

OPERATOR MEWBOURNE OIL COMPANY
WELL/LEASE HAYHURST 23 PA STATE COM 001H
COUNTY EDDY

046-0088

STATE OF NEW MEXICO
DEVIATION REPORT

30015 41356

237	1.08
591	4.45
679	2.16
1,046	2.56
1,394	2.00
1,584	0.29
1,966	2.47
2,285	2.10
2,666	1.15
3,078	0.77
3,455	0.79
3,836	0.84
4,217	0.64
4,630	1.13
4,969	0.40
5,390	0.57
5,802	0.65
6,214	1.58
6,625	1.89

STATE OF TEXAS

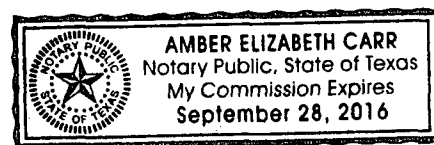
BY: Steve Moore

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on
Steve Moore on behalf of Patterson-UTI Drilling Company LLC.

9/16/13, by

Amber Elizabeth Carr
Notary Public for Midland County, Texas
My Commission Expires:





SURVEY CALCULATION PROGRAM

v1.00.02

OPERATOR:	MEWBOURNE	Supervisors:	
WELL:	HAYHURST 23 PA STATE COM #1H	CLAYTON THOMAS	
LOCATION:	EDDY CO. NM	ANDY DUESTERBURG	
		API #:	30-015-41356
COMMENTS:			
DISPLACEMENT OF 102.93 FT AT 205.55 DEGREES		MAG DEC. (-/+)	7.49E
		GRID CORR. (-/+)	
		TOTAL CORR. (-/+)	7.49E
DATE: 8-10-13		TIME: 4:30am	▼

MINIMUM CURVATURE CALCULATIONS(SPE-3362)PROPOSED DIRECTION									TARGET TRACKING		CLOSURE		BUILD	WALK
									TO CENTER		DIR	DISTANCE	RATE/	RATE/
SVY	MD	INC	TRUE	TVD	SECT	N-S	E-W	DLS/	ABOVE(+)	RIGHT(+)	(DEG AZ)	(FEET)	'/100'	'/100'
NUM			AZM					100	BELOW(-)	LEFT(-)				
TIE	0	0.00	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	100	0.66	110.85	100.00	-0.20	-0.20	0.54	0.7	-100.0	0.5	110.8	0.6	0.7	0.5
2	200	0.45	83.15	199.99	-0.36	-0.36	1.47	0.3	-200.0	1.5	103.9	1.5	-0.2	-0.3
3	300	0.62	202.30	299.99	-0.82	-0.82	1.65	0.9	-300.0	1.7	116.3	1.8	0.2	0.9
4	400	1.30	221.37	399.98	-2.17	-2.17	0.70	0.7	-400.0	0.7	162.2	2.3	0.7	0.3
5	500	1.71	229.86	499.94	-3.98	-3.98	-1.19	0.5	-499.9	-1.2	196.7	4.2	0.4	0.2
6	600	0.72	251.63	599.92	-5.14	-5.14	-2.93	1.1	-599.9	-2.9	209.7	5.9	-1.0	0.0
7	700	0.51	253.89	699.91	-5.46	-5.46	-3.96	0.2	-699.9	-4.0	215.9	6.7	-0.2	0.0
8	800	1.19	203.56	799.90	-6.54	-6.54	-4.80	0.9	-799.9	-4.8	216.3	8.1	0.7	0.0
9	900	1.68	215.95	899.87	-8.68	-8.68	-6.07	0.6	-899.9	-6.1	215.0	10.6	0.5	0.0
10	1000	2.09	260.88	999.82	-10.15	-10.15	-8.73	1.5	-999.8	-8.7	220.7	13.4	0.4	0.0
11	1100	1.37	225.65	1099.78	-11.28	-11.28	-11.39	1.3	-1099.8	-11.4	225.3	16.0	-0.7	0.0
12	1200	1.38	226.26	1199.75	-12.95	-12.95	-13.11	0.0	-1199.7	-13.1	225.4	18.4	0.0	0.0
13	1300	1.80	276.67	1299.72	-13.60	-13.60	-15.54	1.4	-1299.7	-15.5	228.8	20.7	0.4	0.0
14	1400	0.75	274.18	1399.69	-13.37	-13.37	-17.76	1.1	-1399.7	-17.8	233.0	22.2	-1.1	0.0
15	1500	1.28	225.68	1499.67	-14.10	-14.10	-19.21	1.0	-1499.7	-19.2	233.7	23.8	0.5	0.0
16	1600	1.57	193.70	1599.65	-16.21	-16.21	-20.33	0.8	-1599.6	-20.3	231.4	26.0	0.3	0.0
17	1700	0.60	180.85	1699.63	-18.06	-18.06	-20.67	1.0	-1699.6	-20.7	228.8	27.4	-1.0	0.0
18	1800	1.21	127.85	1799.61	-19.24	-19.24	-19.84	1.0	-1799.6	-19.8	225.9	27.6	0.6	0.0
19	1900	2.53	125.40	1899.56	-21.16	-21.16	-17.21	1.3	-1899.6	-17.2	219.1	27.3	1.3	0.0
20	2000	3.31	128.69	1999.43	-24.25	-24.25	-13.15	0.8	-1999.4	-13.2	208.5	27.6	0.8	0.0
21	2100	3.18	130.66	2099.27	-27.86	-27.86	-8.80	0.2	-2099.3	-8.8	197.5	29.2	-0.1	0.0
22	2200	2.47	127.98	2199.15	-30.99	-30.99	-4.99	0.7	-2199.1	-5.0	189.2	31.4	-0.7	0.0
23	2300	2.33	128.22	2299.06	-33.57	-33.57	-1.70	0.1	-2299.1	-1.7	182.9	33.6	-0.1	0.0
24	2400	2.01	125.28	2398.99	-35.84	-35.84	1.33	0.3	-2399.0	1.3	177.9	35.9	-0.3	0.0
25	2500	1.90	125.97	2498.93	-37.83	-37.83	4.10	0.1	-2498.9	4.1	173.8	38.1	-0.1	0.0
26	2600	1.67	127.61	2598.88	-39.69	-39.69	6.60	0.2	-2598.9	6.6	170.6	40.2	-0.2	0.0
27	2700	1.24	121.14	2698.85	-41.14	-41.14	8.68	0.5	-2698.8	8.7	168.1	42.0	-0.4	0.0
28	2800	1.24	124.47	2798.82	-42.32	-42.32	10.50	0.1	-2798.8	10.5	166.1	43.6	0.0	0.0
29	2900	1.12	129.48	2898.80	-43.55	-43.55	12.14	0.2	-2898.8	12.1	164.4	45.2	-0.1	0.0
30	3000	0.73	220.95	2998.79	-44.65	-44.65	12.48	1.4	-2998.8	12.5	164.4	46.4	-0.4	0.0
31	3100	1.04	139.55	3098.79	-45.82	-45.82	12.65	1.2	-3098.8	12.7	164.6	47.5	0.3	0.0
32	3200	1.42	168.49	3198.76	-47.73	-47.73	13.49	0.7	-3198.8	13.5	164.2	49.6	0.4	0.0
33	3300	0.11	144.55	3298.75	-49.02	-49.02	13.79	1.3	-3298.8	13.8	164.3	50.9	-1.3	0.0
34	3400	0.97	144.92	3398.75	-49.79	-49.79	14.33	0.9	-3398.7	14.3	163.9	51.8	0.9	0.0
35	3500	1.13	154.90	3498.73	-51.38	-51.38	15.24	0.2	-3498.7	15.2	163.5	53.6	0.2	0.0
36	3600	1.17	163.58	3598.71	-53.25	-53.25	15.95	0.2	-3598.7	15.9	163.3	55.6	0.0	0.0
37	3700	0.66	143.89	3698.70	-54.69	-54.69	16.57	0.6	-3698.7	16.6	163.1	57.1	-0.5	0.0
38	3800	1.22	179.47	3798.68	-56.22	-56.22	16.92	0.8	-3798.7	16.9	163.2	58.7	0.6	0.0
39	3900	1.45	235.69	3898.66	-58.00	-58.00	15.89	1.3	-3898.7	15.9	164.7	60.1	0.2	0.0
40	4000	1.06	180.73	3998.64	-59.64	-59.64	14.83	1.2	-3998.6	14.8	166.0	61.5	-0.4	0.0
41	4100	1.48	199.00	4098.62	-61.79	-61.79	14.40	0.6	-4098.6	14.4	166.9	63.4	0.4	0.0
42	4200	1.40	201.48	4198.58	-64.14	-64.14	13.53	0.1	-4198.6	13.5	168.1	65.6	-0.1	0.0
43	4300	1.34	256.45	4298.56	-65.55	-65.55	11.95	1.3	-4298.6	11.9	169.7	66.6	-0.1	0.0

