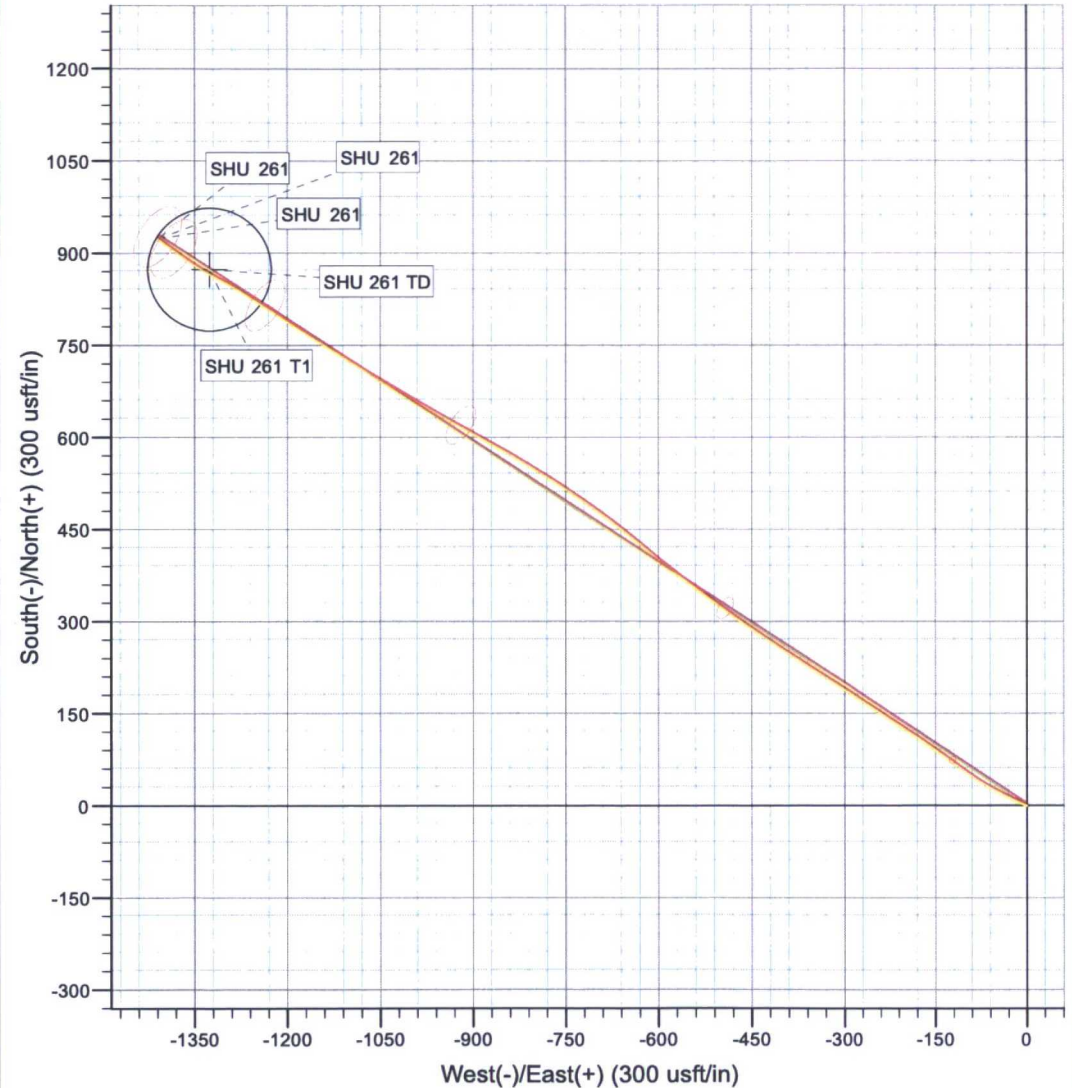
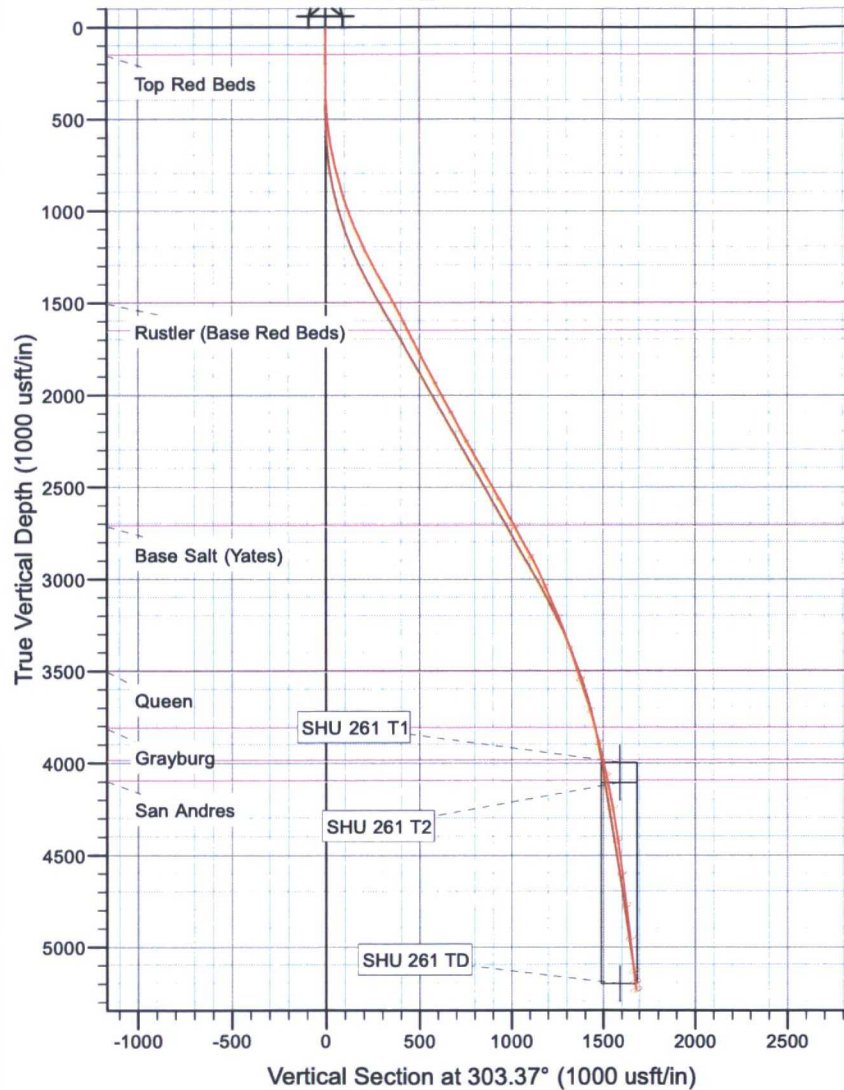




