



Final Surveys - Cimarex Vaca Draw 20-17 Federal #13H MWD 0ft-22542ft
(Surcon Corrected) Survey Geodetic Report
(Def Survey)



Report Date: March 25, 2019 - 10:49 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #13H / Cimarex Vaca Draw 20-17 Federal #13H
Well: Cimarex Vaca Draw 20-17 Federal #13H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Final Surveys - Cimarex Vaca Draw 20-17 Federal #13H MWD 0ft-22542ft (Surcon Corrected)
Survey Date: January 09, 2019
Tort / AHD / DDI / ERD Ratio: 320.269 * / 11202.955 ft / 6.809 / 0.892
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 35.06113", W 103° 36' 1.76446"
Location Grid N/E Y/X: N 404430.850 RUS, E 768241.870 RUS
CRS Grid Convergence Angle: 0.3896 *
Grid Scale Factor: 0.99996806
Version / Patch: 2.10.753.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.630 * (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3448.000 ft above MSL
Seabed / Ground Elevation: 3423.000 ft above MSL
Magnetic Declination: 6.671 *
Total Gravity Field Strength: 998.4285mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47801.059 nT
Magnetic Dip Angle: 59.730 *
Declination Date: March 11, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.3896 *
Total Corr Mag North->Grid North: 6.2814 *
Local Coord Referenced To: Structure Reference Point

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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 °'")	Closure Azimuth (°)	Closure (ft)
SHL [330' FSL, 730' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404430.85	768241.87	N 32 6 35.06	W 103 36 1.76	0.00	0.00
	196.00	0.21	235.78	196.00	-0.20	-0.20	-0.30	0.11	404430.65	768241.57	N 32 6 35.06	W 103 36 1.77	235.78	0.36
	294.00	0.16	242.94	294.00	-0.36	-0.37	-0.57	0.06	404430.48	768241.30	N 32 6 35.06	W 103 36 1.77	237.23	0.67
	388.00	0.23	253.94	388.00	-0.47	-0.48	-0.87	0.08	404430.37	768241.00	N 32 6 35.06	W 103 36 1.77	241.13	0.89
	479.00	0.26	200.12	479.00	-0.71	-0.72	-1.11	0.25	404430.13	768240.76	N 32 6 35.05	W 103 36 1.78	237.02	1.33
	570.00	0.51	146.57	570.00	-1.25	-1.25	-0.96	0.45	404429.60	768240.91	N 32 6 35.05	W 103 36 1.78	217.45	1.58
	662.00	1.05	133.18	661.99	-2.17	-2.17	-0.12	0.62	404428.68	768241.75	N 32 6 35.04	W 103 36 1.77	183.16	2.18
	752.00	0.99	127.02	751.97	-3.21	-3.20	1.10	0.14	404427.65	768242.97	N 32 6 35.03	W 103 36 1.75	161.02	3.39
	839.00	1.03	134.88	838.96	-4.22	-4.21	2.28	0.17	404426.64	768244.13	N 32 6 35.02	W 103 36 1.74	151.80	4.78
