



Project: Lea County, NM
Site: North Hobbs G/SA Unit
Well: NHU 24-674
Depth Reference: GL 3673.4' + 13.5' KB @ 3686.90usft (Savanna 417)
SHL Northing: 630150.19
SHL Easting: 845358.66
Rig: Savanna 417
Plan: Plan 1



44826

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeal	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TD at 4586.90
4586.90	0.00	0.00	4586.90	0.00	0.00	0.00	0.00	0.00	

FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
1578.95	1578.95	Rustler
1658.02	1658.02	Salt
2826.07	2826.07	Yates
3052.66	3052.66	Seven Rivers
3594.51	3594.51	Queen
3921.56	3921.56	Grayburg
4198.67	4198.67	San Andres 1

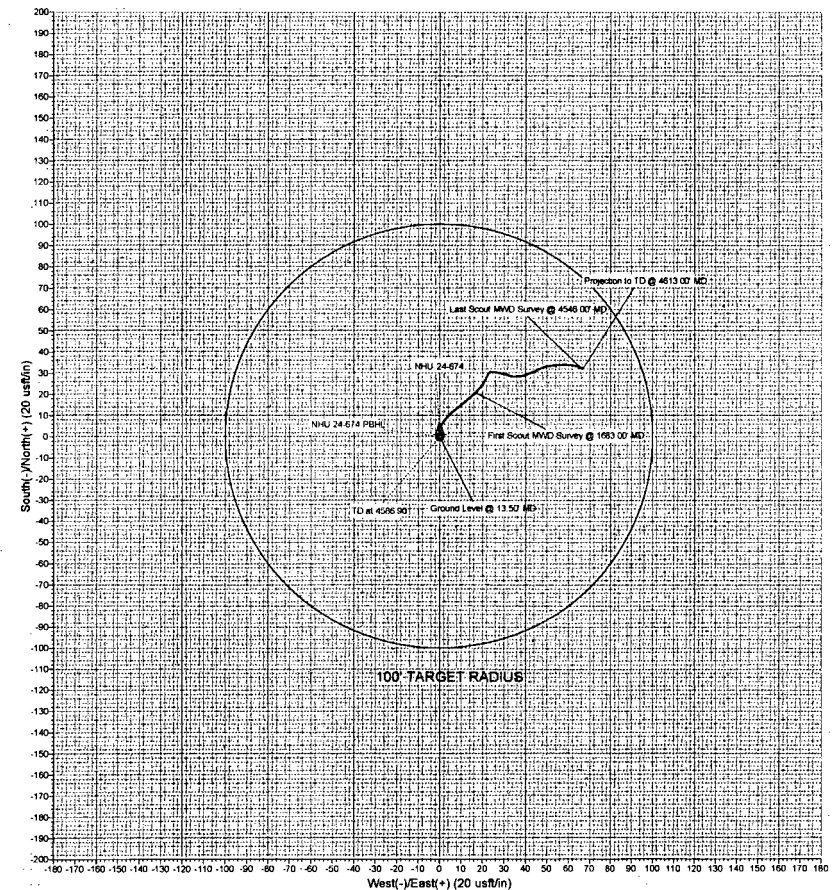
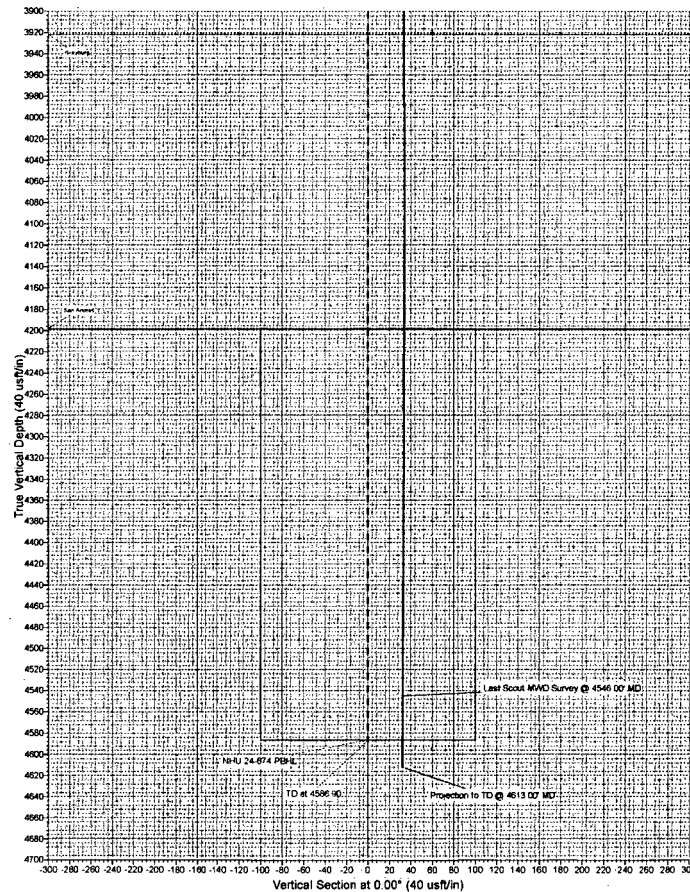
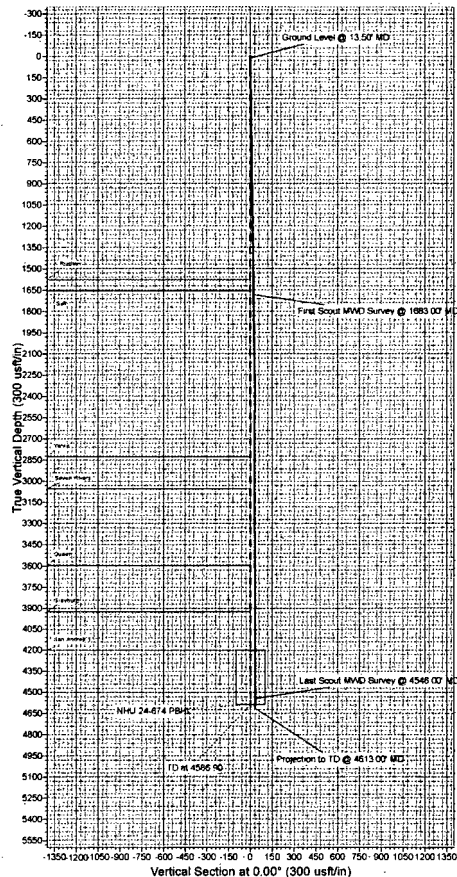
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
NHU 24-674 PBHL	4586.90	0.00	0.00	630150.19	845358.66	Circle (Radius: 100.00)



