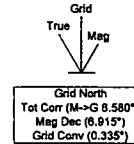


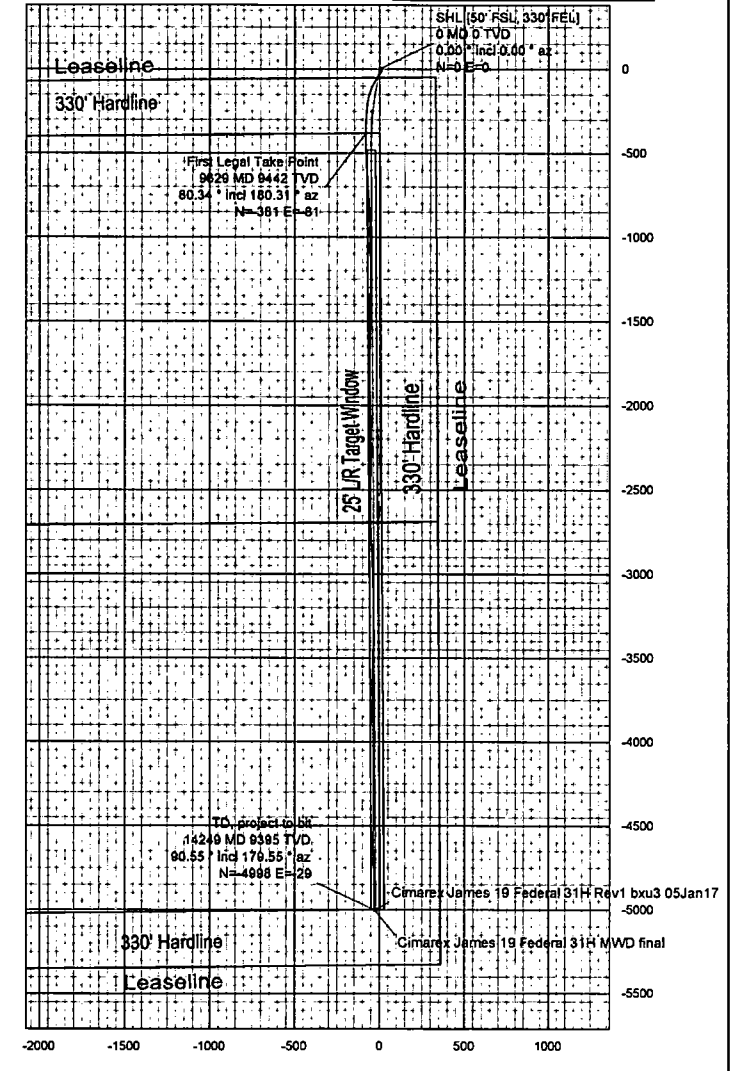
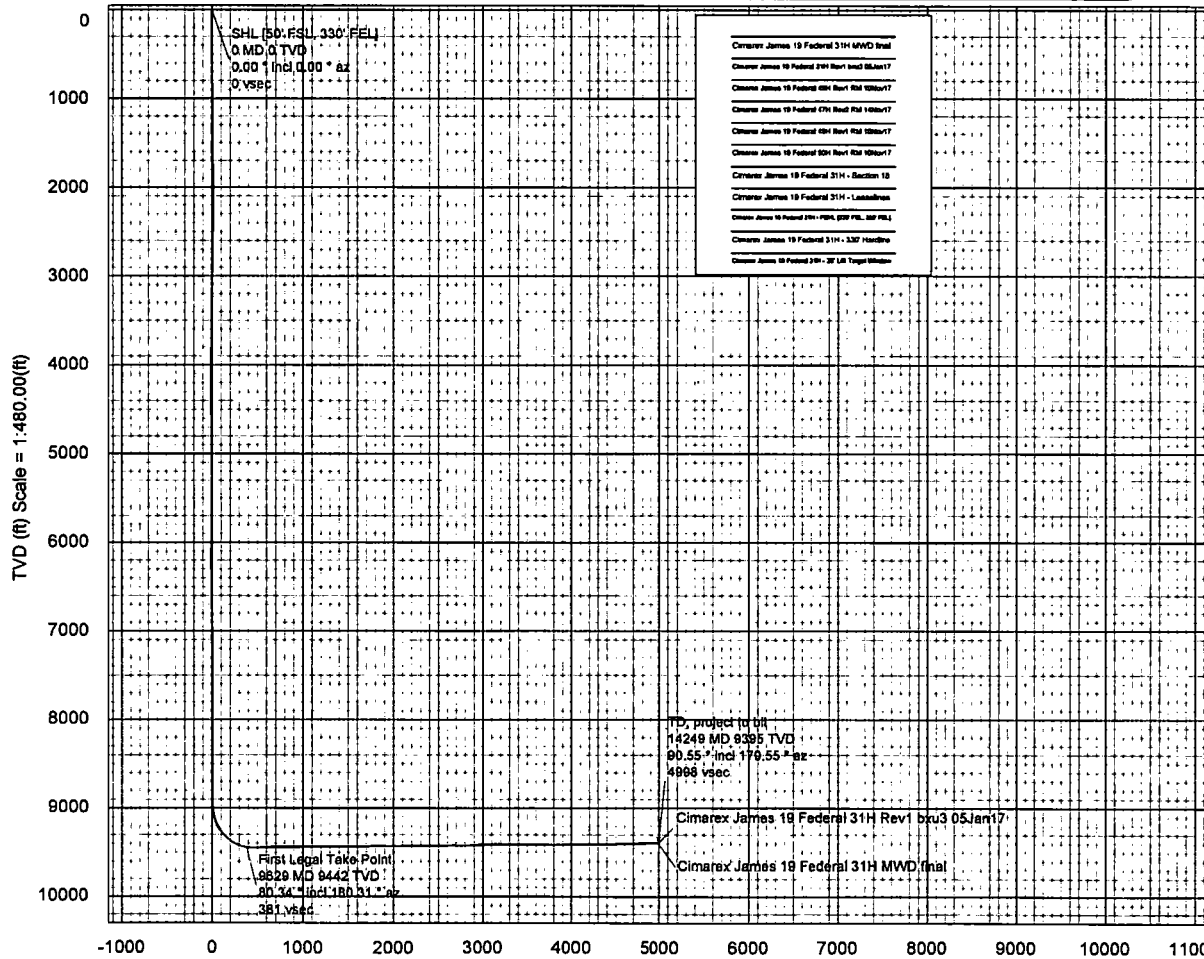
Borehole: Original Borehole		Well: Cimarex James 19 Federal 31H		Field: NM Lea County (NAD 83)		Structure: Cimarex James 19 Federal 31H	
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Gravity & Magnetic Parameters				Surface Location				NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2017	Dip:	60.067°	Date:	14-Jan-2018	Lat:	N 32 17 50.64	Northing:	472493.41RUS	Grid Conv:	0.3351*	Slot:	Cimarex James 19	TVD Ref:	RKB(3672H above MSL)
MagDec:	6.915°	FB:	48119.517nT	Gravity FB:	998.438mgn (0.80665 Based)	Lon:	W 103 42 22.59	Eastng:	735089.33RUS	Scale Fact:	0.99995208	Plan:	EW 31H		Cimarex James 19 Federal 31H MWD final

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (50' FSL, 330' FEL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Legal Take Point	9629.00	80.34	180.31	9442.32	380.83	-381.34	-80.67	10.86
TD, project to bit	14249.00	90.55	179.55	9394.85	4998.08	-4998.35	-28.84	0.00



CONTROLLED	
Plan ref	Cimarex James 19 Federal 31H MWD final
Drawing ref	
Copy number	of 3
Date	02-Feb-2018
Chart	
Client	
Scale	
Notes	
Copy number	of



- Cimarex James 19 Federal 31H MWD final
- Cimarex James 19 Federal 31H Rev1 bxu3 05Jan17
- Cimarex James 19 Federal 31H Rev1 bxu3 05Jan17
- Cimarex James 19 Federal 31H Rev1 bxu3 05Jan17
- Cimarex James 19 Federal 31H Rev1 bxu3 05Jan17
- Cimarex James 19 Federal 31H - Section 19
- Cimarex James 19 Federal 31H - Lease/line
- Cimarex James 19 Federal 31H - PVA, 330' FEL, 330' HLL
- Cimarex James 19 Federal 31H - 330' Hardline
- Cimarex James 19 Federal 31H - 25' LR Target Window

Cimarex James 19 Federal 31H MWD final Survey Geodetic Report



(Def Survey)

Report Date:	February 02, 2018 - 12:20 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	179.646° (Grid North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex James 19 Federal 31H / Cimarex James 19 Federal 31H	TVD Reference Datum:	RKB
Well:	Cimarex James 19 Federal 31H	TVD Reference Elevation:	3672.000 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3648.000 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	6.915°
Survey Name:	Cimarex James 19 Federal 31H MWD final	Total Gravity Field Strength:	998.4382mgn (9.80665 Based)
