



Oxy USA
Lea County, NM
South Hobbs G/SA Unit
SHU 292

HOBBS OCD

DEC 12 2018

RECEIVED

Wellbore #1

Survey: Scout MWD

Standard Survey Report

27 September, 2018





Project: Lea County, NM
Site: South Hobbs G/SA Unit
Well: SHU 292
Depth Reference: GL 3619.5' + 13.5' KB @ 3633.00usft (Savanna 417)
SHL Northing: 615989.74
SHL Easting: 856368.63
Rig: Savanna 417
Plan: plan2



SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1462.99	17.26	233.47	1450.00	-76.79	-103.66	2.00	233.47	129.01	Start 157.07 hold at 1462.99 MD
1620.06	17.26	233.47	1600.00	-104.53	-141.11	0.00	0.00	175.61	Start Build 2.00
1735.70	19.57	233.47	1709.70	-126.28	-170.46	2.00	0.00	212.14	Start 1527.93 hold at 1735.70 MD
3263.63	19.57	233.47	3149.34	-430.97	-581.76	0.00	0.00	724.00	Start Drop -1.00
4220.90	10.00	233.47	4073.84	-576.23	-777.84	1.00	180.00	988.02	Start 450.00 hold at 4220.90 MD
4670.90	10.00	233.47	4517.00	-622.74	-840.63	0.00	0.00	1046.17	Start 676.27 hold at 4670.90 MD
5347.17	10.00	233.47	5183.00	-692.64	-934.99	0.00	0.00	1163.60	TD @ 5347.17 MD

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
SHU 292 PBHL	4517.00	-622.74	-840.63	615367.00	855528.00	Circle (Radius: 100.00)

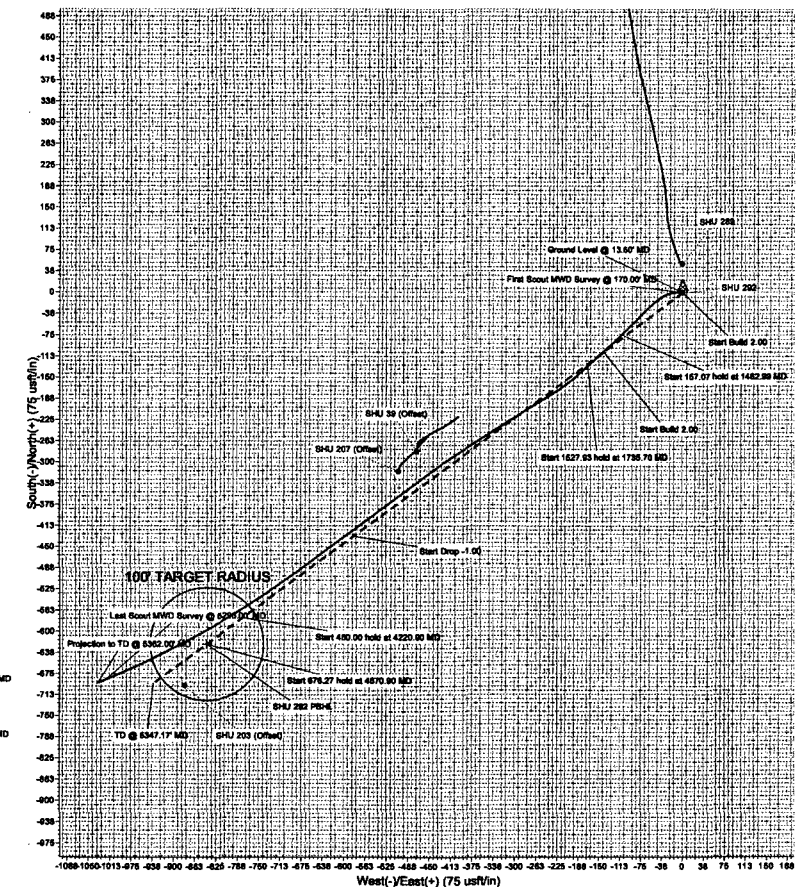
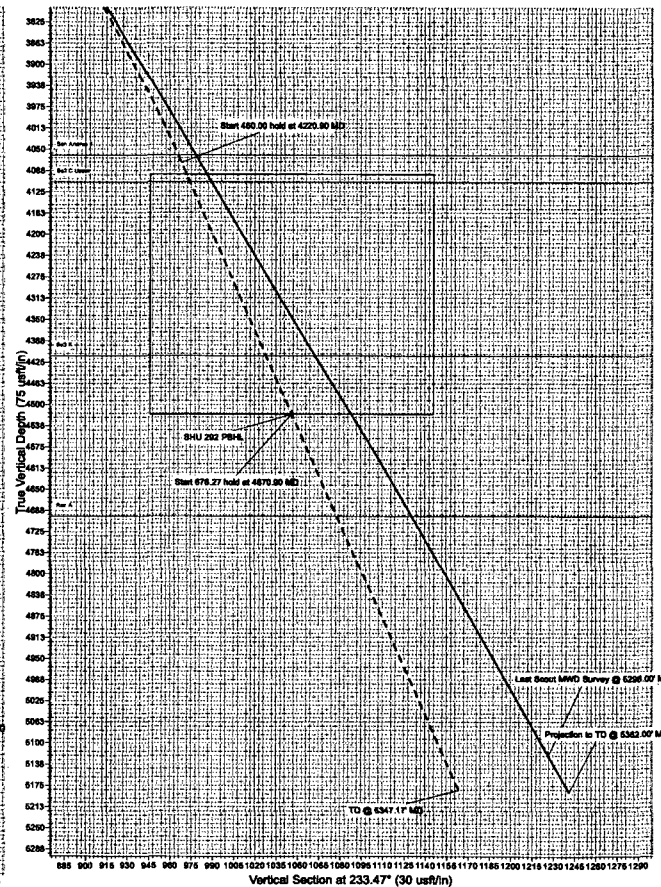
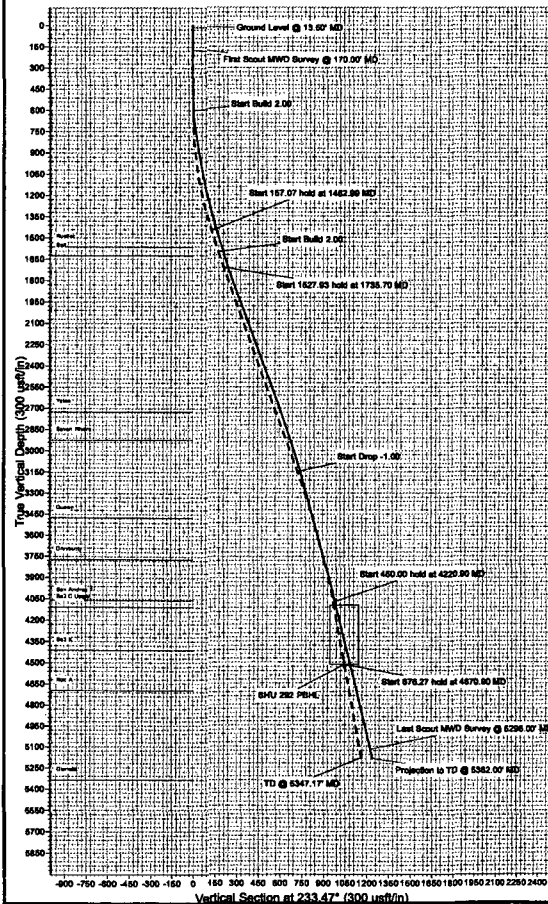