Azimuths to Grid North
True North: -0.61°
Magnetic North: 6.21°

Magnetic Field
Strength: 48088.2snT
Dip Angle: 60.72°
Date: 10/04/2018
Model: HDGM





Microsoft Anticollision Report



Company:	Oxy USA	Local Co-ordinate Reference:	Well NHU 24-674
Project:	Lea County, NM	TVD Reference:	GL 3673.4' + 13.5' KB @ 3686.90usft (Savanna 417)
Reference Site:	North Hobbs G/SA Unit	MD Reference:	GL 3673.4' + 13.5' KB @ 3686.90usft (Savanna 417)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	NHU 24-674	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.80 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.14 Single User Db
Reference Design:	Surveys	Offset TVD Reference:	Reference Datum

Reference	Surveys
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	0.00 to 4,613.00usft
Results Limited by:	Maximum center-center distance of 2,000.00 us
Warning Levels Evaluated at:	2.80 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Combined Pedal Curve
Casing Method:	Not applied

Survey Program		Date	11/07/18	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
13.50	1,543.00	Gyrodatta Gyro (Wellbore #1)	GYD_G003_GC+DROP+	Gyrodatta Stationary Tool drop on BHA on open h
1,683.00	4,613.00	Scout MWD (Wellbore #1)	B001Mb_MWD+HRGM	OWSG MWD + HRGM

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
North Hobbs G/SA Unit						
NHSAU 141-24 (Offset) - Wellbore #1 - Surveys Blind	4,613.00	4,603.30	767.00	604.87	4.731	CC, ES, SF