	938.00	1.20	129.89	937.94	-5.53	-5.50	3.68	0.20	404425.35	768245.55	N 32 6 35.01	W 103 36 1.72	146.20	6.62
	953.00	1.25	140.06	952.94	-5.75	-5.73	3.91	1.49	404425.12	768245.78	N 32 6 35.00	W 103 36 1.72	145.69	6.93
	1125.00	1.48	129.45	1124.89	-8.62	-8.58	6.83	0.20	404422.27	768248.70	N 32 6 34.98	W 103 36 1.69	141.48	10.96
	1220.00	1.52	129.17	1219.86	-10.21	-10.15	8.75	0.04	404420.70	768250.62	N 32 6 34.98	W 103 36 1.66	139.24	13.40
	1304.00	1.55	121.15	1303.83	-11.51	-11.44	10.59	0.26	404419.41	768252.46	N 32 6 34.95	W 103 36 1.64	137.23	15.59
	1311.00	1.54	122.01	1310.82	-11.61	-11.54	10.75	0.36	404419.31	768252.62	N 32 6 34.95	W 103 36 1.64	137.04	15.77
	1406.00	2.26	106.54	1405.77	-12.84	-12.75	13.63	0.92	404418.10	768255.50	N 32 6 34.93	W 103 36 1.61	133.10	18.66
	1598.00	5.64	88.22	1597.29	-13.71	-13.54	26.69	1.86	404417.31	768268.56	N 32 6 34.93	W 103 36 1.46	116.90	29.93
	1691.00	7.24	85.98	1689.70	-13.22	-12.98	37.10	1.74	404417.87	768278.97	N 32 6 34.93	W 103 36 1.33	109.29	39.31
	1786.00	7.70	81.18	1783.90	-11.91	-11.59	49.36	0.82	404419.26	768291.23	N 32 6 34.94	W 103 36 1.19	103.21	50.71
	1882.00	8.74	80.65	1878.91	-9.82	-9.42	62.92	1.09	404421.43	768304.79	N 32 6 34.96	W 103 36 1.03	98.51	63.62
	1976.00	9.04	77.99	1971.78	-7.22	-6.72	77.19	0.54	404424.13	768319.05	N 32 6 34.99	W 103 36 0.87	94.98	77.48
	2071.00	9.49	81.88	2065.54	-4.66	-4.06	92.24	0.81	404426.79	768334.11	N 32 6 35.01	W 103 36 0.69	92.52	92.33
	2165.00	10.42	83.85	2158.13	-2.76	-2.06	108.36	1.05	404428.79	768350.23	N 32 6 35.03	W 103 36 0.50	91.09	108.38
	2259.00	10.31	88.02	2250.59	-1.66	-0.86	125.22	0.81	404429.99	768367.09	N 32 6 35.04	W 103 36 0.31	90.39	125.23
	2353.00	9.63	93.64	2343.18	-1.98	-1.06	141.48	1.26	404429.79	768383.34	N 32 6 35.04	W 103 36 0.12	90.43	141.48
	2447.00	9.45	95.20	2435.88	-3.28	-2.26	157.01	0.34	404428.59	768398.87	N 32 6 35.03	W 103 35 59.94	90.83	157.02
	2542.00	7.82	99.38	2529.80	-5.13	-4.02	171.15	1.84	404426.83	768413.02	N 32 6 35.01	W 103 35 59.77	91.35	171.20
	2636.00	6.72	101.80	2623.04	-7.37	-6.19	182.85	1.21	404424.66	768424.71	N 32 6 34.99	W 103 35 59.64	91.94	182.85
	2731.00	5.29	103.82	2717.52	-9.62	-8.37	192.54	1.52	404422.48	768434.40	N 32 6 34.97	W 103 35 59.53	92.49	192.72

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')	Closure Azimuth (°)	Closure (ft)
	2921.00	5.31	103.48	2908.70	-13.87	-12.51	209.59	0.02	404418.34	788451.46	N 32 6 34.92	W 103 35 59.33	93.42	209.97
	3016.00	5.03	108.04	3001.32	-16.24	-14.83	217.83	0.52	404418.02	788459.69	N 32 6 34.90	W 103 35 59.23	93.89	218.33
