



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

30-015-42298

Company: Occidental Permian Ltd. Date: 7/7/2014 Time: 10:30:54 Page: 1
 Field: Eddy Co, NM (Nad 27) Co-ordinate(NE) Reference: Well: FNR 35 Fed #3H, Grid North
 Site: FNR 35 Fed #3H Vertical (TVD) Reference: SITE 3461.3
 Well: FNR 35 Fed #3H Section (VS) Reference: Well (0.00N,0.00E,91.07Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Start Date:

Company: Engineer:
 Tool: Tied-to:

Site: FNR 35 Fed #3H

Site Position: Northing: 458662.50 ft Latitude: 32 15 36.318 N
 From: Map Easting: 646715.00 ft Longitude: 103 51 31.352 W
 Position Uncertainty: 0.00 ft North Reference: Grid
 Ground Level: 3436.30 ft Grid Convergence: 0.25 deg

Well: FNR 35 Fed #3H Slot Name:

Well Position: +N/-S 0.00 ft Northing: 458662.50 ft Latitude: 32 15 36.318 N
 +E/-W 0.00 ft Easting: 646715.00 ft Longitude: 103 51 31.352 W
 Position Uncertainty: 0.00 ft

Wellpath: 1 Drilled From: Surface
 Current Datum: SITE Height 3461.30 ft Tie-on Depth: 0.00 ft
 Magnetic Data: 4/29/2014 Above System Datum: Mean Sea Level
 Field Strength: 48345 nT Declination: 7.37 deg
 Vertical Section: Depth From (TVD) +N/-S +E/-W Mag Dip Angle: 60.10 deg
 ft ft ft deg
 0.00 0.00 0.00 91.07

Survey Program for Definitive Wellpath

Date: 7/7/2014 Validated: No Version: 0
 Actual From To Survey Toolcode Tool Name

0.00 500.00 Gyro MS (0.00-500.00) NS-GYRO-MS North sensing gyrocompassing m
 500.00 12038.00 WFT MWD (500.00-12038.00) MWD MWD - Standard

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	458662.50	646715.00	
100.00	0.33	178.38	100.00	-0.29	0.01	0.33	0.01	458662.21	646715.01	
200.00	0.72	162.40	200.00	-1.17	0.21	0.41	0.23	458661.33	646715.21	
300.00	1.06	154.02	299.98	-2.61	0.80	0.36	0.85	458659.89	646715.80	
400.00	1.19	149.87	399.96	-4.33	1.73	0.15	1.81	458658.17	646716.73	
500.00	1.10	170.70	499.94	-6.18	2.40	0.42	2.52	458656.32	646717.40	TieOn Gyro MS
596.00	1.11	353.47	595.94	-6.17	2.45	2.30	2.56	458656.33	646717.45	First WFT MWD
688.00	1.13	349.00	687.92	-4.39	2.17	0.10	2.25	458658.11	646717.17	
780.00	1.34	351.60	779.90	-2.44	1.84	0.24	1.89	458660.06	646716.84	
873.00	1.23	350.35	872.88	-0.38	1.52	0.12	1.52	458662.12	646716.52	
965.00	1.05	354.30	964.86	1.44	1.27	0.21	1.24	458663.94	646716.27	
1060.00	0.76	2.28	1059.85	2.93	1.21	0.33	1.15	458665.43	646716.21	
1154.00	0.58	7.73	1153.84	4.03	1.29	0.20	1.22	458666.53	646716.29	
1249.00	0.47	12.47	1248.84	4.88	1.44	0.12	1.35	458667.38	646716.44	
1343.00	0.44	11.59	1342.83	5.61	1.60	0.03	1.49	458668.11	646716.60	
1438.00	0.41	5.59	1437.83	6.31	1.71	0.06	1.59	458668.81	646716.71	
1533.00	0.25	2.57	1532.83	6.85	1.75	0.17	1.62	458669.35	646716.75	
1627.00	0.10	315.62	1626.83	7.12	1.70	0.21	1.57	458669.62	646716.70	
1722.00	0.16	251.99	1721.83	7.14	1.52	0.15	1.38	458669.64	646716.52	
1816.00	0.21	223.31	1815.83	6.97	1.27	0.11	1.14	458669.47	646716.27	
1911.00	0.21	231.67	1910.83	6.74	1.02	0.03	0.89	458669.24	646716.02	
2005.00	0.16	201.18	2004.83	6.51	0.83	0.12	0.71	458669.01	646715.83	
2099.00	0.20	212.27	2098.83	6.25	0.70	0.06	0.58	458668.75	646715.70	
2193.00	0.16	217.69	2192.82	6.00	0.53	0.05	0.42	458668.50	646715.53	