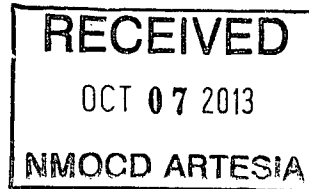


SURVEY CALCULATION PROGRAM

v1.00.02

OPERATOR:	MEWBOURNE	Supervisors:	
WELL:	HAYHURST 23 PA STATE COM #1H	CLAYTON THOMAS	
LOCATION:	EDDY CO. NM	ANDY DUESTERBURG	
		API #:	30-015-41356
COMMENTS:			
DISPLACEMENT OF 102.93 FT AT 205.55 DEGREES		MAG DEC. (+/-)	7.49E
		GRID CORR. (+/-)	
		TOTAL CORR. (+/-)	7.49E
DATE: 8-10-13	TIME: 4:30am		

MINIMUM CURVATURE CALCULATIONS(SPE-3362) PROPOSED DIRECTION									TARGET TRACKING		CLOSURE		BUILD	WALK
									TO CENTER					
SVY			TRUE					DLS/	ABOVE(+)	RIGHT(+)	DIR	DISTANCE	RATE/	
NUM	MD	INC	AZM	TVD	SECT	N-S	E-W	100	BELOW(-)	LEFT(-)	(DEG AZ)	(FEET)	'/100'	'/100'
44	4400	1.43	200.14	4398.53	-67.00	-67.00	10.38	1.3	-4398.5	10.4	171.2	67.8	0.1	0.0
45	4500	1.62	200.03	4498.50	-69.50	-69.50	9.47	0.2	-4498.5	9.5	172.2	70.1	0.2	0.0
46	4600	0.51	221.83	4598.48	-71.16	-71.16	8.69	1.2	-4598.5	8.7	173.0	71.7	-1.1	0.0
47	4700	0.52	235.54	4698.48	-71.75	-71.75	8.01	0.1	-4698.5	8.0	173.6	72.2	0.0	0.0
48	4800	0.73	174.37	4798.47	-72.64	-72.64	7.70	0.7	-4798.5	7.7	173.9	73.0	0.2	0.0
49	4900	1.30	182.06	4898.46	-74.41	-74.41	7.72	0.6	-4898.5	7.7	174.1	74.8	0.6	0.0
50	5000	1.28	225.22	4998.43	-76.33	-76.33	6.89	0.9	-4998.4	6.9	174.8	76.6	0.0	0.0
51	5100	1.23	216.30	5098.41	-77.98	-77.98	5.46	0.2	-5098.4	5.5	176.0	78.2	-0.1	0.0
52	5200	1.05	176.51	5198.39	-79.76	-79.76	4.88	0.8	-5198.4	4.9	176.5	79.9	-0.2	0.0
53	5300	1.13	232.83	5298.37	-81.27	-81.27	4.15	1.0	-5298.4	4.2	177.1	81.4	0.1	0.0
54	5400	0.61	152.83	5398.37	-82.34	-82.34	3.61	1.2	-5398.4	3.6	177.5	82.4	-0.5	0.0
55	5500	1.25	204.10	5498.35	-83.81	-83.81	3.41	1.0	-5498.4	3.4	177.7	83.9	0.6	0.0
56	5600	1.47	258.11	5598.33	-85.07	-85.07	1.71	1.3	-5598.3	1.7	178.9	85.1	0.2	0.0
57	5700	1.27	220.37	5698.30	-86.17	-86.17	-0.27	0.9	-5698.3	-0.3	180.2	86.2	-0.2	0.0
58	5800	0.59	228.24	5798.29	-87.36	-87.36	-1.37	0.7	-5798.3	-1.4	180.9	87.4	-0.7	0.0
59	5900	1.54	261.63	5898.27	-87.90	-87.90	-3.08	1.1	-5898.3	-3.1	182.0	88.0	1.0	0.0
60	6000	2.77	314.37	5998.21	-86.41	-86.41	-6.14	2.2	-5998.2	-6.1	184.1	86.6	1.2	0.0
61	6100	1.10	312.47	6098.15	-84.07	-84.07	-8.57	1.7	-6098.1	-8.6	185.8	84.5	-1.7	0.0
62	6200	2.07	275.00	6198.11	-83.26	-83.26	-11.08	1.4	-6198.1	-11.1	187.6	84.0	1.0	0.0
63	6300	2.00	289.05	6298.05	-82.54	-82.54	-14.53	0.5	-6298.0	-14.5	190.0	83.8	-0.1	0.0
64	6400	1.83	288.26	6398.0	-81.5	-81.5	-17.7	0.2	-6398.0	-17.7	192.3	83.4	-0.2	0.0
65	6500	1.88	303.74	6497.9	-80.1	-80.1	-20.6	0.5	-6497.9	-20.6	194.4	82.7	0.1	0.0
66	6600	2.31	242.16	6597.9	-80.1	-80.1	-23.7	2.2	-6597.9	-23.7	196.5	83.5	0.4	0.0
67	6700	1.33	248.62	6697.8	-81.4	-81.4	-26.6	1.0	-6697.8	-26.6	198.1	85.7	-1.0	0.0
68	6800	3.65	221.78	6797.7	-84.2	-84.2	-29.8	2.5	-6797.7	-29.8	199.5	89.4	2.3	0.0
69	6900	4.40	238.39	6897.5	-88.6	-88.6	-35.2	1.4	-6897.5	-35.2	201.6	95.4	0.8	0.0
70	7000	3.85	245.99	6997.2	-92.0	-92.0	-41.5	0.8	-6997.2	-41.5	204.3	100.9	-0.5	0.0
71	7050	3.11	262.48	7047.1	-92.9	-92.9	-44.4	2.5	-7047.1	-44.4	205.5	102.9	-1.5	0.0