LEGEND

- △ SHU 261, SHU 261, 032816 V2 V0
- SHU 261
- SHU 261 MWD Surveys

SECTION DETAILS

No plan data is available



HC 100000

DEC 21 2016

RECEIVED

OCCIDENTAL PERMIAN LTD

**SOUTH HOBBS UNIT
SEC. 4, T19S, R38E
SHU 261**

SHU 261

Survey: SHU 261 MWD Surveys

Standard Survey Report

29 May, 2016



GEOGUIDANCE
DRILLING SERVICES, INC.



GEOGUIDANCE DRILLING

Survey Report



Company:	OCCIDENTAL PERMIAN LTD	Local Co-ordinate Reference:	Well SHU 261
Project:	SOUTH HOBBS UNIT	TVD Reference:	SHU 261 @ 3623.9usft (H&P 340)
Site:	SEC. 4, T19S, R38E	MD Reference:	SHU 261 @ 3623.9usft (H&P 340)
Well:	SHU 261	North Reference:	Grid
Wellbore:	SHU 261	Survey Calculation Method:	Minimum Curvature
Design:	SHU 261	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. 4, T19S, R38E		
Site Position:		Northing:	616,000.00 usft
From:	Map	Easting:	863,000.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 41' 16.562 N
		Longitude:	103° 9' 31.189 W
		Grid Convergence:	0.64 °

Well	SHU 261, SUR. N 615779.07 E 861409.34		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	3,623.9 usft
		Latitude:	32° 41' 14.550 N
		Longitude:	103° 9' 31.189 W
		Ground Level:	3,607.4 usft

Wellbore	SHU 261		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/28/2016	6.92
			Dip Angle (°)
			60.57
			Field Strength (nT)
			48,382

