

Results of Directional Survey

API number:	30-025-41004		
OGRID:		Operator:	MANZANO LLC
		Property:	BROKEN SPOKE 2 STATE # 1H

surface	ULSTR:	O	02	T 14S	R 38E
				220 FSL	330 FEL

BH Loc	ULSTR:	B	02	T 14S	R 38E
9814	MD	5353.1	TVD	338 FNL	409 FEL
				4942 FSL	

Top Perf/OH	ULSTR:	O	02	T 14S	R 38E
5400	MD	5280.2	TVD	541 FSL	381 FEL

Bot Perf/OH	ULSTR:	B	02	T 14S	R 38E
9677	MD	5352.1	TVD	475 FNL	410 FEL
				4805 FSL	

	MD	N/S	E/W	VD
	5383	305.96	-50.62	5272.23
TOP PERFS/OH	5400	320.97	-51.08	5280.20
	5415	334.21	-51.49	5287.23
	9597	4505.42	-80.96	5351.53
BOT PERFS/OH	9677	4585.42	-80.30	5352.10
	9692	4600.42	-80.18	5352.21

NEXT TO LAST	9755	4663.41	-79.32	5352.67
LAST READING	9814	4722.41	-78.79	5353.11
TD	9814	4722.41	-78.79	5353.11

Surface Location	220	FS	330	FE
Projected BHL	4942	FS	409	FE
Location of				
Top Perfs/OH	541	FS	381	FE
Bottom Perfs/OH	4805	FS	410	FE

SUMMARY of Subsurface Locations

Surface Location	O-02-14S-38E	220	FS	330	FE	Vert. Depth
Top Perfs/OH	O-02-14S-38E	541	FS	381	FE	5280.20
Bottom Perfs/OH	B-02-14S-38E	4805	FS	410	FE	5352.10
Projected TD	B-02-14S-38E	4942	FS	409	FE	5353.11

AUG 22 2014

.MANZANO BROKEN SPOKE 2 STATE #1 SVY.TXT

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Weatherford
WFT Survey Report X & Y's

Company: Manzano LLC

Date: 4/29/2013

Time: 05:58:46

Page:

Field: Lea Co., NM (NAD 83)
Site: Broken Spoke 2 State #1H
Well: Broken Spoke 2 State #1H
Wellpath: Lateral
Sybase

Co-ordinate(NE) Reference: Well: Broken Spoke 2 State #1H
Vertical (TVD) Reference: SITE 3801.0
Section (VS) Reference: Well (0.00N,0.00E,359.99Azi)
Survey Calculation Method: Minimum Curvature Db:

Survey: Wft Svy

Start Date:

4/22/2013

Company: Weatherford
Tool: MWD;MWD - Standard

Engineer:
Tied-to:

Russell W. Joyner
User Defined

Site: Broken spoke 2 State #1H

Site Position:
From: Map
Position Uncertainty: 0.00 ft
Ground Level: 3787.00 ft

Northing: 776019.06 ft
Easting: 930225.74 ft

Latitude: 33 7 36.395 N
Longitude: 103 3 47.071 W
North Reference: Grid
Grid Convergence: 0.69 deg

Well: Broken Spoke 2 State #1H

Slot Name:

Well Position: +N/-S 0.00 ft
+E/-W 0.00 ft
Position Uncertainty: 0.00 ft

Northing: 776019.06 ft
Easting: 930225.74 ft

Latitude: 33 7 36.395 N
Longitude: 103 3 47.071 W

Wellpath: Lateral

Drilled From: Pilot
Tie-on Depth: 4800.00 ft
Above System Datum: Mean Sea Level
Declination: 7.17 deg
Mag Dip Angle: 61.05 deg
+E/-W Direction
ft deg
0.00 359.99

Current Datum: SITE
Magnetic Data: 5/15/2013
Field Strength: 49046 nT
Vertical Section:Depth From (TVD)
ft
0.00

Height 3801.00 ft
+N/-S
ft
0.00

Survey MD Comment	Incl	Azim	TVD	N/S	E/W	DLS	VS	MapN	MapE
ft	deg	deg	ft	ft	ft	deg/100ft	ft	ft	ft