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 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
2383.00	0.16	203.50	2382.82	5.55	0.26	0.02	0.16	458668.05	646715.26	
2478.00	0.20	166.35	2477.82	5.27	0.25	0.13	0.15	458667.77	646715.25	
2573.00	0.07	153.83	2572.82	5.05	0.31	0.14	0.22	458667.55	646715.31	
2667.00	0.10	252.76	2666.82	4.98	0.26	0.14	0.17	458667.48	646715.26	
2762.00	0.20	287.98	2761.82	5.00	0.02	0.14	-0.07	458667.50	646715.02	
2856.00	0.22	294.78	2855.82	5.13	-0.30	0.03	-0.39	458667.63	646714.70	
2951.00	0.14	286.40	2950.82	5.24	-0.57	0.09	-0.67	458667.74	646714.43	
3046.00	0.20	309.67	3045.82	5.38	-0.81	0.10	-0.91	458667.88	646714.19	
3141.00	0.25	45.73	3140.82	5.63	-0.79	0.35	-0.90	458668.13	646714.21	
3236.00	0.72	85.61	3235.82	5.82	-0.05	0.58	-0.16	458668.32	646714.95	
3330.00	1.11	101.72	3329.81	5.68	1.43	0.49	1.33	458668.18	646716.43	
3425.00	1.19	110.66	3424.79	5.15	3.26	0.21	3.16	458667.65	646718.26	
3520.00	1.26	124.75	3519.76	4.20	5.04	0.32	4.96	458666.70	646720.04	
3614.00	1.67	135.70	3613.73	2.63	6.84	0.53	6.79	458665.13	646721.84	
3709.00	1.50	149.51	3708.70	0.57	8.44	0.44	8.43	458663.07	646723.44	
3803.00	1.60	155.38	3802.66	-1.68	9.61	0.20	9.64	458660.82	646724.61	
3898.00	1.56	157.25	3897.63	-4.08	10.67	0.07	10.74	458658.42	646725.67	
4051.00	1.44	162.95	4050.58	-7.84	12.03	0.13	12.18	458654.66	646727.03	
4146.00	0.70	71.81	4145.56	-8.80	12.94	1.70	13.10	458653.70	646727.94	
4241.00	0.97	45.73	4240.55	-8.06	14.06	0.48	14.21	458654.44	646729.06	
4335.00	1.19	41.69	4334.54	-6.77	15.28	0.25	15.41	458655.73	646730.28	
4430.00	1.42	303.47	4429.52	-5.39	14.96	2.08	15.05	458657.11	646729.96	
4525.00	1.57	291.78	4524.49	-4.26	12.77	0.36	12.84	458658.24	646727.77	
4619.00	1.93	295.02	4618.45	-3.11	10.14	0.40	10.19	458659.39	646725.14	
4714.00	1.97	290.18	4713.39	-1.87	7.15	0.18	7.19	458660.63	646722.15	
4809.00	1.65	324.53	4808.35	-0.19	4.83	1.17	4.83	458662.31	646719.83	
4903.00	1.19	10.04	4902.32	1.87	4.21	1.25	4.18	458664.37	646719.21	
4998.00	1.39	21.16	4997.29	3.92	4.80	0.34	4.73	458666.42	646719.80	
5092.00	0.98	27.69	5091.27	5.69	5.58	0.46	5.48	458668.19	646720.58	
5187.00	1.12	21.21	5186.26	7.28	6.30	0.19	6.16	458669.78	646721.30	
5281.00	1.16	25.33	5280.24	8.99	7.04	0.10	6.87	458671.49	646722.04	
5376.00	1.22	19.35	5375.22	10.82	7.78	0.15	7.58	458673.32	646722.78	
5471.00	1.13	20.06	5470.20	12.65	8.44	0.10	8.20	458675.15	646723.44	
5565.00	0.20	91.37	5564.19	13.52	8.92	1.15	8.67	458676.02	646723.92	
5660.00	0.25	157.82	5659.19	13.32	9.17	0.26	8.92	458675.82	646724.17	
5754.00	0.45	137.68	5753.19	12.86	9.49	0.25	9.25	458675.36	646724.49	
5849.00	0.53	150.74	5848.19	12.20	9.96	0.14	9.73	458674.70	646724.96	
5944.00	0.70	142.82	5943.18	11.36	10.52	0.20	10.31	458673.86	646725.52	
6039.00	0.73	164.79	6038.17	10.31	11.03	0.29	10.84	458672.81	646726.03	
6133.00	0.71	182.26	6132.17	9.15	11.17	0.23	11.00	458671.65	646726.17	
6228.00	0.99	171.88	6227.16	7.75	11.26	0.34	11.11	458670.25	646726.26	
6322.00	1.14	177.74	6321.14	6.01	11.41	0.20	11.30	458668.51	646726.41	
6417.00	1.14	189.82	6416.12	4.14	11.29	0.25	11.21	458666.64	646726.29	
6512.00	0.97	201.84	6511.11	2.46	10.83	0.29	10.78	458664.96	646725.83	
6606.00	0.82	209.34	6605.09	1.13	10.20	0.20	10.18	458663.63	646725.20	
6701.00	0.86	215.95	6700.08	-0.04	9.45	0.11	9.45	458662.46	646724.45	
6795.00	0.85	213.68	6794.07	-1.19	8.65	0.04	8.67	458661.31	646723.65	
6890.00	0.80	200.11	6889.06	-2.40	8.03	0.21	8.07	458660.10	646723.03	
6922.00	1.05	192.85	6921.06	-2.89	7.89	0.86	7.94	458659.61	646722.89	
6985.00	2.17	101.11	6984.04	-3.69	8.93	3.87	9.00	458658.81	646723.93	
7016.00	4.90	90.04	7014.98	-3.80	10.83	9.04	10.90	458658.70	646725.83	
7048.00	7.23	88.74	7046.80	-3.76	14.21	7.29	14.28	458658.74	646729.21	