Mewbourne Oil Co

Eddy County, New Mexico

Sec 23, T25S, R27E

Hayhurst 23 PA State Com #1H

Wellbore #1

Design: Wellbore #1

DDC Survey Report

19 August, 2013



DDC Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Hayhurst 23 PA State Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3081.0usft (Patterson UTI)
Site:	Sec 23, T25S, R27E	MD Reference:	WELL @ 3081.0usft (Patterson UTI)
Well:	Hayhurst 23 PA State 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	Sec 23, T25S, R27E		
Site Position:		Northing:	403,383.52 usft
From:	Map	Easting:	554,479.12 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 6' 32.023 N
		Longitude:	104° 9' 26.579 W
		Grid Convergence:	0.09 °

Well	Hayhurst 23 PA State Com #1H		
Well Position	+N/-S	0.0 usft	Northing: 403,333.47 usft
	+E/-W	0.0 usft	Easting: 555,679.09 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 6' 31.508 N
		Longitude:	104° 9' 12.628 W
		Ground Level:	3,061.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	7/11/2013	7.59
			Dip Angle
			(°)
			59.93
			Field Strength
			(nT)
			48,278

Design	Wellbore #1		
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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	359.86

Survey Program	Date 8/19/2013		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,050.0	Gyro (Wellbore #1)	Good_gyro
7,177.0	12,290.0	MWD (Wellbore #1)	MWD default
			Description
			Good Gyro
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.66	110.85	100.0	-0.2	0.5	-0.2	0.66	0.66	0.00
200.0	0.45	83.15	200.0	-0.4	1.5	-0.4	0.33	-0.21	-27.70
300.0	0.62	202.30	300.0	-0.8	1.7	-0.8	0.93	0.17	119.15
400.0	1.30	221.37	400.0	-2.2	0.7	-2.2	0.74	0.68	19.07
500.0	1.71	229.86	499.9	-4.0	-1.2	-4.0	0.47	0.41	8.49
600.0	0.72	251.63	599.9	-5.1	-2.9	-5.1	1.08	-0.99	21.77
700.0	0.51	253.89	699.9	-5.5	-4.0	-5.5	0.21	-0.21	2.26
800.0	1.19	203.56	799.9	-6.5	-4.8	-6.5	0.95	0.68	-50.33
900.0	1.68	215.95	899.9	-8.7	-6.1	-8.7	0.58	0.49	12.39

