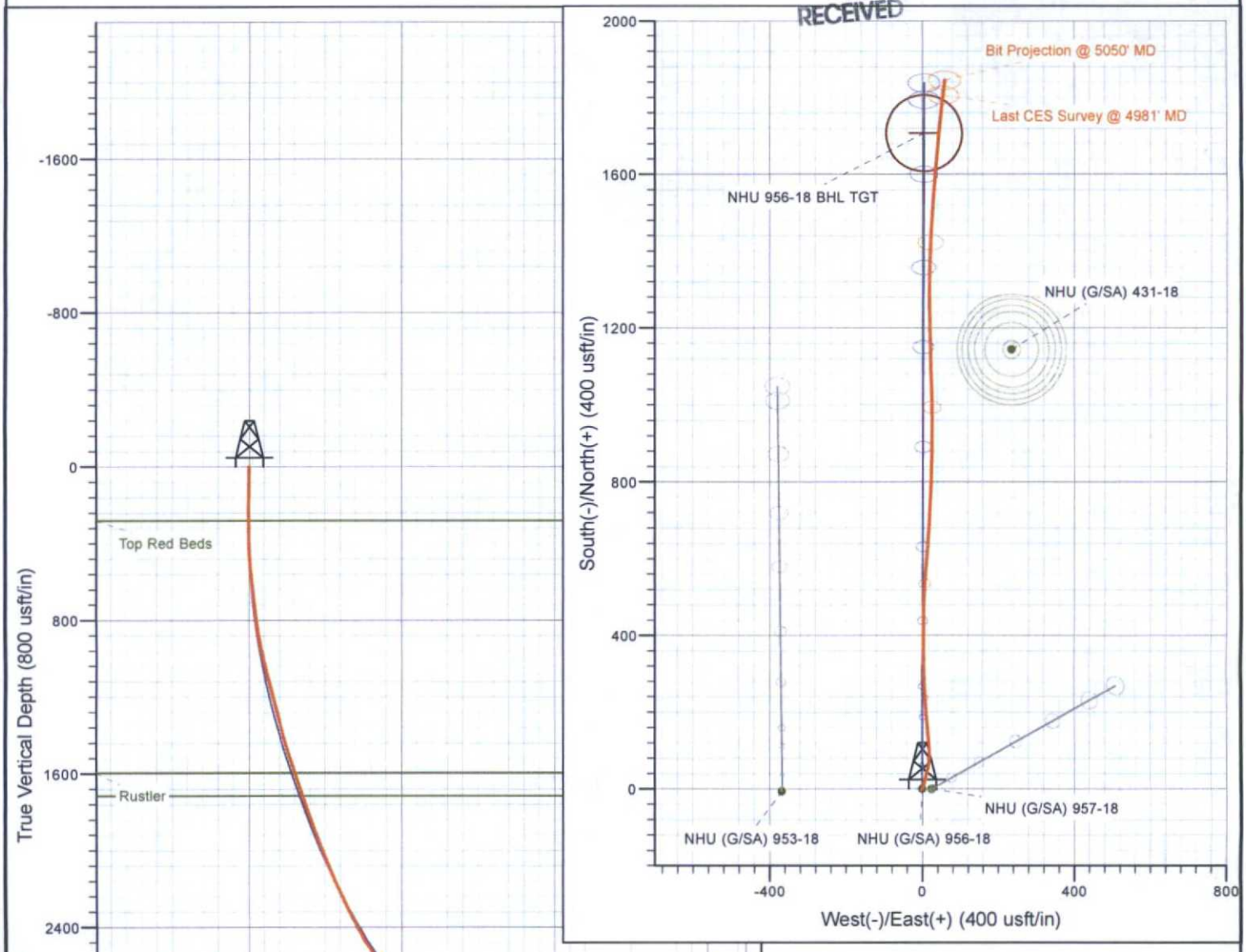
Project: HOBBS, NORTH
Site: NORTH HOBBS GRAYBURG-SA UNIT
Well: NHU (G/SA) 956-18
Wellbore: ST00
Design: Final
Rig: H&P 340

CATHEDRAL



Azimuths to Grid North
True North: -0.62°
Total Correction to Grid North: 6.37°

Magnetic Field
Strength: 48609.0snT
Dip Angle: 60.64°
Date: 1/8/2015
Model: IGRF2010

Cathedral Energy Services

Survey Report

Company:	OXY USA PERMIAN EOR	**Local Co-ordinate Reference:**	Well NHU (G/SA) 956-18
Project:	HOBBS, NORTH	**TVD Reference:**	DFE @ 3675.7usft
Site:	NORTH HOBBS GRAYBURG-SA UNIT	**MD Reference:**	DFE @ 3675.7usft
Well:	NHU (G/SA) 956-18	**North Reference:**	Grid
Wellbore:	ST00	**Survey Calculation Method:**	Minimum Curvature
Design:	Final	**Database:**	USA EDM 5000 Multi Users DB