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Field: Eddy Co, NM (Nad 27)
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Wellpath: 1

Date: 7/7/2014 Time: 10:30:54 Page: 3
Co-ordinate(NE) Reference: Well: FNR 35 Fed #3H, Grid North
Vertical (TVD) Reference: SITE 3461.3
Section (VS) Reference: Well (0.00N,0.00E,91.07Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
7079.00	9.97	84.43	7077.45	-3.45	18.83	9.07	18.89	458659.05	646733.83	
7111.00	12.62	82.33	7108.82	-2.72	25.06	8.38	25.10	458659.78	646740.06	
7142.00	15.50	82.57	7138.89	-1.73	32.52	9.29	32.55	458660.77	646747.52	
7174.00	18.20	83.00	7169.52	-0.57	41.72	8.45	41.73	458661.93	646756.72	
7206.00	20.96	84.17	7199.66	0.62	52.38	8.71	52.36	458663.12	646767.38	
7237.00	24.04	84.29	7228.30	1.81	64.18	9.94	64.14	458664.31	646779.18	
7269.00	26.75	84.67	7257.21	3.13	77.84	8.48	77.77	458665.63	646792.84	
7300.00	29.49	86.63	7284.54	4.23	92.41	9.33	92.31	458666.73	646807.41	
7332.00	31.56	90.10	7312.11	4.68	108.65	8.49	108.54	458667.18	646823.65	
7363.00	34.21	92.44	7338.14	4.29	125.47	9.48	125.37	458666.79	646840.47	
7395.00	37.19	94.48	7364.13	3.15	144.10	10.03	144.02	458665.65	646859.10	
7426.00	39.77	93.89	7388.39	1.75	163.34	8.41	163.28	458664.25	646878.34	
7458.00	42.32	92.15	7412.52	0.65	184.32	8.73	184.28	458663.15	646899.32	
7489.00	44.40	91.07	7435.06	0.06	205.59	7.12	205.56	458662.56	646920.59	
7521.00	46.63	90.61	7457.48	-0.28	228.42	7.04	228.39	458662.22	646943.42	
7552.00	49.18	89.83	7478.26	-0.36	251.42	8.43	251.38	458662.14	646966.42	
7584.00	51.78	89.59	7498.63	-0.24	276.10	8.15	276.06	458662.26	646991.10	
7615.00	53.29	90.13	7517.48	-0.18	300.71	5.06	300.66	458662.32	647015.71	
7647.00	54.62	90.72	7536.31	-0.37	326.58	4.42	326.53	458662.13	647041.58	
7678.00	56.21	91.41	7553.91	-0.85	352.10	5.45	352.05	458661.65	647067.10	
7710.00	58.08	91.25	7571.27	-1.47	378.97	5.86	378.93	458661.03	647093.97	
7741.00	58.39	91.22	7587.59	-2.04	405.32	1.00	405.29	458660.46	647120.32	
7773.00	59.63	90.50	7604.06	-2.45	432.75	4.33	432.72	458660.05	647147.75	
7804.00	60.97	89.64	7619.42	-2.48	459.67	4.95	459.64	458660.02	647174.67	