Survey Date:	January 14, 2018	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	178.795° / 5110.963 ft / 6.139 / 0.541	Total Magnetic Field Strength:	48119.517 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	60.067°
Location Lat / Long:	N 32° 17' 50.64200", W 103° 42' 22.59467"	Declination Date:	January 14, 2018
Location Grid N/E Y/X:	N 472493.410 RUS, E 735089.330 RUS	Magnetic Declination Model:	HDGM 2017
CRS Grid Convergence Angle:	0.3351°	North Reference:	Grid North
Grid Scale Factor:	0.99995208	Grid Convergence Used:	0.3351°
Version / Patch:	2.10.696.0	Total Corr Mag North->Grid North:	6.5801°
		Local Coord Referenced To:	Structure Reference Point

HOBBS OCD
APR 08 2019
RECEIVED

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [50' FSL, 330' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	472493.41	735089.33	N 32 17 50.64	W 103 42 22.59
	179.00	0.68	132.38	179.00	0.72	-0.72	0.78	0.38	472492.69	735090.11	N 32 17 50.63	W 103 42 22.59
	222.00	0.69	126.42	221.99	1.05	-1.04	1.18	0.17	472492.37	735090.51	N 32 17 50.63	W 103 42 22.58
	305.00	0.73	126.94	304.99	1.68	-1.67	1.89	0.06	472491.74	735091.32	N 32 17 50.63	W 103 42 22.57
	397.00	0.69	127.77	396.98	2.40	-2.38	2.89	0.05	472491.03	735092.22	N 32 17 50.62	W 103 42 22.56
	489.00	0.47	155.53	488.97	3.08	-3.06	3.48	0.38	472490.35	735092.81	N 32 17 50.61	W 103 42 22.55
	580.00	0.57	154.60	579.97	3.83	-3.81	3.83	0.11	472489.60	735093.16	N 32 17 50.60	W 103 42 22.55
	673.00	0.71	130.48	672.97	4.63	-4.60	4.47	0.32	472488.81	735093.80	N 32 17 50.60	W 103 42 22.54
	764.00	0.54	159.27	763.96	5.40	-5.37	5.05	0.39	472488.04	735094.38	N 32 17 50.59	W 103 42 22.54
	855.00	0.50	131.80	854.96	6.07	-6.03	5.50	0.27	472487.37	735094.83	N 32 17 50.58	W 103 42 22.53
	949.00	0.47	126.64	948.95	6.58	-6.54	6.11	0.06	472486.87	735095.44	N 32 17 50.57	W 103 42 22.52
	1044.00	0.41	116.62	1043.95	6.96	-6.92	6.73	0.10	472486.46	735096.06	N 32 17 50.57	W 103 42 22.52
	1139.00	0.40	157.71	1138.95	7.43	-7.38	7.16	0.30	472486.03	735096.49	N 32 17 50.57	W 103 42 22.51
	1148.00	0.20	167.86	1147.95	7.47	-7.43	7.17	2.29	472485.98	735096.50	N 32 17 50.57	W 103 42 22.51
	1238.00	0.42	184.19	1237.95	7.95	-7.91	7.18	0.28	472485.50	735096.51	N 32 17 50.56	W 103 42 22.51
