

COPY

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 07 2019



Survey Report

RECEIVED

30-015-44406

Service Company: Aim Directional Services, LLC

Well: Striker 1 SWD

API or UWI: 30-015-44406

State: NM

County: Eddy

Country: USA

Comment

Location: Loving

Rig: Bison 15

Job Number: WT-18-255

Operating Company: NGL Energy Partners

Magnetic Declination: 7.05

Proposed Azimuth: 0.00

North Reference: GRID

Latitude: 32.309947

Longitude: -104.071171

Tie-In Data

MD	Inclination	Azimuth	TVD	NS	EW
2590.00	2.45	114.66	2588.84	-24.71	29.87

Survey Data

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
2767.00	1.93	112.87	2765.71	-27.45	36.05	127.28	45.31	-27.45	0.30
2862.00	1.01	120.87	2860.68	-28.50	38.25	126.69	47.70	-28.50	0.99
2957.00	0.79	261.76	2955.67	-29.02	38.32	127.14	48.07	-29.02	1.79
3053.00	1.14	279.69	3051.66	-28.96	36.72	128.26	46.76	-28.96	0.48
3149.00	1.19	278.81	3147.64	-28.64	34.79	129.46	45.07	-28.64	0.06
3244.00	1.36	284.08	3242.62	-28.22	32.73	130.77	43.21	-28.22	0.22
3340.00	1.45	280.65	3338.59	-27.72	30.43	132.33	41.16	-27.72	0.13
3435.00	1.45	277.67	3433.56	-27.33	28.06	134.25	39.17	-27.33	0.08
3531.00	1.32	272.13	3529.53	-27.13	25.75	136.50	37.40	-27.13	0.19
3626.00	1.27	281.36	3624.50	-26.88	23.62	138.69	35.79	-26.88	0.23
3722.00	1.32	283.11	3720.48	-26.42	21.50	140.86	34.06	-26.42	0.07
3817.00	1.27	281.18	3815.46	-25.97	19.40	143.24	32.42	-25.97	0.07
3912.00	1.58	281.01	3910.43	-25.51	17.08	146.19	30.71	-25.51	0.33
4007.00	1.32	277.40	4005.40	-25.12	14.71	149.65	29.11	-25.12	0.29
4103.00	1.41	283.64	4101.37	-24.70	12.47	153.22	27.67	-24.70	0.18
4198.00	1.45	284.26	4196.34	-24.13	10.17	157.15	26.19	-24.13	0.05

