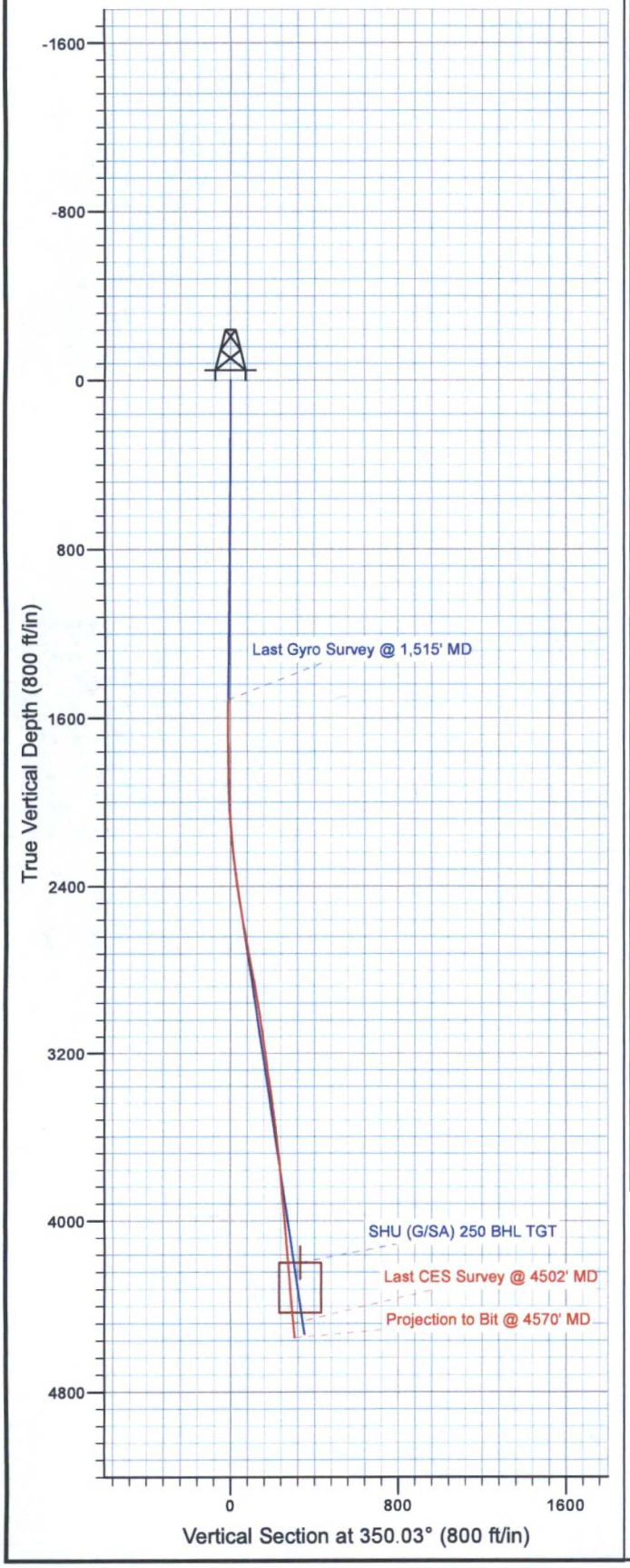
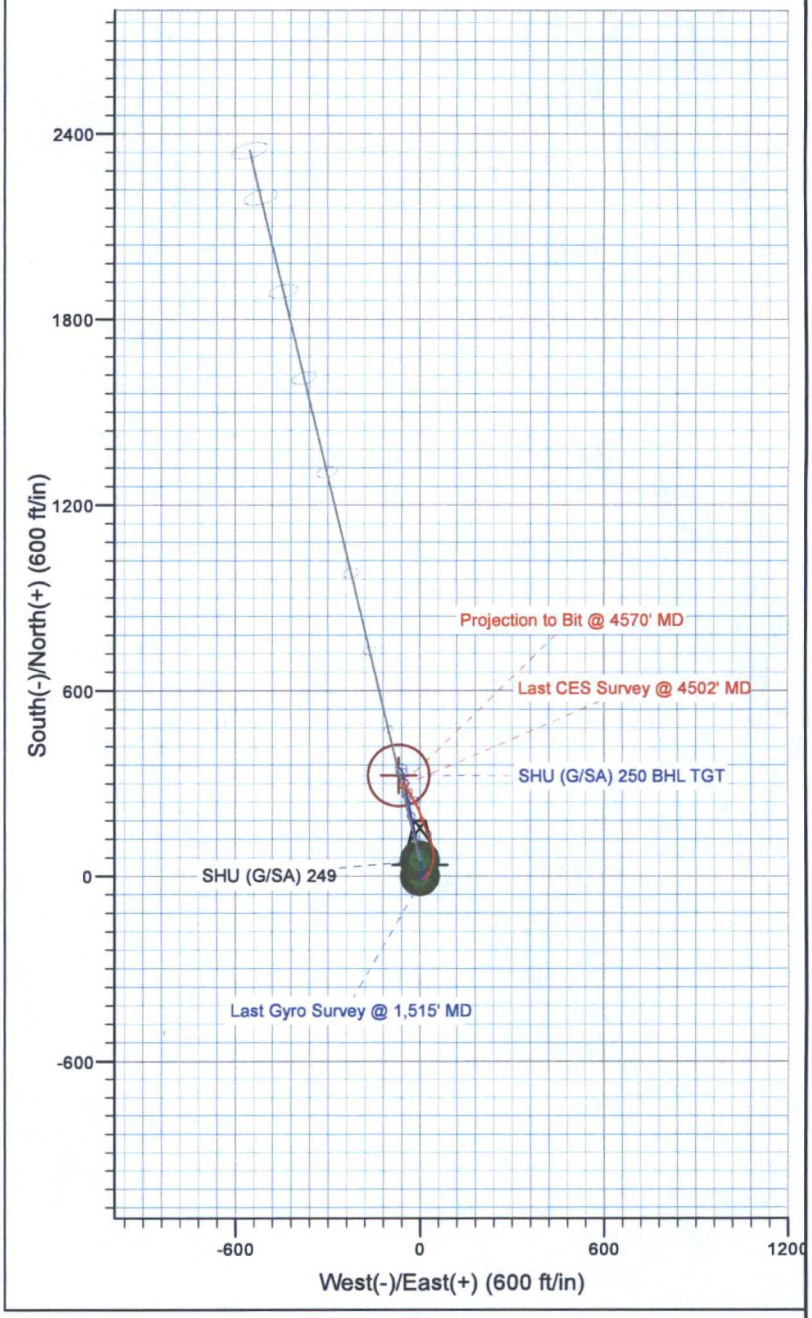
Project: HOBBS, SOUTH
Site: SOUTH HOBBS GRAYBURG-SA UNIT
Well: SHU (G/SA) 250
Wellbore: ST00
Design: FINAL
Rig: H&P 340

