



30-015-44594

Mewbourne Oil Company

Eddy County, New Mexico (Nad 83)

Sec 11, T26S, R28E

Delaware Ranch 11W1NC Fee #2H

Wellbore #1

**Provide Signature Page for
Directional Survey**

Design: Wellbore #1

QES Survey Report

21 May, 2018

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DISTRICT II-ARTESIA O.C.D.





Survey Report



Company: Mewbourne Oil Company
Project: Eddy County, New Mexico (Nad 83)
Site: Sec 11, T26S, R28E
Well: Delaware Ranch 11 W1NC Fee #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Delaware Ranch 11 W1NC Fee #2H
TVD Reference: WELL @ 2998.0usft (Patterson #230)
MD Reference: WELL @ 2998.0usft (Patterson #230)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Eddy County, New Mexico (Nad 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Sec 11, T26S, R28E

Site Position:		Northing:	382,171.70 usft	Latitude:	32° 3' 1.362 N
From:	Map	Easting:	625,583.90 usft	Longitude:	104° 3' 41.083 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	Delaware Ranch 11 W1NC Fee #2H				
Well Position	+N/-S	0.0 usft	Northing:	382,171.79 usft	Latitude: 32° 3' 1.361 N
	+E/-W	0.0 usft	Easting:	625,633.80 usft	Longitude: 104° 3' 40.503 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level: 2,971.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/18/2018	7.08	59.81	47,700.23035711

Design Wellbore #1

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	0.60

Survey Program Date 5/21/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
128.0	521.0	GYRO (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
604.0	14,440.0	QES MWD (Wellbore #1)	OWSG (Rev2) MWD	OWSG 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
128.0	0.70	254.60	128.0	-0.2	-0.8	-0.2	0.55	0.55	0.00
220.0	0.80	303.50	220.0	0.0	-1.8	0.0	0.68	0.11	53.15
310.0	1.60	283.60	310.0	0.6	-3.6	0.6	0.99	0.89	-22.11
401.0	2.00	287.40	400.9	1.4	-6.3	1.3	0.46	0.44	4.18
Tie into Gyro @ 521' MD / 520.9' TVD									
521.0	1.90	243.80	520.9	1.2	-10.1	1.1	1.21	-0.08	-36.33
604.0	2.10	248.10	603.8	0.0	-12.8	-0.1	0.30	0.24	5.18
696.0	2.20	242.20	695.7	-1.5	-15.9	-1.6	0.26	0.11	-6.41
788.0	1.90	202.40	787.7	-3.7	-18.0	-3.9	1.55	-0.33	-43.26



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Survey

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886.0	1.30	149.30	885.7	-6.2	-18.1	-6.3	1.56	-0.61	-54.18
980.0	2.30	97.50	979.6	-7.3	-15.7	-7.5	1.93	1.06	-55.11
1,074.0	2.70	93.80	1,073.5	-7.7	-11.6	-7.8	0.46	0.43	-3.94
1,169.0	1.10	109.20	1,168.5	-8.2	-8.5	-8.3	1.75	-1.68	16.21
1,264.0	0.60	105.20	1,263.5	-8.6	-7.1	-8.7	0.53	-0.53	-4.21
1,358.0	0.30	80.60	1,357.5	-8.7	-6.4	-8.7	0.37	-0.32	-26.17
1,453.0	0.30	33.50	1,452.5	-8.4	-6.0	-8.5	0.25	0.00	-49.58
1,548.0	0.40	12.70	1,547.5	-7.9	-5.8	-8.0	0.17	0.11	-21.89
1,642.0	0.90	6.60	1,641.4	-6.8	-5.7	-6.9	0.54	0.53	-6.49
1,737.0	1.30	13.40	1,736.4	-5.1	-5.3	-5.1	0.44	0.42	7.16
1,831.0	1.70	13.60	1,830.4	-2.7	-4.8	-2.7	0.43	0.43	0.21
1,926.0	1.10	62.60	1,925.4	-0.9	-3.6	-0.9	1.35	-0.63	51.58
2,021.0	1.90	96.60	2,020.3	-0.6	-1.3	-0.7	1.23	0.84	35.79
2,115.0	1.20	139.80	2,114.3	-1.6	0.9	-1.6	1.40	-0.74	45.96
2,210.0	1.60	146.70	2,209.3	-3.4	2.3	-3.4	0.46	0.42	7.26
2,304.0	2.40	128.20	2,303.2	-5.8	4.6	-5.7	1.08	0.85	-19.68
2,399.0	2.10	142.10	2,398.2	-8.4	7.2	-8.3	0.65	-0.32	14.63
2,492.0	1.30	259.70	2,491.1	-9.9	7.2	-9.8	3.16	-0.86	126.45
2,581.0	1.70	280.80	2,580.1	-9.8	4.9	-9.8	0.76	0.45	23.71
2,657.0	1.80	287.30	2,656.1	-9.3	2.7	-9.2	0.29	0.13	8.55
2,752.0	2.50	248.80	2,751.0	-9.6	-0.7	-9.6	1.65	0.74	-40.53
2,846.0	2.00	208.40	2,844.9	-11.7	-3.4	-11.8	1.73	-0.53	-42.98
2,941.0	2.40	166.90	2,939.9	-15.1	-3.7	-15.2	1.69	0.42	-43.68
3,036.0	1.10	150.90	3,034.8	-17.9	-2.8	-17.9	1.45	-1.37	-16.84
3,130.0	0.90	141.90	3,128.8	-19.2	-1.9	-19.3	0.27	-0.21	-9.57
3,225.0	1.70	228.10	3,223.8	-20.8	-2.5	-20.8	1.97	0.84	90.74
3,319.0	1.90	224.40	3,317.7	-22.8	-4.6	-22.9	0.25	0.21	-3.94
3,413.0	1.80	223.80	3,411.7	-25.0	-6.8	-25.1	0.11	-0.11	-0.64
3,507.0	1.60	216.10	3,505.7	-27.1	-8.5	-27.2	0.32	-0.21	-8.19
3,601.0	1.70	221.20	3,599.6	-29.2	-10.2	-29.3	0.19	0.11	5.43
3,696.0	1.90	175.70	3,694.6	-31.9	-11.1	-32.0	1.48	0.21	-47.89
3,791.0	1.90	171.50	3,789.5	-35.0	-10.7	-35.1	0.15	0.00	-4.42
3,884.0	1.90	176.70	3,882.5	-38.1	-10.4	-38.2	0.19	0.00	5.59
3,979.0	1.80	171.10	3,977.4	-41.1	-10.1	-41.2	0.22	-0.11	-5.89
4,073.0	1.60	176.60	4,071.4	-43.9	-9.8	-44.0	0.27	-0.21	5.85
4,168.0	1.70	174.80	4,166.3	-46.6	-9.6	-46.7	0.12	0.11	-1.89
4,263.0	1.60	176.60	4,261.3	-49.3	-9.3	-49.4	0.12	-0.11	1.89
4,357.0	1.90	180.80	4,355.3	-52.2	-9.3	-52.3	0.35	0.32	4.47
4,452.0	1.80	183.90	4,450.2	-55.3	-9.4	-55.4	0.15	-0.11	3.26
4,547.0	1.90	181.50	4,545.2	-58.3	-9.6	-58.4	0.13	0.11	-2.53
4,641.0	1.90	184.80	4,639.1	-61.4	-9.7	-61.5	0.12	0.00	3.51
4,736.0	1.20	164.60	4,734.1	-64.0	-9.6	-64.1	0.92	-0.74	-21.26
4,831.0	1.30	165.30	4,829.0	-66.0	-9.1	-66.1	0.11	0.11	0.74