	3110.00	5.19	104.88	3094.95	-18.66	-17.20	225.85	0.34	404413.65	788467.72	N 32 6 34.88	W 103 35 59.14	94.36	226.51
	3204.00	5.23	97.91	3188.56	-20.40	-16.89	234.21	0.68	404411.96	788476.07	N 32 6 34.86	W 103 35 59.04	94.61	234.97
	3298.00	5.14	93.59	3282.17	-21.31	-19.75	242.65	0.43	404411.10	788484.51	N 32 6 34.85	W 103 35 58.94	94.65	243.45
	3392.00	4.75	86.49	3375.82	-21.39	-19.77	250.74	0.77	404411.08	788492.60	N 32 6 34.85	W 103 35 58.85	94.51	251.52
	3486.00	4.86	76.20	3469.50	-20.25	-18.58	258.49	0.92	404412.27	788500.35	N 32 6 34.86	W 103 35 58.76	94.11	259.16
	3581.00	6.93	76.49	3563.99	-18.01	-16.28	267.97	2.18	404414.57	788509.83	N 32 6 34.88	W 103 35 58.65	93.48	268.47
	3675.00	7.29	74.32	3657.27	-15.15	-13.35	279.23	0.48	404417.50	788521.09	N 32 6 34.91	W 103 35 58.52	92.74	279.55
	3769.00	7.22	73.74	3750.51	-11.96	-10.08	290.84	0.11	404420.77	788532.50	N 32 6 34.94	W 103 35 58.39	91.99	290.82
	3863.00	7.67	80.04	3843.72	-9.30	-7.34	302.49	0.99	404423.51	788544.35	N 32 6 34.97	W 103 35 58.25	91.39	302.58
	3957.00	7.71	86.47	3936.88	-7.90	-5.87	314.96	0.92	404424.98	788556.82	N 32 6 34.98	W 103 35 58.10	91.07	315.02
	4052.00	7.32	83.99	4031.06	-6.96	-4.84	327.34	0.53	404426.01	788569.20	N 32 6 34.99	W 103 35 57.96	90.85	327.38
	4146.00	7.19	84.57	4124.31	-5.85	-3.68	339.15	0.16	404427.19	788581.01	N 32 6 35.00	W 103 35 57.82	90.62	339.17
	4241.00	7.35	82.87	4218.55	-4.61	-2.34	351.10	0.28	404428.51	788592.96	N 32 6 35.01	W 103 35 57.68	90.38	351.11
	4335.00	7.51	84.04	4311.76	-3.30	-0.96	363.18	0.23	404429.89	788605.03	N 32 6 35.03	W 103 35 57.54	90.15	363.18
	4429.00	7.90	92.89	4404.91	-3.05	-0.62	375.74	1.30	404430.23	788617.60	N 32 6 35.03	W 103 35 57.40	90.10	375.74
	4524.00	8.09	97.48	4498.99	-4.31	-1.80	388.89	0.73	404429.05	788630.75	N 32 6 35.02	W 103 35 57.24	90.26	388.89
	4618.00	8.72	97.14	4591.98	-6.14	-3.54	402.52	0.67	404427.31	788644.37	N 32 6 35.00	W 103 35 57.09	90.50	402.53
	4712.00	8.43	105.21	4684.93	-8.92	-6.24	416.24	1.32	404424.61	788658.09	N 32 6 34.97	W 103 35 56.93	90.86	416.28
	4806.00	7.59	112.60	4778.02	-13.20	-10.43	428.62	1.41	404420.42	788670.47	N 32 6 34.93	W 103 35 56.78	91.39	428.75
	4901.00	7.51	119.23	4872.19	-18.71	-15.87	439.83	0.92	404414.98	788681.68	N 32 6 34.87	W 103 35 56.65	92.07	440.11
	4996.00	6.73	130.18	4966.47	-25.40	-22.50	449.50	1.64	404408.35	788691.35	N 32 6 34.81	W 103 35 56.54	92.87	450.06
