

Results of Directional Survey

API number:	30-025-30587		
OGRID:		Operator:	MARSHALL & WINSTON INC
		Property:	SLICK MESA 27 STATE # 1H

surface	ULSTR:	N	27	T	21S	R	34E
				660	FSL	1980	FWL

BH Loc	ULSTR:	F	27	T	21S	R	34E
14198	MD	11247.5	TVD	1475	FNL	1944	FWL
				3805	FSL		

Top Perf/OH	ULSTR:	N	27	T	21S	R	34E
11300	MD	11213.1	TVD	929	FSL	2044	FWL

Bot Perf/OH	ULSTR:	F	27	T	21S	R	34E
14128	MD	11248.9	TVD	1544	FNL	1953	FWL
				3736	FSL		

	MD	N/S	E/W	VD
	11298	267.52	64.37	11212.21
TOP PERFS/OH	11300	269.29	64.47	11213.13
	11329	295.00	65.93	11226.45
	14048	2996.34	-16.12	11250.54
BOT PERFS/OH	14128	3075.61	-26.83	11248.93
	14142	3089.48	-28.71	11248.65

NEXT TO LAST	14142	3089.48	-28.71	11248.65
LAST READING	14198.00	3144.96	-36.21	11247.48
TD	14198	3144.96	-36.21	11247.48

Surface Location	660	FS	1980	FW
Projected BHL	3805	FS	1944	FW
Location of				
Top Perfs/OH	929	FS	2044	FW
Bottom Perfs/OH	3736	FS	1953	FW

SUMMARY of Subsurface Locations

Surface Location	N-27-21S-34E	660	FS	1980	FW	Vert. Depth
Top Perfs/OH	N-27-21S-34E	929	FS	2044	FW	11213.13
Bottom Perfs/OH	F-27-21S-34E	3736	FS	1953	FW	11248.93
Projected TD	F-27-21S-34E	3805	FS	1944	FW	11247.48

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Scientific Drilling

Gyroscopic Survey Report
for
MARSHALL & WINSTON

Well Location	LEA COUNTY, NEW MEXICO
Well Name	SLICK MESA STATE #1-H
Rig Number	AZTEC WELL SERVICE #471
Survey Date	6/30/2014
Latitude	32.4440000°N
Longitude	103.4590000°E
North Reference	Grid North
Grid Correction	-0.47 deg
Depth Reference	RKB (27.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 0.00Azim (deg)
Definitive Survey	FINAL GYRO SURVEY
Operator(s)	DUSTIN FIGUEROA

