



Company: Mewbourne Oil Company
Lease/Well: Pine Box 21 MD Fed Com/1H

Rig Name: Patterson #101
State/County: New Mexico/Eddy

Latitude: 32.55

GRID North is 0.09 Degrees West of True North

VS-Azi: 0.00 Degrees



30-015-39390

Depth Reference : RKB=18 Feet Elevation=3510 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: pine box 21 md fed com #1h_ed.ut

Minimum Curvature Method

Report Date/Time: 12/20/2011 / 15:31

Vaughn Energy Services

Midland, TX

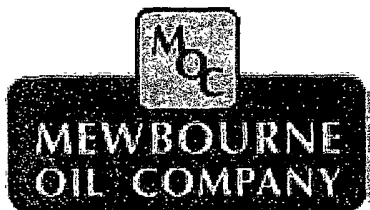
432-563-5444

Surveyor: Zach Garcia

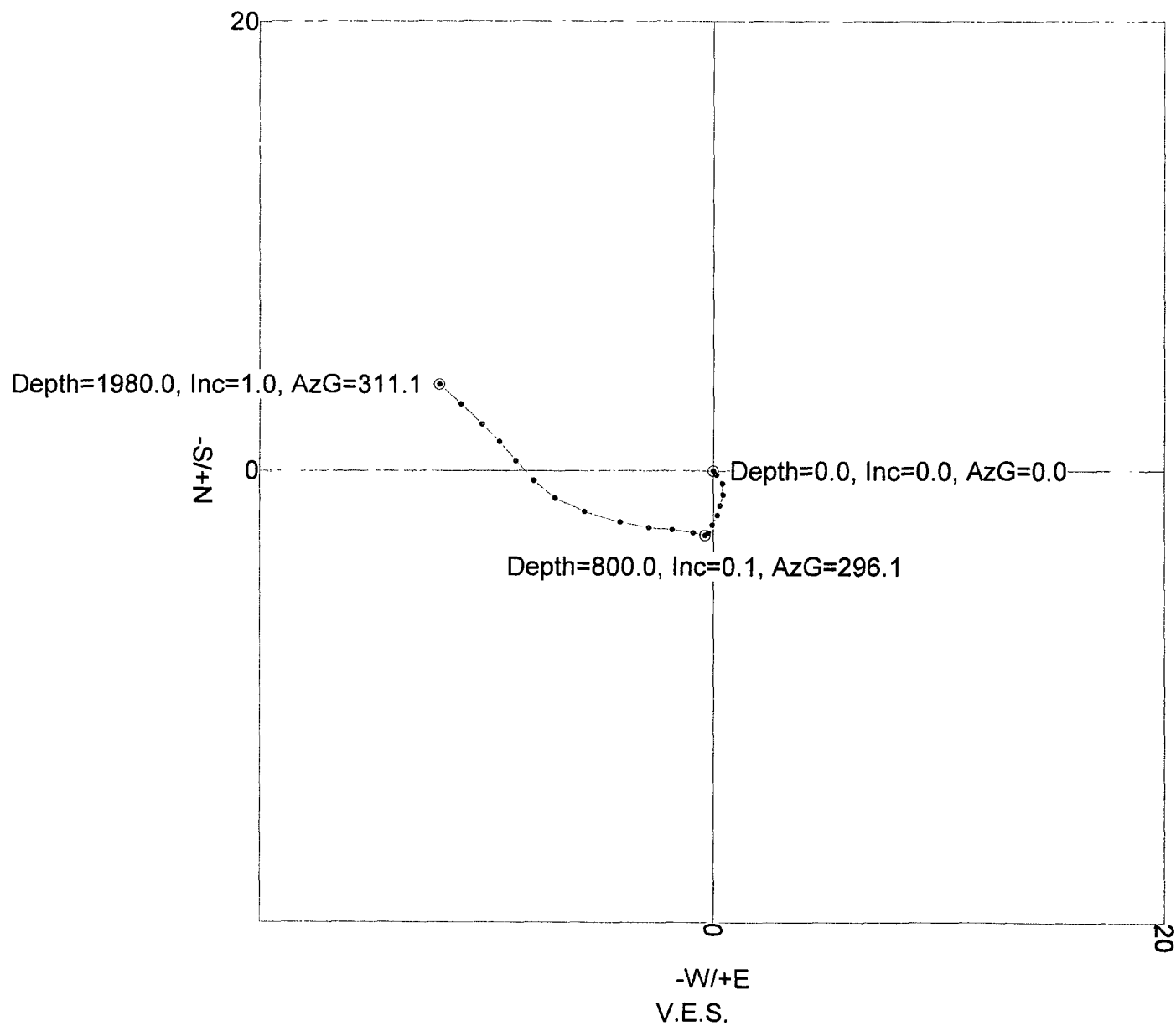
Pine Box 21 MD Fed Com 1H

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.25	137.39	100.00	-0.16	0.15	-0.16	0.22	137.39	0.25
200.00	0.29	151.57	200.00	-0.55	0.42	-0.55	0.69	142.54	0.08
300.00	0.33	202.74	300.00	-1.04	0.43	-1.04	1.13	157.56	0.27
400.00	0.25	187.43	400.00	-1.52	0.29	-1.52	1.55	169.23	0.11
500.00	0.26	202.88	500.00	-1.95	0.17	-1.95	1.95	174.93	0.07
600.00	0.29	212.44	599.99	-2.37	-0.05	-2.37	2.37	181.28	0.05
700.00	0.18	192.17	699.99	-2.74	-0.22	-2.74	2.75	184.65	0.14
800.00	0.13	296.05	799.99	-2.84	-0.36	-2.84	2.87	187.17	0.25
900.00	0.50	278.69	899.99	-2.73	-0.89	-2.73	2.87	198.06	0.38
1000.00	0.59	278.00	999.99	-2.59	-1.83	-2.59	3.17	215.23	0.09
1100.00	0.58	271.52	1099.98	-2.51	-2.85	-2.51	3.79	228.64	0.07
1200.00	0.91	287.29	1199.97	-2.26	-4.11	-2.26	4.69	241.21	0.38
1300.00	0.97	285.56	1299.96	-1.79	-5.68	-1.79	5.95	252.46	0.07
1400.00	0.70	307.08	1399.95	-1.20	-6.98	-1.20	7.08	260.25	0.41
1500.00	0.68	312.70	1499.94	-0.43	-7.90	-0.43	7.92	266.91	0.07