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4,925.0	1.40	168.60	4,923.0	-68.1	-8.6	-68.2	0.13	0.11	3.51
5,020.0	1.10	172.00	5,018.0	-70.2	-8.2	-70.2	0.33	-0.32	3.58
5,115.0	1.10	179.00	5,113.0	-72.0	-8.1	-72.1	0.14	0.00	7.37
5,209.0	1.10	200.30	5,207.0	-73.7	-8.4	-73.8	0.43	0.00	22.66
5,304.0	0.90	178.80	5,301.9	-75.3	-8.7	-75.4	0.44	-0.21	-22.63
5,398.0	0.80	179.70	5,395.9	-76.7	-8.6	-76.8	0.11	-0.11	0.96
5,493.0	1.00	167.40	5,490.9	-78.2	-8.5	-78.3	0.29	0.21	-12.95
5,587.0	0.80	181.80	5,584.9	-79.6	-8.3	-79.7	0.32	-0.21	15.32
5,681.0	0.60	174.10	5,678.9	-80.8	-8.3	-80.9	0.23	-0.21	-8.19
5,776.0	1.70	177.30	5,773.9	-82.7	-8.1	-82.8	1.16	1.16	3.37
5,870.0	2.10	169.70	5,867.8	-85.8	-7.8	-85.9	0.50	0.43	-8.09
5,964.0	1.80	172.00	5,961.8	-88.9	-7.3	-89.0	0.33	-0.32	2.45
6,059.0	2.10	173.00	6,056.7	-92.1	-6.8	-92.2	0.32	0.32	1.05
6,153.0	2.10	170.80	6,150.7	-95.6	-6.4	-95.6	0.09	0.00	-2.34
6,248.0	1.90	179.20	6,245.6	-98.8	-6.1	-98.9	0.37	-0.21	8.84
6,343.0	2.10	182.90	6,340.5	-102.2	-6.1	-102.2	0.25	0.21	3.89
6,438.0	1.80	179.20	6,435.5	-105.4	-6.2	-105.4	0.34	-0.32	-3.89
6,532.0	1.20	188.20	6,529.5	-107.8	-6.3	-107.9	0.68	-0.64	9.57
6,627.0	1.10	125.80	6,624.4	-109.4	-5.7	-109.4	1.26	-0.11	-65.68
6,721.0	1.20	124.70	6,718.4	-110.4	-4.2	-110.5	0.11	0.11	-1.17
6,816.0	1.20	131.00	6,813.4	-111.7	-2.6	-111.7	0.14	0.00	6.63
6,911.0	0.40	50.30	6,908.4	-112.1	-1.6	-112.1	1.27	-0.84	-84.95
7,006.0	1.20	114.50	7,003.4	-112.3	-0.4	-112.3	1.14	0.84	67.58
7,100.0	1.30	131.70	7,097.4	-113.4	1.3	-113.4	0.41	0.11	18.30
7,194.0	1.50	155.30	7,191.3	-115.2	2.6	-115.2	0.64	0.21	25.11
7,289.0	2.00	183.40	7,286.3	-118.0	3.0	-118.0	1.03	0.53	29.58
7,384.0	1.90	185.90	7,381.2	-121.3	2.7	-121.2	0.14	-0.11	2.63
7,478.0	1.80	187.10	7,475.2	-124.3	2.4	-124.2	0.11	-0.11	1.28
7,573.0	2.30	180.30	7,570.1	-127.7	2.2	-127.6	0.58	0.53	-7.16
7,667.0	2.20	183.90	7,664.1	-131.3	2.1	-131.3	0.18	-0.11	3.83
7,762.0	2.20	185.90	7,759.0	-135.0	1.7	-134.9	0.08	0.00	2.11
7,857.0	2.20	202.20	7,853.9	-138.5	0.9	-138.5	0.66	0.00	17.16
7,951.0	2.40	217.30	7,947.8	-141.7	-1.0	-141.7	0.68	0.21	16.06
8,045.0	1.90	217.30	8,041.8	-144.5	-3.1	-144.5	0.53	-0.53	0.00
8,140.0	1.80	206.30	8,136.7	-147.1	-4.8	-147.2	0.39	-0.11	-11.58
8,235.0	0.80	232.30	8,231.7	-148.9	-5.9	-148.9	1.20	-1.05	27.37
8,329.0	0.60	165.50	8,325.7	-149.7	-6.3	-149.8	0.84	-0.21	-71.06
8,423.0	1.10	150.70	8,419.7	-151.0	-5.8	-151.0	0.58	0.53	-15.74
8,518.0	0.70	163.20	8,514.7	-152.3	-5.2	-152.4	0.47	-0.42	13.16
8,612.0	0.50	186.60	8,608.7	-153.3	-5.0	-153.3	0.33	-0.21	24.89
8,707.0	1.10	161.10	8,703.7	-154.6	-4.8	-154.6	0.72	0.63	-26.84
8,801.0	1.80	161.80	8,797.6	-156.8	-4.0	-156.9	0.74	0.74	0.74
8,896.0	1.70	180.30	8,892.6	-159.7	-3.6	-159.7	0.60	-0.11	19.47