CATHEDRAL





Azimuths to Grid North
True North: -0.65°
Total Correction to Grid North: 6.28°

Magnetic Field
Strength: 48551.2snT
Dip Angle: 60.58°
Date: 4/15/2015
Model: IGRF2010

Cathedral Energy Services

Survey Report

Company:	OXY USA PERMIAN EOR	**Local Co-ordinate Reference:**	Well SHU (G/SA) 250
Project:	HOBBS, SOUTH	**TVD Reference:**	DFE @ 3616.1ft
Site:	SOUTH HOBBS GRAYBURG-SA UNIT	**MD Reference:**	DFE @ 3616.1ft
Well:	SHU (G/SA) 250	**North Reference:**	Grid
Wellbore:	ST00	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL	**Database:**	USA EDM 5000 Multi Users DB

Project	HOBBS, SOUTH, North America, HOBBS, SOUTH - ALTURA HOBBS-OP		
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	SOUTH HOBBS GRAYBURG-SA UNIT				
Site Position:		**Northing:**	617,519.84 ft	**Latitude:**	32.692216
From:	Map	**Easting:**	859,409.81 ft	**Longitude:**	-103.165105
Position Uncertainty:	1.0 ft	**Slot Radius:**	600.000 in	**Grid Convergence:**	0.63 °