7836.00	62.13	89.54	7634.67	-2.28	487.81	3.64	487.77	458660.22	647202.81	
7867.00	62.91	89.53	7648.97	-2.05	515.31	2.52	515.26	458660.45	647230.31	
7899.00	63.32	89.51	7663.44	-1.82	543.85	1.28	543.79	458660.68	647258.85	
7931.00	64.12	89.78	7677.61	-1.64	572.54	2.61	572.47	458660.86	647287.54	
7962.00	65.05	90.43	7690.91	-1.69	600.54	3.55	600.47	458660.81	647315.54	
7994.00	66.87	90.86	7703.95	-2.02	629.76	5.82	629.69	458660.48	647344.76	
8025.00	68.30	91.23	7715.77	-2.54	658.41	4.74	658.35	458659.96	647373.41	
8057.00	69.57	91.72	7727.27	-3.31	688.27	4.22	688.21	458659.19	647403.27	
8088.00	72.46	91.68	7737.35	-4.18	717.56	9.32	717.52	458658.32	647432.56	
8120.00	74.78	91.85	7746.38	-5.13	748.25	7.27	748.21	458657.37	647463.25	
8151.00	77.74	91.91	7753.74	-6.12	778.34	9.55	778.32	458656.38	647493.34	
8183.00	80.09	91.54	7759.89	-7.06	809.73	7.43	809.72	458655.44	647524.73	
8211.00	82.92	91.51	7764.03	-7.80	837.41	10.11	837.41	458654.70	647552.41	
8337.00	87.06	91.31	7775.03	-10.88	962.86	3.29	962.90	458651.62	647677.86	
8400.00	89.93	89.95	7776.68	-11.58	1025.83	5.04	1025.87	458650.92	647740.83	
8495.00	89.51	88.68	7777.15	-10.44	1120.82	1.41	1120.82	458652.06	647835.82	
8589.00	89.79	88.68	7777.72	-8.28	1214.79	0.30	1214.73	458654.22	647929.79	
8684.00	91.26	91.30	7776.85	-8.26	1309.78	3.16	1309.70	458654.24	648024.78	
8778.00	88.53	90.24	7777.02	-9.52	1403.76	3.12	1403.69	458652.98	648118.76	
8873.00	90.00	91.51	7778.24	-10.97	1498.73	2.04	1498.68	458651.53	648213.73	
8967.00	89.44	91.33	7778.70	-13.30	1592.70	0.63	1592.67	458649.20	648307.70	
9061.00	91.12	92.53	7778.24	-16.47	1686.64	2.20	1686.66	458646.03	648401.64	
9156.00	86.29	91.65	7780.39	-19.93	1781.53	5.17	1781.59	458642.57	648496.53	
9250.00	86.92	91.89	7785.96	-22.83	1875.32	0.72	1875.42	458639.67	648590.32	
9345.00	89.30	92.92	7789.09	-26.81	1970.17	2.73	1970.33	458635.69	648685.17	
9440.00	87.41	92.05	7791.82	-30.93	2065.04	2.19	2065.26	458631.57	648780.04	
9534.00	86.57	92.01	7796.75	-34.26	2158.85	0.89	2159.11	458628.24	648873.85	
9628.00	86.36	90.55	7802.55	-36.35	2252.65	1.57	2252.93	458626.15	648967.65	
9723.00	87.83	90.31	7807.36	-37.06	2347.52	1.57	2347.80	458625.44	649062.52	



