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Wellbore:	ORIG HOLE	**Survey Calculation Method:**	Minimum Curvature
Design:	NHU (G/SA) 662-24	**Database:**	HOPSPP

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,226.00	0.60	51.67	1,225.93	-3.91	0.98	-0.69	0.16	0.00	-14.92
1,352.00	0.40	269.97	1,351.93	-3.50	1.06	-0.46	0.75	-0.16	-112.46
1,478.00	1.10	85.37	1,477.92	-3.40	1.83	0.28	1.19	0.56	139.21
1,633.00	0.18	162.52	1,632.91	-3.51	3.38	1.66	0.69	-0.59	49.77
1,819.00	0.48	136.95	1,818.91	-4.36	4.00	1.88	0.18	0.16	-13.75
2,008.00	0.26	206.20	2,007.90	-5.32	4.35	1.81	0.24	-0.12	36.64
2,197.00	0.09	66.11	2,196.90	-5.65	4.30	1.62	0.18	-0.09	-74.12
2,385.00	1.01	49.49	2,384.89	-4.51	5.69	3.36	0.49	0.49	-8.84
2,574.00	1.49	57.49	2,573.85	-2.11	9.03	7.39	0.27	0.25	4.23
2,763.00	2.29	71.38	2,762.74	0.42	14.68	13.58	0.48	0.42	7.35
2,951.00	1.36	48.26	2,950.65	3.10	19.91	19.44	0.62	-0.49	-12.30
3,138.00	1.14	54.59	3,137.60	5.66	23.08	23.38	0.14	-0.12	3.39
3,327.00	1.32	56.79	3,326.56	7.94	26.43	27.37	0.10	0.10	1.16
3,516.00	1.45	57.23	3,515.50	10.43	30.27	31.89	0.07	0.07	0.23
3,704.00	1.32	59.07	3,703.45	12.83	34.12	36.39	0.07	-0.07	0.98
3,893.00	1.41	59.43	3,892.40	15.13	37.99	40.86	0.05	0.05	0.19
4,082.00	1.45	57.14	4,081.34	17.61	42.00	45.53	0.04	0.02	-1.21
4,270.00	1.54	64.08	4,269.27	20.00	46.27	50.41	0.11	0.05	3.69
4,459.00	1.58	71.64	4,458.20	21.93	51.03	55.54	0.11	0.02	4.00
4,647.00	2.02	74.54	4,646.11	23.63	56.68	61.40	0.24	0.23	1.54
4,688.00	2.55	61.10	4,687.08	24.27	58.18	63.02	1.83	1.29	-32.78
5,100.00	2.55	61.10	5,098.67	33.13	74.23	81.28	0.00	0.00	0.00

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,566.00	1,565.91	SURFACE CASING	9.625	12.250
5,089.00	5,087.68	PRODUCTION CASING	8.750	8.750

Checked By: _____ Approved By: _____ Date: _____