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8,990.0	1.50	178.80	8,986.6	-162.3	-3.6	-162.3	0.22	-0.21	-1.60
9,059.0	1.40	175.10	9,055.5	-164.0	-3.5	-164.1	0.20	-0.14	-5.36
9,156.0	0.50	208.00	9,152.5	-165.6	-3.6	-165.6	1.05	-0.93	33.92
9,188.0	4.20	19.00	9,184.5	-164.6	-3.3	-164.6	14.67	11.56	534.38
9,220.0	9.90	24.10	9,216.2	-161.0	-1.7	-161.0	17.90	17.81	15.94
9,252.0	15.60	21.60	9,247.4	-154.5	1.0	-154.4	17.89	17.81	-7.81
9,284.0	19.70	19.90	9,277.9	-145.4	4.4	-145.3	12.91	12.81	-5.31
9,316.0	23.60	20.60	9,307.7	-134.3	8.5	-134.2	12.21	12.19	2.19
9,348.0	27.00	19.00	9,336.6	-121.4	13.1	-121.3	10.84	10.63	-5.00
9,380.0	29.70	15.40	9,364.7	-106.9	17.6	-106.7	9.98	8.44	-11.25
9,412.0	34.00	10.60	9,391.9	-90.5	21.3	-90.2	15.59	13.44	-15.00
9,444.0	38.10	6.10	9,417.8	-71.9	24.0	-71.6	15.25	12.81	-14.06
9,476.0	39.90	0.90	9,442.7	-51.8	25.2	-51.5	11.67	5.63	-16.25
9,508.0	40.90	354.20	9,467.1	-31.1	24.3	-30.8	13.92	3.13	-20.94
9,540.0	41.30	350.80	9,491.2	-10.2	21.6	-10.0	7.09	1.25	-10.63
9,572.0	42.50	351.80	9,515.0	10.9	18.4	11.1	4.29	3.75	3.13
9,604.0	43.30	353.60	9,538.4	32.5	15.6	32.7	4.57	2.50	5.63
9,636.0	45.70	355.90	9,561.3	54.8	13.5	55.0	9.03	7.50	7.19
9,668.0	48.90	358.90	9,583.0	78.3	12.5	78.4	12.14	10.00	9.38
9,700.0	51.60	2.20	9,603.4	102.9	12.7	103.0	11.58	8.44	10.31
9,732.0	54.20	2.60	9,622.7	128.4	13.8	128.5	8.19	8.13	1.25
HL Crossed @ 9752.2' MD / 9634.3' TVD									
9,752.2	55.97	2.15	9,634.3	145.0	14.5	145.1	8.93	8.75	-2.21
9,764.0	57.00	1.90	9,640.8	154.8	14.8	154.9	8.93	8.75	-2.14
9,796.0	60.20	1.90	9,657.5	182.1	15.8	182.2	10.00	10.00	0.00
9,828.0	63.40	1.20	9,672.6	210.3	16.5	210.4	10.18	10.00	-2.19
9,860.0	65.80	0.30	9,686.3	239.2	16.9	239.3	7.92	7.50	-2.81
9,892.0	69.10	359.90	9,698.6	268.7	16.9	268.9	10.38	10.31	-1.25
9,924.0	71.60	0.10	9,709.3	298.9	16.9	299.0	7.83	7.81	0.63
9,956.0	72.60	359.70	9,719.2	329.3	16.9	329.5	3.34	3.13	-1.25
9,988.0	74.60	359.40	9,728.2	360.0	16.6	360.2	6.31	6.25	-0.94
10,020.0	75.60	359.00	9,736.4	390.9	16.2	391.1	3.35	3.13	-1.25
10,052.0	77.30	358.50	9,743.9	422.0	15.5	422.2	5.53	5.31	-1.56
10,084.0	78.10	358.00	9,750.8	453.3	14.6	453.4	2.93	2.50	-1.56
10,116.0	80.70	357.80	9,756.6	484.7	13.4	484.8	8.15	8.13	-0.63
10,148.0	81.50	357.30	9,761.6	516.3	12.1	516.4	2.94	2.50	-1.56
10,180.0	83.40	357.10	9,765.8	548.0	10.5	548.1	5.97	5.94	-0.63
10,212.0	85.40	357.30	9,768.9	579.8	9.0	579.8	6.28	6.25	0.63
10,307.0	86.90	357.60	9,775.3	674.5	4.8	674.5	1.61	1.58	0.32
10,403.0	90.90	356.90	9,777.1	770.3	0.1	770.3	4.23	4.17	-0.73
10,499.0	89.20	355.50	9,777.1	866.1	-6.2	866.0	2.29	-1.77	-1.46
10,594.0	89.90	355.70	9,777.8	960.8	-13.5	960.6	0.77	0.74	0.21
10,691.0	91.00	356.70	9,777.0	1,057.6	-19.9	1,057.3	1.53	1.13	1.03
10,787.0	90.20	359.00	9,776.0	1,153.5	-23.5	1,153.2	2.54	-0.83	2.40