North Hobbs G/SA Unit - NHSAU 141-24 (Offset) - Wellbore #1 - Surveys Blind											Offset Site Error: 0.00 usft		
Survey Program: 4270-OXY_IO35Ua_INC-ONLY											Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	8.90	0.00	0.00	0.31	38.13	655.04	514.20	832.75				
13.50	13.50	4.60	13.50	0.00	0.16	38.13	655.04	514.20	832.75	832.59	0.16	5,154.201	
103.63	103.63	94.73	103.63	0.19	3.32	55.43	655.04	514.20	832.29	828.97	3.33	250.185	
289.25	289.22	280.32	289.22	0.58	9.83	14.90	655.04	514.20	829.91	820.06	9.85	84.295	
474.20	474.15	465.25	474.15	0.96	16.31	4.55	655.04	514.20	826.94	810.60	16.34	50.607	
658.45	658.37	649.47	658.37	1.34	22.77	-2.22	655.04	514.20	823.65	800.84	22.81	36.107	
842.81	842.70	833.80	842.70	1.72	29.24	-10.98	655.04	514.20	820.32	791.04	29.29	28.011	
1,025.90	1,025.76	1,016.86	1,025.76	2.10	35.65	-12.17	655.04	514.20	817.27	781.55	35.72	22.883	
1,198.53	1,198.36	1,189.46	1,198.36	2.46	41.71	-14.62	655.04	514.20	814.24	772.46	41.78	19.489	
1,370.78	1,370.59	1,361.69	1,370.59	2.82	47.74	-9.27	655.04	514.20	811.36	763.53	47.83	16.964	
1,543.00	1,542.78	1,533.88	1,542.78	3.18	53.78	-12.77	655.04	514.20	808.61	754.73	53.88	15.009	
1,683.00	1,682.76	1,673.86	1,682.76	3.34	58.69	-6.68	655.04	514.20	806.17	747.38	58.79	13.714	
1,855.00	1,854.73	1,845.83	1,854.73	3.54	64.72	-2.92	655.04	514.20	802.95	738.14	64.82	12.388	
2,027.00	2,026.70	2,017.80	2,026.70	3.92	70.75	9.84	655.04	514.20	799.48	728.63	70.86	11.283	
2,200.00	2,199.66	2,190.76	2,199.66	4.44	76.81	12.26	655.04	514.20	795.84	718.90	76.94	10.343	
2,373.00	2,372.63	2,363.73	2,372.63	5.04	82.88	-72.45	655.04	514.20	793.52	710.49	83.03	9.557	
2,545.00	2,544.60	2,535.70	2,544.60	5.71	88.91	-51.12	655.04	514.20	791.89	702.80	89.09	8.888	
2,717.00	2,716.57	2,707.67	2,716.57	6.42	94.94	-85.60	655.04	514.20	790.59	695.44	95.16	8.308	
2,889.00	2,888.55	2,879.65	2,888.55	7.16	100.97	-61.61	655.04	514.20	789.81	688.58	101.22	7.803	
3,062.00	3,061.52	3,052.62	3,061.52	7.93	107.03	-46.77	655.04	514.20	787.93	680.60	107.33	7.341	
3,234.00	3,233.49	3,224.59	3,233.49	8.72	113.06	-33.85	655.04	514.20	785.23	671.83	113.40	6.924	
3,407.00	3,406.44	3,397.54	3,406.44	9.53	119.13	-29.94	655.04	514.20	782.02	662.51	119.51	6.544	
3,579.00	3,578.40	3,569.50	3,578.40	10.35	125.16	-25.94	655.04	514.20	778.76	653.18	125.58	6.201	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



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Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	NHU 24-674	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.80 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.14 Single User Db
Reference Design:	Surveys	Offset TVD Reference:	Reference Datum

