



Job Number: SYMO-170600
Company: Apache Corp.
Lease/Well: Salt Fork 3-4 Federal Com 2H
Location: Eddy County, NM
Rig Name: H&P 482
RKB: 26'
G.L. or M.S.L.: GL

State/Country: Texas/USA
Declination: Declination See Details Below
Grid: East To Grid North
File name: C:\WINSER-12017\APACHEMOSAL.TFO-19-4FED-12H.SVY
Date/Time: 31-Aug-17 / 15:25
Curve Name: Surface - 7800' M.D. (SRG)
Lat: 32.688083 Long: -103.960444

30-015-43666

MS Energy

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane - 257.00
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Declination To True North: 7.32°
Grid Convergence Factor: 0° 12' 4.99092"
Total Correction Mag to Grid: 7.30°

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.66	78.03	100.00	.12	.56	.58	.58	78.03	.66
200.00	.84	59.33	199.99	.61	1.76	-1.85	1.86	70.78	.30
300.00	.65	49.85	299.98	1.35	2.82	-3.05	3.13	64.39	.23
400.00	.42	53.39	399.98	1.94	3.55	-3.89	4.04	61.38	.23
500.00	.82	311.80	499.97	2.63	3.31	-3.82	4.23	51.51	.99
600.00	.72	305.09	599.96	3.47	2.26	-2.99	4.14	33.10	.13
700.00	.70	312.17	699.96	4.24	1.30	-2.22	4.44	16.98	.09
800.00	.68	310.43	799.95	5.04	.39	-1.51	5.05	4.44	.03
900.00	.69	308.95	899.94	5.80	-.53	-.79	5.82	354.79	.02
1000.00	.62	306.80	999.93	6.50	-1.43	-.07	6.66	347.59	.07
1100.00	.55	315.12	1099.93	7.17	-2.20	.53	7.50	342.92	.11
1200.00	.49	330.55	1199.93	7.88	-2.75	.91	8.35	340.75	.15

Measured Depth Ft	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
1300.00	.53	335.86	1299.92	8.67	-3.15	1.12	9.23	340.04	.06
1400.00	.58	333.94	1399.92	9.55	-3.56	1.32	10.19	339.55	.05
1500.00	.56	330.51	1499.91	10.43	-4.02	1.58	11.18	338.90	.04
1600.00	.26	25.11	1599.91	11.06	-4.17	1.57	11.82	339.35	.46
1700.00	.37	355.24	1699.91	11.59	-4.10	1.39	12.29	340.52	.19
1800.00	.16	2.62	1799.91	12.05	-4.12	1.30	12.73	341.12	.21
1900.00	.26	35.59	1899.91	12.37	-3.98	1.10	13.00	342.16	.15
2000.00	.29	27.26	1999.91	12.76	-3.73	.76	13.32	343.72	.05
2100.00	.43	2.76	2099.90	13.38	-3.60	.50	13.86	344.94	.21
2200.00	.46	343.74	2199.90	14.14	-3.69	.42	14.62	345.36	.15
2300.00	.54	324.34	2299.90	14.91	-4.08	.62	15.46	344.69	.19
2400.00	.66	328.37	2399.89	15.78	-4.66	.99	16.46	343.56	.13
2500.00	.61	349.24	2499.89	16.80	-5.06	1.15	17.54	343.24	.24
2600.00	.77	348.78	2599.88	17.98	-5.29	1.11	18.74	343.61	.16
2700.00	.85	342.03	2699.87	19.34	-5.65	1.15	20.15	343.72	.12
2800.00	.78	342.90	2799.86	20.70	-6.08	1.27	21.57	343.64	.07
2900.00	.54	332.01	2899.85	21.77	-6.50	1.44	22.72	343.38	.27
3000.00	.51	330.45	2999.85	22.57	-6.94	1.68	23.61	342.91	.03
3100.00	.15	117.17	3099.85	22.90	-7.04	1.71	23.96	342.90	.64
3200.00	.38	131.57	3199.84	22.62	-6.68	1.42	23.58	343.55	.24
3300.00	.19	176.73	3299.84	22.23	-6.42	1.26	23.14	343.89	.28
3400.00	.38	149.94	3399.84	21.78	-6.25	1.19	22.66	344.00	.23
3500.00	.33	136.98	3499.84	21.28	-5.88	.94	22.08	344.55	.09
3600.00	.10	151.31	3599.84	21.00	-5.64	.78	21.74	344.95	.23
3700.00	.29	175.14	3699.84	20.67	-5.58	.79	21.41	344.89	.20
3800.00	.27	138.90	3799.84	20.24	-5.40	.71	20.95	345.05	.18
3900.00	.09	167.77	3899.84	19.98	-5.23	.60	20.66	345.32	.20
4000.00	.30	202.10	3999.84	19.66	-5.32	.76	20.37	344.87	.23
4100.00	1.35	196.58	4099.82	18.29	-5.75	1.49	19.17	342.55	1.05
4200.00	5.07	210.55	4199.65	13.36	-8.33	5.11	15.74	328.04	3.77
4300.00	5.88	211.86	4299.19	5.20	-13.28	11.77	14.26	291.38	.82
4400.00	5.86	211.87	4398.67	-3.49	-18.68	18.99	19.00	259.43	.02
4500.00	5.86	212.90	4498.15	-12.11	-24.15	26.25	27.02	243.37	.11
4600.00	5.29	209.06	4597.67	-20.42	-29.16	33.01	35.60	234.99	.68