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Well: FNR 35 Fed #3H
Wellpath: 1

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9818.00	91.33	89.84	7808.06	-37.19	2442.50	3.72	2442.77	458625.31	649157.50	
9914.00	89.86	88.91	7807.06	-36.14	2538.49	1.81	2538.72	458626.36	649253.49	
10008.00	90.98	90.46	7806.37	-35.62	2632.48	2.03	2632.68	458626.88	649347.48	
10104.00	89.93	90.96	7805.61	-36.81	2728.47	1.21	2728.68	458625.69	649443.47	
10199.00	88.81	91.09	7806.65	-38.51	2823.44	1.19	2823.67	458623.99	649538.44	
10295.00	90.70	91.12	7807.06	-40.36	2919.42	1.97	2919.67	458622.14	649634.42	
10390.00	87.55	90.11	7808.52	-41.38	3014.39	3.48	3014.64	458621.12	649729.39	
10484.00	89.09	89.77	7811.27	-41.29	3108.35	1.68	3108.58	458621.21	649823.35	
10578.00	89.65	88.11	7812.30	-39.55	3202.32	1.86	3202.50	458622.95	649917.32	
10672.00	89.93	88.46	7812.65	-36.73	3296.28	0.48	3296.39	458625.77	650011.28	
10765.00	89.86	90.26	7812.82	-35.69	3389.27	1.94	3389.35	458626.81	650104.27	
10861.00	93.15	89.47	7810.30	-35.47	3485.22	3.52	3485.28	458627.03	650200.22	
10955.00	93.36	88.92	7804.96	-34.15	3579.06	0.63	3579.08	458628.35	650294.06	
11050.00	89.23	90.69	7802.81	-33.83	3674.01	4.73	3674.00	458628.67	650389.01	
11144.00	90.77	91.49	7802.81	-35.62	3767.99	1.85	3768.00	458626.88	650482.99	
11239.00	90.21	90.97	7802.00	-37.66	3862.96	0.80	3863.00	458624.84	650577.96	
11334.00	90.70	92.25	7801.25	-40.32	3957.92	1.44	3957.99	458622.18	650672.92	
11428.00	89.30	91.90	7801.25	-43.73	4051.86	1.54	4051.97	458618.77	650766.86	
11523.00	90.35	92.39	7801.54	-47.28	4146.79	1.22	4146.95	458615.22	650861.79	
11617.00	90.42	93.11	7800.91	-51.79	4240.68	0.77	4240.91	458610.71	650955.68	
11712.00	89.23	95.01	7801.20	-58.52	4335.43	2.36	4335.77	458603.98	651050.43	
11806.00	85.94	94.77	7805.16	-66.52	4428.99	3.51	4429.47	458595.98	651143.99	
11900.00	85.86	95.07	7811.88	-74.57	4522.41	0.33	4523.01	458587.93	651237.41	
11963.00	86.22	95.11	7816.23	-80.14	4585.01	0.57	4585.71	458582.36	651300.01	Last WFT MWD
12038.00	86.22	95.11	7821.17	-86.81	4659.55	0.00	4660.36	458575.69	651374.55	Proj to Bit