DDC Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Hayhurst 23 PA State Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3081.0usft (Patterson UTI)
Site:	Sec 23, T25S, R27E	MD Reference:	WELL @ 3081.0usft (Patterson UTI)
Well:	Hayhurst 23 PA State 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)
1,000.0	2.09	260.88	999.8	-10.2	-8.7	-10.1	1.49	0.41	44.93
1,100.0	1.37	225.65	1,099.8	-11.3	-11.4	-11.2	1.25	-0.72	-35.23
1,200.0	1.38	226.26	1,199.7	-12.9	-13.1	-12.9	0.02	0.01	0.61
1,300.0	1.80	276.67	1,299.7	-13.6	-15.5	-13.6	1.41	0.42	50.41
1,400.0	0.75	274.18	1,399.7	-13.4	-17.8	-13.3	1.05	-1.05	-2.49
1,500.0	1.28	225.68	1,499.7	-14.1	-19.2	-14.1	0.96	0.53	-48.50
1,600.0	1.57	193.70	1,599.6	-16.2	-20.3	-16.2	0.83	0.29	-31.98
1,700.0	0.60	180.85	1,699.6	-18.1	-20.7	-18.0	0.99	-0.97	-12.85
1,800.0	1.21	127.85	1,799.6	-19.2	-19.8	-19.2	0.97	0.61	-53.00
1,900.0	2.53	125.40	1,899.6	-21.2	-17.2	-21.1	1.32	1.32	-2.45
2,000.0	3.31	128.69	1,999.4	-24.2	-13.2	-24.2	0.80	0.78	3.29
2,100.0	3.18	130.66	2,099.3	-27.9	-8.8	-27.8	0.17	-0.13	1.97
2,200.0	2.47	127.98	2,199.1	-31.0	-5.0	-31.0	0.72	-0.71	-2.68
2,300.0	2.33	128.22	2,299.1	-33.6	-1.7	-33.6	0.14	-0.14	0.24
2,400.0	2.01	125.28	2,399.0	-35.8	1.3	-35.8	0.34	-0.32	-2.94
2,500.0	1.90	125.97	2,498.9	-37.8	4.1	-37.8	0.11	-0.11	0.69
2,600.0	1.67	127.61	2,598.9	-39.7	6.6	-39.7	0.24	-0.23	1.64
2,700.0	1.24	121.14	2,698.8	-41.1	8.7	-41.2	0.46	-0.43	-6.47
2,800.0	1.24	124.47	2,798.8	-42.3	10.5	-42.3	0.07	0.00	3.33
2,900.0	1.12	129.48	2,898.8	-43.5	12.1	-43.6	0.16	-0.12	5.01
3,000.0	0.73	220.95	2,998.8	-44.7	12.5	-44.7	1.35	-0.39	91.47
3,100.0	1.04	139.55	3,098.8	-45.8	12.7	-45.9	1.18	0.31	-81.40
3,200.0	1.42	168.49	3,198.8	-47.7	13.5	-47.8	0.72	0.38	28.94
3,300.0	0.11	144.55	3,298.8	-49.0	13.8	-49.1	1.32	-1.31	-23.94
3,400.0	0.97	144.92	3,398.7	-49.8	14.3	-49.8	0.86	0.86	0.37
3,500.0	1.13	154.90	3,498.7	-51.4	15.2	-51.4	0.24	0.16	9.98
3,600.0	1.17	163.58	3,598.7	-53.2	15.9	-53.3	0.18	0.04	8.68
3,700.0	0.66	143.89	3,698.7	-54.7	16.6	-54.7	0.59	-0.51	-19.69
3,800.0	1.22	179.47	3,798.7	-56.2	16.9	-56.3	0.78	0.56	35.58
3,900.0	1.45	235.69	3,898.7	-58.0	15.9	-58.0	1.27	0.23	56.22
4,000.0	1.06	180.73	3,998.6	-59.6	14.8	-59.7	1.21	-0.39	-54.96
4,100.0	1.48	199.00	4,098.6	-61.8	14.4	-61.8	0.58	0.42	18.27
4,200.0	1.40	201.48	4,198.6	-64.1	13.5	-64.2	0.10	-0.08	2.48
4,300.0	1.34	256.45	4,298.6	-65.6	11.9	-65.6	1.27	-0.06	54.97
4,400.0	1.43	200.14	4,398.5	-67.0	10.4	-67.0	1.31	0.09	-56.31
4,500.0	1.62	200.03	4,498.5	-69.5	9.5	-69.5	0.19	0.19	-0.11
4,600.0	0.51	221.83	4,598.5	-71.2	8.7	-71.2	1.16	-1.11	21.80
4,700.0	0.52	235.54	4,698.5	-71.7	8.0	-71.8	0.12	0.01	13.71
4,800.0	0.73	174.37	4,798.5	-72.6	7.7	-72.7	0.66	0.21	-61.17
4,900.0	1.30	182.06	4,898.5	-74.4	7.7	-74.4	0.58	0.57	7.69
5,000.0	1.28	225.22	4,998.4	-76.3	6.9	-76.3	0.95	-0.02	43.16
5,100.0	1.23	216.30	5,098.4	-78.0	5.5	-78.0	0.20	-0.05	-8.92
5,200.0	1.05	176.51	5,198.4	-79.8	4.9	-79.8	0.79	-0.18	-39.79

DDC Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Hayhurst 23 PA State Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3081.0usft (Patterson UTI)
Site:	Sec 23, T25S, R27E	MD Reference:	WELL @ 3081.0usft (Patterson UTI)
Well:	Hayhurst 23 PA State 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)	
5,300.0	1.13	232.83	5,298.4	-81.3	4.2	-81.3	1.03	0.08	56.32	
5,400.0	0.61	152.83	5,398.4	-82.3	3.6	-82.3	1.19	-0.52	-80.00	
5,500.0	1.25	204.10	5,498.4	-83.8	3.4	-83.8	0.99	0.64	51.27	
5,600.0	1.47	258.11	5,598.3	-85.1	1.7	-85.1	1.25	0.22	54.01	
5,700.0	1.27	220.37	5,698.3	-86.2	-0.3	-86.2	0.91	-0.20	-37.74	
5,800.0	0.59	228.24	5,798.3	-87.4	-1.4	-87.4	0.69	-0.68	7.87	
5,900.0	1.54	261.63	5,898.3	-87.9	-3.1	-87.9	1.10	0.95	33.39	
6,000.0	2.77	314.37	5,998.2	-86.4	-6.1	-86.4	2.21	1.23	52.74	
6,100.0	1.10	312.47	6,098.1	-84.1	-8.6	-84.0	1.67	-1.67	-1.90	
6,200.0	2.07	275.00	6,198.1	-83.3	-11.1	-83.2	1.37	0.97	-37.47	
6,300.0	2.00	289.05	6,298.0	-82.5	-14.5	-82.5	0.50	-0.07	14.05	
6,400.0	1.83	288.26	6,398.0	-81.5	-17.7	-81.4	0.17	-0.17	-0.79	
6,500.0	1.88	303.74	6,497.9	-80.1	-20.6	-80.0	0.50	0.05	15.48	
6,600.0	2.31	242.16	6,597.9	-80.1	-23.7	-80.0	2.18	0.43	-61.58	
6,700.0	1.33	248.62	6,697.8	-81.4	-26.6	-81.4	1.00	-0.98	6.46	
6,800.0	3.65	221.78	6,797.7	-84.2	-29.8	-84.2	2.54	2.32	-26.84	
6,900.0	4.40	238.39	6,897.5	-88.6	-35.2	-88.5	1.38	0.75	16.61	
7,000.0	3.85	245.99	6,997.2	-92.0	-41.5	-91.9	0.77	-0.55	7.60	
Tie In @ 7050' MD / 7047' TVD										
7,050.0	3.11	262.48	7,047.1	-92.9	-44.4	-92.8	2.47	-1.48	32.98	
7,177.0	0.40	118.80	7,174.1	-93.5	-47.4	-93.4	2.71	-2.13	-113.13	
7,209.0	3.30	45.30	7,206.1	-92.9	-46.7	-92.8	10.03	9.06	-229.69	
7,241.0	6.10	23.70	7,238.0	-90.7	-45.3	-90.6	10.20	8.75	-67.50	
7,272.0	9.10	19.80	7,268.7	-86.9	-43.8	-86.8	9.81	9.68	-12.58	
7,304.0	12.40	15.60	7,300.1	-81.2	-42.0	-81.1	10.59	10.31	-13.13	
7,336.0	14.20	17.20	7,331.3	-74.2	-40.0	-74.1	5.74	5.63	5.00	
7,367.0	15.80	14.90	7,361.2	-66.5	-37.8	-66.4	5.51	5.16	-7.42	
7,399.0	19.20	11.40	7,391.7	-57.1	-35.6	-57.0	11.12	10.63	-10.94	
7,431.0	23.10	9.10	7,421.6	-45.7	-33.6	-45.6	12.46	12.19	-7.19	
7,463.0	27.20	8.40	7,450.5	-32.3	-31.5	-32.2	12.85	12.81	-2.19	
7,496.0	30.40	6.80	7,479.4	-16.5	-29.4	-16.5	9.97	9.70	-4.85	
7,527.0	33.60	5.20	7,505.7	-0.2	-27.7	-0.1	10.68	10.32	-5.16	
7,559.0	36.80	2.90	7,531.9	18.2	-26.4	18.3	10.82	10.00	-7.19	
7,591.0	40.30	2.00	7,556.9	38.1	-25.6	38.2	11.08	10.94	-2.81	
Crossed Hardline @ 7601.4' MD / 7564.7' TVD										
7,601.4	41.47	1.26	7,564.7	44.9	-25.4	45.0	12.17	11.25	-7.08	
7,622.0	43.80	359.90	7,579.9	58.9	-25.2	58.9	12.17	11.31	-6.62	
7,654.0	47.60	0.30	7,602.2	81.8	-25.2	81.8	11.91	11.88	1.25	
7,686.0	52.00	359.90	7,622.9	106.2	-25.2	106.3	13.78	13.75	-1.25	
7,717.0	55.60	358.00	7,641.2	131.2	-25.6	131.3	12.62	11.61	-6.13	
7,749.0	60.20	357.50	7,658.2	158.3	-26.7	158.4	14.44	14.38	-1.56	
7,781.0	62.90	357.80	7,673.4	186.4	-27.8	186.5	8.48	8.44	0.94	
7,813.0	65.50	357.10	7,687.4	215.2	-29.1	215.3	8.36	8.13	-2.19	
7,844.0	68.40	358.90	7,699.5	243.7	-30.1	243.8	10.77	9.35	5.81	