Offset Design North Hobbs G/SA Unit - NHSAU 141-24 (Offset) - Wellbore #1 - Surveys Blind													Offset Site Error: 0.00 usft
Survey Program: 4270-OXY_IO350a_INC-ONLY													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,752.00	3,751.37	3,742.47	3,751.37	11.17	131.22	-43.49	655.04	514.20	775.84	644.15	131.70	5.891	
3,924.00	3,923.33	3,914.43	3,923.33	12.00	137.25	-46.94	655.04	514.20	773.33	635.55	137.77	5.613	
4,097.00	4,096.30	4,087.40	4,096.30	12.83	143.32	-52.75	655.04	514.20	771.10	627.21	143.89	5.359	
4,269.00	4,268.26	4,259.36	4,268.26	13.67	149.34	-60.42	655.04	514.20	769.28	619.31	149.97	5.130	
4,442.00	4,441.23	4,432.33	4,441.23	14.51	155.41	-68.02	655.04	514.20	767.87	611.78	156.09	4.920	
4,546.00	4,545.22	4,536.32	4,545.22	15.01	159.06	-77.04	655.04	514.20	767.29	607.53	159.76	4.803	
4,613.00	4,612.20	4,603.30	4,612.20	15.34	161.40	-77.13	655.04	514.20	767.00	604.87	162.13	4.731	CC, ES, SF

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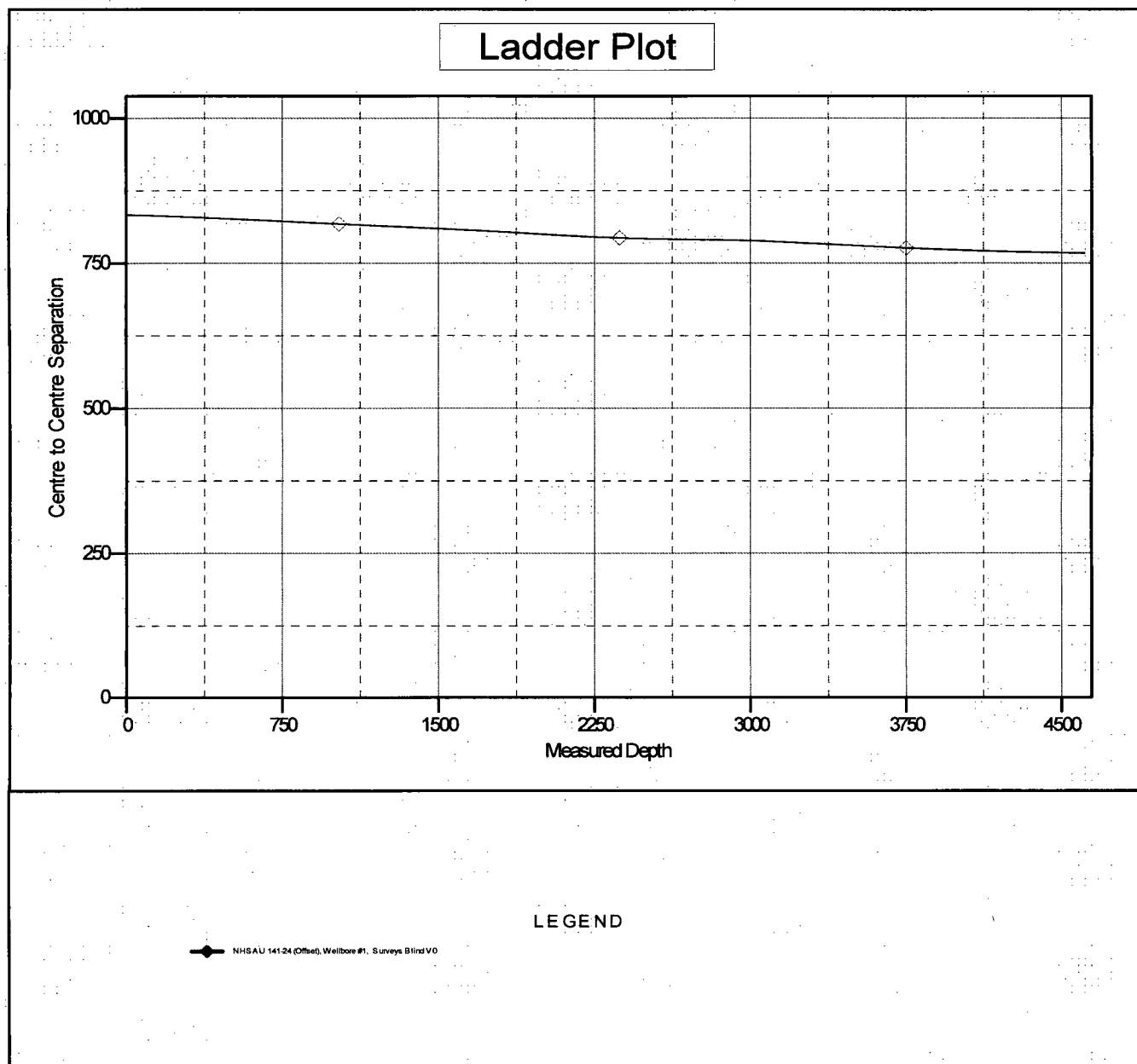