	5090.00	6.45	124.15	5059.85	-31.97	-29.01	458.08	0.79	404401.84	788699.93	N 32 6 34.74	W 103 35 56.44	93.62	459.00
	5185.00	5.65	115.28	5154.32	-37.02	-34.00	466.72	1.29	404398.85	788708.58	N 32 6 34.69	W 103 35 56.34	94.17	467.96
	5215.00	5.49	109.47	5184.18	-38.14	-35.11	469.41	1.95	404395.74	788711.27	N 32 6 34.68	W 103 35 56.31	94.28	470.72
	5279.00	5.30	79.47	5247.90	-38.66	-35.59	475.21	4.37	404395.26	788717.06	N 32 6 34.68	W 103 35 56.24	94.28	476.54
	5373.00	5.30	77.96	5341.50	-37.02	-33.89	483.72	0.15	404396.96	788725.57	N 32 6 34.69	W 103 35 56.14	94.01	484.81
	5464.00	6.20	69.93	5432.05	-34.51	-31.33	492.45	1.32	404399.52	788734.30	N 32 6 34.72	W 103 35 56.04	93.64	493.44
	5468.00	6.20	73.02	5436.02	-34.38	-31.19	492.86	8.34	404399.68	788734.71	N 32 6 34.72	W 103 35 56.04	93.62	493.84
	5562.00	5.89	73.36	5529.50	-31.57	-28.33	502.33	0.33	404402.52	788744.18	N 32 6 34.75	W 103 35 55.93	93.23	503.13
	5656.00	5.68	72.06	5623.02	-28.82	-25.52	511.38	0.26	404405.33	788753.23	N 32 6 34.77	W 103 35 55.82	92.86	512.01
	5751.00	6.36	69.83	5717.50	-25.62	-22.25	520.79	0.76	404408.60	788762.64	N 32 6 34.81	W 103 35 55.71	92.45	521.27
	5845.00	6.99	71.56	5810.86	-22.08	-18.65	531.10	0.70	404412.20	788772.96	N 32 6 34.84	W 103 35 55.59	92.01	531.43
	5940.00	6.54	71.44	5905.20	-18.60	-15.10	541.72	0.47	404415.75	788783.57	N 32 6 34.88	W 103 35 55.47	91.60	541.93
	6034.00	6.22	76.04	5998.62	-15.73	-12.17	551.73	0.84	404418.88	788793.58	N 32 6 34.90	W 103 35 55.35	91.26	551.67
	6129.00	6.31	84.12	6093.05	-14.02	-10.39	561.92	0.93	404420.46	788803.77	N 32 6 34.92	W 103 35 55.23	91.06	562.02
	6224.00	7.93	84.51	6187.31	-12.93	-9.23	573.64	1.71	404421.62	788815.49	N 32 6 34.93	W 103 35 55.10	90.92	573.71
	6318.00	9.06	83.70	6280.28	-11.59	-7.80	587.45	1.21	404423.05	788829.30	N 32 6 34.94	W 103 35 54.94	90.76	587.50
	6412.00	8.86	85.71	6373.13	-10.33	-6.44	602.02	0.40	404424.41	788843.87	N 32 6 34.96	W 103 35 54.77	90.61	602.06
	6506.00	9.06	85.23	6465.99	-9.27	-5.29	616.62	0.23	404425.56	788858.47	N 32 6 34.97	W 103 35 54.60	90.49	616.64
	6600.00	8.75	84.58	6558.85	-8.07	-3.99	631.11	0.35	404426.88	788872.96	N 32 6 34.98	W 103 35 54.43	90.36	631.12
	6786.00	8.49	83.50	6744.73	-5.33	-1.07	659.14	0.16	404429.78	788900.98	N 32 6 35.01	W 103 35 54.10	90.09	659.14
	6883.00	8.22	84.28	6838.72	-3.95	0.40	672.86	0.31	404431.25	788914.71	N 32 6 35.02	W 103 35 53.94	89.97	672.86
	6977.00	7.81	82.96	6931.80	-2.58	1.85	685.89	0.48	404432.70	788927.73	N 32 6 35.03	W 103 35 53.79	89.85	685.89