DDC Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Hayhurst 23 PA State Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3081.0usft (Patterson UTI)
Site:	Sec 23, T25S, R27E	MD Reference:	WELL @ 3081.0usft (Patterson UTI)
Well:	Hayhurst 23 PA State 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)
7,876.0	72.30	357.80	7,710.3	273.8	-31.0	273.9	12.61	12.19	-3.44
7,907.0	76.80	358.40	7,718.5	303.7	-32.0	303.7	14.64	14.52	1.94
7,939.0	79.50	359.00	7,725.1	335.0	-32.7	335.0	8.63	8.44	1.88
7,971.0	81.00	357.60	7,730.5	366.5	-33.6	366.6	6.37	4.69	-4.38
8,003.0	84.20	357.80	7,734.6	398.2	-34.9	398.3	10.02	10.00	0.63
8,035.0	87.50	357.60	7,736.9	430.1	-36.2	430.2	10.33	10.31	-0.63
8,043.0	88.50	358.70	7,737.2	438.1	-36.4	438.2	18.58	12.50	13.75
8,129.0	91.20	358.70	7,737.5	524.0	-38.4	524.1	3.14	3.14	0.00
8,192.0	87.80	0.10	7,738.0	587.0	-39.0	587.1	5.84	-5.40	2.22
8,286.0	88.00	0.50	7,741.4	681.0	-38.6	681.1	0.48	0.21	0.43
8,381.0	88.90	358.90	7,744.0	775.9	-39.0	776.0	1.93	0.95	-1.68
8,444.0	87.80	0.60	7,745.8	838.9	-39.3	839.0	3.21	-1.75	2.70
8,507.0	88.30	359.90	7,748.0	901.9	-39.0	901.9	1.36	0.79	-1.11
8,570.0	87.10	0.50	7,750.5	964.8	-38.8	964.9	2.13	-1.90	0.95
8,633.0	87.40	2.20	7,753.5	1,027.7	-37.3	1,027.8	2.74	0.48	2.70
8,696.0	87.80	1.30	7,756.2	1,090.6	-35.4	1,090.7	1.56	0.63	-1.43
8,759.0	88.20	1.90	7,758.4	1,153.6	-33.7	1,153.6	1.14	0.63	0.95
8,822.0	88.20	2.00	7,760.3	1,216.5	-31.5	1,216.6	0.16	0.00	0.16
8,885.0	88.60	2.20	7,762.1	1,279.4	-29.2	1,279.5	0.71	0.63	0.32
8,948.0	88.00	1.50	7,764.0	1,342.4	-27.2	1,342.4	1.46	-0.95	-1.11
9,011.0	88.40	1.50	7,765.9	1,405.3	-25.5	1,405.4	0.63	0.63	0.00
9,074.0	87.90	1.00	7,768.0	1,468.3	-24.2	1,468.3	1.12	-0.79	-0.79
9,168.0	87.90	0.50	7,771.4	1,562.2	-22.9	1,562.2	0.53	0.00	-0.53
9,263.0	87.90	358.90	7,774.9	1,657.1	-23.4	1,657.2	1.68	0.00	-1.68
9,357.0	88.70	358.50	7,777.7	1,751.1	-25.6	1,751.1	0.95	0.85	-0.43
9,452.0	87.80	358.40	7,780.6	1,846.0	-28.1	1,846.0	0.95	-0.95	-0.11
9,547.0	87.80	358.50	7,784.2	1,940.9	-30.7	1,940.9	0.11	0.00	0.11
9,642.0	89.50	357.50	7,786.5	2,035.8	-34.0	2,035.9	2.08	1.79	-1.05
9,736.0	91.50	359.90	7,785.7	2,129.7	-36.1	2,129.8	3.32	2.13	2.55
9,768.0	92.20	359.90	7,784.6	2,161.7	-36.2	2,161.8	2.19	2.19	0.00
9,800.0	90.50	359.90	7,783.9	2,193.7	-36.3	2,193.8	5.31	-5.31	0.00
9,831.0	88.60	0.10	7,784.1	2,224.7	-36.3	2,224.8	6.16	-6.13	0.65
9,894.0	86.30	1.30	7,786.9	2,287.6	-35.5	2,287.7	4.12	-3.65	1.90
9,957.0	86.70	1.20	7,790.8	2,350.5	-34.1	2,350.6	0.65	0.63	-0.16
10,021.0	86.70	359.60	7,794.5	2,414.4	-33.7	2,414.5	2.50	0.00	-2.50
10,084.0	88.10	0.10	7,797.3	2,477.3	-33.8	2,477.4	2.36	2.22	0.79
10,147.0	89.20	0.60	7,798.8	2,540.3	-33.4	2,540.4	1.92	1.75	0.79
10,210.0	89.80	0.60	7,799.3	2,603.3	-32.8	2,603.4	0.95	0.95	0.00
10,273.0	88.90	0.60	7,800.1	2,666.3	-32.1	2,666.4	1.43	-1.43	0.00
10,336.0	87.00	359.20	7,802.3	2,729.3	-32.2	2,729.3	3.75	-3.02	-2.22
10,431.0	89.90	359.80	7,804.9	2,824.2	-33.1	2,824.3	3.12	3.05	0.63
10,526.0	90.30	359.00	7,804.7	2,919.2	-34.1	2,919.3	0.94	0.42	-0.84
10,620.0	91.20	0.10	7,803.5	3,013.2	-34.8	3,013.3	1.51	0.96	1.17