Well	SHU (G/SA) 250					
Well Position	**+N/-S**	0.0 ft	**Northing:**	613,586.58 ft	**Latitude:**	32.681075
	+E/-W	0.0 ft	**Easting:**	870,205.24 ft	**Longitude:**	-103.130167
Position Uncertainty		1.0 ft	**Wellhead Elevation:**	3,599.6 ft	**Ground Level:**	3,599.6 ft

Wellbore	ST00				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	4/15/2015	6.93	60.58	48,551

Design	FINAL				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.0	0.0	0.0	350.03

Survey Program **Date** 6/20/2015

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
16.5	1,515.0	Gyro (ST00)	MWD+HDGM+AX+SAG_B0(	OWSG MWD + HDGM + Axial Corr + Sag Correction
1,696.0	4,570.0	Survey #2 (ST00)	MWD+HDGM+AX+SAG_B0(	OWSG MWD + HDGM + Axial Corr + Sag Correction

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
16.5	0.00	0.00	16.5	0.0	0.0	0.0	0.00	0.00	
100.0	0.58	71.49	100.0	0.1	0.4	0.1	0.69	0.69	
200.0	0.35	69.12	200.0	0.4	1.2	0.2	0.23	-0.23	
300.0	0.48	105.60	300.0	0.4	1.9	0.1	0.29	0.13	
400.0	0.39	130.61	400.0	0.1	2.5	-0.4	0.21	-0.09	
500.0	0.41	145.68	500.0	-0.5	3.0	-1.0	0.11	0.02	
600.0	0.55	149.12	600.0	-1.2	3.4	-1.7	0.14	0.14	
700.0	0.50	135.18	700.0	-1.9	4.0	-2.5	0.14	-0.05	
800.0	0.58	130.83	800.0	-2.5	4.7	-3.3	0.09	0.08	
900.0	0.73	152.19	900.0	-3.4	5.3	-4.3	0.28	0.15	
1,000.0	0.80	153.08	1,000.0	-4.6	6.0	-5.6	0.07	0.07	

Cathedral Energy Services

Survey Report

Company:	OXY USA PERMIAN EOR	**Local Co-ordinate Reference:**	Well SHU (G/SA) 250
Project:	HOBBS, SOUTH	**TVD Reference:**	DFE @ 3616.1ft
Site:	SOUTH HOBBS GRAYBURG-SA UNIT	**MD Reference:**	DFE @ 3616.1ft
Well:	SHU (G/SA) 250	**North Reference:**	Grid
Wellbore:	ST00	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL	**Database:**	USA EDM 5000 Multi Users DB

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,100.0	0.93	151.77	1,100.0	-5.9	6.7	-7.0	0.13	0.13	
1,200.0	0.69	149.17	1,199.9	-7.2	7.4	-8.3	0.24	-0.24	
1,300.0	0.55	147.61	1,299.9	-8.1	7.9	-9.3	0.14	-0.14	
1,400.0	0.54	126.36	1,399.9	-8.8	8.6	-10.1	0.20	-0.01	
1,500.0	0.56	108.21	1,499.9	-9.2	9.4	-10.7	0.17	0.02	
1,515.0	0.56	101.78	1,514.9	-9.2	9.5	-10.8	0.42	0.00	Last Gyro Survey @ 1,515' MD
1,696.0	1.20	82.30	1,695.9	-9.2	12.3	-11.2	0.39	0.35	
1,876.0	2.60	49.00	1,875.8	-6.2	17.2	-9.1	0.96	0.78	
2,055.0	4.40	32.50	2,054.5	2.2	24.0	-2.0	1.14	1.01	
2,235.0	7.10	23.30	2,233.6	18.3	32.1	12.4	1.58	1.50	
2,415.0	9.50	16.90	2,411.7	42.7	40.8	35.0	1.43	1.33	
2,594.0	10.10	357.60	2,588.1	72.5	44.5	63.7	1.86	0.34	
2,774.0	11.00	341.00	2,765.1	104.5	38.2	96.3	1.75	0.50	
2,953.0	9.50	338.70	2,941.2	134.4	27.3	127.7	0.87	-0.84	
3,132.0	8.40	335.70	3,118.0	160.1	16.5	154.8	0.67	-0.61	
3,312.0	8.00	340.30	3,296.2	183.9	6.9	179.9	0.43	-0.22	
3,492.0	8.10	340.30	3,474.4	207.6	-1.6	204.8	0.06	0.06	
3,672.0	6.20	333.00	3,653.0	228.2	-10.3	226.6	1.17	-1.06	
3,852.0	5.10	329.20	3,832.2	243.8	-18.8	243.3	0.65	-0.61	
4,032.0	5.80	327.90	4,011.3	258.3	-27.7	259.2	0.39	0.39	
4,211.0	5.30	324.70	4,189.5	272.7	-37.3	275.1	0.33	-0.28	
4,223.3	5.30	324.89	4,201.8	273.7	-38.0	276.1	0.14	0.00	SHU (G/SA) 250 BHL TGT
4,392.0	5.30	327.50	4,369.7	286.6	-46.6	290.4	0.14	0.00	
4,502.0	5.20	328.10	4,479.3	295.1	-52.0	299.7	0.10	-0.09	Last CES Survey @ 4502' MD
4,570.0	5.20	328.10	4,547.0	300.4	-55.3	305.4	0.00	0.00	Projection to Bit @ 4570' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHU (G/SA) 250 BHL TC	0.00	0.00	4,196.1	326.4	-69.4	613,913.00	870,135.80	32.681975	-103.130380
- actual wellpath misses target center by 61.7ft at 4223.3ft MD (4201.8 TVD, 273.7 N, -38.0 E)									
- Circle (radius 100.0)									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,515.0	1,514.9	-9.2	9.5	Last Gyro Survey @ 1,515' MD
4,502.0	4,479.3	295.1	-52.0	Last CES Survey @ 4502' MD
4,570.0	4,547.0	300.4	-55.3	Projection to Bit @ 4570' MD