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Reference Design:	Surveys	Offset TVD Reference:	Reference Datum

Reference Depths are relative to GL 3673.4' + 13.5' KB @ 3686.90usft Coordinates are relative to: NHU 24-674
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W Grid Convergence at Surface is: 0.61°



CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



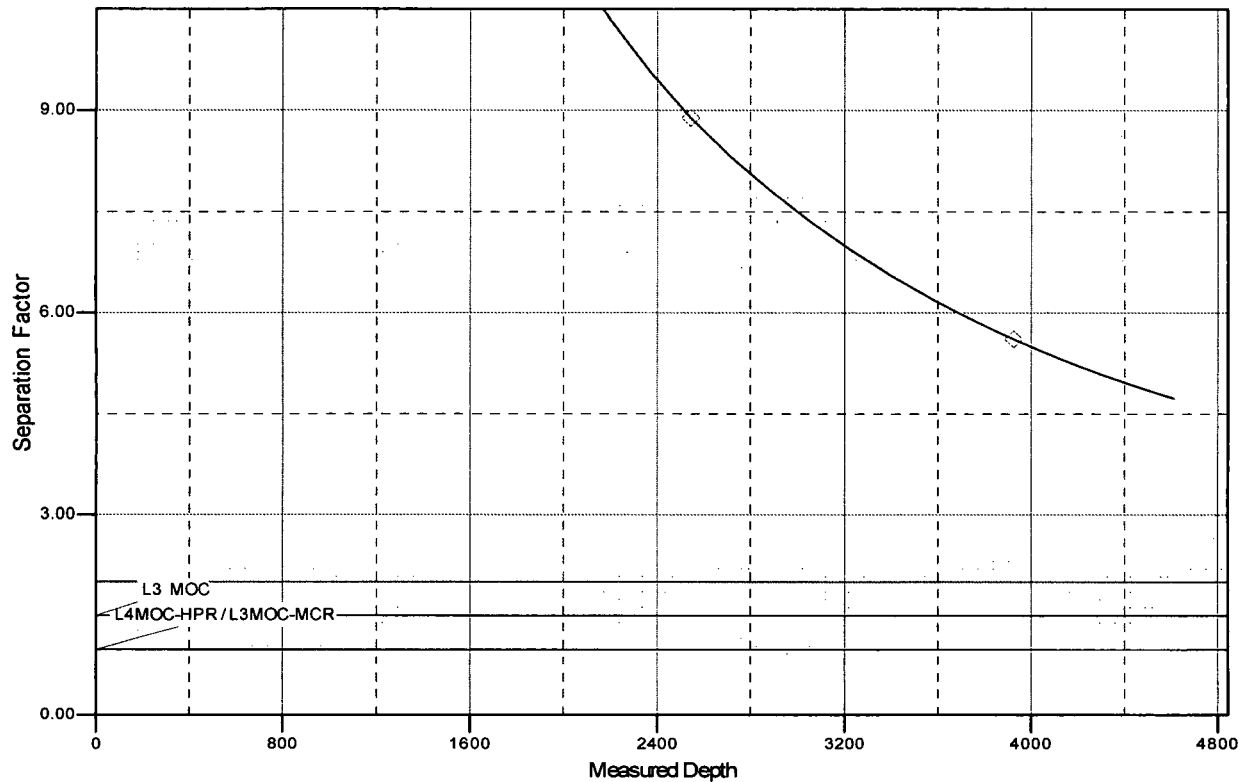
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Separation Factor Plot



LEGEND

◆ NHSAU 141-24 (Offset), Wellbore #1, Surveys Blind V0

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