Design	SHU 261		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			303.37

Survey Program	Date 5/29/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
192.0	5,587.0	SHU 261 MWD Surveys (SHU 261)	MWD+IGRF
			Description
			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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
192.0	0.57	181.50	192.0	-1.0	0.0	-0.5	0.30	0.30	0.00
374.0	1.19	302.92	374.0	-0.8	-1.6	0.9	0.86	0.34	66.71
554.0	6.50	293.40	553.5	4.2	-12.6	12.8	2.96	2.95	-5.29
737.0	12.50	296.30	733.9	17.1	-39.8	42.7	3.29	3.28	1.58
902.0	15.90	302.70	893.9	37.3	-74.9	83.0	2.27	2.06	3.88
1,081.0	21.30	306.40	1,063.5	69.8	-121.7	140.1	3.09	3.02	2.07
1,261.0	25.40	303.10	1,228.7	110.3	-180.4	211.3	2.39	2.28	-1.83
1,441.0	29.75	303.58	1,388.2	156.1	-250.0	294.7	2.42	2.42	0.27
1,530.0	28.34	302.70	1,466.0	179.8	-286.2	337.9	1.66	-1.58	-0.99



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Wellbore:	SHU 261	Survey Calculation Method:	Minimum Curvature
Design:	SHU 261	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)
1,706.0	27.05	302.84	1,621.8	224.0	-354.9	419.7	0.73	-0.73	0.08
1,886.0	27.69	304.12	1,781.7	269.7	-424.0	502.4	0.48	0.36	0.71
2,066.0	27.91	306.22	1,940.9	318.0	-492.6	586.3	0.56	0.12	1.17
2,245.0	28.48	307.75	2,098.7	368.9	-560.1	670.7	0.51	0.32	0.85
2,425.0	28.74	310.70	2,256.7	423.4	-626.9	756.4	0.80	0.14	1.64
2,605.0	29.79	305.87	2,413.8	477.9	-695.9	844.0	1.44	0.58	-2.68
2,785.0	29.71	303.14	2,570.0	528.4	-769.5	933.3	0.75	-0.04	-1.52
2,965.0	29.05	299.76	2,726.9	574.5	-844.8	1,021.5	0.99	-0.37	-1.88
3,144.0	28.13	299.05	2,884.1	616.6	-919.4	1,107.0	0.55	-0.51	-0.40
3,324.0	23.69	300.50	3,045.9	655.6	-987.7	1,185.4	2.49	-2.47	0.81
3,505.0	22.02	301.34	3,212.7	691.7	-1,048.0	1,255.7	0.94	-0.92	0.46
3,684.0	19.69	302.57	3,380.0	725.4	-1,102.1	1,319.4	1.32	-1.30	0.69
3,864.0	17.84	302.22	3,550.4	756.4	-1,151.0	1,377.3	1.03	-1.03	-0.19
4,044.0	16.60	303.88	3,722.3	785.4	-1,195.6	1,430.5	0.74	-0.69	0.92
4,224.0	14.11	302.31	3,895.9	811.5	-1,235.5	1,478.2	1.40	-1.38	-0.87
4,403.0	12.30	303.10	4,070.2	833.6	-1,270.0	1,519.1	1.02	-1.01	0.44
4,584.0	9.15	297.50	4,248.0	850.7	-1,298.9	1,552.7	1.83	-1.74	-3.09
4,764.0	8.18	299.71	4,425.9	863.7	-1,322.7	1,579.7	0.57	-0.54	1.23
4,944.0	7.96	302.57	4,604.2	876.7	-1,344.3	1,604.9	0.25	-0.12	1.59
5,123.0	7.63	304.99	4,781.5	890.2	-1,364.5	1,629.2	0.26	-0.18	1.35
5,303.0	6.94	306.57	4,960.0	903.6	-1,383.0	1,652.0	0.40	-0.38	0.88
5,483.0	6.46	307.27	5,138.8	916.2	-1,399.8	1,673.0	0.27	-0.27	0.39
Last EM Survey									
5,545.0	6.46	307.27	5,200.4	920.4	-1,405.4	1,679.9	0.00	0.00	0.00
Projected Planned TVD									
5,587.0	6.46	307.27	5,242.2	923.3	-1,409.1	1,684.7	0.00	0.00	0.00

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
155.0	155.0	Top Red Beds			
1,574.2	1,505.0	Rustler (Base Red Beds)			
1,743.2	1,655.0	Top Salt			
2,951.4	2,715.0	Base Salt (Yates)			
3,816.2	3,505.0	Queen			
4,140.4	3,815.0	Grayburg			
4,320.8	3,990.0	Basal Grayburg			
4,433.5	4,100.0	San Andres			



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Well:	SHU 261	North Reference:	Grid
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Design:	SHU 261	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,483.0	5,138.7	916.6	-1,400.6	Last EM Survey
5,545.0	5,200.3	921.1	-1,406.6	Projected Planned TVD
5,588.0	5,242.9	924.2	-1,410.9	Straight Lined Survey Well TD

Checked By: _____	Approved By: _____	Date: _____
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