1600.00	0.68	322.06	1599.93	0.45	-8.71	0.45	8.72	272.94	0.11
1700.00	0.58	316.38	1699.93	1.28	-9.42	1.28	9.51	277.76	0.11
1800.00	0.66	313.04	1799.92	2.05	-10.20	2.05	10.40	281.36	0.09

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.82	314.55	1899.91	2.95	-11.13	2.95	11.52	284.83	0.16
1980.00	1.00	311.15	1979.90	3.81	-12.07	3.81	12.66	287.52	0.24



Vaughn Energy Services
Midland, TX
432-563-5444
Surveyor: Zach Garcia
Pine Box 21 MD Fed Com 1H



Mewbourne Oil Co

Eddy County, New Mexico

Section 21-20S-25E

Pine Box 21 MD Fed Com #1H

Wellbore #1

Survey: MWD

DDC Survey Report

15 December, 2011



DDC
Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Pine Box 21 MD Fed Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3529.0usft (Patterson UTI #101)
Site:	Section 21-20S-25E	MD Reference:	WELL @ 3529.0usft (Patterson UTI #101)
Well:	Pine Box 21 MD Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project:	Eddy County, New Mexico		
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:	Section 21-20S-25E		
Site Position:		Northing:	569,825.22 usft
From:	Map	Easting:	410,431.75 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 33' 58.393 N
		Longitude:	104° 37' 26.646 W
		Grid Convergence:	-0 16 °

Well:	Pine Box 21 MD Fed Com #1H					
Well Position	+N/-S	0.0 usft	Northing:	564,582.28 usft	Latitude:	32° 33' 7.343 N
	+E/-W	0.0 usft	Easting:	450,000.34 usft	Longitude:	104° 29' 44.178 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,510.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/28/2011	7.98	60.32	48,663