Survey Report



Company: Mewbourne Oil Company
Project: Eddy County, New Mexico (Nad 83)
Site: Sec 11, T26S, R28E
Well: Delaware Ranch 11 W1NC Fee #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Delaware Ranch 11 W1NC Fee #2H
TVD Reference: WELL @ 2998.0usft (Patterson #230)
MD Reference: WELL @ 2998.0usft (Patterson #230)
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)
10,883.0	91.10	1.50	9,774.9	1,249.5	-23.1	1,249.2	2.77	0.94	2.60
10,977.0	88.70	0.40	9,775.1	1,343.5	-21.6	1,343.2	2.81	-2.55	-1.17
11,071.0	89.90	1.70	9,776.3	1,437.5	-19.8	1,437.2	1.88	1.28	1.38
11,166.0	88.60	3.10	9,777.5	1,532.4	-15.9	1,532.1	2.01	-1.37	1.47
11,260.0	86.40	1.80	9,781.6	1,626.2	-11.8	1,626.0	2.72	-2.34	-1.38
11,355.0	89.00	3.80	9,785.4	1,721.0	-7.2	1,720.8	3.45	2.74	2.11
11,449.0	88.80	3.20	9,787.2	1,814.8	-1.5	1,814.7	0.67	-0.21	-0.64
11,543.0	90.80	4.10	9,787.5	1,908.6	4.5	1,908.5	2.33	2.13	0.96
11,637.0	90.30	4.60	9,786.6	2,002.3	11.7	2,002.3	0.75	-0.53	0.53
11,732.0	90.00	3.40	9,786.4	2,097.1	18.3	2,097.2	1.30	-0.32	-1.26
11,826.0	90.40	1.10	9,786.1	2,191.0	22.0	2,191.1	2.48	0.43	-2.45
11,920.0	91.30	1.00	9,784.7	2,285.0	23.7	2,285.1	0.96	0.96	-0.11
12,015.0	87.20	359.40	9,785.9	2,379.9	24.0	2,380.1	4.63	-4.32	-1.68
12,109.0	86.90	359.20	9,790.8	2,473.8	22.9	2,473.9	0.38	-0.32	-0.21
12,204.0	87.40	359.50	9,795.5	2,568.7	21.8	2,568.8	0.61	0.53	0.32
12,298.0	88.60	0.30	9,798.8	2,662.6	21.6	2,662.7	1.53	1.28	0.85
12,393.0	89.70	359.50	9,800.2	2,757.6	21.5	2,757.7	1.43	1.16	-0.84
12,487.0	90.20	359.90	9,800.2	2,851.6	21.0	2,851.7	0.68	0.53	0.43
12,582.0	90.00	359.70	9,800.1	2,946.6	20.6	2,946.7	0.30	-0.21	-0.21
12,677.0	91.50	1.10	9,798.8	3,041.6	21.3	3,041.7	2.16	1.58	1.47
12,772.0	91.40	2.20	9,796.4	3,136.5	24.0	3,136.6	1.16	-0.11	1.16
12,866.0	88.50	0.80	9,796.5	3,230.5	26.5	3,230.6	3.43	-3.09	-1.49
12,961.0	88.40	2.00	9,799.1	3,325.4	28.8	3,325.5	1.27	-0.11	1.26
13,055.0	87.80	1.70	9,802.2	3,419.3	31.9	3,419.5	0.71	-0.64	-0.32
13,149.0	87.20	0.40	9,806.3	3,513.2	33.6	3,513.4	1.52	-0.64	-1.38
13,244.0	89.30	0.80	9,809.2	3,608.1	34.6	3,608.3	2.25	2.21	0.42
13,339.0	91.00	0.30	9,809.0	3,703.1	35.5	3,703.3	1.87	1.79	-0.53
13,434.0	91.00	1.00	9,807.3	3,798.1	36.6	3,798.3	0.74	0.00	0.74
13,528.0	92.20	0.60	9,804.7	3,892.1	37.9	3,892.3	1.35	1.28	-0.43
13,623.0	92.30	0.10	9,800.9	3,987.0	38.5	3,987.2	0.54	0.11	-0.53
13,718.0	91.60	1.70	9,797.7	4,081.9	39.9	4,082.1	1.84	-0.74	1.68
13,813.0	91.10	1.70	9,795.5	4,176.9	42.8	4,177.1	0.53	-0.53	0.00
13,908.0	91.00	2.70	9,793.7	4,271.8	46.4	4,272.0	1.06	-0.11	1.05
14,002.0	90.00	3.80	9,792.9	4,365.6	51.7	4,365.9	1.58	-1.06	1.17
14,097.0	90.80	5.90	9,792.2	4,460.3	59.8	4,460.6	2.37	0.84	2.21
14,191.0	88.90	3.40	9,792.5	4,553.9	67.4	4,554.4	3.34	-2.02	-2.66
14,285.0	86.30	2.00	9,796.4	4,647.7	71.8	4,648.2	3.14	-2.77	-1.49
14,383.0	86.90	3.10	9,802.2	4,745.5	76.2	4,746.0	1.28	0.61	1.12
TD @ 14440' MD / 9805.3' TVD									
14,440.0	86.90	3.10	9,805.3	4,802.3	79.2	4,802.9	0.00	0.00	0.00



Survey Report



Company: Mewbourne Oil Company
Project: Eddy County, New Mexico (Nad 83)
Site: Sec 11, T26S, R28E
Well: Delaware Ranch 11 W1NC Fee #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Delaware Ranch 11 W1NC Fee #2H
TVD Reference: WELL @ 2998.0usft (Patterson #230)
MD Reference: WELL @ 2998.0usft (Patterson #230)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
521.0	520.9	1.2	-10.1	Tie into Gyro @ 521' MD / 520.9' TVD
9,752.2	9,634.3	145.0	14.5	HL Crossed @ 9752.2' MD / 9634.3' TVD
14,440.0	9,805.3	4,802.3	79.2	TD @ 14440' MD / 9805.3' TVD

Checked By: _____ Approved By: _____ Date: _____



Mewbourne Oil Company

Eddy County, New Mexico (Nad 83)

Sec 11, T26S, R28E

Delaware Ranch 11 W1NC Fee #2H

Wellbore #1

Survey: QES MWD

QES Survey Certification Report

21 May, 2018

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SEP 21 2018

DISTRICT II-ARTESIA O.C.D.