Well Notes



Well Name: SLICK MESA STATE #1-H
 Survey: FINAL GYRO SURVEY
 Survey Date: 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.10	238.90	100.00	-0.04	-0.04	-0.07	0.10	0.08	238.90
200.00	0.17	250.45	200.00	-0.13	-0.13	-0.28	0.08	0.31	244.28
300.00	0.11	256.03	300.00	-0.21	-0.21	-0.51	0.06	0.55	247.97
400.00	0.09	244.61	400.00	-0.26	-0.26	-0.68	0.03	0.73	248.70
500.00	0.09	248.14	500.00	-0.32	-0.32	-0.82	0.01	0.88	248.29
600.00	0.10	241.65	600.00	-0.39	-0.39	-0.96	0.01	1.03	247.75
700.00	0.07	251.42	700.00	-0.45	-0.45	-1.09	0.03	1.18	247.50
800.00	0.08	246.94	800.00	-0.50	-0.50	-1.20	0.01	1.30	247.64
900.00	0.08	204.43	900.00	-0.58	-0.58	-1.29	0.06	1.42	245.73
1000.00	0.11	195.63	1000.00	-0.73	-0.73	-1.35	0.03	1.54	241.41
1100.00	0.08	198.57	1100.00	-0.89	-0.89	-1.40	0.03	1.66	237.46
1200.00	0.06	190.34	1200.00	-1.01	-1.01	-1.43	0.02	1.75	234.72
1300.00	0.04	179.17	1300.00	-1.10	-1.10	-1.44	0.02	1.81	232.54
1400.00	0.13	97.04	1400.00	-1.15	-1.15	-1.32	0.13	1.75	228.94
1500.00	0.25	90.80	1500.00	-1.17	-1.17	-0.99	0.13	1.53	220.16
1600.00	0.23	95.04	1600.00	-1.19	-1.19	-0.56	0.03	1.32	205.30
1700.00	0.31	87.82	1700.00	-1.20	-1.20	-0.09	0.08	1.20	184.45
1800.00	0.26	88.55	1799.99	-1.18	-1.18	0.40	0.05	1.25	161.24
1900.00	0.55	65.93	1899.99	-0.98	-0.98	1.06	0.32	1.45	132.68
2000.00	0.61	66.60	1999.99	-0.57	-0.57	1.99	0.07	2.07	106.10
2100.00	0.65	65.54	2099.98	-0.13	-0.13	3.00	0.04	3.00	92.43
2200.00	0.64	68.16	2199.97	0.31	0.31	4.03	0.03	4.04	85.54
2300.00	0.51	66.22	2299.97	0.70	0.70	4.96	0.12	5.01	81.94
2400.00	0.42	73.05	2399.97	0.99	0.99	5.72	0.11	5.80	80.17
2500.00	0.39	75.14	2499.96	1.19	1.19	6.40	0.03	6.51	79.51
2600.00	0.38	71.24	2599.96	1.38	1.38	7.05	0.03	7.18	78.92
2700.00	0.40	68.34	2699.96	1.62	1.62	7.69	0.03	7.85	78.13
2800.00	0.39	73.58	2799.96	1.84	1.84	8.34	0.04	8.54	77.55
2900.00	0.43	69.79	2899.95	2.07	2.07	9.02	0.05	9.25	77.09
3000.00	0.54	64.44	2999.95	2.40	2.40	9.79	0.11	10.08	76.23
3100.00	0.83	66.73	3099.94	2.89	2.89	10.88	0.29	11.26	75.14
3200.00	1.04	67.45	3199.93	3.52	3.52	12.38	0.21	12.87	74.13
3300.00	1.21	66.22	3299.91	4.29	4.29	14.18	0.17	14.82	73.16
3400.00	1.23	66.30	3399.89	5.15	5.15	16.12	0.02	16.92	72.30
3500.00	1.25	68.10	3499.86	5.98	5.98	18.12	0.05	19.08	71.72