	1332.00	0.61	183.11	1331.94	8.80	-8.75	7.13	0.20	472484.66	735096.48	N 32 17 50.55	W 103 42 22.51
	1427.00	0.53	185.03	1426.94	9.74	-9.69	7.06	0.09	472483.72	735096.39	N 32 17 50.55	W 103 42 22.51
	1522.00	0.63	189.01	1521.93	10.69	-10.65	6.94	0.11	472482.76	735096.27	N 32 17 50.54	W 103 42 22.51
	1616.00	0.66	195.89	1615.93	11.72	-11.68	6.71	0.09	472481.73	735096.04	N 32 17 50.53	W 103 42 22.52
	1711.00	0.75	193.46	1710.92	12.85	-12.81	6.42	0.10	472480.60	735095.75	N 32 17 50.51	W 103 42 22.52
	1805.00	1.05	209.06	1804.91	14.20	-14.18	5.86	0.41	472479.25	735095.19	N 32 17 50.50	W 103 42 22.53
	1900.00	0.90	199.62	1899.89	15.66	-15.63	5.18	0.23	472477.79	735094.51	N 32 17 50.49	W 103 42 22.54
	1994.00	1.00	199.58	1893.88	17.12	-17.09	4.66	0.11	472476.32	735093.99	N 32 17 50.47	W 103 42 22.54
	2089.00	0.32	302.62	2088.88	17.76	-17.73	4.16	1.18	472475.68	735093.49	N 32 17 50.47	W 103 42 22.55
	2184.00	0.79	350.58	2183.87	16.97	-16.94	3.83	0.68	472474.67	735093.16	N 32 17 50.47	W 103 42 22.55
	2278.00	0.67	349.61	2277.86	15.78	-15.76	3.63	0.13	472473.65	735092.95	N 32 17 50.49	W 103 42 22.55
	2373.00	0.71	17.47	2372.86	14.68	-14.65	3.70	0.35	472472.76	735093.03	N 32 17 50.52	W 103 42 22.55
	2467.00	0.77	8.55	2466.85	13.50	-13.47	3.97	0.14	472471.94	735093.30	N 32 17 50.51	W 103 42 22.55
	2562.00	0.86	18.77	2561.84	12.19	-12.17	4.29	0.18	472471.24	735093.62	N 32 17 50.52	W 103 42 22.55
	2657.00	0.83	8.91	2656.83	10.84	-10.81	4.63	0.16	472470.60	735093.96	N 32 17 50.53	W 103 42 22.54
	2751.00	0.89	11.15	2750.82	9.45	-9.42	4.88	0.07	472469.99	735094.21	N 32 17 50.55	W 103 42 22.54
	2846.00	1.06	15.93	2845.81	7.89	-7.86	5.26	0.20	472469.55	735094.59	N 32 17 50.56	W 103 42 22.53
	2941.00	1.27	22.34	2940.79	6.07	-6.04	5.90	0.26	472468.37	735095.23	N 32 17 50.58	W 103 42 22.53
	3035.00	0.86	352.58	3034.77	4.41	-4.37	6.21	0.72	472467.04	735095.54	N 32 17 50.60	W 103 42 22.52
	3130.00	0.89	321.71	3129.76	3.12	-3.09	5.66	0.49	472465.32	735094.99	N 32 17 50.61	W 103 42 22.53
	3224.00	0.61	350.72	3223.75	2.05	-2.02	5.13	0.49	472463.39	735094.45	N 32 17 50.62	W 103 42 22.54
	3319.00	0.65	357.55	3318.75	1.01	-0.98	5.02	0.09	472461.43	735094.35	N 32 17 50.63	W 103 42 22.54
	3413.00	0.72	339.41	3412.74	-0.07	0.10	4.79	0.24	472459.51	735094.12	N 32 17 50.64	W 103 42 22.54