Checked By: _____ Approved By: _____ Date: _____

MS Energy Services

Job Number: SVMO-150467
Company: OXY USA, Inc.
Lease/Well: South Hobbs GSA Unit 250
Location: Lea County, NM
Rig Name: H&P #340
RKB: 16'
G.L. or M.S.L.: GL

State/Country: New Mexico/USA
Declination: 6.36°
Grid: East To Grid North
File name: W:\WINSER~1\2015SU~1\OXY\MO\SOUTHH~2\250.SVY
Date/Time: 19-Jun-15 / 09:49
Curve Name: Surface - 1515' M.D. (Rate Gyro) (API 30-025-42541)

MS Survey

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane .00
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from Surface MD to 1515' MD is, to the best of our knowledge a true and accurate account of the well bore.

Clayton Turner 6/19/15
MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16.50	.00	.00	16.50	.00	.00	.00	.00	.00	.00
100.00	.58	71.49	100.00	.13	.40	.13	.42	71.49	.69
200.00	.35	69.12	200.00	.40	1.17	.40	1.23	70.90	.23
300.00	.48	105.60	299.99	.40	1.85	.40	1.90	77.83	.29
400.00	.39	130.61	399.99	.07	2.52	.07	2.52	88.50	.21
500.00	.41	145.68	499.99	-.45	2.98	-.45	3.01	98.62	.11
600.00	.55	149.12	599.98	-1.16	3.42	-1.16	3.62	108.69	.14
700.00	.50	135.18	699.98	-1.88	3.98	-1.88	4.40	115.29	.14
800.00	.58	130.83	799.98	-2.52	4.67	-2.52	5.31	118.36	.09
900.00	.73	152.19	899.97	-3.41	5.35	-3.41	6.35	122.55	.28
1000.00	.80	153.08	999.96	-4.60	5.96	-4.60	7.53	127.65	.07
1100.00	.93	151.77	1099.95	-5.94	6.66	-5.94	8.92	131.71	.13

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
1200.00	.69	149.17	1199.94	-7.17	7.36	-7.17	10.27	134.27	.24
1300.00	.55	147.61	1299.93	-8.09	7.92	-8.09	11.32	135.61	.14
1400.00	.54	126.36	1399.93	-8.78	8.56	-8.78	12.26	135.73	.20
1500.00	.56	108.21	1499.92	-9.21	9.40	-9.21	13.16	134.41	.17
Last Survey Depth Recorded									
1515.00	.56	101.78	1514.92	-9.25	9.54	-9.25	13.29	134.10	.42