Quintana Energy Services

11390 FM 830

Willis, TX 77318

Phone: (936) 856-4332

Fax: (936) 856-8678



Survey Certification Sheet

Company	Job Number	Date
Mewbourne Oil Company	WT-180409	5/24/2018

Lease	Well Name	County & State
SEC 26, T11N, R28E	Deleware Ranch 11 WINC Fee #2H	Eddy County, NM

API No.	Survey Depth Range	Survey Type
30-015-44594	521 feet to 14440 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
	Jay Mullen

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Quintana Energy Services (QES). This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coordinates are calculated using minimum curvature.

Christopher Hughes

MWD Compliance Manager

Christopher Hughes

Quintana Energy Services

Digitally signed by Christopher Hughes
DN: cn=Christopher Hughes, o=QES, ou=compliance,
email=chrish@qeslp.com, c=US
Date: 2018.05.31 13:44:16 -05'00'



QES Survey Certification Report



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Database: EDM 5000.1 Single User Db

Project	Eddy County, New Mexico (Nad 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Sec 11, T26S, R28E

Site Position:
From: Map
Position Uncertainty: 0.0 usft

Northing: 382,171.70 usft
Easting: 625,583.90 usft
Slot Radius: 13-3/16"

Latitude: 32° 3' 1.362 N
Longitude: 104° 3' 41.083 W
Grid Convergence: 0.14 °

Well Delaware Ranch 11 W1NC Fee #2H

Well Position +N/-S 0.0 usft **Northing:** 382,171.79 usft **Latitude:** 32° 3' 1.361 N
+E/-W 0.0 usft **Easting:** 625,633.80 usft **Longitude:** 104° 3' 40.503 W
Position Uncertainty 0.0 usft **Wellhead Elevation:** usft **Ground Level:** 2,971.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/18/2018	7.08	59.81	47,700.23035711

Design Wellbore #1

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	0.60

Survey Program Date 5/21/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
128.0	521.0	GYRO (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
604.0	14,440.0	QES MWD (Wellbore #1)	OWSG (Rev2) MWD	OWSG MWD - Standard

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
521.0	1.90	243.80	520.9	1.2	-10.1	10.2	276.55
Tie into Gyro @ 521' MD / 520.9' TVD							
604.0	2.10	248.10	603.8	0.0	-12.8	12.8	269.94
696.0	2.20	242.20	695.7	-1.5	-15.9	15.9	264.73
788.0	1.90	202.40	787.7	-3.7	-18.0	18.4	258.40
886.0	1.30	149.30	885.7	-6.2	-18.1	19.1	251.19
980.0	2.30	97.50	979.6	-7.3	-15.7	17.3	244.95
1,074.0	2.70	93.80	1,073.5	-7.7	-11.6	13.9	236.34
1,169.0	1.10	109.20	1,168.5	-8.2	-8.5	11.8	226.12
1,264.0	0.60	105.20	1,263.5	-8.6	-7.1	11.2	219.75
1,358.0	0.30	80.60	1,357.5	-8.7	-6.4	10.8	216.53



QES Survey Certification Report



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
1,453.0	0.30	33.50	1,452.5	-8.4	-6.0	10.4	215.64
1,548.0	0.40	12.70	1,547.5	-7.9	-5.8	9.8	216.45
1,642.0	0.90	6.60	1,641.4	-6.8	-5.7	8.9	219.67
1,737.0	1.30	13.40	1,736.4	-5.1	-5.3	7.4	226.57
1,831.0	1.70	13.60	1,830.4	-2.7	-4.8	5.5	240.79
1,926.0	1.10	62.60	1,925.4	-0.9	-3.6	3.7	256.41
2,021.0	1.90	96.60	2,020.3	-0.6	-1.3	1.4	243.01
2,115.0	1.20	139.80	2,114.3	-1.6	0.9	1.8	149.37
2,210.0	1.60	146.70	2,209.3	-3.4	2.3	4.1	146.22
2,304.0	2.40	128.20	2,303.2	-5.8	4.6	7.3	141.55
2,399.0	2.10	142.10	2,398.2	-8.4	7.2	11.0	139.25
2,492.0	1.30	259.70	2,491.1	-9.9	7.2	12.2	143.91
2,581.0	1.70	280.80	2,580.1	-9.8	4.9	11.0	153.40
2,657.0	1.80	287.30	2,656.1	-9.3	2.7	9.6	163.90
2,752.0	2.50	248.80	2,751.0	-9.6	-0.7	9.6	184.10
2,846.0	2.00	208.40	2,844.9	-11.7	-3.4	12.2	196.04
2,941.0	2.40	166.90	2,939.9	-15.1	-3.7	15.6	193.78
3,036.0	1.10	150.90	3,034.8	-17.9	-2.8	18.1	188.97
3,130.0	0.90	141.90	3,128.8	-19.2	-1.9	19.3	185.72
3,225.0	1.70	228.10	3,223.8	-20.8	-2.5	20.9	186.90
3,319.0	1.90	224.40	3,317.7	-22.8	-4.6	23.3	191.50
3,413.0	1.80	223.80	3,411.7	-25.0	-6.8	25.9	195.12
3,507.0	1.60	216.10	3,505.7	-27.1	-8.5	28.4	197.50
3,601.0	1.70	221.20	3,599.6	-29.2	-10.2	31.0	199.31
3,696.0	1.90	175.70	3,694.6	-31.9	-11.1	33.7	199.13
3,791.0	1.90	171.50	3,789.5	-35.0	-10.7	36.6	197.00
3,884.0	1.90	176.70	3,882.5	-38.1	-10.4	39.4	195.26
3,979.0	1.80	171.10	3,977.4	-41.1	-10.1	42.3	193.76
4,073.0	1.60	176.60	4,071.4	-43.9	-9.8	44.9	192.54
4,168.0	1.70	174.80	4,166.3	-46.6	-9.6	47.6	191.58
4,263.0	1.60	176.60	4,261.3	-49.3	-9.3	50.2	190.73
4,357.0	1.90	180.80	4,355.3	-52.2	-9.3	53.0	190.09
4,452.0	1.80	183.90	4,450.2	-55.3	-9.4	56.1	189.67
4,547.0	1.90	181.50	4,545.2	-58.3	-9.6	59.1	189.30
4,641.0	1.90	184.80	4,639.1	-61.4	-9.7	62.2	189.00
4,736.0	1.20	164.60	4,734.1	-64.0	-9.6	64.7	188.53
4,831.0	1.30	165.30	4,829.0	-66.0	-9.1	66.6	187.82
4,925.0	1.40	168.60	4,923.0	-68.1	-8.6	68.7	187.16
5,020.0	1.10	172.00	5,018.0	-70.2	-8.2	70.6	186.67
5,115.0	1.10	179.00	5,113.0	-72.0	-8.1	72.4	186.39
5,209.0	1.10	200.30	5,207.0	-73.7	-8.4	74.2	186.47
5,304.0	0.90	178.80	5,302.0	-75.3	-8.7	75.8	186.56
5,398.0	0.80	179.70	5,395.9	-76.7	-8.6	77.2	186.42
5,493.0	1.00	167.40	5,490.9	-78.2	-8.5	78.6	186.17
5,587.0	0.80	181.80	5,584.9	-79.6	-8.3	80.1	185.95