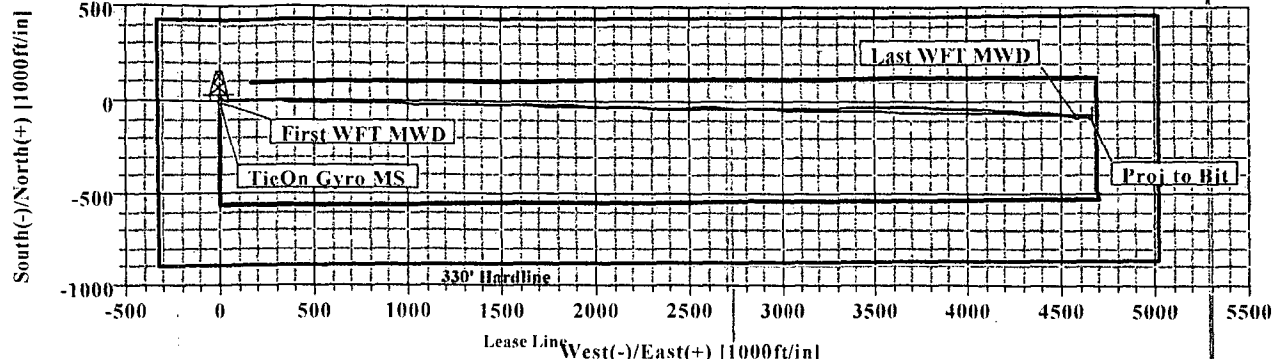
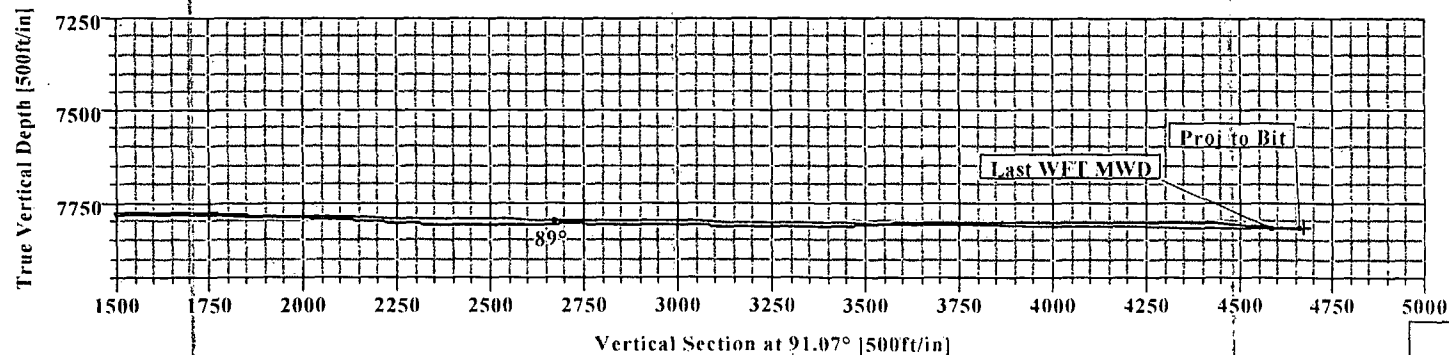
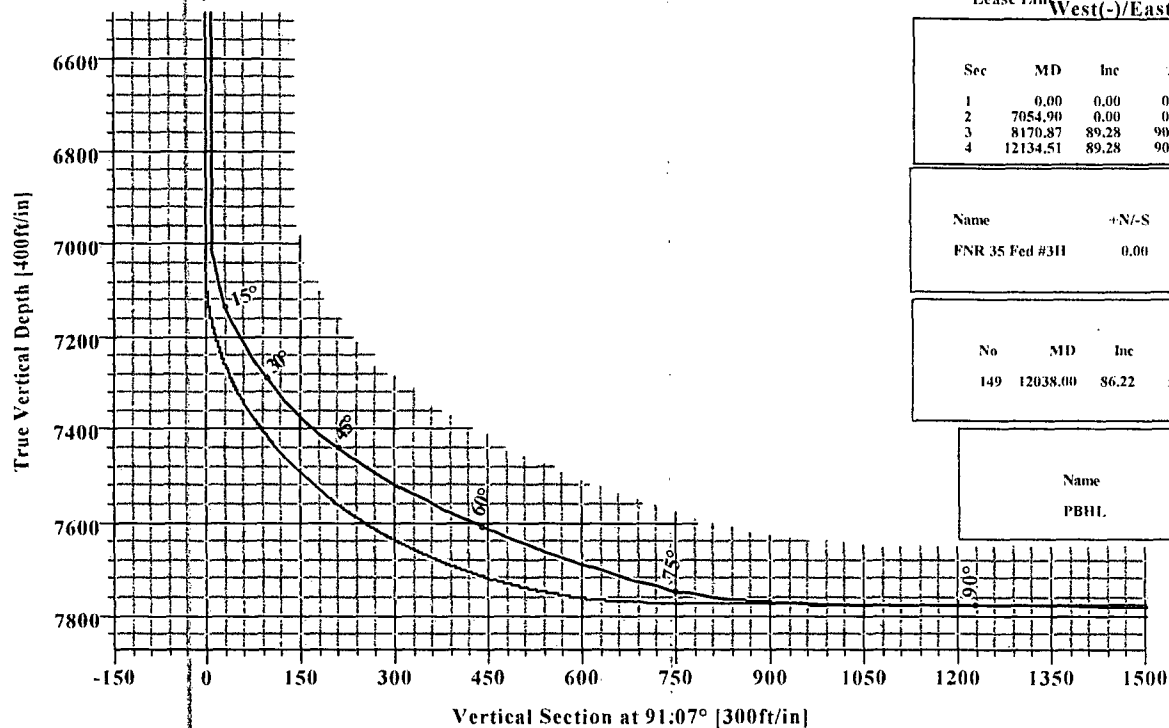
Annotation