	3508.00	0.88	344.30	3507.73	-1.34	1.36	4.38	0.18	472457.77	735093.71	N 32 17 50.66	W 103 42 22.54
	3602.00	0.73	346.39	3601.72	-2.62	2.64	4.05	0.16	472456.05	735093.38	N 32 17 50.67	W 103 42 22.55
	3697.00	0.81	341.67	3696.71	-3.84	3.87	3.69	0.11	472454.28	735093.02	N 32 17 50.68	W 103 42 22.55
	3792.00	0.68	335.70	3791.70	-5.00	5.02	3.25	0.16	472452.43	735092.58	N 32 17 50.69	W 103 42 22.56
	3886.00	0.67	338.43	3885.70	-6.02	6.04	2.82	0.04	472450.45	735092.15	N 32 17 50.70	W 103 42 22.56
	3981.00	0.24	15.62	3980.70	-6.73	6.74	2.67	0.53	472500.15	735092.00	N 32 17 50.71	W 103 42 22.56
	4076.00	0.29	31.57	4075.69	-7.12	7.14	2.85	0.09	472500.55	735092.18	N 32 17 50.71	W 103 42 22.56
	4170.00	0.25	47.74	4169.69	-7.46	7.48	3.12	0.09	472500.89	735092.45	N 32 17 50.72	W 103 42 22.56
	4265.00	0.53	105.70	4264.69	-7.48	7.50	3.70	0.47	472500.91	735093.03	N 32 17 50.72	W 103 42 22.55
	4360.00	0.65	123.36	4359.69	-7.06	7.09	4.57	0.23	472500.50	735093.90	N 32 17 50.71	W 103 42 22.54
	4454.00	1.07	117.60	4453.68	-6.35	6.39	5.80	0.46	472499.80	735095.13	N 32 17 50.70	W 103 42 22.53
	4549.00	1.06	118.99	4548.66	-5.50	5.55	7.35	0.03	472498.96	735096.68	N 32 17 50.70	W 103 42 22.51
	4622.00	0.94	111.37	4621.65	-4.95	5.00	8.50	0.25	472498.41	735097.83	N 32 17 50.69	W 103 42 22.50
	4716.00	1.06	114.51	4715.63	-4.30	4.36	10.01	0.14	472497.77	735099.34	N 32 17 50.68	W 103 42 22.48
	4811.00	1.18	111.81	4810.62	-3.56	3.64	11.72	0.14	472497.04	735101.05	N 32 17 50.68	W 103 42 22.46
	4905.00	1.16	114.64	4904.60	-2.80	2.88	13.48	0.07	472496.29	735102.81	N 32 17 50.67	W 103 42 22.44
	5000.00	1.19	106.61	4999.58	-2.10	2.20	15.30	0.18	472495.61	735104.63	N 32 17 50.66	W 103 42 22.42
	5094.00	1.20	111.71	5093.56	-1.45	1.55	17.15	0.11	472494.96	735106.48	N 32 17 50.66	W 103 42 22.39
	5189.00	1.26	107.50	5188.53	-0.75	0.87	19.07	0.11	472494.28	735108.40	N 32 17 50.65	W 103 42 22.37
	5284.00	0.45	81.10	5283.52	-0.49	0.61	20.43	0.93	472494.02	735109.76	N 32 17 50.65	W 103 42 22.36
	5378.00	0.35	23.32	5377.52	-0.81	0.94	20.91	0.42	472494.35	735110.24	N 32 17 50.65	W 103 42 22.35
	5473.00	0.30	31.58	5472.52	-1.28	1.41	21.16	0.07	472494.82	735110.49	N 32 17 50.65	W 103 42 22.35
	5567.00	0.28	41.05	5566.52	-1.66	1.80	21.44	0.06	472495.21	735110.77	N 32 17 50.66	W 103 42 22.34