Azimuths to Grid North
True North: -0.63°
Magnetic North: 6.17°

Magnetic Field
Strength: 48124.1nT
Dip Angle: 60.73°
Date: 09/22/2018
Model: HDGM

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
1565.30	1583.73	Rustler
1626.41	1647.76	Salt
2722.60	2810.71	Yates
2921.90	3022.24	Seven Rivers
3474.17	3604.96	Queen
3769.75	3910.49	Grayburg
4060.68	4207.54	San Andres 1
4107.81	4255.40	Sa2 C Upper
4413.59	4565.89	Sa3 K
4697.16	4853.84	Roz A





Survey Report



Company:	Oxy USA	Local Co-ordinate Reference:	Well SHU 292
Project:	Lea County, NM	TVD Reference:	GL 3619.5' + 13.5' KB @ 3633.00usft (Savanna 417)
Site:	South Hobbs G/SA Unit	MD Reference:	GL 3619.5' + 13.5' KB @ 3633.00usft (Savanna 417)
Well:	SHU 292	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single User Db

Project	Lea County, 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		

Site	South Hobbs G/SA Unit				
Site Position:		Northing:	616,257.52 usft	Latitude:	32° 41' 19.686 N
From:	Map	Easting:	857,718.46 usft	Longitude:	103° 10' 14.307 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.63 °

Well	SHU 292				
Well Position	+N/-S	0.00 usft	Northing:	615,989.74 usft	Latitude: 32° 41' 17.183 N
	+E/-W	0.00 usft	Easting:	856,368.63 usft	Longitude: 103° 10' 30.133 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,619.50 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	09/22/18	6.80	60.73	48,124.10000000

Design	Surveys				
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	233.47	

Survey Program	Date 09/27/18				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
13.50	5,362.00	Scout MWD (Wellbore #1)	B001Mb_MWD+HRGM	OWSG MWD + HRGM	