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
4700.00	4.72	209.17	4697.29	-28.05	-33.41	38.86	43.62	229.99	.57
4800.00	4.65	201.73	4796.96	-35.40	-36.91	43.93	51.15	226.20	.61
4900.00	4.53	202.35	4896.64	-42.82	-39.91	48.52	58.54	222.99	.13
5000.00	4.08	199.70	4996.36	-49.82	-42.62	52.73	65.56	220.54	.49
5100.00	4.46	206.38	5096.08	-56.66	-45.54	57.12	72.69	218.79	.63
5200.00	4.42	206.15	5195.78	-63.60	-48.97	62.02	80.27	217.60	.04
5300.00	4.00	209.08	5295.51	-70.10	-52.36	66.79	87.50	216.76	.47
5400.00	3.87	209.43	5395.27	-76.09	-55.72	71.40	94.31	216.21	.13
5500.00	4.31	215.25	5495.02	-82.10	-59.54	76.48	101.42	215.95	.60
5600.00	4.32	213.85	5594.74	-88.30	-63.81	82.04	108.94	215.85	.11
5700.00	4.46	211.41	5694.44	-94.74	-67.93	87.50	116.58	215.64	.23
5800.00	4.57	204.66	5794.13	-101.68	-71.62	92.66	124.37	215.16	.54
5900.00	4.71	195.67	5893.81	-109.26	-74.39	97.06	132.18	214.25	.74
6000.00	4.33	198.28	5993.50	-116.79	-76.69	100.99	139.72	213.29	.43
6100.00	4.22	210.06	6093.22	-123.56	-79.71	105.47	147.04	212.83	.88
6200.00	4.15	213.56	6192.95	-129.76	-83.56	110.60	154.34	212.78	.26
6300.00	3.94	215.02	6292.70	-135.59	-87.53	115.79	161.39	212.84	.23
6400.00	3.63	214.46	6392.49	-141.01	-91.29	120.67	167.99	212.92	.31
6500.00	3.57	215.09	6492.29	-146.17	-94.87	125.32	174.26	212.99	.07
6600.00	3.14	213.08	6592.12	-151.01	-98.16	129.61	180.11	213.02	.45
6700.00	3.21	218.05	6691.96	-155.51	-101.38	133.76	185.64	213.10	.28
6800.00	4.31	215.16	6791.75	-160.79	-105.27	138.74	192.18	213.21	1.12
6900.00	5.77	205.34	6891.36	-168.41	-109.58	144.66	200.92	213.05	1.69
7000.00	5.37	206.25	6990.89	-177.15	-113.80	150.74	210.55	212.72	.41
7100.00	4.68	207.48	7090.50	-184.96	-117.76	156.35	219.27	212.48	.70
7200.00	4.59	198.61	7190.18	-192.37	-120.91	161.09	227.22	212.15	.72
7300.00	6.69	203.71	7289.69	-201.50	-124.53	166.67	236.88	211.72	2.16
7400.00	6.53	203.73	7389.02	-212.04	-129.16	173.55	248.28	211.35	.16
7500.00	6.11	200.96	7488.41	-222.21	-133.36	179.93	259.16	210.97	.52
7600.00	5.46	201.78	7587.90	-231.60	-137.03	185.61	269.10	210.61	.66
7700.00	4.97	204.90	7687.49	-239.95	-140.62	190.99	278.12	210.37	.57
Last Survey Depth Recorded									
7800.00	4.91	204.86	7787.12	-247.76	-144.24	196.28	286.69	210.21	.06