	5662.00	0.58	333.50	5661.52	-2.27	2.40	21.37	0.57	472495.81	735110.70	N 32 17 50.66	W 103 42 22.35
	5757.00	0.63	329.90	5756.51	-3.15	3.28	20.90	0.07	472496.89	735110.23	N 32 17 50.67	W 103 42 22.35
	5851.00	0.55	311.85	5850.51	-3.91	4.03	20.30	0.21	472497.44	735109.63	N 32 17 50.68	W 103 42 22.36
	5945.00	0.62	313.15	5944.50	-4.56	4.68	19.60	0.08	472498.09	735108.92	N 32 17 50.69	W 103 42 22.37

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6040.00	0.36	339.59	6039.50	-5.19	5.31	19.12	0.35	472498.72	735108.45	N 32 17 50.69	W 103 42 22.37
	6135.00	0.43	322.86	6134.49	-5.76	6.88	18.80	0.14	472489.26	735108.13	N 32 17 50.70	W 103 42 22.38
	6229.00	0.71	248.76	6228.49	-5.83	5.95	18.04	0.77	472489.36	735107.37	N 32 17 50.70	W 103 42 22.38
	6324.00	1.07	225.77	6323.48	-5.01	5.11	16.86	0.53	472498.52	735106.19	N 32 17 50.69	W 103 42 22.40
	6418.00	1.13	215.58	6417.46	-3.65	3.75	15.69	0.22	472497.16	735105.02	N 32 17 50.68	W 103 42 22.41
	6513.00	0.96	211.29	6512.45	-2.22	2.31	14.73	0.20	472495.72	735104.06	N 32 17 50.66	W 103 42 22.42
	6607.00	1.02	214.10	6606.43	-0.85	0.94	13.85	0.08	472494.35	735103.18	N 32 17 50.65	W 103 42 22.43
	6702.00	1.21	202.61	6701.41	0.77	-0.69	12.99	0.31	472492.72	735102.32	N 32 17 50.63	W 103 42 22.44
	6796.00	1.32	211.51	6795.39	2.60	-2.53	12.05	0.24	472490.89	735101.37	N 32 17 50.62	W 103 42 22.45
	6891.00	1.23	212.82	6890.37	4.38	-4.31	10.92	0.10	472489.10	735100.25	N 32 17 50.60	W 103 42 22.47
	6986.00	1.47	210.73	6985.34	6.28	-6.22	9.75	0.26	472487.17	735099.08	N 32 17 50.58	W 103 42 22.48
	7080.00	0.62	206.93	7079.33	7.76	-7.71	8.90	0.91	472485.70	735098.23	N 32 17 50.57	W 103 42 22.49
	7175.00	0.10	221.58	7174.32	8.28	-8.23	8.61	0.55	472485.18	735097.94	N 32 17 50.56	W 103 42 22.49
	7269.00	0.13	196.50	7268.32	8.45	-8.39	8.53	0.06	472485.02	735097.86	N 32 17 50.56	W 103 42 22.50
	7364.00	0.32	189.08	7363.32	8.81	-8.76	8.45	0.20	472484.65	735097.78	N 32 17 50.55	W 103 42 22.50
	7458.00	0.09	141.98	7457.32	9.13	-9.08	8.46	0.28	472484.33	735097.79	N 32 17 50.55	W 103 42 22.50
	7553.00	0.32	77.75	7552.32	9.13	-9.08	8.76	0.31	472484.33	735098.09	N 32 17 50.55	W 103 42 22.49
	7648.00	0.29	70.39	7647.32	9.00	-8.94	9.25	0.05	472484.47	735098.58	N 32 17 50.55	W 103 42 22.49