	7071.00	7.83	83.06	7024.93	-1.10	3.41	698.58	0.03	404434.26	788940.43	N 32 6 35.05	W 103 35 53.64	89.72	698.59
	7165.00	7.51	85.33	7118.09	0.09	4.68	711.06	0.47	404435.53	788952.80	N 32 6 35.06	W 103 35 53.50	89.62	711.07
	7244.00	6.89	84.55	7196.47	0.90	5.55	720.92	0.79	404436.40	788962.77	N 32 6 35.07	W 103 35 53.38	89.56	720.94
	7259.00	6.89	86.69	7211.36	1.02	5.69	722.72	1.71	404436.54	788964.56	N 32 6 35.07	W 103 35 53.38	89.55	722.74
	7354.00	7.06	85.02	7305.65	1.78	6.52	734.22	0.28	404437.37	788976.07	N 32 6 35.08	W 103 35 53.23	89.49	734.25
	7448.00	6.36	85.70	7399.01	2.80	7.42	745.17	0.75	404438.27	788987.01	N 32 6 35.08	W 103 35 53.10	89.43	745.20
	7543.00	6.10	82.57	7493.45	3.58	8.46	755.42	0.45	404439.31	788997.26	N 32 6 35.09	W 103 35 52.98	89.36	755.47
	7639.00	5.26	84.32	7588.98	4.62	9.56	764.86	0.89	404440.41	789006.70	N 32 6 35.10	W 103 35 52.87	89.28	764.92
	7733.00	6.26	91.23	7682.50	4.87	9.87	774.27	1.29	404440.72	789016.11	N 32 6 35.11	W 103 35 52.76	89.27	774.33
	7827.00	6.06	91.58	7775.96	4.58	9.63	784.35	0.22	404440.48	789026.19	N 32 6 35.10	W 103 35 52.64	89.30	784.41
	7922.00	5.91	89.84	7870.44	4.37	9.50	794.26	0.25	404440.35	789036.10	N 32 6 35.10	W 103 35 52.53	89.31	794.31
	8016.00	5.65	90.30	7963.96	4.30	9.49	803.72	0.28	404440.34	789045.56	N 32 6 35.10	W 103 35 52.42	89.32	803.78
	8205.00	6.11	92.27	8151.97	3.73	9.05	823.08	0.27	404439.80	789064.92	N 32 6 35.10	W 103 35 52.19	89.37	823.13
	8299.00	5.67	94.76	8245.47	3.08	8.46	832.70	0.54	404439.31	789074.54	N 32 6 35.09	W 103 35 52.08	89.42	832.74
	8393.00	5.43	95.82	8339.03	2.19	7.63	841.75	0.28	404438.48	789083.60	N 32 6 35.08	W 103 35 51.98	89.48	841.79
	8488.00	5.30	96.19	8433.62	1.20	6.70	850.59	0.14	404437.55	789092.43	N 32 6 35.07	W 103 35 51.88	89.55	850.61
	8582.00	5.11	96.59	8527.23	0.20	5.75	859.06	0.21	404436.60	789100.90	N 32 6 35.06	W 103 35 51.78	89.62	859.08

Comments	MD (ft)	Incl (°)	Azin Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')	Closure Azimuth (°)	Closure (ft)
	8676.00	4.91	98.73	8620.87	-0.94	4.66	867.20	0.29	404435.51	769109.04	N 32 6 35.05	W 103 35 51.68	89.69	867.21
	8771.00	4.45	100.26	8715.55	-2.27	3.38	874.84	0.50	404434.23	769116.88	N 32 6 35.04	W 103 35 51.59	89.78	874.85
	8865.00	4.14	103.43	8809.29	-3.75	1.95	881.73	0.42	404432.80	769123.57	N 32 6 35.02	W 103 35 51.51	89.87	881.73
	8960.00	3.71	105.59	8904.07	-5.41	0.32	888.03	0.48	404431.17	769129.87	N 32 6 35.00	W 103 35 51.44	89.98	888.03