DDC
Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Hayhurst 23 PA State Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3081.0usft (Patterson UTI)
Site:	Sec 23, T25S, R27E	MD Reference:	WELL @ 3081.0usft (Patterson UTI)
Well:	Hayhurst 23 PA State 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)	
10,683.0	91.60	359.60	7,801.9	3,076.2	-35.0	3,076.2	1.02	0.63	-0.79	
10,746.0	90.50	358.00	7,800.8	3,139.1	-36.3	3,139.2	3.08	-1.75	-2.54	
10,809.0	90.80	358.50	7,800.1	3,202.1	-38.2	3,202.2	0.93	0.48	0.79	
10,872.0	89.20	357.10	7,800.1	3,265.1	-40.6	3,265.1	3.37	-2.54	-2.22	
10,935.0	89.10	358.20	7,801.0	3,328.0	-43.2	3,328.1	1.75	-0.16	1.75	
10,998.0	89.60	358.00	7,801.7	3,391.0	-45.3	3,391.1	0.85	0.79	-0.32	
11,060.0	90.20	356.90	7,801.8	3,452.9	-48.1	3,453.0	2.02	0.97	-1.77	
11,123.0	90.00	359.20	7,801.7	3,515.8	-50.2	3,516.0	3.66	-0.32	3.65	
11,186.0	90.30	358.90	7,801.6	3,578.8	-51.2	3,579.0	0.67	0.48	-0.48	
11,248.0	89.80	1.90	7,801.5	3,640.8	-50.8	3,640.9	4.91	-0.81	4.84	
11,311.0	89.90	1.00	7,801.7	3,703.8	-49.2	3,703.9	1.44	0.16	-1.43	
11,374.0	90.70	1.20	7,801.3	3,766.8	-48.0	3,766.9	1.31	1.27	0.32	
11,470.0	89.80	2.60	7,800.9	3,862.7	-44.8	3,862.8	1.73	-0.94	1.46	
11,564.0	90.40	4.20	7,800.8	3,956.6	-39.3	3,956.7	1.82	0.64	1.70	
11,659.0	91.20	4.70	7,799.4	4,051.3	-31.9	4,051.3	0.99	0.84	0.53	
11,723.0	91.10	3.10	7,798.1	4,115.1	-27.5	4,115.2	2.50	-0.16	-2.50	
11,786.0	89.60	2.40	7,797.8	4,178.0	-24.5	4,178.1	2.63	-2.38	-1.11	
11,850.0	89.40	2.00	7,798.3	4,242.0	-22.0	4,242.0	0.70	-0.31	-0.63	
11,913.0	90.00	1.50	7,798.7	4,305.0	-20.1	4,305.0	1.24	0.95	-0.79	
11,976.0	91.10	359.60	7,798.0	4,367.9	-19.5	4,368.0	3.48	1.75	-3.02	
12,040.0	91.60	358.90	7,796.5	4,431.9	-20.4	4,432.0	1.34	0.78	-1.09	
12,103.0	90.40	357.80	7,795.4	4,494.9	-22.2	4,494.9	2.58	-1.90	-1.75	
12,166.0	87.70	358.70	7,796.5	4,557.8	-24.1	4,557.9	4.52	-4.29	1.43	
12,240.0	87.90	358.40	7,799.3	4,631.8	-26.0	4,631.8	0.49	0.27	-0.41	
TD @ 12290' MD / 7801.2' TVD										
12,290.0	87.90	358.40	7,801.2	4,681.7	-27.4	4,681.8	0.00	0.00	0.00	

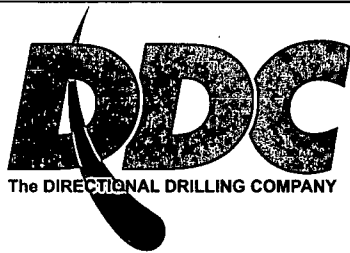
Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,050.0	7,047.1	-92.9	-44.4	Tie In @ 7050' MD / 7047' TVD
7,601.4	7,564.7	44.9	-25.4	Crossed Hardline @ 7601.4' MD / 7564.7' TVD
12,290.0	7,801.2	4,681.7	-27.4	TD @ 12290' MD / 7801.2' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: Mewbourne Oil Co
Hayhurst 23 PA State Com #1H
Eddy County, New Mexico
Rig: Patterson UTI
Created By: TIFFANI MIZELL
Date: 8/19/2013

Hayhurst 23 PA State Com #1H
Eddy County, New Mexico
Q130470 & WT-13555
Design #2

Mewbourne Oil Company



T G M Azimuths to Grid North
Correction: 7.49°
Magnetic Field
Strength: 48278.3snT
Dip Angle: 59.93°
Date: 7/11/2013
Model: IGRF2010

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

WELL DETAILS: Hayhurst 23 PA State Com #1H

Ground Level: 3961.0
Northing Easting Latitude Longitude
0.0 0.0 403333.47 555679.09 32° 6' 31.506 N 104° 9' 12.628 W

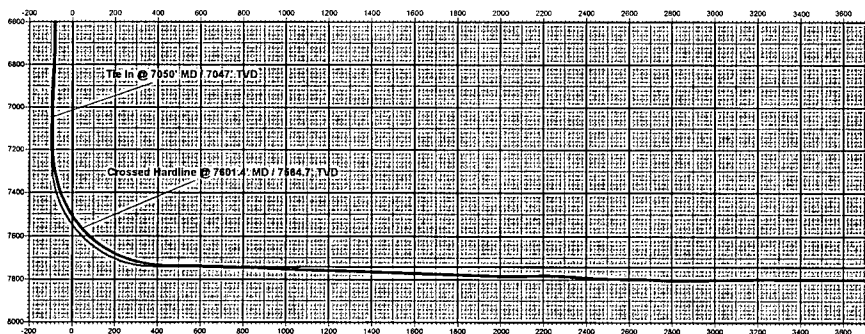
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - Hayhurst 23 PA State Com #1H	7741.0	4886.3	-11.1	468019.73	555668.03	32° 7' 17.886 N	104° 9' 12.668 W

