



HOBBS OCD

SEP 13 2016

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OCCIDENTAL PERMIAN LTD

**SOUTH HOBBS UNIT
SEC. 4, T19S, R38E
SHU 264**

SHU 264

Design: SHU 264

Standard Survey Report

02 June, 2016



GEOGUIDANCE
DRILLING SERVICES, INC.



GEOGUIDANCE DRILLING

Survey Report



Company:	OCCIDENTAL PERMIAN LTD	Local Co-ordinate Reference:	Well SHU 264
Project:	SOUTH HOBBS UNIT	TVD Reference:	SHU 264 @ 3624.0usft (H&P 340)
Site:	SEC. 4, T19S, R38E	MD Reference:	SHU 264 @ 3624.0usft (H&P 340)
Well:	SHU 264	North Reference:	Grid
Wellbore:	SHU 264	Survey Calculation Method:	Minimum Curvature
Design:	SHU 264	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' 12.552 W
		Grid Convergence:	0.64 °

Well	SHU 264, SUR. N 615782.93 E 861459.19		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	3,624.0 usft
		Latitude:	32° 41' 14.583 N
		Longitude:	103° 9' 30.605 W
		Ground Level:	3,607.5 usft

Wellbore	SHU 264		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/17/2016	6.93
			Dip Angle (°)
			60.57
			Field Strength (nT)
			48,385

Design	SHU 264		
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 (°)
			82.17

Survey Program	Date 6/2/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
134.0	1,455.0	MultiShot Surveys (SHU 264)	EMS+IGRF
1,615.0	5,275.0	MWD SURVEYS (SHU 264)	MWD+IGRF
			Description
			OWSG EMS + IGRF or WMM
			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
134.0	0.30	125.00	134.0	-0.2	0.3	0.3	0.22	0.22	0.00
194.0	0.50	121.40	194.0	-0.4	0.6	0.6	0.34	0.33	-6.00
255.0	0.70	93.60	255.0	-0.6	1.2	1.1	0.57	0.33	-45.57
315.0	0.80	103.70	315.0	-0.7	2.0	1.9	0.28	0.17	16.83
376.0	0.90	117.60	376.0	-1.0	2.8	2.7	0.37	0.16	22.79
466.0	1.10	97.10	466.0	-1.5	4.3	4.1	0.45	0.22	-22.78
556.0	1.00	91.90	556.0	-1.6	6.0	5.7	0.15	-0.11	-5.78
646.0	1.00	85.90	645.9	-1.6	7.5	7.3	0.12	0.00	-6.67
736.0	1.10	92.00	735.9	-1.5	9.2	8.9	0.17	0.11	6.78



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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)
825.0	1.20	104.30	824.9	-1.8	10.9	10.6	0.30	0.11	13.82
915.0	1.40	108.50	914.9	-2.4	12.9	12.5	0.25	0.22	4.67
1,005.0	1.20	99.10	1,004.9	-2.9	14.9	14.3	0.32	-0.22	-10.44
1,095.0	1.30	98.80	1,094.8	-3.2	16.8	16.2	0.11	0.11	-0.33
1,185.0	1.30	105.50	1,184.8	-3.6	18.8	18.1	0.17	0.00	7.44
1,275.0	0.80	106.20	1,274.8	-4.1	20.4	19.7	0.56	-0.56	0.78
1,365.0	1.00	117.30	1,364.8	-4.6	21.7	20.9	0.29	0.22	12.33
1,455.0	0.80	117.60	1,454.8	-5.3	23.0	22.0	0.22	-0.22	0.33
1,615.0	0.40	58.60	1,614.8	-5.5	24.4	23.4	0.43	-0.25	-36.88
1,795.0	5.80	75.00	1,794.4	-2.8	33.7	33.1	3.01	3.00	9.11
1,974.0	9.40	79.70	1,971.8	2.2	56.9	56.6	2.04	2.01	2.63
2,157.0	13.20	84.30	2,151.3	6.9	92.4	92.5	2.13	2.08	2.51
2,334.0	16.35	81.44	2,322.4	12.6	137.1	137.6	1.83	1.78	-1.62
2,514.0	16.48	82.32	2,495.1	19.8	187.5	188.4	0.16	0.07	0.49
2,694.0	15.29	80.91	2,668.2	27.0	236.2	237.7	0.69	-0.66	-0.78
2,874.0	13.80	79.68	2,842.4	34.6	280.8	282.9	0.85	-0.83	-0.68
3,054.0	12.27	79.11	3,017.8	42.0	320.7	323.4	0.85	-0.85	-0.32
3,233.0	10.20	77.39	3,193.3	49.1	354.8	358.2	1.17	-1.16	-0.96
3,413.0	8.17	75.06	3,371.0	55.9	382.8	386.8	1.15	-1.13	-1.29
3,593.0	6.81	75.22	3,549.5	61.9	405.4	410.1	0.76	-0.76	0.09
3,773.0	6.42	70.23	3,728.3	68.0	425.2	430.5	0.39	-0.22	-2.77
3,952.0	6.55	66.89	3,906.1	75.4	444.0	450.2	0.22	0.07	-1.87
4,132.0	6.33	65.66	4,085.0	83.5	462.5	469.6	0.14	-0.12	-0.68
4,312.0	6.68	62.85	4,263.8	92.4	480.9	489.0	0.26	0.19	-1.56
4,491.0	6.35	68.78	4,441.7	100.7	499.4	508.4	0.42	-0.18	3.31
4,671.0	6.02	80.69	4,620.6	105.8	518.0	527.6	0.73	-0.18	6.62
4,851.0	5.84	79.34	4,799.7	109.1	536.3	546.1	0.13	-0.10	-0.75
5,031.0	5.48	81.57	4,978.8	112.0	553.8	563.9	0.23	-0.20	1.24
5,198.0	5.58	79.94	5,145.0	114.6	569.7	580.0	0.11	0.06	-0.98
Last EM Survey									
5,253.2	5.58	79.94	5,200.0	115.5	574.9	585.3	0.00	0.00	0.00
Projected Target TD based on Last EM survey @5198'									
5,275.0	5.58	79.94	5,221.7	115.9	577.0	587.4	0.00	0.00	0.00
Actual TD of Well									