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	
13.50	0.00	0.00	13.50	0.00	0.00	0.00	0.00	0.00	0.00	
Ground Level @ 13.50' MD										
170.00	0.18	81.23	170.00	0.04	0.24	-0.22	0.12	0.12	0.00	
First Scout MWD Survey @ 170.00' MD										
354.00	0.40	47.92	354.00	0.51	1.01	-1.11	0.15	0.12	-18.10	
537.00	1.58	282.85	536.98	1.50	-0.98	-0.11	1.01	0.64	-68.34	
722.00	9.01	258.33	721.07	-0.87	-17.68	14.72	4.11	4.02	-13.25	
907.00	9.67	232.93	903.69	-13.17	-44.27	43.41	2.24	0.36	-13.73	



Survey Report



Company:	Oxy USA	Local Co-ordinate Reference:	Well SHU 292
Project:	Lea County, NM	TVD Reference:	GL 3619.5' + 13.5' KB @ 3633.00usft (Savanna 417)
Site:	South Hobbs G/SA Unit	MD Reference:	GL 3619.5' + 13.5' KB @ 3633.00usft (Savanna 417)
Well:	SHU 292	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 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)
1,073.00	10.15	224.23	1,067.23	-32.05	-65.60	71.79	0.95	0.29	-5.24
1,245.00	13.89	225.46	1,235.42	-57.40	-90.90	107.21	2.18	2.17	0.72
1,418.00	15.60	228.01	1,402.72	-87.53	-122.99	150.93	1.06	0.99	1.47
1,552.00	17.01	228.01	1,531.33	-112.70	-150.95	188.38	1.05	1.05	0.00
1,726.00	17.67	228.71	1,697.42	-147.15	-189.71	240.03	0.40	0.38	0.40
1,899.00	20.66	238.82	1,860.86	-180.29	-235.57	296.61	2.58	1.73	5.84
2,071.00	20.00	237.41	2,022.15	-211.85	-286.32	356.17	0.48	-0.38	-0.82
2,244.00	19.96	236.62	2,184.73	-244.03	-335.90	415.17	0.16	-0.02	-0.46
2,417.00	20.31	237.85	2,347.16	-276.25	-385.98	474.59	0.32	0.20	0.71
2,589.00	20.04	233.89	2,508.62	-309.50	-435.06	533.82	0.81	-0.16	-2.30
2,761.00	19.21	232.66	2,670.62	-344.04	-481.37	591.59	0.54	-0.48	-0.72
2,933.00	17.71	233.10	2,833.77	-376.91	-524.79	646.04	0.88	-0.87	0.26
3,106.00	17.67	232.84	2,998.59	-408.57	-566.75	698.61	0.05	-0.02	-0.15
3,278.00	15.34	233.89	3,163.49	-437.75	-605.94	747.47	1.37	-1.35	0.61
3,451.00	15.65	231.87	3,330.20	-465.64	-642.79	793.68	0.36	0.18	-1.17
3,624.00	13.54	235.21	3,497.61	-491.61	-677.78	837.25	1.31	-1.22	1.93
3,796.00	14.99	234.33	3,664.31	-516.07	-712.39	879.62	0.85	0.84	-0.51
3,969.00	14.11	235.92	3,831.76	-540.93	-748.03	923.06	0.56	-0.51	0.92
4,141.00	13.32	237.76	3,998.85	-563.25	-782.15	963.77	0.52	-0.46	1.07
4,313.00	13.27	239.61	4,166.24	-583.81	-815.94	1,003.15	0.25	-0.03	1.08
4,485.00	13.71	240.66	4,333.50	-603.78	-850.74	1,043.00	0.29	0.26	0.61
4,658.00	14.29	242.86	4,501.36	-623.57	-887.61	1,084.41	0.45	0.34	1.27
4,830.00	12.88	242.95	4,668.54	-641.97	-923.57	1,124.26	0.82	-0.82	0.05
5,002.00	13.01	244.88	4,836.17	-658.90	-958.18	1,162.15	0.26	0.08	1.12
5,175.00	13.01	246.46	5,004.73	-674.95	-993.66	1,200.21	0.21	0.00	0.91
5,296.00	13.14	247.34	5,122.60	-685.69	-1,018.84	1,226.83	0.20	0.11	0.73
Last Scout MWD Survey @ 5296.00' MD									
5,362.00	13.14	247.34	5,186.87	-691.47	-1,032.68	1,241.40	0.00	0.00	0.00
Projection to TD @ 5362.00' MD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
13.50	13.50	0.00	0.00	Ground Level @ 13.50' MD
170.00	170.00	0.04	0.24	First Scout MWD Survey @ 170.00' MD
5,296.00	5,122.60	-685.69	-1,018.84	Last Scout MWD Survey @ 5296.00' MD
5,362.00	5,186.87	-691.47	-1,032.68	Projection to TD @ 5362.00' MD

Checked By: _____ Approved By: _____ Date: _____