Design:	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0

Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	356.70

Survey Program	Date:	12/15/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	1,980.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
2,050.0	7,290.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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)
Tie In @ 1980' MD / 1979.9' TVD									
1,980.0	1.00	311.15	1,979.9	3.8	-12.1	4.5	0.00	0.00	0.00
2,050.0	1.00	305.20	2,049.9	4.6	-13.0	5.3	0.15	0.00	-8.50
2,082.0	1.10	310.00	2,081.9	4.9	-13.5	5.7	0.42	0.31	15.00
2,113.0	2.50	336.80	2,112.9	5.7	-14.0	6.5	5.15	4.52	86.45
2,144.0	5.00	345.10	2,143.8	7.7	-14.6	8.5	8.23	8.06	26.77
2,175.0	7.60	348.60	2,174.6	11.0	-15.3	11.8	8.47	8.39	11.29
2,206.0	10.50	351.90	2,205.2	15.8	-16.1	16.7	9.50	9.35	10.65
2,238.0	13.50	356.60	2,236.5	22.4	-16.8	23.3	9.85	9.38	14.69
2,269.0	16.60	0.40	2,266.5	30.4	-17.0	31.4	10.49	10.00	12.26

DDC Survey Report



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Well:	Pine Box 21 MD Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 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)	
2,300.0	19.60	2.00	2,295.9	40.1	-16.8	41.0	9.81	9.68	5.16	
2,332.0	22.80	2.10	2,325.8	51.6	-16.3	52.5	10.00	10.00	0.31	
2,363.0	26.10	1.60	2,354.0	64.5	-15.9	65.3	10.67	10.65	-1.61	
2,395.0	29.10	0.20	2,382.3	79.3	-15.7	80.0	9.59	9.38	-4.38	
2,426.0	32.30	358.70	2,409.0	95.1	-15.9	95.9	10.61	10.32	-4.84	
2,458.0	35.60	357.80	2,435.5	113.0	-16.4	113.7	10.43	10.31	-2.81	
2,489.0	38.70	357.30	2,460.2	131.7	-17.2	132.4	10.05	10.00	-1.61	
2,521.0	41.60	356.10	2,484.7	152.3	-18.4	153.1	9.38	9.06	-3.75	
2,552.0	44.60	355.50	2,507.3	173.4	-20.0	174.2	9.77	9.68	-1.94	
2,583.0	47.60	355.80	2,528.8	195.6	-21.7	196.6	9.70	9.68	0.97	
2,614.0	50.70	356.70	2,549.1	219.0	-23.2	220.0	10.24	10.00	2.90	
Crossed Hard Line @ 2640.5' MD										
2,640.5	53.35	357.20	2,565.4	239.9	-24.3	240.9	10.11	10.00	1.89	