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
4294.00	1.67	282.06	4292.30	-23.54	7.62	162.06	24.74	-23.54	0.24
4390.00	1.41	285.05	4388.27	-22.94	5.11	167.43	23.50	-22.94	0.28
4485.00	1.49	278.98	4483.24	-22.44	2.77	172.98	22.61	-22.44	0.18
4581.00	1.54	282.76	4579.20	-21.96	0.27	179.28	21.97	-21.96	0.12
4676.00	1.41	282.24	4674.17	-21.43	-2.11	185.63	21.54	-21.43	0.14
4772.00	1.49	279.16	4770.14	-20.99	-4.50	192.10	21.46	-20.99	0.12
4867.00	1.32	279.16	4865.11	-20.61	-6.80	198.25	21.71	-20.61	0.18
4963.00	1.36	284.43	4961.09	-20.15	-8.99	204.05	22.07	-20.15	0.13
5056.00	1.23	274.68	5054.06	-19.80	-11.06	209.18	22.68	-19.80	0.27
5151.00	1.41	271.69	5149.04	-19.68	-13.24	213.93	23.72	-19.68	0.20
5247.00	1.45	281.27	5245.01	-19.41	-15.61	218.82	24.91	-19.41	0.25
5342.00	1.36	267.56	5339.98	-19.22	-17.92	222.99	26.28	-19.22	0.37
5438.00	1.27	273.27	5435.96	-19.21	-20.12	226.32	27.82	-19.21	0.17
5533.00	1.05	268.96	5530.94	-19.17	-22.04	228.99	29.21	-19.17	0.25
5629.00	0.66	264.66	5626.93	-19.23	-23.47	230.67	30.34	-19.23	0.41
5724.00	0.79	236.01	5721.92	-19.65	-24.56	231.34	31.45	-19.65	0.40
5820.00	0.66	241.28	5817.91	-20.29	-25.59	231.60	32.66	-20.29	0.15
5915.00	0.53	236.88	5912.91	-20.79	-26.44	231.82	33.63	-20.79	0.14
6010.00	0.40	212.45	6007.90	-21.31	-26.99	231.70	34.38	-21.31	0.25
6093.00	0.44	242.42	6090.90	-21.70	-27.42	231.65	34.97	-21.70	0.27
6189.00	0.53	261.49	6186.90	-21.94	-28.19	232.11	35.72	-21.94	0.19
6284.00	0.66	280.83	6281.89	-21.90	-29.16	233.09	36.47	-21.90	0.25
6379.00	0.70	288.39	6376.88	-21.61	-30.25	234.45	37.18	-21.61	0.10
6475.00	0.44	250.42	6472.88	-21.55	-31.15	235.32	37.88	-21.55	0.46
6570.00	0.57	250.24	6567.88	-21.83	-31.94	235.65	38.69	-21.83	0.14
6666.00	0.57	225.81	6663.87	-22.33	-32.73	235.70	39.62	-22.33	0.25
6761.00	0.13	268.00	6758.87	-22.66	-33.18	235.67	40.18	-22.66	0.51
6856.00	0.92	337.87	6853.87	-21.96	-33.57	236.81	40.12	-21.96	0.93
6951.00	1.19	305.00	6948.85	-20.69	-34.67	239.18	40.37	-20.69	0.68
7047.00	1.19	306.76	7044.83	-19.52	-36.29	241.72	41.20	-19.52	0.04
7141.00	0.97	306.23	7138.81	-18.46	-37.71	243.91	41.99	-18.46	0.23
7236.00	0.79	39.31	7233.81	-17.48	-37.94	245.26	41.78	-17.48	1.35
7331.00	0.88	61.45	7328.80	-16.63	-36.89	245.74	40.46	-16.63	0.35
7426.00	0.26	85.01	7423.79	-16.26	-36.03	245.71	39.53	-16.26	0.68
7520.00	0.40	116.83	7517.79	-16.39	-35.53	245.24	39.12	-16.39	0.24
7614.00	0.48	158.22	7611.79	-16.90	-35.09	244.28	38.95	-16.90	0.34
7710.00	0.79	138.27	7707.78	-17.77	-34.50	242.75	38.81	-17.77	0.39