	7742.00	0.35	59.61	7741.32	8.78	-8.72	9.72	0.09	472484.69	735099.05	N 32 17 50.56	W 103 42 22.48
	7837.00	0.38	78.35	7836.32	8.57	-8.51	10.28	0.13	472484.90	735099.61	N 32 17 50.56	W 103 42 22.48
	7931.00	0.51	98.54	7930.31	8.57	-8.50	11.00	0.21	472484.91	735100.33	N 32 17 50.56	W 103 42 22.47
	8026.00	0.50	103.77	8025.31	8.74	-8.67	11.82	0.05	472484.74	735101.15	N 32 17 50.56	W 103 42 22.46
	8121.00	0.36	108.47	8120.31	8.94	-8.86	12.51	0.15	472484.55	735101.83	N 32 17 50.55	W 103 42 22.45
	8215.00	0.32	104.40	8214.31	9.10	-9.02	13.04	0.05	472484.39	735102.37	N 32 17 50.55	W 103 42 22.44
	8310.00	0.44	128.14	8309.30	9.39	-9.31	13.58	0.21	472484.10	735102.91	N 32 17 50.55	W 103 42 22.44
	8404.00	0.46	142.94	8403.30	9.92	-9.83	14.09	0.13	472483.58	735103.42	N 32 17 50.54	W 103 42 22.43
	8499.00	0.53	128.01	8498.30	10.50	-10.41	14.67	0.15	472483.00	735104.00	N 32 17 50.54	W 103 42 22.42
	8594.00	0.45	126.04	8593.29	10.99	-10.90	15.32	0.09	472482.51	735104.65	N 32 17 50.53	W 103 42 22.42
	8688.00	0.18	78.81	8687.29	11.18	-11.09	15.76	0.38	472482.32	735105.09	N 32 17 50.53	W 103 42 22.41
	8783.00	0.22	141.08	8782.29	11.30	-11.20	16.02	0.22	472482.21	735105.35	N 32 17 50.53	W 103 42 22.41
	8869.00	0.13	0.36	8868.29	11.33	-11.23	16.13	0.38	472482.18	735105.46	N 32 17 50.53	W 103 42 22.41
	8933.00	0.37	265.87	8932.29	11.27	-11.17	15.92	0.63	472482.24	735105.25	N 32 17 50.53	W 103 42 22.41
	8965.00	3.58	225.84	8964.27	11.97	-11.88	15.10	10.33	472481.53	735104.43	N 32 17 50.52	W 103 42 22.42
	8996.00	7.99	215.18	8995.10	14.39	-14.31	13.16	14.58	472479.10	735102.49	N 32 17 50.50	W 103 42 22.44
	9028.00	10.60	216.44	9026.68	18.56	-18.50	10.13	8.18	472474.91	735099.46	N 32 17 50.46	W 103 42 22.48
	9059.00	12.50	215.67	9057.05	23.56	-23.52	6.48	6.15	472469.89	735095.81	N 32 17 50.41	W 103 42 22.52
	9091.00	15.38	217.69	9088.11	29.70	-29.69	1.87	9.13	472463.72	735091.20	N 32 17 50.35	W 103 42 22.57
	9122.00	19.13	214.53	9117.71	37.11	-37.13	-3.53	12.46	472456.28	735085.81	N 32 17 50.27	W 103 42 22.64
	9154.00	22.80	212.55	9147.58	46.62	-46.68	-9.84	11.68	472446.73	735079.50	N 32 17 50.18	W 103 42 22.71
	9186.00	27.52	210.30	9176.54	58.19	-58.19	-16.91	15.05	472435.11	735072.43	N 32 17 50.07	W 103 42 22.80
	9217.00	30.04	208.72	9203.71	71.14	-71.29	-24.25	8.49	472422.12	735065.08	N 32 17 49.94	W 103 42 22.88