.MANZANO BROKEN SPOKE 2 STATE #1 SVY.TXT

on SDI	4800.00	0.78	76.64	4799.80	20.33	24.82	0.00	20.33	776039.39	930250.56	Tie
First wft Svy	4814.00	1.79	343.15	4813.79	20.56	24.85	14.25	20.56	776039.63	930250.59	
	4845.00	6.41	324.06	4844.71	22.43	23.69	15.34	22.42	776041.49	930249.43	
	4877.00	11.93	315.72	4876.29	26.24	20.33	17.70	26.24	776045.31	930246.07	
	4908.00	15.83	317.48	4906.38	31.66	15.24	12.65	31.65	776050.72	930240.98	
	4940.00	20.46	320.97	4936.78	39.22	8.76	14.86	39.22	776058.29	930234.50	
	4971.00	23.85	325.21	4965.49	48.58	1.77	12.08	48.58	776067.65	930227.51	
	5003.00	27.54	328.68	4994.32	60.22	-5.77	12.45	60.22	776079.28	930219.97	
	5035.00	30.88	332.16	5022.25	73.81	-13.45	11.71	73.81	776092.87	930212.29	
	5067.00	33.49	336.11	5049.33	89.14	-20.87	10.47	89.15	776108.21	930204.87	
	5099.00	35.55	340.44	5075.70	105.99	-27.56	10.01	105.99	776125.05	930198.18	
	5131.00	37.47	347.04	5101.43	124.25	-32.86	13.65	124.25	776143.31	930192.88	
	5162.00	39.40	352.42	5125.72	143.19	-36.27	12.45	143.20	776162.26	930189.47	
	5193.00	39.72	354.01	5149.62	162.80	-38.60	3.43	162.81	776181.86	930187.14	
	5225.00	41.87	355.11	5173.84	183.61	-40.58	7.08	183.62	776202.67	930185.16	
	5257.00	45.91	354.03	5196.90	205.69	-42.69	12.84	205.70	776224.75	930183.05	
	5289.00	49.74	354.20	5218.38	229.28	-45.12	11.98	229.28	776248.34	930180.62	
	5320.00	53.34	355.31	5237.66	253.44	-47.33	11.95	253.45	776272.51	930178.41	
	5352.00	56.68	356.36	5256.01	279.59	-49.23	10.78	279.60	776298.65	930176.51	
	5383.00	60.21	357.59	5272.23	305.96	-50.62	11.88	305.97	776325.03	930175.12	
	5415.00	63.86	358.85	5287.23	334.21	-51.49	11.92	334.21	776353.27	930174.25	
	5447.00	66.92	359.66	5300.55	363.29	-51.86	9.84	363.30	776382.36	930173.88	
	5478.00	69.92	0.88	5311.96	392.12	-51.73	10.35	392.12	776411.18	930174.01	
	5510.00	73.03	2.09	5322.12	422.44	-50.94	10.36	422.45	776441.51	930174.80	
	5542.00	76.02	2.12	5330.66	453.26	-49.80	9.34	453.27	776472.32	930175.94	
	5573.00	79.80	2.31	5337.15	483.54	-48.63	12.21	483.55	776502.61	930177.11	
	5605.00	83.77	2.35	5341.72	515.18	-47.35	12.41	515.19	776534.25	930178.39	
	5636.00	86.71	2.38	5344.29	546.05	-46.07	9.48	546.05	776565.11	930179.67	
	5700.00	87.55	1.95	5347.50	609.92	-43.66	1.47	609.93	776628.98	930182.08	
	5795.00	87.69	2.17	5351.44	704.78	-40.24	0.27	704.78	776723.84	930185.50	
	5891.00	89.23	2.30	5354.02	800.66	-36.50	1.61	800.67	776819.73	930189.24	
	5986.00	90.14	1.11	5354.55	895.62	-33.67	1.58	895.62	776914.68	930192.07	
	6081.00	90.14	1.00	5354.31	990.60	-31.93	0.12	990.61	777009.67	930193.81	
	6176.00	90.00	1.12	5354.20	1085.59	-30.17	0.19	1085.59	777104.65	930195.57	
	6271.00	90.70	1.10	5353.62	1180.57	-28.33	0.74	1180.57	777199.63	930197.41	
	6366.00	91.05	0.81	5352.17	1275.54	-26.74	0.48	1275.55	777294.60	930199.00	
	6461.00	89.44	1.10	5351.76	1370.52	-25.16	1.72	1370.53	777389.59	930200.58	
	6555.00	89.37	1.45	5352.74	1464.50	-23.07	0.38	1464.50	777483.56	930202.67	