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
7805.00	0.88	136.34	7802.77	-18.79	-33.56	240.76	38.46	-18.79	0.10
7900.00	0.66	160.33	7897.76	-19.83	-32.87	238.90	38.39	-19.83	0.41
7996.00	0.84	169.12	7993.75	-21.04	-32.55	237.12	38.76	-21.04	0.22
8091.00	1.27	158.40	8088.74	-22.70	-32.03	234.67	39.26	-22.70	0.50
8187.00	1.32	153.30	8184.71	-24.68	-31.14	231.61	39.74	-24.68	0.13
8282.00	1.58	158.57	8279.68	-26.88	-30.17	228.31	40.41	-26.88	0.31
8378.00	0.84	155.85	8375.66	-28.75	-29.40	225.64	41.12	-28.75	0.77
8473.00	0.40	209.90	8470.66	-29.67	-29.28	224.62	41.69	-29.67	0.72
8568.00	0.75	249.10	8565.65	-30.18	-30.03	224.85	42.58	-30.18	0.53
8664.00	0.97	244.27	8661.64	-30.76	-31.35	225.54	43.92	-30.76	0.24
8759.00	1.10	222.38	8756.62	-31.78	-32.69	225.80	45.59	-31.78	0.43
8855.00	1.49	227.39	8852.60	-33.31	-34.23	225.78	47.76	-33.31	0.42
8950.00	1.67	233.02	8947.56	-34.98	-36.24	226.02	50.37	-34.98	0.25
9046.00	1.23	240.58	9043.53	-36.32	-38.26	226.48	52.75	-36.32	0.50
9141.00	0.84	236.36	9138.52	-37.21	-39.72	226.87	54.43	-37.21	0.42
9237.00	0.62	240.14	9234.51	-37.86	-40.76	227.11	55.63	-37.86	0.23
9333.00	0.75	248.31	9330.50	-38.35	-41.80	227.46	56.72	-38.35	0.17
9428.00	0.84	230.91	9425.49	-39.02	-42.91	227.72	58.00	-39.02	0.27
9558.00	1.05	245.76	9555.48	-40.11	-44.74	228.12	60.09	-40.11	0.25
9653.00	0.66	21.11	9650.47	-39.96	-45.34	228.61	60.43	-39.96	1.67
9749.00	0.84	47.22	9746.46	-38.96	-44.62	228.87	59.24	-38.96	0.40
9844.00	0.44	20.32	9841.46	-38.15	-43.98	229.06	58.22	-38.15	0.52
9940.00	0.48	332.95	9937.45	-37.44	-44.04	229.63	57.80	-37.44	0.39
10035.00	0.22	350.61	10032.45	-36.91	-44.25	230.17	57.62	-36.91	0.29
10131.00	0.62	355.27	10128.45	-36.21	-44.32	230.75	57.23	-36.21	0.42
10226.00	0.40	359.93	10223.45	-35.37	-44.36	231.44	56.74	-35.37	0.24
10322.00	1.41	53.28	10319.43	-34.32	-43.42	231.67	55.35	-34.32	1.26
10417.00	1.80	60.22	10414.40	-32.88	-41.19	231.39	52.70	-32.88	0.46
10512.00	1.27	60.05	10509.36	-31.62	-38.98	230.95	50.19	-31.62	0.56
10606.00	0.79	38.87	10603.35	-30.59	-37.67	230.92	48.53	-30.59	0.64
10702.00	0.97	24.19	10699.34	-29.34	-36.92	231.53	47.16	-29.34	0.30
10797.00	1.23	2.57	10794.32	-27.58	-36.55	232.95	45.79	-27.58	0.51
10893.00	0.84	358.70	10890.30	-25.85	-36.52	234.70	44.74	-25.85	0.41
10988.00	0.57	331.01	10985.30	-24.74	-36.76	236.06	44.31	-24.74	0.45
11084.00	0.79	348.77	11081.29	-23.68	-37.12	237.47	44.03	-23.68	0.31
11179.00	0.66	317.92	11176.28	-22.63	-37.61	238.97	43.90	-22.63	0.43
11274.00	1.32	15.05	11271.27	-21.16	-37.70	240.69	43.23	-21.16	1.17