	9248.00	31.89	208.87	9230.29	85.07	-85.27	-31.93	5.97	472408.15	735057.40	N 32 17 49.80	W 103 42 22.97
	9279.00	35.54	205.69	9256.07	100.31	-100.56	-39.79	13.08	472392.85	735049.54	N 32 17 49.65	W 103 42 23.07
	9311.00	39.61	202.02	9281.43	118.11	-118.41	-47.65	14.51	472375.01	735041.68	N 32 17 49.47	W 103 42 23.16
	9342.00	43.53	198.42	9304.62	137.37	-137.71	-54.74	14.80	472355.71	735034.60	N 32 17 49.28	W 103 42 23.24
	9373.00	47.94	194.27	9326.26	158.63	-159.01	-60.95	17.15	472334.41	735028.38	N 32 17 49.07	W 103 42 23.32
	9405.00	50.91	190.62	9347.08	182.32	-182.73	-66.17	12.69	472310.68	735023.16	N 32 17 48.84	W 103 42 23.38
	9436.00	52.53	188.19	9366.28	208.30	-208.74	-70.14	8.07	472286.68	735019.19	N 32 17 48.60	W 103 42 23.43
	9468.00	55.92	185.79	9384.99	232.05	-232.50	-73.29	12.22	472260.92	735016.05	N 32 17 48.35	W 103 42 23.46
	9499.00	60.89	184.00	9401.23	258.33	-258.80	-75.53	16.77	472234.62	735013.80	N 32 17 48.09	W 103 42 23.49
	9531.00	66.60	183.59	9415.38	286.94	-287.43	-77.43	17.88	472206.00	735011.91	N 32 17 47.80	W 103 42 23.52
	9563.00	71.93	182.71	9426.70	316.80	-317.30	-79.06	16.85	472176.13	735010.27	N 32 17 47.51	W 103 42 23.54
	9595.00	76.32	181.45	9435.45	347.55	-348.05	-80.18	14.23	472145.38	735009.16	N 32 17 47.20	W 103 42 23.55
	9625.00	79.91	180.37	9441.63	376.89	-377.40	-80.64	12.47	472116.03	735008.69	N 32 17 46.91	W 103 42 23.56
First Legal Take Point	9629.00	80.34	180.31	9442.32	380.83	-381.34	-80.67	10.88	472112.09	735008.67	N 32 17 46.87	W 103 42 23.56
	9657.00	83.35	179.87	9446.29	408.54	-409.05	-80.71	10.86	472084.38	735008.63	N 32 17 46.80	W 103 42 23.56
	9688.00	86.90	179.49	9448.92	439.43	-439.93	-80.54	11.52	472053.50	735008.80	N 32 17 46.29	W 103 42 23.56
	9717.00	90.31	178.48	9449.63	468.41	-468.92	-80.02	12.26	472024.52	735009.31	N 32 17 46.01	W 103 42 23.56
	9811.00	94.61	176.02	9445.59	562.21	-562.69	-75.52	5.27	471930.75	735013.81	N 32 17 45.08	W 103 42 23.51
	9906.00	92.37	177.09	9439.81	656.89	-657.34	-69.82	2.61	471836.11	735019.51	N 32 17 44.14	W 103 42 23.45
	10000.00	90.76	175.75	9437.24	750.70	-751.11	-63.96	2.23	471742.33	735025.38	N 32 17 43.21	W 103 42 23.39
	10095.00	90.83	177.81	9435.63	845.57	-845.95	-58.82	2.17	471647.60	735030.71	N 32 17 42.27	W 103 42 23.34