Well Name: SLICK MESA STATE #1-H

Survey: FINAL GYRO SURVEY

Survey Date: 6/30/2014

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Closure	Closure
ft	deg	deg	ft	ft	ft	ft	1100ft	Distance	Direction
								ft	deg
3600.00	1.30	66.06	3599.84	6.85	6.85	20.17	0.07	21.30	71.23
3700.00	1.29	64.35	3699.81	7.80	7.80	22.22	0.04	23.55	70.66
3800.00	1.31	63.13	3799.79	8.80	8.80	24.25	0.03	25.80	70.05
3900.00	1.23	58.30	3899.76	9.88	9.88	26.18	0.13	27.98	69.32
4000.00	1.19	55.79	3999.74	11.03	11.03	27.95	0.06	30.05	68.47
4100.00	1.20	53.46	4099.72	12.24	12.24	29.66	0.05	32.08	67.57
4200.00	1.13	50.13	4199.70	13.49	13.49	31.25	0.10	34.04	66.65
4300.00	1.05	50.03	4299.68	14.71	14.71	32.71	0.08	35.87	65.78
4400.00	1.10	49.87	4399.66	15.92	15.92	34.14	0.05	37.67	65.01
4500.00	1.06	51.83	4499.65	17.10	17.10	35.60	0.05	39.50	64.34
4600.00	1.08	56.76	4599.63	18.19	18.19	37.11	0.09	41.33	63.89
4700.00	1.11	56.89	4699.61	19.24	19.24	38.72	0.03	43.23	63.58
4800.00	1.08	55.68	4799.59	20.30	20.30	40.31	0.04	45.13	63.27
4900.00	1.02	62.62	4899.58	21.24	21.24	41.87	0.14	46.95	63.10
5000.00	0.97	60.72	4999.56	22.06	22.06	43.40	0.06	48.68	63.05
5100.00	0.92	55.01	5099.55	22.94	22.94	44.80	0.10	50.33	62.89
5200.00	0.88	48.26	5199.53	23.91	23.91	46.03	0.11	51.87	62.55
5300.00	0.86	39.69	5299.52	25.00	25.00	47.09	0.13	53.31	62.03
5400.00	0.89	40.34	5399.51	26.17	26.17	48.07	0.04	54.73	61.43
5500.00	0.84	40.25	5499.50	27.32	27.32	49.05	0.06	56.14	60.88
5600.00	0.56	47.04	5599.49	28.22	28.22	49.88	0.28	57.31	60.50
5700.00	0.60	49.30	5699.49	28.89	28.89	50.63	0.04	58.30	60.29
5800.00	0.64	42.38	5799.48	29.65	29.65	51.41	0.09	59.34	60.03
5900.00	0.69	38.70	5899.47	30.53	30.53	52.16	0.07	60.44	59.66
6000.00	0.68	36.31	5999.47	31.48	31.48	52.89	0.03	61.55	59.24
6100.00	0.65	32.44	6099.46	32.43	32.43	53.54	0.05	62.60	58.79
6200.00	0.73	35.96	6199.45	33.43	33.43	54.22	0.09	63.70	58.35
6300.00	0.66	32.95	6299.45	34.43	34.43	54.91	0.08	64.81	57.91
6400.00	0.53	30.99	6399.44	35.30	35.30	55.46	0.13	65.74	57.52
6500.00	0.40	27.66	6499.44	36.01	36.01	55.86	0.13	66.46	57.19
6600.00	0.35	32.69	6599.44	36.57	36.57	56.19	0.06	67.04	56.94
6700.00	0.34	33.72	6699.43	37.08	37.08	56.52	0.01	67.60	56.73
6800.00	0.23	8.24	6799.43	37.52	37.52	56.71	0.17	68.00	56.51
6900.00	0.20	9.06	6899.43	37.89	37.89	56.77	0.03	68.25	56.28
7000.00	0.14	336.01	6999.43	38.17	38.17	56.74	0.11	68.39	56.07
7100.00	0.13	329.64	7099.43	38.39	38.39	56.63	0.02	68.42	55.87