MD ft	TVD ft	
500.00	499.94	TieOn Gyro MS
596.00	595.94	First WFT MWD
11963.00	7816.23	Last WFT MWD
12038.00	7821.17	Proj to Bit



FNR 35 Fed #3H
Eddy Co, NM

KB ELEV: 3434.00
GL ELEV: 3409.80



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	7054.90	0.00	0.00	7054.90	0.00	0.00	0.00	0.00	0.00	
3	8170.87	89.28	90.91	7771.04	-11.23	707.08	8.00	90.91	707.17	
4	12134.51	89.28	90.91	7821.00	-74.20	4669.90	0.00	0.00	4670.47	PBHL

WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FNR 35 Fed #3H	0.00	0.00	458662.50	646715.00	32°15'36.318N	103°51'31.352W

Survey: WFT MWD (FNR 35 Fed #3H/1)										
No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
149	12038.00	86.22	95.11	7821.17	-86.81	4659.55	0.00	0.00	4660.36	

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	7821.00	-74.20	4669.90	458588.30	651384.90	Point

SITE DETAILS	
FNR 35 Fed #3H	
Site Centre Northing:	458662.50
Easting:	646715.00
Ground Level:	3436.30
Positional Uncertainty:	0.00
Convergence:	0.25



Weatherford®

Survey: WFT MWD (FNR 35 Fed #3H/1)
Created By: Patrick Rudolph
Date: 7/7/2014