Project	HOBBS, NORTH, 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				
Site Position:		**Northing:**	635,270.89 usft	**Latitude:**	32° 44' 28.21 N
From:	Map	**Easting:**	853,897.68 usft	**Longitude:**	103° 10' 56.59 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.62 °

Well	NHU (G/SA) 956-18					
Well Position	**+N/-S**	0.0 usft	**Northing:**	635,724.52 usft	**Latitude:**	32° 44' 32.68 N
	+E/-W	0.0 usft	**Easting:**	854,084.26 usft	**Longitude:**	103° 10' 54.35 W
Position Uncertainty		1.0 usft	**Wellhead Elevation:**	3,659.2 usft	**Ground Level:**	3,659.2 usft

Wellbore	ST00			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	1/8/2015	7.00	60.64	48,609

Design	Final				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	0.17

Survey Program **Date** 7/23/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
115.0	5,050.0	Survey #1 (ST00)	MWD+HDGM+AX+SAG_B0(OWSG	MWD + HDGM + Axial Corr + Sag Correction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf	Build Rate (°/100u	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
115.0	0.60	183.80	115.0	-0.6	0.0	-0.6	0.52	0.52	
236.0	1.00	191.50	236.0	-2.3	-0.3	-2.3	0.34	0.33	
419.0	2.80	22.30	418.9	0.3	1.1	0.3	2.07	0.98	
584.0	7.10	15.10	583.3	13.9	5.3	13.9	2.63	2.61	
764.0	6.80	14.30	762.0	35.0	10.8	35.0	0.18	-0.17	
944.0	11.60	10.40	939.6	63.1	16.7	63.1	2.69	2.67	
1,124.0	14.90	355.90	1,114.8	104.0	18.3	104.1	2.59	1.83	
1,304.0	14.90	353.60	1,288.8	150.1	14.1	150.1	0.33	0.00	
1,484.0	17.00	357.00	1,461.8	199.4	10.1	199.4	1.28	1.17	
1,606.0	18.80	356.50	1,577.9	236.8	8.0	236.8	1.48	1.48	
1,699.0	18.60	357.20	1,666.0	266.6	6.4	266.6	0.32	-0.22	
1,879.0	19.70	358.50	1,836.1	325.6	4.2	325.6	0.66	0.61	

Cathedral Energy Services

Survey Report

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Site:	NORTH HOBBS GRAYBURG-SA UNIT	**MD Reference:**	DFE @ 3675.7usft
Well:	NHU (G/SA) 956-18	**North Reference:**	Grid
Wellbore:	ST00	**Survey Calculation Method:**	Minimum Curvature
Design:	Final	**Database:**	USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf	Build Rate (°/100u	Formations / Comments
2,058.0	21.90	359.80	2,003.4	389.1	3.3	389.1	1.26	1.23	
2,238.0	23.80	0.50	2,169.2	459.0	3.5	459.0	1.07	1.06	
2,418.0	26.90	3.90	2,331.9	536.0	6.5	536.0	1.90	1.72	
2,598.0	30.20	4.60	2,490.0	621.8	12.9	621.8	1.84	1.83	
2,778.0	31.90	3.60	2,644.2	714.4	19.6	714.4	0.99	0.94	
2,958.0	32.10	1.80	2,796.8	809.6	24.0	809.7	0.54	0.11	
3,138.0	30.30	0.40	2,950.8	902.8	25.9	902.9	1.08	-1.00	
3,318.0	30.20	359.00	3,106.3	993.5	25.4	993.6	0.40	-0.06	
3,498.0	29.60	358.60	3,262.3	1,083.2	23.5	1,083.3	0.35	-0.33	
3,678.0	28.90	358.60	3,419.4	1,171.1	21.4	1,171.2	0.39	-0.39	
3,858.0	27.70	358.60	3,577.9	1,256.5	19.3	1,256.5	0.67	-0.67	
4,038.0	26.70	0.90	3,738.0	1,338.7	18.9	1,338.8	0.81	-0.56	
4,218.0	28.70	3.00	3,897.3	1,422.3	21.8	1,422.4	1.24	1.11	
4,398.0	28.90	3.80	4,055.1	1,508.9	26.9	1,509.0	0.24	0.11	
4,578.0	29.20	4.60	4,212.4	1,596.0	33.3	1,596.1	0.27	0.17	
4,757.0	31.00	5.40	4,367.3	1,685.5	41.2	1,685.6	1.03	1.01	
4,937.0	33.70	6.70	4,519.3	1,781.2	51.4	1,781.4	1.55	1.50	
4,981.0	34.20	6.80	4,555.8	1,805.6	54.3	1,805.8	1.14	1.14	**Last CES Survey @ 4981' MD**
5,050.0	34.20	6.80	4,612.9	1,844.1	58.9	1,844.3	0.00	0.00	**Bit Projection @ 5050' MD**