.MANZANO BROKEN SPOKE 2 STATE #1 SVY.TXT

6650.00	90.07	0.94	5353.20	1559.47	-21.09	0.91	1559.48	777578.54	930204.65
6745.00	90.21	1.00	5352.97	1654.46	-19.48	0.16	1654.46	777673.52	930206.26
6840.00	89.79	0.23	5352.97	1749.45	-18.46	0.92	1749.46	777768.52	930207.28
6942.00	90.07	359.07	5353.09	1851.45	-19.08	1.17	1851.45	777870.51	930206.66
7031.00	89.93	358.59	5353.09	1940.43	-20.90	0.56	1940.43	777959.49	930204.84
7126.00	89.79	358.78	5353.33	2035.40	-23.08	0.25	2035.41	778054.47	930202.66
7221.00	90.07	358.41	5353.44	2130.38	-25.41	0.49	2130.38	778149.44	930200.33
7316.00	89.86	358.66	5353.50	2225.34	-27.84	0.34	2225.35	778244.41	930197.90
7411.00	89.86	358.13	5353.73	2320.31	-30.50	0.56	2320.31	778339.37	930195.24
7506.00	89.65	357.29	5354.14	2415.23	-34.30	0.91	2415.23	778434.29	930191.44
7601.00	89.72	357.38	5354.66	2510.12	-38.71	0.12	2510.13	778529.19	930187.03
7696.00	89.79	358.22	5355.07	2605.05	-42.36	0.89	2605.06	778624.12	930183.38
7791.00	90.21	358.04	5355.07	2700.00	-45.46	0.48	2700.01	778719.07	930180.28
7886.00	90.14	357.38	5354.78	2794.92	-49.26	0.70	2794.93	778813.99	930176.48
7982.00	90.21	357.44	5354.48	2890.83	-53.59	0.10	2890.84	778909.89	930172.15
8076.00	90.70	358.69	5353.74	2984.77	-56.77	1.43	2984.78	779003.83	930168.97
8172.00	91.05	359.02	5352.27	3080.74	-58.69	0.50	3080.75	779099.80	930167.05
8267.00	90.49	358.77	5350.99	3175.71	-60.52	0.65	3175.72	779194.77	930165.22
8362.00	90.42	359.38	5350.24	3270.69	-62.05	0.65	3270.71	779289.76	930163.69
8457.00	90.07	358.96	5349.83	3365.68	-63.43	0.58	3365.69	779384.75	930162.31
8552.00	90.07	359.19	5349.72	3460.67	-64.96	0.24	3460.68	779479.73	930160.78
8647.00	90.00	359.14	5349.66	3555.66	-66.35	0.09	3555.67	779574.72	930159.39
8742.00	89.65	358.47	5349.95	3650.64	-68.33	0.80	3650.65	779669.70	930157.41
8837.00	89.86	358.07	5350.36	3745.59	-71.20	0.48	3745.61	779764.66	930154.54
8932.00	89.86	358.29	5350.59	3840.55	-74.21	0.23	3840.56	779859.61	930151.53
9027.00	90.14	357.69	5350.59	3935.49	-77.54	0.70	3935.50	779954.55	930148.20
9122.00	89.86	359.18	5350.59	4030.45	-80.14	1.60	4030.46	780049.51	930145.60
9217.00	89.65	358.95	5350.99	4125.44	-81.69	0.33	4125.45	780144.50	930144.05
9313.00	89.93	0.25	5351.35	4221.43	-82.36	1.39	4221.44	780240.49	930143.38
9408.00	90.14	0.43	5351.29	4316.43	-81.80	0.29	4316.44	780335.49	930143.94
9503.00	90.00	0.35	5351.17	4411.43	-81.15	0.17	4411.44	780430.49	930144.59
9597.00	89.58	359.88	5351.52	4505.42	-80.96	0.67	4505.44	780524.49	930144.78
9692.00	89.58	1.06	5352.21	4600.42	-80.18	1.24	4600.43	780619.48	930145.56
9755.00	89.58	0.51	5352.67	4663.41	-79.32	0.87	4663.42	780682.47	930146.42
Last wft svy									
9814.00	89.58	0.51	5353.11	4722.41	-78.79	0.00	4722.42	780741.47	930146.95
Proj. To Bit									

Annotation
MD TVD

.MANZANO BROKEN SPOKE 2 STATE #1 SVY.TXT

ft	ft	
4800.00	4799.80	Tie On SDI
4814.00	4813.79	First Wft Svy
9755.00	5352.67	Last Wft Svy
9814.00	5353.11	Proj. To Bit