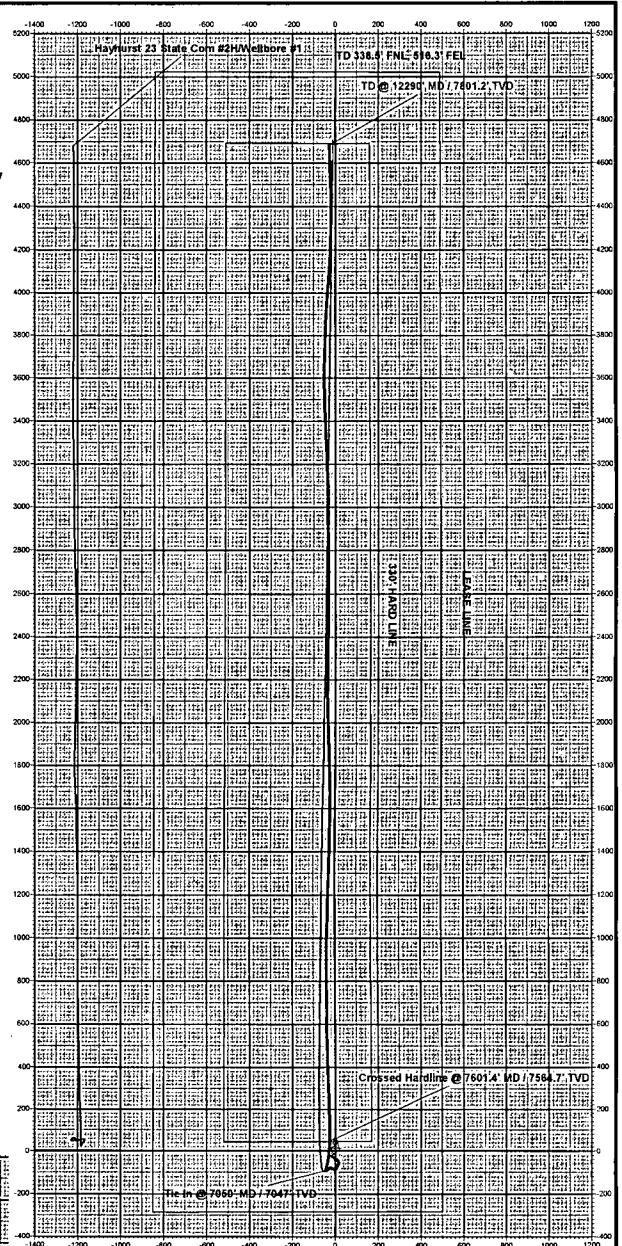
- plan hits target center

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
7050.0	3.11	262.48	7047.1	-92.9	-44.4	-92.8	180.8	Tie In @ 7050' MD / 7047' TVD
7601.4	41.47	1.26	7564.7	44.9	-25.4	45.0	326.2	Crossed Hardline @ 7601.4' MD / 7564.7' TVD
12290.0	87.90	358.40	7801.2	4881.7	-27.4	4681.8	4964.8	TD @ 12290' MD / 7801.2' TVD



Vertical Section at 359.86° (200 usf/in)



Operating Company Mewbourne
 Well Name & Number Hay Hurst 23 PA State Com #1H
 Sales Ticket Number 5731414
 Date 8/19/2013

Company Rep Gary Sutton
 Field Hay Hollow
 BOT Service Rep John Davis
 District Location Odessa, Texas, USA



	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse
Casing	7.000	26.00	P-110	6.276	6.151	LT&C	0.03826	8,050.00	9,960	6,230
Top Liner	4.500	13.50	338000	3.920	3.795	LT&C	0.01492	4,412.20	12,410	10,680
Bott Liner										

TVD	7,799.00	KOP	7,138.00	Open Hole	6.125	Casing Vol. (bbl)	300.3
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Carry Fluid Weight (ppg)	8.8	Propant Content (ppa)		Max Drill Out Size	0
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	Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press.	Max Rate (BPM)	Displ. (BBL)
Liner Top	1	10292414	JR Setting Sleeve_RH Profile	7848.76						

Zone Length										
		JR Sleeve_S3 Hyd Set Packer	7848.76	9.50	5.813	3.875				
		4-1/2-13.5 LTC Nipple	7858.26	6.76	5.000	3.920				
		8 Joints of 4-1/2-13.5 LTC Casing	7865.02	308.73	5.000	3.920				
20		3.625 EX Frac Sleeve	8173.75	2.40	5.750		3.525	2286	303	305
407.4		2 Joint of 4-1/2-13.5 LTC Casing	8176.15	76.10	5.000	3.920				
		Baker Open Hole Packer	8252.25	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	8256.14	75.44	5.000	3.920				
19		3.500 EX Frac Sleeve	8331.58	2.40	5.750		3.400	2286	282	308
238.9		4 Joint of 4-1/2-13.5 LTC Casing	8333.98	153.30	5.000	3.920				
		Baker Open Hole Packer	8487.28	3.89	5.820	3.875		2154		
		3 Joints of 4-1/2-13.5 LTC Casing	8491.17	114.52	5.000	3.920				
18		3.375 EX Frac Sleeve	8605.69	2.40	5.750		3.275	2286	262	312
240.4		3 Joint of 4-1/2-13.5 LTC Casing	8608.09	115.74	5.000	3.920				
		Baker Open Hole Packer	8723.83	3.89	5.820	3.875		2154		
		3 Joints of 4-1/2-13.5 LTC Casing	8727.72	115.74	5.000	3.920				
17		3.250 EX Frac Sleeve	8843.46	2.40	5.750		3.150	2286	242	315
279.4		4 Joint of 4-1/2-13.5 LTC Casing	8845.86	153.44	5.000	3.920				
		Baker Open Hole Packer	8999.30	3.89	5.820	3.875		2154		
		3 Joints of 4-1/2-13.5 LTC Casing	9003.19	114.30	5.000	3.920				
16		3.125 EX Frac Sleeve	9117.49	2.40	5.750		3.025	2286	223	319
239.8		3 Joints of 4-1/2-13.5 LTC Casing	9119.89	115.34	5.000	3.920				
		Baker Open Hole Packer	9235.23	3.89	5.820	3.875		2154		

