OCCIDENTAL PERMIAN LTD

SOUTH HOBBS UNIT
SEC. 6, T19S, R38E
SHU 291

SHU 291

Design: SHU 291

Standard Survey Report

07 March, 2018

GeoGuidance Drilling

Survey Report

Company:	OCCIDENTAL PERMIAN LTD	**Local Co-ordinate Reference:**	Well SHU 291
Project:	SOUTH HOBBS UNIT	**TVD Reference:**	SHU 291 @ 3636.10usft (TRINIDAD 435)
Site:	SEC. 6, T19S, R38E	**MD Reference:**	SHU 291 @ 3636.10usft (TRINIDAD 435)
Well:	SHU 291	**North Reference:**	Grid
Wellbore:	SHU 291	**Survey Calculation Method:**	Minimum Curvature
Design:	SHU 291	**Database:**	EDM 5000.1 Single User Db

Project	SOUTH HOBBS UNIT		
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	SEC. 6, T19S, R38E				
Site Position:		**Northing:**	616,000.00 usft	**Latitude:**	32.688235
From:	Map	**Easting:**	853,000.00 usft	**Longitude:**	-103.185984
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.62 °

Well	SHU 291, SUR. N 615336.50 E 853777.44					
Well Position	**+N/-S**	0.00 usft	**Northing:**	615,336.50 usft	**Latitude:**	32.686389
	+E/-W	0.00 usft	**Easting:**	853,777.44 usft	**Longitude:**	-103.183481
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	3,636.10 usft	**Ground Level:**	3,618.60 usft

Wellbore	SHU 291				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	1/31/2018	6.73	60.54	48,187

Design	SHU 291						
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** 3/7/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
192.00	1,552.00	MultiShot Survey (SHU 291)	EMS+IGRF	OWSG EMS + IGRF or WMM
1,680.00	5,620.00	SHU 291 Surveys (SHU 291)	MWD+IGRF	OWSG MWD + IGRF or WMM

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
192.00	0.80	206.11	191.99	-1.20	-0.59	-1.20	0.42	0.42	0.00
MultiShot Surveys									
315.00	0.70	195.51	314.98	-2.70	-1.17	-2.70	0.14	-0.08	-8.62
489.00	1.30	73.01	488.97	-3.15	0.43	-3.15	1.02	0.34	-70.40
652.00	0.20	168.81	651.95	-2.88	2.26	-2.88	0.82	-0.67	58.77
835.00	1.10	44.41	834.94	-1.94	3.55	-1.94	0.67	0.49	-67.98
1,018.00	1.60	68.51	1,017.89	0.25	7.16	0.25	0.41	0.27	13.17
1,208.00	0.80	34.71	1,207.85	2.31	10.38	2.31	0.55	-0.42	-17.79
1,396.00	0.60	110.31	1,395.84	3.05	12.05	3.05	0.46	-0.11	40.21

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Wellbore:	SHU 291	**Survey Calculation Method:**	Minimum Curvature
Design:	SHU 291	**Database:**	EDM 5000.1 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)
1,552.00	0.50	104.81	1,551.83	2.59	13.47	2.59	0.07	-0.06	-3.53
1,743.00	0.66	73.57	1,742.83	2.69	15.34	2.69	0.18	0.08	-16.36
EM Surveys									
1,933.00	0.81	66.55	1,932.81	3.53	17.62	3.53	0.09	0.08	-3.69
2,122.00	0.97	74.97	2,121.79	4.48	20.39	4.48	0.11	0.08	4.46
2,311.00	1.41	78.40	2,310.75	5.36	24.21	5.36	0.24	0.23	1.81
2,498.00	1.54	63.06	2,497.68	6.96	28.70	6.96	0.22	0.07	-8.20
2,688.00	1.38	59.37	2,687.62	9.28	32.95	9.28	0.10	-0.08	-1.94
2,876.00	1.41	44.61	2,875.57	12.08	36.52	12.08	0.19	0.02	-7.85
3,064.00	1.71	35.86	3,063.50	16.00	39.79	16.00	0.20	0.16	-4.65
3,250.00	0.88	51.15	3,249.45	19.15	42.53	19.15	0.48	-0.45	8.22
3,439.00	1.19	50.80	3,438.42	21.30	45.18	21.30	0.16	0.16	-0.19
3,628.00	1.41	41.84	3,627.37	24.27	48.25	24.27	0.16	0.12	-4.74
3,817.00	0.75	69.39	3,816.34	26.44	50.96	26.44	0.43	-0.35	14.58
4,006.00	0.22	125.77	4,005.33	26.66	52.41	26.66	0.35	-0.28	29.83
4,195.00	0.66	190.94	4,194.32	25.38	52.50	25.38	0.32	0.23	34.48
4,383.00	0.66	150.25	4,382.31	23.38	52.83	23.38	0.24	0.00	-21.64
4,572.00	0.97	165.85	4,571.29	20.88	53.76	20.88	0.20	0.16	8.25
4,762.00	1.05	176.18	4,761.26	17.59	54.27	17.59	0.10	0.04	5.44
4,951.00	0.79	171.21	4,950.24	14.57	54.59	14.57	0.14	-0.14	-2.63
5,138.00	1.10	191.60	5,137.21	11.54	54.42	11.54	0.24	0.17	10.90
5,327.00	1.32	189.32	5,326.17	7.61	53.70	7.61	0.12	0.12	-1.21
5,516.00	1.23	198.02	5,515.13	3.54	52.72	3.54	0.11	-0.05	4.60
5,539.00	1.23	190.68	5,538.12	3.06	52.60	3.06	0.68	0.00	-31.91
5,620.00	1.23	190.68	5,619.10	1.35	52.28	1.35	0.00	0.00	0.00
Projection To TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
192.00	191.99	-1.20	-0.59	MultiShot Surveys
1,743.00	1,742.83	2.69	15.34	EM Surveys
5,620.00	5,619.10	1.35	52.28	Projection To TD

Checked By: _____ Approved By: _____ Date: _____