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
11369.00	1.89	22.52	11366.23	-18.66	-36.81	243.12	41.27	-18.66	0.64
11463.00	2.15	23.57	11460.17	-15.61	-35.51	246.27	38.79	-15.61	0.28
11558.00	2.15	23.92	11555.11	-12.35	-34.08	250.08	36.25	-12.35	0.01
11653.00	2.07	14.08	11650.04	-9.06	-32.94	254.63	34.16	-9.06	0.39
11748.00	1.93	18.65	11744.98	-5.88	-32.01	259.60	32.55	-5.88	0.22
11843.00	1.71	13.11	11839.94	-2.98	-31.18	264.54	31.32	-2.98	0.30
11929.00	1.71	14.08	11925.90	-0.49	-30.57	269.09	30.58	-0.49	0.03
12024.00	1.58	12.15	12020.86	2.17	-29.95	274.14	30.03	2.17	0.15
12120.00	1.58	7.40	12116.82	4.77	-29.50	279.19	29.89	4.77	0.14
12215.00	1.85	8.46	12211.78	7.59	-29.11	284.61	30.08	7.59	0.29
12311.00	1.76	10.65	12307.73	10.57	-28.61	290.28	30.50	10.57	0.12
12406.00	1.93	3.36	12402.68	13.60	-28.25	295.71	31.35	13.60	0.30
12502.00	2.20	6.08	12498.62	17.05	-27.96	301.38	32.74	17.05	0.30
12597.00	2.15	7.84	12593.55	20.63	-27.52	306.85	34.39	20.63	0.09
12693.00	1.98	8.90	12689.49	24.05	-27.02	311.67	36.17	24.05	0.18
12788.00	1.80	10.04	12784.44	27.14	-26.50	315.68	37.93	27.14	0.19
12884.00	1.93	3.27	12880.39	30.24	-26.15	319.15	39.98	30.24	0.27
12979.00	1.63	8.81	12975.34	33.17	-25.85	322.07	42.05	33.17	0.36
13074.00	1.63	4.59	13070.30	35.85	-25.54	324.54	44.02	35.85	0.13
13169.00	2.24	347.89	13165.25	39.02	-25.82	326.51	46.78	39.02	0.87
13296.00	1.89	352.55	13292.17	43.52	-26.61	328.56	51.01	43.52	0.31
13399.00	0.66	56.36	13395.14	45.53	-26.34	329.95	52.60	45.53	1.66
13455.00	1.67	127.46	13451.13	45.21	-25.42	330.66	51.87	45.21	2.83
13550.00	2.02	134.67	13546.08	43.19	-23.13	331.83	49.00	43.19	0.44
13645.00	0.66	154.79	13641.06	41.52	-21.71	332.40	46.85	41.52	1.49
13741.00	1.01	295.68	13737.05	41.39	-22.23	331.76	46.98	41.39	1.64
13801.00	2.68	301.40	13797.02	42.35	-23.91	330.55	48.63	42.35	2.80
13963.00	1.63	272.39	13958.91	44.42	-29.44	326.46	53.29	44.42	0.92
14058.00	1.05	210.69	14053.88	43.73	-31.24	324.46	53.74	43.73	1.54
14154.00	1.27	212.98	14149.86	42.08	-32.26	322.52	53.02	42.08	0.23
14250.00	1.98	200.76	14245.82	39.63	-33.43	319.85	51.85	39.63	0.82
14345.00	2.51	200.23	14340.75	36.15	-34.73	316.14	50.13	36.15	0.56
14441.00	2.99	197.95	14436.64	31.79	-36.23	311.27	48.20	31.79	0.51
14536.00	3.60	203.22	14531.48	26.70	-38.17	304.97	46.58	26.70	0.72
14632.00	3.96	205.95	14627.27	20.94	-40.81	297.17	45.87	20.94	0.42
14727.00	3.65	199.88	14722.07	15.15	-43.27	289.30	45.85	15.15	0.53
14821.00	3.65	199.88	14815.87	9.52	-45.31	281.87	46.30	9.52	0.00

Projected Survey

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
14889.00	3.65	199.88	14883.74	5.45	-46.78	276.65	47.10	5.45	0.00