	9055.00	3.14	105.19	8998.90	-6.95	-1.18	893.50	0.60	404429.67	769135.34	N 32 6 34.99	W 103 35 51.38	90.08	893.50
	9149.00	2.51	107.58	9092.78	-8.28	-2.48	897.95	0.68	404428.37	769139.78	N 32 6 34.98	W 103 35 51.33	90.16	897.95
	9244.00	1.81	126.12	9187.71	-9.81	-3.99	901.14	1.03	404426.88	769142.98	N 32 6 34.96	W 103 35 51.29	90.25	901.15
	9338.00	1.36	130.68	9281.68	-11.43	-5.60	903.19	0.50	404425.25	769145.02	N 32 6 34.94	W 103 35 51.26	90.35	903.20
	9431.00	1.11	152.16	9374.86	-12.95	-7.11	904.44	0.56	404423.74	769146.28	N 32 6 34.93	W 103 35 51.25	90.45	904.47
	9526.00	1.31	162.83	9469.84	-14.81	-8.96	905.19	0.32	404421.89	769147.03	N 32 6 34.91	W 103 35 51.24	90.57	905.24
	9620.00	0.83	182.54	9563.62	-16.52	-10.87	905.48	0.64	404420.18	769147.32	N 32 6 34.89	W 103 35 51.24	90.68	905.54
	9714.00	1.06	201.99	9657.61	-18.00	-12.16	905.12	0.42	404418.69	769146.96	N 32 6 34.88	W 103 35 51.24	90.77	905.21
	9809.00	0.99	217.32	9752.59	-19.46	-13.62	904.30	0.30	404417.23	769146.14	N 32 6 34.87	W 103 35 51.25	90.86	904.40
	9903.00	1.24	249.11	9846.57	-20.46	-14.63	902.86	0.70	404416.22	769144.69	N 32 6 34.86	W 103 35 51.27	90.93	902.87
	9997.00	1.65	259.24	9940.54	-21.06	-15.25	900.58	0.51	404415.60	769142.42	N 32 6 34.85	W 103 35 51.30	90.97	900.70
	10091.00	1.54	261.20	10034.51	-21.49	-15.69	898.00	0.13	404415.16	769139.84	N 32 6 34.85	W 103 35 51.33	91.00	898.14
	10186.00	2.28	304.52	10129.46	-20.60	-14.82	895.18	1.65	404416.03	769137.02	N 32 6 34.85	W 103 35 51.36	90.95	895.30
	10281.00	2.36	300.79	10224.38	-18.50	-12.75	891.94	0.18	404418.11	769133.78	N 32 6 34.87	W 103 35 51.40	90.82	892.03
	10375.00	2.27	297.72	10318.30	-16.63	-10.89	888.63	0.16	404419.96	769130.47	N 32 6 34.89	W 103 35 51.43	90.70	888.70
	10469.00	1.88	301.52	10412.24	-14.94	-9.22	885.67	0.44	404421.63	769127.51	N 32 6 34.91	W 103 35 51.47	90.60	885.72
	10563.00	1.54	287.54	10506.20	-13.73	-8.03	883.15	0.57	404422.82	769124.99	N 32 6 34.92	W 103 35 51.50	90.52	883.19
	10657.00	1.50	292.19	10600.17	-12.87	-7.18	880.81	0.14	404423.67	769122.65	N 32 6 34.93	W 103 35 51.52	90.47	880.84
	10752.00	1.03	346.92	10695.15	-11.56	-5.88	879.48	1.30	404424.97	769121.30	N 32 6 34.94	W 103 35 51.54	90.38	879.48
	10847.00	0.65	324.61	10780.14	-10.29	-4.61	878.96	0.52	404426.24	769120.80	N 32 6 34.96	W 103 35 51.55	90.30	878.97
	11035.00	1.84	326.75	10978.09	-6.88	-1.22	876.68	0.63	404429.63	769118.52	N 32 6 34.99	W 103 35 51.57	90.08	876.69
	11130.00	1.76	319.78	11073.04	-4.48	1.17	874.91	0.25	404432.02	769116.75	N 32 6 35.01	W 103 35 51.59	89.92	874.91