2,646.0	53.90	357.30	2,568.6	244.3	-24.5	245.3	10.11	10.00	1.81	
2,677.0	57.10	357.60	2,586.2	269.8	-25.6	270.9	10.35	10.32	0.97	
2,708.0	60.30	357.20	2,602.3	296.3	-26.9	297.4	10.38	10.32	-1.29	
2,740.0	63.70	356.50	2,617.3	324.5	-28.4	325.6	10.80	10.63	-2.19	
2,771.0	66.80	356.00	2,630.3	352.6	-30.2	353.7	10.11	10.00	-1.61	
2,802.0	70.20	355.70	2,641.7	381.4	-32.3	382.6	11.00	10.97	-0.97	
2,834.0	74.20	355.50	2,651.4	411.7	-34.7	413.0	12.51	12.50	-0.63	
2,866.0	78.20	355.60	2,659.1	442.7	-37.1	444.1	12.50	12.50	0.31	
2,898.0	80.50	355.80	2,665.0	474.1	-39.4	475.5	7.21	7.19	0.63	
2,929.0	83.00	356.10	2,669.4	504.7	-41.6	506.2	8.12	8.06	0.97	
2,946.0	84.70	356.30	2,671.3	521.5	-42.7	523.1	10.07	10.00	1.18	
3,047.0	90.00	355.20	2,675.9	622.1	-50.2	624.0	5.36	5.25	-1.09	
3,079.0	89.90	355.60	2,676.0	654.0	-52.8	656.0	1.29	-0.31	1.25	
3,110.0	90.20	358.00	2,675.9	685.0	-54.5	687.0	7.80	0.97	7.74	
3,142.0	90.40	358.40	2,675.8	716.9	-55.5	718.9	1.40	0.63	1.25	
3,174.0	90.30	358.30	2,675.6	748.9	-56.4	750.9	0.44	-0.31	-0.31	
3,206.0	90.20	358.00	2,675.4	780.9	-57.5	782.9	0.99	-0.31	-0.94	
3,238.0	90.30	358.50	2,675.3	812.9	-58.4	814.9	1.59	0.31	1.56	
3,269.0	90.10	358.00	2,675.2	843.9	-59.4	845.9	1.74	-0.65	-1.61	
3,301.0	90.20	358.40	2,675.1	875.9	-60.4	877.9	1.29	0.31	1.25	
3,333.0	90.70	358.70	2,674.8	907.8	-61.2	909.9	1.82	1.56	0.94	
3,365.0	90.70	358.90	2,674.4	939.8	-61.9	941.8	0.62	0.00	0.63	
3,396.0	90.50	359.30	2,674.1	970.8	-62.4	972.8	1.44	-0.65	1.29	
3,460.0	90.60	359.20	2,673.5	1,034.8	-63.2	1,036.7	0.22	0.16	-0.16	
3,523.0	90.00	359.90	2,673.2	1,097.8	-63.7	1,099.7	1.46	-0.95	1.11	
3,587.0	90.30	357.30	2,673.0	1,161.8	-65.3	1,163.6	4.09	0.47	-4.06	
3,650.0	90.00	356.00	2,672.8	1,224.7	-68.9	1,226.6	2.12	-0.48	-2.06	
3,713.0	89.60	355.50	2,673.1	1,287.5	-73.6	1,289.6	1.02	-0.63	-0.79	
3,777.0	90.30	356.70	2,673.1	1,351.4	-78.0	1,353.6	2.17	1.09	1.88	
3,839.0	90.30	356.90	2,672.8	1,413.3	-81.4	1,415.6	0.32	0.00	0.32	