Well Name: SLICK MESA STATE #1-H

Survey: FINAL GYRO SURVEY

Survey Date: 6/30/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft	Closure Distance ft	Closure Direction deg
7200.00	0.22	244.64	7199.43	38.41	38.41	56.40	0.25	68.24	55.75
7300.00	0.23	246.66	7299.43	38.24	38.24	56.04	0.02	67.85	55.69
7400.00	0.29	244.81	7399.43	38.06	38.06	55.63	0.06	67.40	55.62
7500.00	0.23	208.03	7499.43	37.77	37.77	55.30	0.17	66.97	55.67
7600.00	0.29	214.17	7599.43	37.39	37.39	55.07	0.06	66.56	55.83
7700.00	0.22	235.39	7699.43	37.07	37.07	54.77	0.11	66.14	55.91
7800.00	0.17	261.28	7799.43	36.94	36.94	54.47	0.10	65.82	55.86
7900.00	0.17	286.77	7899.42	36.97	36.97	54.19	0.07	65.60	55.70
8000.00	0.30	156.64	7999.42	36.77	36.77	54.15	0.43	65.45	55.82
8100.00	0.25	156.55	8099.42	36.33	36.33	54.34	0.04	65.37	56.23
8200.00	0.33	159.72	8199.42	35.86	35.86	54.53	0.08	65.26	56.67
8300.00	0.09	145.61	8299.42	35.52	35.52	54.67	0.24	65.20	56.99
8400.00	0.17	142.94	8399.42	35.33	35.33	54.81	0.08	65.21	57.19
8500.00	0.47	137.22	8499.42	34.91	34.91	55.18	0.30	65.30	57.68
8600.00	0.52	135.72	8599.42	34.29	34.29	55.77	0.05	65.47	58.42
8700.00	0.35	135.83	8699.41	33.75	33.75	56.30	0.16	65.64	59.06
8800.00	0.26	139.17	8799.41	33.36	33.36	56.66	0.10	65.75	59.51
8900.00	0.22	144.51	8899.41	33.03	33.03	56.92	0.04	65.81	59.87
9000.00	0.95	118.01	8999.40	32.48	32.48	57.76	0.76	66.27	60.65
9100.00	1.33	133.33	9099.38	31.30	31.30	59.34	0.48	67.09	62.19
9200.00	1.64	133.73	9199.35	29.51	29.51	61.22	0.32	67.96	64.26
9300.00	1.86	115.30	9299.30	27.83	27.83	63.72	0.60	69.53	66.41
9400.00	1.85	112.68	9399.25	26.51	26.51	66.68	0.09	71.76	68.32
9500.00	1.64	108.18	9499.21	25.44	25.44	69.53	0.25	74.04	69.90
9600.00	1.19	116.50	9599.18	24.53	24.53	71.82	0.49	75.89	71.14
9700.00	1.12	120.36	9699.16	23.57	23.57	73.59	0.11	77.27	72.24
9800.00	0.78	132.78	9799.14	22.62	22.62	74.93	0.39	78.27	73.20
9900.00	0.87	147.37	9899.13	21.52	21.52	75.84	0.23	78.83	74.16
10000.00	1.14	146.46	9999.12	20.06	20.06	76.79	0.27	79.37	75.36
10100.00	0.95	142.88	10099.10	18.57	18.57	77.84	0.20	80.03	76.58
10200.00	0.58	159.25	10199.09	17.43	17.43	78.52	0.42	80.43	77.48
10300.00	1.47	195.31	10299.07	15.72	15.72	78.36	1.06	79.92	78.65
10400.00	0.78	234.72	10399.06	14.09	14.09	77.46	1.00	78.74	79.69
10500.00	0.94	228.39	10499.04	13.15	13.15	76.29	0.19	77.42	80.22
10600.00	1.54	273.19	10599.02	12.68	12.68	74.34	1.10	75.41	80.32
10700.00	1.83	258.10	10698.98	12.43	12.43	71.44	0.53	72.51	80.13



Well Name: SLICK MESA STATE #1-H

Survey: FINAL GYRO SURVEY

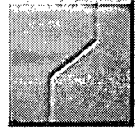
Survey Date: 6/30/2014

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Closure	Closure
ft	deg	deg	ft	ft	ft	ft	7100ft	Distance	Direction
								ft	deg
10766.00	1.97	270.74	10764.94	12.23	12.23	69.27	0.67	70.34	79.99



Job Number: 1016UD14
Company: MARSHALL AND WINSTON, INC
Lease/Well: Slick Mesa State 27-1H
Location: Lea Co.
Rig Name: Patriot 1
State/County: New Mexico/ Lea
Country: US
API Number: 30-025-30587

Elev. GL: 3700.00 ft **RKB:** 18.00 ft
System: US State Plane 1927 (Exact solution)
Group: Texas Central 4203
Datum: CLARKE 1866
Mag. Decl.: 7.45° (C:\HawkEye\IGRF2005.mif)
Grid Conv.: -2.02346 W
Date: Friday, August 1, 2014



Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 359.00°
Northing (US ft): 526476.10 Easting (US ft): 769600.90
Latitude: 31°03'16.256" N Longitude: -104°15'48.8589" W
Direction Reference: True North