	11224.00	1.66	304.92	11167.00	-2.58	3.05	872.86	0.48	404433.90	769114.70	N 32 6 35.03	W 103 35 51.62	89.80	872.86
	11319.00	1.65	274.37	11261.96	-1.68	3.94	870.36	0.82	404434.79	769112.21	N 32 6 35.04	W 103 35 51.65	89.74	870.37
	11413.00	1.32	257.77	11355.93	-1.79	3.82	867.96	0.57	404434.67	769109.80	N 32 6 35.04	W 103 35 51.67	89.75	867.97
	11507.00	1.48	253.83	11449.90	-2.34	3.25	865.73	0.20	404434.10	769107.57	N 32 6 35.03	W 103 35 51.70	89.78	865.74
	11603.00	1.55	247.76	11545.87	-3.16	2.41	863.34	0.18	404433.26	769105.18	N 32 6 35.03	W 103 35 51.73	89.84	863.34
	11696.00	1.50	221.78	11638.84	-4.53	1.03	861.37	0.74	404431.88	769103.21	N 32 6 35.01	W 103 35 51.75	89.93	861.37
	11790.00	1.76	219.00	11732.90	-6.56	-1.01	859.64	0.29	404429.84	769101.48	N 32 6 34.99	W 103 35 51.77	90.07	859.64
	11884.00	1.95	207.65	11826.75	-9.09	-3.55	857.99	0.44	404427.30	769099.83	N 32 6 34.97	W 103 35 51.79	90.24	857.99
	11941.00	2.14	205.49	11883.72	-10.90	-5.37	857.08	0.36	404425.48	769098.92	N 32 6 34.95	W 103 35 51.80	90.36	857.10
	12003.00	2.25	205.92	11945.67	-13.04	-7.51	856.05	0.18	404423.34	769097.89	N 32 6 34.93	W 103 35 51.81	90.50	856.08
	12035.00	0.90	226.70	11977.66	-13.77	-8.24	855.59	4.51	404422.61	769097.43	N 32 6 34.92	W 103 35 51.82	90.55	855.63
	12067.00	3.96	5.24	12009.64	-12.84	-7.32	855.51	14.60	404423.53	769097.35	N 32 6 34.93	W 103 35 51.82	90.49	855.54
	12098.00	9.05	9.47	12040.43	-9.37	-3.84	856.01	16.48	404427.01	769097.85	N 32 6 34.97	W 103 35 51.81	90.26	856.02
	12129.00	14.40	11.84	12070.77	-3.20	2.34	857.20	17.32	404433.19	769099.04	N 32 6 35.03	W 103 35 51.80	89.84	857.20
	12161.00	16.71	9.81	12101.59	5.22	10.77	858.80	7.42	404441.62	769100.64	N 32 6 35.11	W 103 35 51.78	89.28	858.87
	12194.00	19.51	8.49	12132.96	15.34	20.89	860.42	8.57	404451.74	769102.26	N 32 6 35.21	W 103 35 51.78	88.81	860.88
	12225.00	22.76	7.94	12161.87	26.39	31.96	862.02	10.50	404482.81	769103.86	N 32 6 35.32	W 103 35 51.74	87.88	862.61
	12256.00	25.11	7.63	12190.20	38.84	44.42	863.72	7.59	404475.27	769105.56	N 32 6 35.44	W 103 35 51.72	87.06	864.86
	12288.00	27.55	8.21	12218.88	52.88	58.47	865.68	7.67	404489.32	769107.52	N 32 6 35.58	W 103 35 51.70	86.14	867.65
	12319.00	29.46	6.87	12246.12	67.53	73.14	867.61	6.50	404503.99	769109.45	N 32 6 35.73	W 103 35 51.67	85.18	870.69
	12350.00	31.75	7.62	12272.80	83.18	88.79	869.61	7.49	404519.64	769111.45	N 32 6 35.88	W 103 35 51.65	84.17	874.13