Striker SWD #1



TUBULARS						WELL INFORMATION		DIRECTIONS TO SITE	PROPOSED INJECTION INTERVAL
STRING DETAILS (Size, WPF, Grade, Conn)	HOLE SIZE (in.)	O.D. (in.)	I.D. (in.)	HOLE DEPTH (ft)	SET DEPTH (ft)	RIG: Bison Rig #15		Directions to Site - NENW of Sec 15, T21S, R28E. From Loving head north on 721.1 mile to Hwy 31 (Potash Road). Travel 1.5 miles east and turn South onto location. Lat/Long - 32.309947, -104.071171	Devonian, Silurian, Fusselman, Montoya
20" 94# J-55 BTC	24	20.000	19.468	550'	540'	API #: 30-015-44406			
13.375" 68# HCL 80 BTC	17.5	13.375	12.415	2,674'	2,664'	COUNTRY: Eddy			
9.625" 53.5# P120 BTC	12.25	9.625	8.535	9,523'	9,502'	S/T/R: Sec. 15, T21S 28E			
7.625" 39# HCP110 Liberty FIM	8.5	7.625	6.539	13,879'	13,850'	LATITUDE: 32.311472			
Open Hole Injection Interval	6.5			14,889'		LONGITUDE: -104.071417			
						SPOD DATE: 12/25/2018			
						TD DATE: 2/18/2019			
STRING COMPONENTS					GL: 3468' KB: 3498'	HOLE INFORMATION / GEO TOPS		CEMENT INFO	PROPOSED INJECTIN STRING
COMPONENT	O.D.	I.D.	Top	Btm		24" Surface Hole T.D. = 550'		Pumped 20 bbls of Gel water spacer followed by 187 bbls (780 sacks) of 14.8 ppg, 1.342 H ₂ O. Displaced with 191 bbls of FW, bumped plug and bled 2 bbls back.	211 jts/8674' of 7" 26# TCPC Duoline Coated Injection String
Surface Casing Shoe	20.000	19.468		540'		Rustler - 850'			
						Castile - 1,180'		Pumped 20 bbls of Gel water spacer followed by 459 bbls (1450 sx) of 13.7 ppg, 1.777 H ₂ O. Displaced with 392 bbls of FW, bumped plug and bled 2.5 bbls back.	
						Base Salt - 2,140'			
						Lamar Limestone - 2,582'			
Weatherford 9-5/8" DV Tool/ECP	12.415	8.535	2,775'	2,747'		Bell Canyon - 2,618'			
1st Intermediate Casing Shoe	13.375	12.415		2,664'		17.5" 1st Intermediate T.D. = 2674'			123 jts/5059' of 5-1/2" 17# TCPC Duoline Coated Injection String
						Cherry Canyon - 3,262'		Stage 1: Pumped 138 bbls (450sx) of 13.7 ppg, 1.72 H ₂ O/k lead cement, followed by 114 bbls (520 sx) of 15.6 ppg, 1.23 H ₂ O/k tail cement. Bumped plug at 500 psi over FCP (1816 psi) and circulated 88 bbls to surface after opening DVT.	
Weatherford 9-5/8" DV Tool	9.625	8.535	6,186'	6,182'		Brushy Canyon - 5,220'		Stage 2: Pumped 249 bbls (800 sx) 13.7 ppg, 1.75 H ₂ O/k cement. Bumped plug at 500 psi over FCP (1132 psi) and circulated XS cement (unknown volume)	
						1st Bone Springs Lime - 6,510'			
						1st Bone Springs Sand - 6,980'			
Top of 5-1/2" 17# TCPC Coated Injection String				8,679'		2nd Bone Springs Lime - 7,430'			
						2nd Bone Springs Sand - 7,913'			7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim Set at 13772'
VersaFlex Liner Hanger	8.535	7.625	8996'	9,015'				Stage 3: Pumped 198 bbls (640 sx) 13.7 ppg, 1.74 H ₂ O/k cement. Bumped plug at 500 psi over FCP (1407 psi) and circulated XS cement (100% excess circulated).	
						3rd Bone Springs Lime - 8,356'			
						Wolfcamp - 9,405'			
						12.25" 2nd Intermediate T.D. = 9523'			
2nd Intermediate Casing Shoe	9.625	8.535		9,502'					
						Pennsylvanian - 10,858'		Pumped 30 bbls of water based Toned Spacer II (13 ppg) followed by 57 bbls (150 sx) of 11.9 ppg, 2.118 H ₂ O/k lead cement and 29 bbls (115 sx) of 13.2 ppg, 1.439 H ₂ O/k tail cement.	
						Strawn - 11,148'			
						Atoka - 11,305'		Displaced with 349 bbls of mud with a 10 bbls spacer sweep (11.5 ppg) and bumped plug @ 1700 psi. Continued to pressure up to 2200 psi and held for 5 min. Bled 2 bbls back. Circulated 10 bbls back once hanger was set.	
						Morrow - 11,911'			
						Morrow Lime - 11,966'			
						Lower Morrow - 12,617'		Dropped ball and burst disk at 4900 psi to set packer. Picked up to test, slacked off to release coils and pulled out of running tool with drill string. Pressure tested to 1500 psi of 10 min. Good test.	
						Barnett - 13,230'			
						Mississippian Limestone - 13,380'			
						Woodford - 13,708'			
TCPC Permanent Packer				13,772'		Devonian - 13,835'			
						8.5" 3rd Intermediate T.D. = 13879'			
3rd Intermediate Liner Shoe	7.625	6.539		13,850'					
						Silurian Carbonate - 14,169'			
						Fusselman - 14,361'			
						Montoya - 14,704'			
						6.5" Injection Hole T.D. = 14889'			

IPT PERSONNEL: Johnny Musso (Field Ops Manager), Stacy Wimmer (Field Ops Manager), Trevor Smith (Drilling Engineer)
IPT WSS: Spike Medina, Jeff Jones, Tylor Bond, Mark Bercier, Jackson Wehr