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100 Ft	Easting (US ft)	Northing (US ft)	UD/NS From-Plan (Ft)	LR/EW From-Plan (Ft)
10766.00	1.97	270.74	10764.94	18.03	67.60	16.85	12.00	769669.09	526491.73	18.03 (N)	67.60 (E)
10830.00	7.80	352.60	10828.72	22.36	65.94	21.20	12.14	769667.59	526496.12	6.82 (U)	67.43 (R)
10862.00	12.90	3.50	10860.19	28.08	65.88	26.93	17.00	769667.73	526501.84	19.14 (U)	64.97 (R)
10893.00	17.90	2.70	10890.07	36.30	66.31	35.14	16.14	769668.45	526510.03	21.06 (U)	65.60 (R)
10925.00	21.50	0.40	10920.19	47.08	66.59	45.91	11.51	769669.11	526520.80	17.31 (U)	66.74 (R)
10956.00	24.40	357.00	10948.74	59.16	66.29	57.99	10.28	769669.24	526532.88	13.88 (U)	67.40 (R)
10988.00	26.50	353.30	10977.63	72.85	65.11	71.70	8.23	769668.54	526546.61	11.55 (U)	67.23 (R)
11019.00	28.00	353.30	11005.19	86.95	63.45	85.83	4.84	769667.38	526560.75	9.36 (U)	65.46 (R)
11050.00	28.70	355.00	11032.48	101.59	61.96	100.49	3.45	769666.41	526575.44	7.66 (U)	63.53 (R)
11081.00	31.40	356.57	11059.31	117.07	60.82	115.99	9.07	769665.82	526590.95	6.68 (U)	62.18 (R)
11112.00	34.60	358.20	11085.30	133.93	60.06	132.86	10.71	769665.66	526607.83	2.97 (U)	61.26 (R)
11144.00	37.80	359.80	11111.12	152.82	59.75	151.76	10.43	769666.00	526626.72	-1.66 (D)	61.03 (R)
11175.00	41.80	0.79	11134.93	172.66	59.85	171.59	13.06	769666.81	526646.54	-4.54 (D)	61.39 (R)
11203.00	45.80	2.00	11155.14	192.03	60.33	190.95	14.59	769667.98	526665.88	-8.13 (D)	62.24 (R)
11235.00	50.00	3.00	11176.59	215.75	61.38	214.64	13.33	769669.86	526689.55	-13.37 (D)	63.82 (R)
11266.00	55.70	3.30	11195.30	240.41	62.74	239.28	18.40	769672.08	526714.14	-16.09 (D)	65.49 (R)
11298.00	60.50	3.60	11212.21	267.52	64.37	266.35	15.02	769674.68	526741.18	-18.01 (D)	67.41 (R)
11329.00	64.80	2.90	11226.45	295.00	65.93	293.81	14.02	769677.20	526768.59	-22.33 (D)	69.08 (R)
11360.00	70.90	2.40	11238.13	323.67	67.25	322.45	19.73	769679.54	526797.19	-23.84 (D)	70.44 (R)
11392.00	76.35	1.58	11247.15	354.34	68.32	353.10	17.21	769681.68	526827.81	-22.55 (D)	71.52 (R)
11424.00	81.54	1.20	11253.28	385.73	69.08	384.46	16.26	769683.55	526859.15	-23.50 (D)	72.44 (R)
11455.00	87.43	0.50	11256.26	416.57	69.53	415.29	19.13	769685.10	526889.95	-22.61 (D)	73.05 (R)
11483.00	93.14	7.50	11256.12	444.47	71.48	443.15	32.25	769688.03	526917.77	-17.84 (D)	75.80 (R)
11514.00	92.84	7.30	11254.50	475.17	75.47	473.78	1.16	769693.10	526948.31	-14.54 (D)	80.09 (R)
11576.00	92.53	7.30	11251.60	536.60	83.34	535.06	0.50	769703.14	527009.42	-11.62 (D)	88.58 (R)
11608.00	93.32	7.40	11249.97	568.29	87.43	566.68	2.49	769708.34	527040.95	-10.00 (D)	92.99 (R)
11702.00	90.24	7.30	11247.05	661.47	99.45	659.63	3.28	769723.64	527133.64	-7.06 (D)	105.96 (R)
11795.00	88.88	6.20	11247.76	753.82	110.38	751.77	1.88	769737.82	527225.55	-7.78 (D)	117.50 (R)
11888.00	88.57	4.30	11249.83	846.40	118.88	844.19	2.07	769749.60	527317.77	-9.85 (D)	126.43 (R)
11951.00	89.32	4.30	11250.99	909.21	123.61	906.91	1.19	769756.53	527380.38	-11.00 (D)	131.69 (R)
11982.00	89.85	4.40	11251.21	940.12	125.96	937.78	1.74	769759.97	527411.19	-11.23 (D)	134.32 (R)
12077.00	89.32	3.00	11251.90	1034.92	132.09	1032.45	1.58	769769.45	527505.71	-11.92 (D)	141.02 (R)
12170.00	90.90	2.60	11251.72	1127.80	136.63	1125.25	1.75	769777.27	527598.37	-11.74 (D)	146.28 (R)
12264.00	89.89	1.00	11251.08	1221.75	139.58	1219.13	2.01	769783.54	527692.16	-11.09 (D)	149.86 (R)
12358.00	90.64	0.60	11250.64	1315.74	140.90	1313.08	0.90	769788.17	527786.04	-10.66 (D)	151.94 (R)
12452.00	91.38	359.60	11248.98	1409.72	141.06	1407.04	1.32	769791.65	527879.96	-9.00 (D)	152.87 (R)
12640.00	89.49	357.30	11247.56	1597.63	135.98	1595.01	1.58	769793.20	528067.93	-7.57 (D)	149.46 (R)
12734.00	89.80	357.20	11248.14	1691.52	131.47	1688.96	0.35	769792.01	528161.92	-8.15 (D)	145.75 (R)
12864.00	89.40	357.20	11249.05	1821.36	125.12	1818.90	0.31	769790.25	528291.90	-9.06 (D)	140.48 (R)
12929.00	89.80	356.40	11249.50	1886.25	121.49	1883.85	1.38	769788.91	528356.89	-9.51 (D)	137.49 (R)
13016.00	90.10	355.40	11249.58	1973.03	115.27	1970.72	1.20	769785.76	528443.83	-9.59 (D)	132.13 (R)
13109.00	89.50	354.30	11249.90	2065.65	106.92	2063.47	1.35	769780.69	528536.69	-9.92 (D)	124.73 (R)
13203.00	89.20	353.30	11250.97	2159.09	96.77	2157.08	1.11	769773.84	528630.43	-10.98 (D)	115.52 (R)
13297.00	88.04	352.60	11253.23	2252.35	85.23	2250.52	1.44	769765.61	528724.04	-13.25 (D)	104.81 (R)