DDC Survey Report



Company: Mewbourne Oil Co
Project: Eddy County, New Mexico
Site: Section 21-20S-25E
Well: Pine Box 21 MD Fed Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Pine Box 21 MD Fed Com #1H
TVD Reference: WELL @ 3529.0usft (Patterson UTI #101)
MD Reference: WELL @ 3529.0usft (Patterson UTI #101)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 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)
3,902.0	90.20	357.50	2,672.5	1,476.2	-84.5	1,478.6	0.97	-0.16	0.95
3,966.0	90.00	357.50	2,672.4	1,540.1	-87.3	1,542.6	0.31	-0.31	0.00
4,029.0	89.80	356.50	2,672.5	1,603.0	-90.6	1,605.6	1.62	-0.32	-1.59
4,092.0	89.50	356.20	2,672.9	1,665.9	-94.6	1,668.6	0.67	-0.48	-0.48
4,156.0	90.70	358.20	2,672.8	1,729.8	-97.7	1,732.6	3.64	1.88	3.13
4,219.0	90.70	358.60	2,672.0	1,792.8	-99.5	1,795.6	0.63	0.00	0.63
4,283.0	90.60	359.20	2,671.3	1,856.8	-100.7	1,859.5	0.95	-0.16	0.94
4,346.0	90.50	359.30	2,670.7	1,919.8	-101.5	1,922.4	0.22	-0.16	0.16
4,410.0	89.80	357.70	2,670.5	1,983.8	-103.2	1,986.4	2.73	-1.09	-2.50
4,474.0	89.50	358.40	2,670.9	2,047.7	-105.4	2,050.4	1.19	-0.47	1.09
4,537.0	89.20	358.40	2,671.6	2,110.7	-107.1	2,113.4	0.48	-0.48	0.00
4,601.0	89.70	356.70	2,672.2	2,174.6	-109.9	2,177.3	2.77	0.78	-2.66
4,665.0	90.60	355.80	2,672.1	2,238.5	-114.1	2,241.3	1.99	1.41	-1.41
4,729.0	90.30	355.80	2,671.6	2,302.3	-118.8	2,305.3	0.47	-0.47	0.00
4,792.0	89.70	355.00	2,671.6	2,365.1	-123.8	2,368.3	1.59	-0.95	-1.27
4,856.0	90.70	354.80	2,671.4	2,428.8	-129.5	2,432.3	1.59	1.56	-0.31
4,920.0	90.60	354.40	2,670.6	2,492.6	-135.5	2,496.2	0.64	-0.16	-0.63
4,984.0	90.20	354.40	2,670.2	2,556.3	-141.8	2,560.2	0.63	-0.63	0.00
5,047.0	89.80	354.60	2,670.2	2,619.0	-147.8	2,623.1	0.71	-0.63	0.32
5,111.0	89.30	354.80	2,670.7	2,682.7	-153.7	2,687.1	0.84	-0.78	0.31
5,174.0	90.70	354.40	2,670.7	2,745.4	-159.6	2,750.0	2.31	2.22	-0.63
5,238.0	90.70	354.40	2,669.9	2,809.1	-165.9	2,814.0	0.00	0.00	0.00
5,301.0	90.20	354.40	2,669.4	2,871.8	-172.0	2,876.9	0.79	-0.79	0.00
5,364.0	89.60	354.50	2,669.5	2,934.5	-178.1	2,939.9	0.97	-0.95	0.16
5,426.0	91.90	354.40	2,668.7	2,996.2	-184.1	3,001.8	3.71	3.71	-0.16
5,487.0	92.10	354.10	2,666.6	3,056.9	-190.2	3,062.7	0.59	0.33	-0.49
5,549.0	91.70	355.80	2,664.5	3,118.6	-195.7	3,124.7	2.82	-0.65	2.74
5,609.0	90.70	357.10	2,663.3	3,178.4	-199.4	3,184.7	2.73	-1.67	2.17
5,668.0	90.30	357.00	2,662.7	3,237.4	-202.4	3,243.6	0.70	-0.68	-0.17
5,729.0	90.20	356.90	2,662.5	3,298.3	-205.7	3,304.6	0.23	-0.16	-0.16
5,788.0	90.20	356.70	2,662.3	3,357.2	-209.0	3,363.6	0.34	0.00	-0.34
5,848.0	89.80	358.20	2,662.3	3,417.1	-211.6	3,423.6	2.59	-0.67	2.50
5,908.0	89.70	358.10	2,662.5	3,477.1	-213.6	3,483.6	0.24	-0.17	-0.17
5,969.0	89.40	357.90	2,663.0	3,538.1	-215.7	3,544.6	0.59	-0.49	-0.33
6,033.0	89.40	357.50	2,663.7	3,602.0	-218.3	3,608.6	0.62	0.00	-0.63
6,096.0	89.40	357.60	2,664.3	3,664.9	-221.0	3,671.6	0.16	0.00	0.16
6,160.0	89.50	357.60	2,665.0	3,728.9	-223.6	3,735.6	0.16	0.16	0.00
6,223.0	89.50	356.30	2,665.5	3,791.8	-227.0	3,798.6	2.06	0.00	-2.06
6,287.0	89.40	356.00	2,666.1	3,855.6	-231.3	3,862.6	0.49	-0.16	-0.47
6,351.0	89.30	355.60	2,666.9	3,919.5	-236.0	3,926.5	0.64	-0.16	-0.63
6,414.0	90.60	356.30	2,666.9	3,982.3	-240.4	3,989.5	2.34	2.06	1.11
6,478.0	90.70	356.50	2,666.2	4,046.2	-244.5	4,053.5	0.35	0.16	0.31
6,542.0	90.50	356.40	2,665.5	4,110.0	-248.4	4,117.5	0.35	-0.31	-0.16
6,605.0	90.20	355.50	2,665.1	4,172.9	-252.9	4,180.5	1.51	-0.48	-1.43