QES Survey Certification Report



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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
5,681.0	0.60	174.10	5,678.9	-80.8	-8.3	81.2	185.84
5,776.0	1.70	177.30	5,773.9	-82.7	-8.1	83.1	185.63
5,870.0	2.10	169.70	5,867.8	-85.8	-7.8	86.1	185.18
5,964.0	1.80	172.00	5,961.8	-88.9	-7.3	89.2	184.67
6,059.0	2.10	173.00	6,056.7	-92.1	-6.8	92.4	184.25
6,153.0	2.10	170.80	6,150.7	-95.6	-6.4	95.8	183.81
6,248.0	1.90	179.20	6,245.6	-98.8	-6.1	99.0	183.51
6,343.0	2.10	182.90	6,340.5	-102.2	-6.1	102.3	183.43
6,438.0	1.80	179.20	6,435.5	-105.4	-6.2	105.6	183.36
6,532.0	1.20	188.20	6,529.5	-107.8	-6.3	108.0	183.35
6,627.0	1.10	125.80	6,624.4	-109.4	-5.7	109.5	182.99
6,721.0	1.20	124.70	6,718.4	-110.4	-4.2	110.5	182.16
6,816.0	1.20	131.00	6,813.4	-111.7	-2.6	111.7	181.33
6,911.0	0.40	50.30	6,908.4	-112.1	-1.6	112.1	180.82
7,006.0	1.20	114.50	7,003.4	-112.3	-0.4	112.3	180.22
7,100.0	1.30	131.70	7,097.4	-113.4	1.3	113.4	179.36
7,194.0	1.50	155.30	7,191.3	-115.2	2.6	115.3	178.72
7,289.0	2.00	183.40	7,286.3	-118.0	3.0	118.1	178.55
7,384.0	1.90	185.90	7,381.2	-121.3	2.7	121.3	178.71
7,478.0	1.80	187.10	7,475.2	-124.3	2.4	124.3	178.90
7,573.0	2.30	180.30	7,570.1	-127.7	2.2	127.7	179.02
7,667.0	2.20	183.90	7,664.1	-131.3	2.1	131.4	179.10
7,762.0	2.20	185.90	7,759.0	-135.0	1.7	135.0	179.26
7,857.0	2.20	202.20	7,853.9	-138.5	0.9	138.5	179.64
7,951.0	2.40	217.30	7,947.8	-141.7	-1.0	141.7	180.41
8,045.0	1.90	217.30	8,041.8	-144.5	-3.1	144.6	181.24
8,140.0	1.80	206.30	8,136.7	-147.1	-4.8	147.2	181.85
8,235.0	0.80	232.30	8,231.7	-148.9	-5.9	149.0	182.29
8,329.0	0.60	165.50	8,325.7	-149.7	-6.3	149.9	182.42
8,423.0	1.10	150.70	8,419.7	-151.0	-5.8	151.1	182.19
8,518.0	0.70	163.20	8,514.7	-152.3	-5.2	152.4	181.94
8,612.0	0.50	186.60	8,608.7	-153.3	-5.0	153.4	181.88
8,707.0	1.10	161.10	8,703.7	-154.6	-4.8	154.6	181.78
8,801.0	1.80	161.80	8,797.6	-156.8	-4.0	156.9	181.48
8,896.0	1.70	180.30	8,892.6	-159.7	-3.6	159.7	181.28
8,990.0	1.50	178.80	8,986.6	-162.3	-3.6	162.3	181.26
9,059.0	1.40	175.10	9,055.5	-164.0	-3.5	164.1	181.21
9,156.0	0.50	208.00	9,152.5	-165.6	-3.6	165.6	181.23
9,188.0	4.20	19.00	9,184.5	-164.6	-3.3	164.6	181.13
9,220.0	9.90	24.10	9,216.2	-161.0	-1.7	161.0	180.62
9,252.0	15.60	21.60	9,247.4	-154.5	1.0	154.5	179.64
9,284.0	19.70	19.90	9,277.9	-145.4	4.4	145.4	178.27
9,316.0	23.60	20.60	9,307.7	-134.3	8.5	134.6	176.39
9,348.0	27.00	19.00	9,336.6	-121.4	13.1	122.1	173.85