Operating Company Mewbourne
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 Sales Ticket Number 5731414
 Date 8/19/2013

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	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse
Casing	7.000	26.00	P-110	6.276	6.151	LT&C	0.03826	8,050.00	9,960	6,230
Top Liner	4.500	13.50	338000	3.920	3.795	LT&C	0.01492	4,412.20	12,410	10,680
Bott Liner										
TVD		7,799.00	KOP		7,138.00	Open Hole		6.125	Casing Vol. (bbl)	300.3
Carry Fluid Weight (ppg)		8.8	Propant Content (ppa)					Max Drill Out Size		0

	Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press.	Max Rate (BPM)	Displ. (BBL)
15 241.5		3 Joints of 4-1/2-13.5 LTC Casing	9239.12	115.67	5.000	3.920				
		3.000 EX Frac sleeve	9354.79	2.40	5.750		2.900	2286	205	323
		3 Joint of 4-1/2-13.5 LTC Casing	9357.19	115.67	5.000	3.920				
14 163.9		Baker Open Hole Packer	9472.86	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	9476.75	76.60	5.000	3.920				
		2.875 EX Frac Sleeve	9553.35	2.40	5.750		2.775	2286	188	326
13 201.7		2 Joints of 4-1/2-13.5 LTC Casing	9555.75	77.10	5.000	3.920				
		Baker Open Hole Packer	9632.85	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	9636.74	76.93	5.000	3.920				
12 201.7		2.750 EX Frac Sleeve	9713.67	2.40	5.750		2.650	2286	171	328
		3 Joint of 4-1/2-13.5 LTC Casing	9716.07	114.61	5.000	3.920				
		Baker Open Hole Packer	9830.68	3.89	5.820	3.875		2154		
11 203		2 Joints of 4-1/2-13.5 LTC Casing	9834.57	77.11	5.000	3.920				
		2.625 EX Frac Sleeve	9911.68	2.40	5.750		2.525	2286	155	331
		3 Joints of 4-1/2-13.5 LTC Casing	9914.08	114.36	5.000	3.920				
10 200.5		Baker Open Hole Packer	10028.44	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	10032.33	76.96	5.000	3.920				
		2.500 EX Frac Sleeve	10109.29	2.40	5.750		2.400	2286	140	334
9		3 Joint of 4-1/2-13.5 LTC Casing	10111.69	115.82	5.000	3.920				
		Baker Open Hole Packer	10227.51	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	10231.40	76.58	5.000	3.920				
		2.375 EX Frac Sleeve	10307.98	2.40	5.750		2.275	2286	126	337
		3 Joints of 4-1/2-13.5 LTC Casing	10310.38	113.71	5.000	3.920				
		Baker Open Hole Packer	10424.09	3.89	5.820	3.875		2154		
		2 Joint of 4-1/2-13.5 LTC Casing	10427.98	77.17	5.000	3.920				
		2.250 EX Frac Sleeve	10505.15	2.40	5.750		2.150	2286	113	340

Operating Company Mewbourne
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 Field Hay Hollow
 BOT Service Rep John Davis
 District Location Odessa, Texas, USA



	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse		
Casing	7.000	26.00	P-110	6.276	6.151	LT&C	0.03826	8,050.00	9,960	6,230		
Top Liner	4.500	13.50	338000	3.920	3.795	LT&C	0.01492	4,412.20	12,410	10,680		
Bott Liner												
TVD		7,799.00		KOP		7,138.00		Open Hole		6.125	Casing Vol. (bbl)	300.3
Carry Fluid Weight (ppg)			8.8		Propant Content (ppa)				Max Drill Out Size		0	

	Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press.	Max Rate (BPM)	Displ. (BBL)
203		3 Joints of 4-1/2-13.5 LTC Casing	10507.55	115.69	5.000	3.920				
		Baker Open Hole Packer	10623.24	3.89	5.820	3.875		2154		
		2 Joint of 4-1/2-13.5 LTC Casing	10627.13	76.96	5.000	3.920				
8		2.125 EX Frac Sleeve	10704.09	2.40	5.750		2.025	2286	100	343
202.4		3 Joints of 4-1/2-13.5 LTC Casing	10706.49	115.29	5.000	3.920				
		Baker Open Hole Packer	10821.78	3.89	5.820	3.875		2154		
		3 Joint of 4-1/2-13.5 LTC Casing	10825.67	114.78	5.000	3.920				
7		2.000 EX Frac Sleeve	10940.45	2.40	5.750		1.900	2286	88	346
240.9		3 Joints of 4-1/2-13.5 LTC Casing	10942.85	115.89	5.000	3.920				
		Baker Open Hole Packer	11058.74	3.89	5.820	3.875		2154		
		3 Joint of 4-1/2-13.5 LTC Casing	11062.63	115.69	5.000	3.920				
6		1.875 EX Frac Sleeve	11178.32	2.40	5.750		1.775	2286	77	350
241.6		3 Joints of 4-1/2-13.5 LTC Casing	11180.72	115.70	5.000	3.920				
		Baker Open Hole Packer	11296.42	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	11300.31	77.13	5.000	3.920				
5		1.750 EX Frac Sleeve	11377.44	2.40	5.750		1.650	2286	66	353
202.8		3 Joint of 4-1/2-13.5 LTC Casing	11379.84	115.51	5.000	3.920				
		Baker Open Hole Packer	11495.35	3.89	5.820	3.875		2154		
		3 Joints of 4-1/2-13.5 LTC Casing	11499.24	115.72	5.000	3.920				
4		1.625 EX Frac Sleeve	11614.96	2.40	5.750		1.525	2286	57	356
240.6		3 Joints of 4-1/2-13.5 LTC Casing	11617.36	114.68	5.000	3.920				
		Baker Open Hole Packer	11732.04	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC Casing	11735.93	77.10	5.000	3.920				
3		1.500 DBL Ball Frac Sleeve	11813.03	2.40	5.750		1.400	2286	48	359
203		3 Joint of 4-1/2-13.5 LTC Casing	11815.43	115.69	5.000	3.920				
		Baker Open Hole Packer	11931.12	3.89	5.820	3.875		2154		

Company Rep	Gary Sutton
Field	Hay Hollow
BOT Service Rep	John Davis



Date 8/19/2013

District Location Odessa, Texas, USA

[illegible]

TVD	7,799.00	KOP	7,138.00	Open Hole	6.125	Casing Vol. (bbl)	300.3
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Carry Fluid Weight (ppg)	8.8	Propant Content (ppa)		Max Drill Out Size	0
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