DDC Survey Report



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6,669.0	90.70	357.00	2,664.6	4,236.7	-257.0	4,244.5	2.47	0.78	2.34
6,732.0	90.60	356.40	2,663.9	4,299.6	-260.7	4,307.5	0.97	-0.16	-0.95
6,797.0	90.10	355.70	2,663.5	4,364.5	-265.2	4,372.5	1.32	-0.77	-1.08
6,860.0	89.90	355.50	2,663.5	4,427.3	-270.0	4,435.5	0.45	-0.32	-0.32
6,923.0	89.60	354.50	2,663.8	4,490.1	-275.5	4,498.5	1.66	-0.48	-1.59
6,986.0	89.70	354.60	2,664.2	4,552.8	-281.5	4,561.4	0.22	0.16	0.16
7,050.0	89.20	354.80	2,664.8	4,616.5	-287.4	4,625.4	0.84	-0.78	0.31
7,113.0	89.20	354.40	2,665.7	4,679.2	-293.3	4,688.3	0.63	0.00	-0.63
7,177.0	90.40	355.80	2,665.9	4,743.0	-298.8	4,752.3	2.88	1.88	2.19
7,246.0	90.30	355.80	2,665.5	4,811.8	-303.8	4,821.3	0.14	-0.14	0.00
TD @ 7290' MD / 2665.2' TVD									
7,290.0	90.30	355.80	2,665.2	4,855.7	-307.0	4,865.3	0.00	0.00	0.00

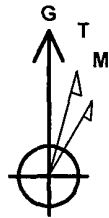
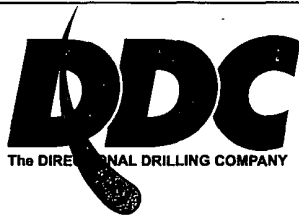
Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,980.0	1,979.9	3.8	-12.1	Tie In @ 1980' MD / 1979.9' TVD
2,640.5	2,565.4	239.9	-24.3	Crossed Hard Line @ 2640.5' MD
7,290.0	2,665.2	4,855.7	-307.0	TD @ 7290' MD / 2665.2' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name Mewbourne Oil Co
Pine Box 21 MD Fed Com #1H
Eddy County, New Mexico
Rig: Patterson UT1 #101
Created By Dina Chance
Date 12/15/2011

Pine Box 21 MD Fed Com #1H
Eddy County, New Mexico
Q110334 & WT-11695

Mewbourne Oil Company



Azimuths to Grid North

Magnetic North: 8.06°

Magnetic Field

Strength: 48663.2snT

Dip Angle: 60.32°

Date: 11/28/2011

Model: IGRF2010

WELL DETAILS: Pine Box 21 MD Fed Com #1H

		Ground Level	3510.0		
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.0	0.0	564552.28	450006.34	32° 33' 7.343 N	104° 29' 44.178 W