QES Survey Certification Report



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Site: Sec 11, T26S, R28E
Well: Delaware Ranch 11 W1NC Fee #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Delaware Ranch 11 W1NC Fee #2H
TVD Reference: WELL @ 2998.0usft (Patterson #230)
MD Reference: WELL @ 2998.0usft (Patterson #230)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
9,380.0	29.70	15.40	9,364.7	-106.9	17.6	108.4	170.67
9,412.0	34.00	10.60	9,391.9	-90.5	21.3	93.0	166.74
9,444.0	38.10	6.10	9,417.8	-71.9	24.0	75.8	161.52
9,476.0	39.90	0.90	9,442.7	-51.8	25.2	57.6	154.02
9,508.0	40.90	354.20	9,467.1	-31.1	24.3	39.5	141.94
9,540.0	41.30	350.80	9,491.2	-10.2	21.6	23.9	115.35
9,572.0	42.50	351.80	9,515.0	10.9	18.4	21.3	59.30
9,604.0	43.30	353.60	9,538.4	32.5	15.6	36.0	25.62
9,636.0	45.70	355.90	9,561.3	54.8	13.5	56.5	13.88
9,668.0	48.90	358.90	9,583.0	78.3	12.5	79.3	9.06
9,700.0	51.60	2.20	9,603.4	102.9	12.7	103.7	7.06
9,732.0	54.20	2.60	9,622.7	128.4	13.8	129.2	6.14
9,764.0	57.00	1.90	9,640.8	154.8	14.8	155.5	5.48
9,796.0	60.20	1.90	9,657.5	182.1	15.8	182.8	4.94
9,828.0	63.40	1.20	9,672.6	210.3	16.5	210.9	4.49
9,860.0	65.80	0.30	9,686.3	239.2	16.9	239.8	4.04
9,892.0	69.10	359.90	9,698.6	268.7	16.9	269.3	3.61
9,924.0	71.60	0.10	9,709.3	298.9	16.9	299.3	3.24
9,956.0	72.60	359.70	9,719.2	329.3	16.9	329.7	2.94
9,988.0	74.60	359.40	9,728.2	360.0	16.6	360.4	2.65
10,020.0	75.60	359.00	9,736.4	390.9	16.2	391.3	2.37
10,052.0	77.30	358.50	9,743.9	422.0	15.5	422.3	2.11
10,084.0	78.10	358.00	9,750.8	453.3	14.6	453.5	1.84
10,116.0	80.70	357.80	9,756.6	484.7	13.4	484.9	1.59
10,148.0	81.50	357.30	9,761.6	516.3	12.1	516.4	1.34
10,180.0	83.40	357.10	9,765.8	548.0	10.5	548.1	1.10
10,212.0	85.40	357.30	9,768.9	579.8	9.0	579.9	0.89
10,307.0	86.90	357.60	9,775.3	674.5	4.8	674.5	0.40
10,403.0	90.90	356.90	9,777.1	770.3	0.1	770.3	0.01
10,499.0	89.20	355.50	9,777.1	866.1	-6.2	866.1	359.59
10,594.0	89.90	355.70	9,777.8	960.8	-13.5	960.9	359.19
10,691.0	91.00	356.70	9,777.0	1,057.6	-19.9	1,057.8	358.92
10,787.0	90.20	359.00	9,776.0	1,153.5	-23.5	1,153.8	358.83
10,883.0	91.10	1.50	9,774.9	1,249.5	-23.1	1,249.7	358.94
10,977.0	88.70	0.40	9,775.1	1,343.5	-21.6	1,343.7	359.08
11,071.0	89.90	1.70	9,776.3	1,437.5	-19.8	1,437.6	359.21
11,166.0	88.60	3.10	9,777.5	1,532.4	-15.9	1,532.4	359.41
11,260.0	86.40	1.80	9,781.6	1,626.2	-11.8	1,626.2	359.58
11,355.0	89.00	3.80	9,785.4	1,721.0	-7.2	1,721.0	359.76
11,449.0	88.80	3.20	9,787.2	1,814.8	-1.5	1,814.8	359.95
11,543.0	90.80	4.10	9,787.5	1,908.6	4.5	1,908.6	0.14
11,637.0	90.30	4.60	9,786.6	2,002.3	11.7	2,002.3	0.33
11,732.0	90.00	3.40	9,786.4	2,097.1	18.3	2,097.2	0.50
11,826.0	90.40	1.10	9,786.1	2,191.0	22.0	2,191.1	0.57



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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
11,920.0	91.30	1.00	9,784.7	2,285.0	23.7	2,285.1	0.59
12,015.0	87.20	359.40	9,785.9	2,379.9	24.0	2,380.1	0.58
12,109.0	86.90	359.20	9,790.8	2,473.8	22.9	2,473.9	0.53
12,204.0	87.40	359.50	9,795.5	2,568.7	21.8	2,568.8	0.49
12,298.0	88.60	0.30	9,798.8	2,662.6	21.6	2,662.7	0.47
12,393.0	89.70	359.50	9,800.2	2,757.6	21.5	2,757.7	0.45
12,487.0	90.20	359.90	9,800.2	2,851.6	21.0	2,851.7	0.42
12,582.0	90.00	359.70	9,800.1	2,946.6	20.6	2,946.7	0.40
12,677.0	91.50	1.10	9,798.8	3,041.6	21.3	3,041.7	0.40
12,772.0	91.40	2.20	9,796.4	3,136.5	24.0	3,136.6	0.44
12,866.0	88.50	0.80	9,796.5	3,230.5	26.5	3,230.6	0.47
12,961.0	88.40	2.00	9,799.1	3,325.4	28.8	3,325.5	0.50
13,055.0	87.80	1.70	9,802.2	3,419.3	31.9	3,419.5	0.53
13,149.0	87.20	0.40	9,806.3	3,513.2	33.6	3,513.4	0.55
13,244.0	89.30	0.80	9,809.2	3,608.1	34.6	3,608.3	0.55
13,339.0	91.00	0.30	9,809.0	3,703.1	35.5	3,703.3	0.55
13,434.0	91.00	1.00	9,807.3	3,798.1	36.6	3,798.3	0.55
13,528.0	92.20	0.60	9,804.7	3,892.1	37.9	3,892.3	0.56
13,623.0	92.30	0.10	9,800.9	3,987.0	38.5	3,987.2	0.55
13,718.0	91.60	1.70	9,797.7	4,081.9	39.9	4,082.1	0.56
13,813.0	91.10	1.70	9,795.5	4,176.9	42.8	4,177.1	0.59
13,908.0	91.00	2.70	9,793.7	4,271.8	46.4	4,272.0	0.62
14,002.0	90.00	3.80	9,792.9	4,365.6	51.7	4,365.9	0.68
14,097.0	90.80	5.90	9,792.2	4,460.3	59.8	4,460.7	0.77
14,191.0	88.90	3.40	9,792.5	4,553.9	67.4	4,554.4	0.85
14,285.0	86.30	2.00	9,796.4	4,647.7	71.8	4,648.3	0.89
14,383.0	86.90	3.10	9,802.2	4,745.5	76.2	4,746.1	0.92
14,440.0	86.90	3.10	9,805.3	4,802.3	79.2	4,803.0	0.95