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Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
155.0	155.0	Top Red Beds				
1,505.2	1,505.0	Rustler (Base Red Beds)				
1,855.2	1,855.0	Top Salt				
2,742.5	2,715.0	Base Salt (Yates)				
3,548.2	3,505.0	Queen				
3,860.3	3,815.0	Grayburg				
4,036.4	3,990.0	Basal Grayburg				
4,147.1	4,100.0	San Andres				

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,198.0	5,145.0	114.6	569.7	Last EM Survey
5,253.2	5,200.0	115.5	574.9	Projected Target TD based on Last EM survey @5198'
5,275.0	5,221.7	115.9	577.0	Actual TD of Well

Checked By: _____	Approved By: _____	Date: _____
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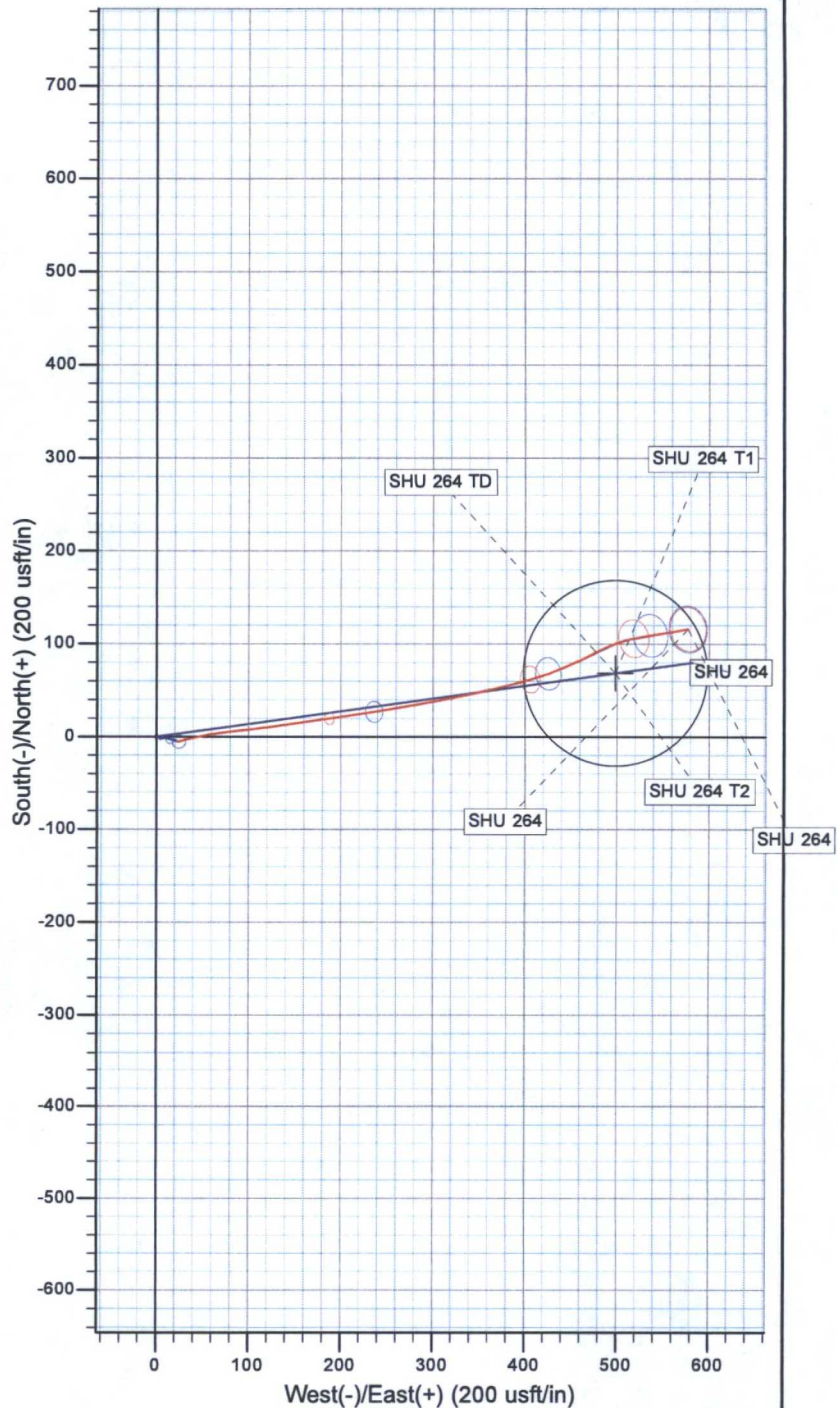
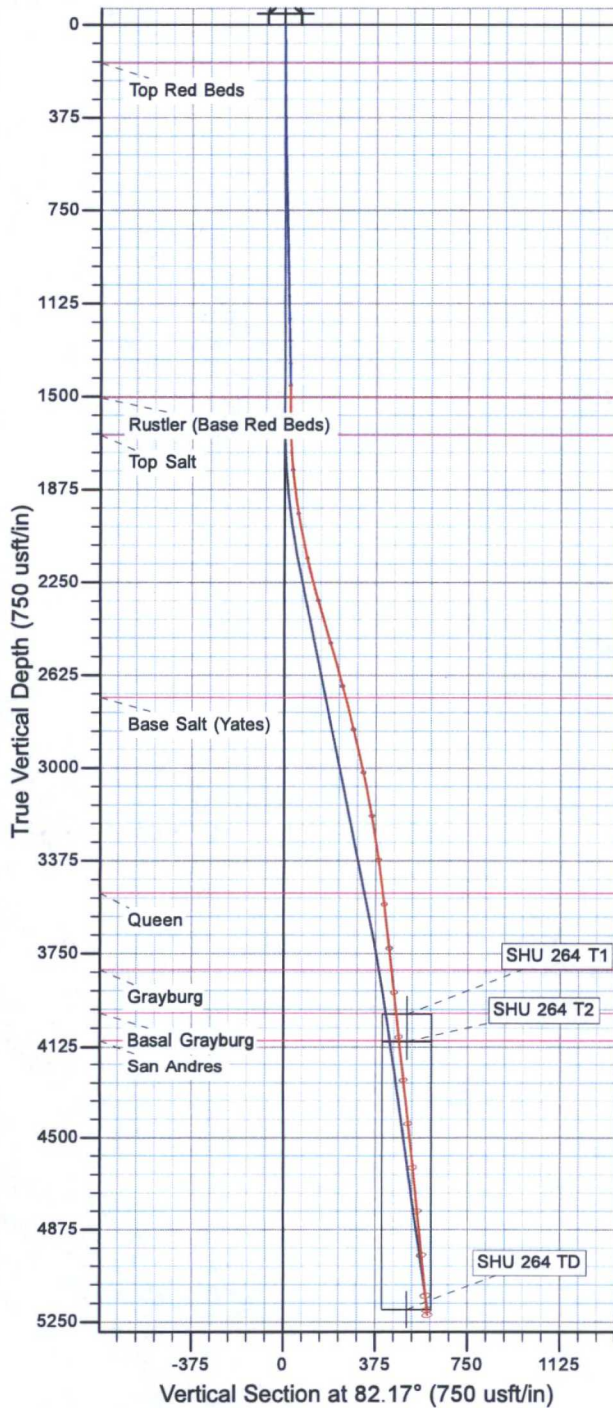


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Project: SOUTH HOBBS UNIT
 Site: SEC. 4, T19S, R38E
 Well: SHU 264
 Wellpath: SHU 264
 Design: SHU 264



Azimuths to Grid North
 True North: -0.63°
 Magnetic North: 6.29°
 Magnetic Field
 Strength: 48385.0snT
 Dip Angle: 60.57°
 Date: 3/17/2016
 Model: IGRF2015



LEGEND

- △ SHU 264, SHU 264, 031716 V1 V0
- SHU 264
- MWD SURVEYS

SECTION DETAILS

No plan data is available