PROJECT DETAILS: Eddy County, New Mexico

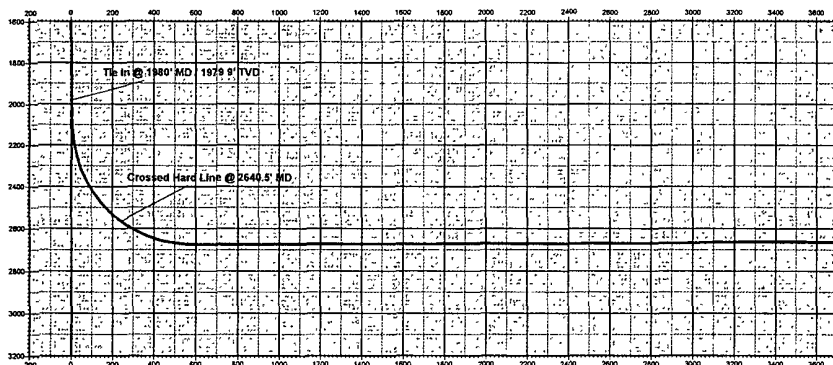
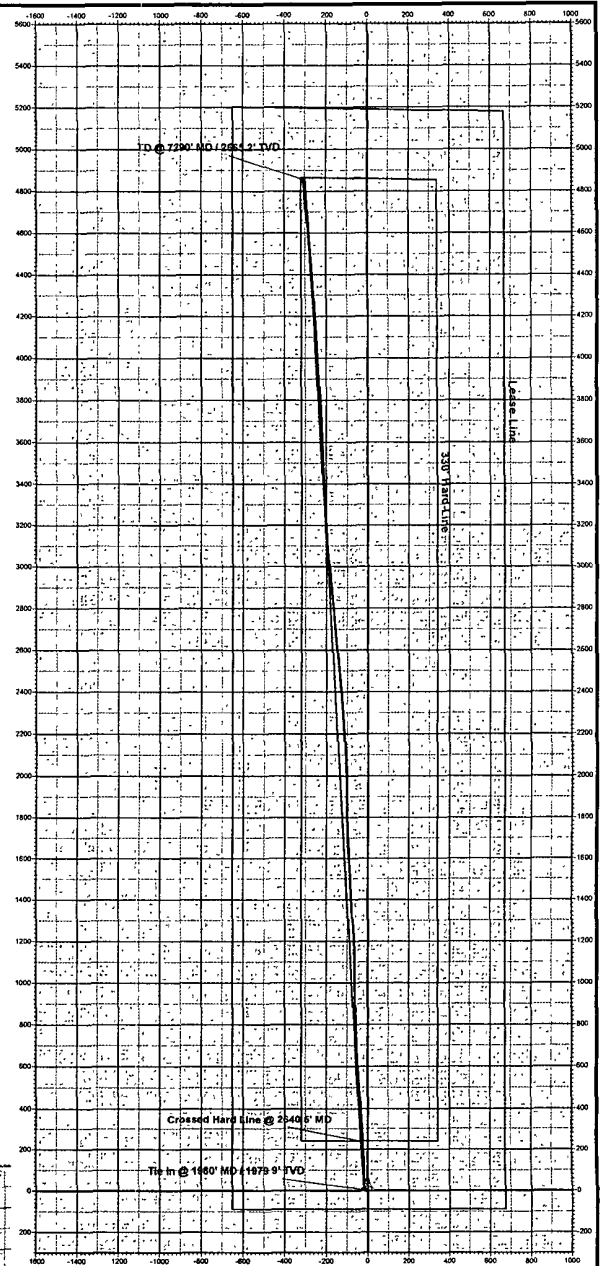
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL Pine Box 21 MD Fed Com	2664.0	4863.2	-288.2	569445.48	449702.12	32° 33' 55.464 N	104° 29' 47.748 W
-plan hits target center							

ANNOTATIONS

MD	Inc	Azi	TVD	+N-S	+E-W	V-Sect	Departure	Annotation
1880.0	1.00	311.15	1979.9	3.8	-12.1	3.9	-17.4	Tie In @ 1880' MD / 1979.9' TVD
2640.6	63.36	357.20	2565.4	239.9	-24.3	240.1	255.0	Crossed Hard Line @ 2640.6' MD
7290.0	90.30	355.60	2665.2	4866.1	-307.0	4868.2	4580.8	TD @ 7290' MD / 2665.2' TVD



Vertical Section at 355.49° (200 usf/in)

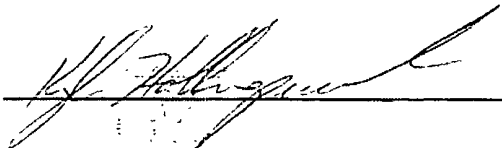
OPERATOR MEWBOURNE OIL CO.
WELL/LEASE PINE BOX 21 MD FED COM #1H
COUNTY EDDY

STATE OF NEW MEXICO
DEVIATION REPORT

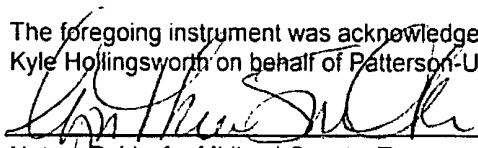
325	0 05
879	0.76

STATE OF TEXAS

COUNTY OF MIDLAND

BY 

The foregoing instrument was acknowledged before me on January 26, 2012 by
Kyle Hollingsworth on behalf of Patterson-UTL Drilling Company LLC.


Notary Public for Midland County, Texas
My Commission Expires: November 6, 2014