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS */100 Ft	Eastng (US ft)	Northng (US ft)	UD/NS From-Plan (Ft)	LR/EW From-Plan (Ft)
13391.00	88.80	352.60	11255.82	2345.54	73.13	2343.90	0.81	769756.80	528817.59	-15.84 (D)	93.42 (R)
13516.00	89.90	352.40	11257.24	2469.46	56.82	2468.09	0.89	769744.88	528942.01	-17.26 (D)	78.10 (R)
13579.00	89.60	352.10	11257.52	2531.88	48.32	2530.65	0.67	769738.59	529004.70	-17.53 (D)	70.10 (R)
13672.00	90.30	352.30	11257.60	2624.02	35.70	2623.00	0.78	769729.23	529097.22	-17.61 (D)	58.16 (R)
13766.00	90.70	351.30	11256.78	2717.05	22.29	2716.25	1.15	769719.12	529190.67	-16.79 (D)	45.55 (R)
13859.00	91.60	351.90	11254.91	2809.04	8.71	2808.46	1.16	769708.79	529283.08	-14.93 (D)	32.59 (R)
13954.00	91.30	352.80	11252.51	2903.16	-3.93	2902.79	1.00	769699.48	529377.59	-12.52 (D)	20.57 (R)
14048.00	91.10	352.30	11250.54	2996.34	-16.12	2996.17	0.57	769690.59	529471.15	-10.55 (D)	9.08 (R)
14142.00	91.20	352.30	11248.65	3089.48	-28.71	3089.51	0.11	769681.30	529564.67	-8.67 (D)	-2.82 (L)
Projection To Bit											
14198.00	91.20	352.30	11247.48	3144.96	-36.21	3145.11	0.00	769675.76	529620.38	-7.49 (D)	-9.92 (L)