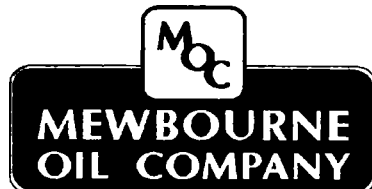
TD @ 14440' MD / 9805.3' TVD

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
521.0	520.9	1.2	-10.1	Tie into Gyro @ 521' MD / 520.9' TVD
14,440.0	9,805.3	4,802.3	79.2	TD @ 14440' MD / 9805.3' TVD

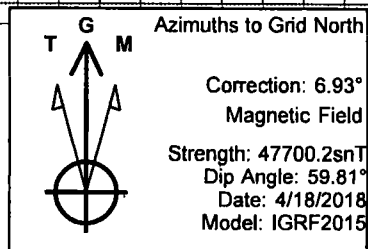
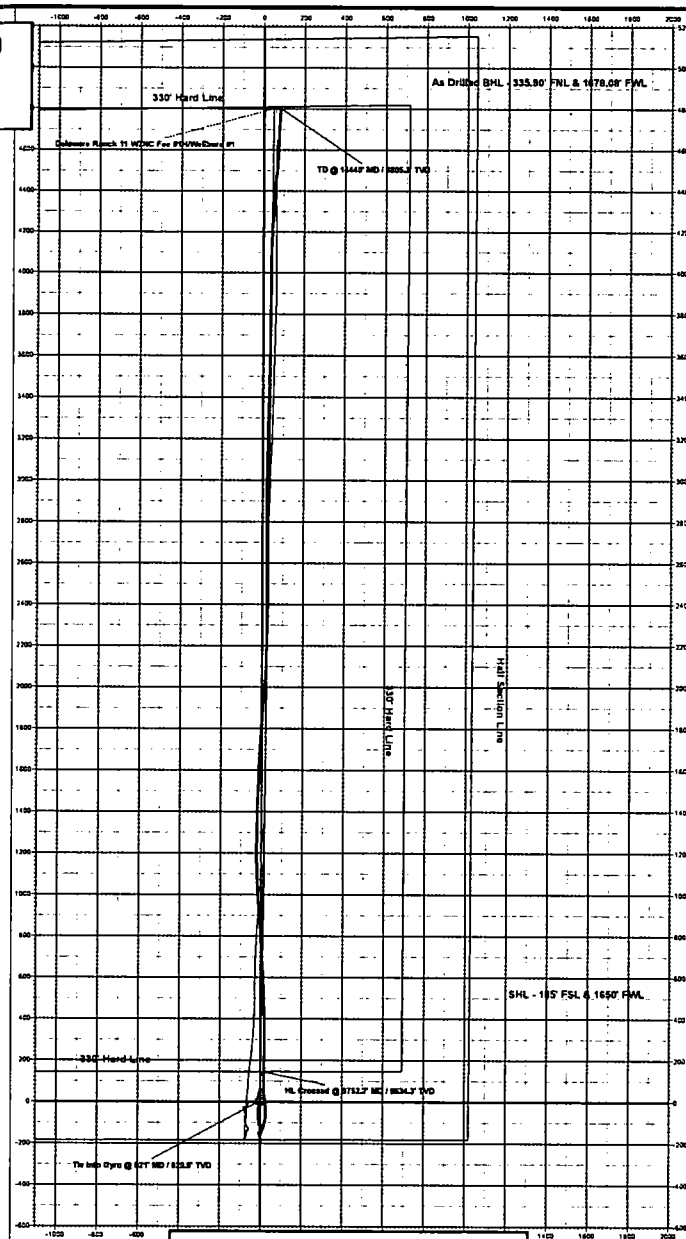
Checked By: _____ Approved By: _____ Date: _____

Delaware Ranch 11 W1NC Fee #2H
Eddy County, New Mexico (Nad 83)
Q180479 & WT-180409
Design #1



Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

		2871.0			
•N-E	•E-W	Northing	Easting	Latitude	Longitude
0.0	0.0	382171.79	625833.80	32° 3' 1.381 N	104° 3' 40.503 W



ANNOTATIONS						
MD	Inc	Azi	TVD	+N/-S	VSection	Departure
521.0	18.00	243.80	520.9	1.2	-10.1	Th to Hig Dip @ 521' MD / 520.9' TVD
9752.2	55.97	2.15	9854.3	145.0	14.6	HL Crossed @ 9752.2' MD / 9854.3' TVD
14440.0	38.80	3.10	14905.3	4802.3	78.2	TD @ 14440' MD / 14905.3' TVD