	10190.00	89.48	178.94	9435.67	940.54	-940.91	-55.93	1.85	471552.55	735033.41	N 32 17 41.34	W 103 42 23.31
	10284.00	90.24	179.05	9435.90	1034.54	-1034.89	-54.28	0.82	471458.57	735035.05	N 32 17 40.41	W 103 42 23.30
	10379.00	90.00	178.43	9435.70	1128.53	-1128.88	-53.02	0.47	471363.58	735036.31	N 32 17 39.47	W 103 42 23.29
	10473.00	90.31	178.97	9435.44	1223.53	-1223.88	-52.53	0.66	471269.59	735036.81	N 32 17 38.53	W 103 42 23.29
	10567.00	89.55	180.45	9435.56	1317.53	-1317.88	-52.87	0.98	471175.60	735036.46	N 32 17 37.60	W 103 42 23.30
	10662.00	90.52	180.67	9435.50	1412.51	-1412.87	-53.80	1.05	471080.61	735035.53	N 32 17 36.66	W 103 42 23.32
	10757.00	89.14	179.97	9435.78	1507.50	-1507.87	-54.33	1.63	470985.62	735035.00	N 32 17 35.72	W 103 42 23.33
	10851.00	90.55	180.18	9436.04	1601.50	-1601.86	-54.45	1.52	470891.62	735034.88	N 32 17 34.79	W 103 42 23.34
	10946.00	91.86	180.94	9434.04	1696.46	-1696.84	-55.38	1.59	470796.66	735033.95	N 32 17 33.86	W 103 42 23.36
	11040.00	91.31	180.21	9431.44	1790.41	-1790.79	-56.37	0.82	470702.70	735032.96	N 32 17 32.93	W 103 42 23.37
	11135.00	90.48	178.45	9429.96	1885.39	-1885.77	-55.31	2.11	470607.73	735034.02	N 32 17 31.99	W 103 42 23.37
	11229.00	89.76	178.47	9429.76	1979.37	-1979.74	-52.79	0.77	470513.77	735036.55	N 32 17 31.06	W 103 42 23.34
	11324.00	90.89	178.91	9429.22	2074.36	-2074.71	-50.61	1.28	470418.80	735038.72	N 32 17 30.12	W 103 42 23.33
	11418.00	89.86	178.75	9428.61	2168.35	-2168.70	-49.51	1.41	470324.62	735039.82	N 32 17 29.19	W 103 42 23.32
	11513.00	90.55	179.92	9428.27	2263.35	-2263.70	-49.24	0.75	470229.63	735040.09	N 32 17 28.25	W 103 42 23.32
	11608.00	90.31	180.58	9427.55								

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
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Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
 Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/98.425	30.000	30.000	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex James 19 Federal 31H MWD final
	1	24.000	24.000	Act Sns	30.000	30.000	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex James 19 Federal 31H MWD final
	1	24.000	14249.000	Act Sns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Cimarex James 19 Federal 31H MWD final