	12382.00	33.85	9.01	12299.70	100.31	105.94	872.12	6.97	404536.79	769113.96	N 32 6 36.05	W 103 35 51.62	83.07	878.53
	12413.00	37.26	8.90	12324.91	118.09	123.75	874.92	11.00	404554.59	769116.76	N 32 6 36.23	W 103 35 51.58	81.95	883.63
	12445.00	40.90	7.62	12349.75	138.04	143.71	877.81	11.85	404574.55	769119.65	N 32 6 36.42	W 103 35 51.55	80.70	889.50
	12476.00	44.33	6.09	12372.56	158.86	164.54	880.31	11.56	404595.39	769122.15	N 32 6 36.63	W 103 35 51.52	79.41	895.55
	12507.00	48.48	6.42	12393.93	181.15	186.88	882.76	13.41	404617.70	769124.60	N 32 6 36.85	W 103 35 51.49	78.05	902.32
	12538.00	52.22	5.26	12413.71	204.88	210.60	885.18	12.40	404641.44	769127.02	N 32 6 37.09	W 103 35 51.46	76.82	909.88
	12569.00	56.18	4.77	12431.84	229.90	235.64	887.37	12.84	404666.48	769129.21	N 32 6 37.33	W 103 35 51.43	75.13	918.13
	12601.00	60.55	4.72	12448.62	257.03	262.78	889.63	13.66	404693.62	769131.47	N 32 6 37.60	W 103 35 51.40	73.54	927.63
	12632.00	64.91	4.26	12462.82	284.48	290.25	891.78	14.13	404721.09	769133.62	N 32 6 37.87	W 103 35 51.37	71.97	937.82
	12644.00	66.34	3.77	12467.77	295.38	301.15	892.55	12.48	404731.99	769134.38	N 32 6 37.98	W 103 35 51.36	71.36	941.98
	12737.00	75.65	1.81	12498.03	383.08	388.88	896.78	10.21	404819.71	769138.62	N 32 6 38.85	W 103 35 51.31	66.56	977.46
	12769.00	78.26	0.60	12505.25	414.24	420.04	897.43	8.95	404850.88	769139.27	N 32 6 39.18	W 103 35 51.30	64.92	990.87
	12800.00	83.11	359.54	12510.27	444.82	450.82	897.47	16.00	404881.46	769139.31	N 32 6 39.46	W 103 35 51.29	63.34	1004.24
	12853.00	90.17	358.04	12513.37	497.69	503.48	896.35	13.82	404934.32	769138.19	N 32 6 39.98	W 103 35 51.30	60.68	1028.07
	12894.00	92.51	357.85	12512.41	538.65	544.44	894.88	5.73	404975.28	769136.72	N 32 6 40.39	W 103 35 51.32	58.68	1047.49

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 ° ' ")	Closure Azimuth (°)	Closure (ft)
	12987.00	91.20	358.66	12509.40	631.58	637.35	892.05	1.66	405068.18	769133.89	N 32 6 41.31	W 103 35 51.34	54.46	1096.34
	13082.00	88.04	354.77	12510.03	726.42	732.16	886.61	5.28	405162.99	769128.45	N 32 6 42.25	W 103 35 51.40	50.45	1149.84
	13176.00	89.17	351.83	12512.32	819.81	825.48	875.64	3.35	405256.30	769117.48	N 32 6 43.17	W 103 35 51.52	46.69	1203.40
	13270.00	89.72	354.68	12513.23	913.21	918.81	864.61	3.09	405349.63	769106.45	N 32 6 44.09	W 103 35 51.64	43.26	1261.65
	13365.00	92.68	358.03	12511.24	1008.01	1013.58	858.57	4.70	405444.39	769100.41	N 32 6 45.03	W 103 35 51.70	40.27	1328.34
	13459.00	91.34	1.00	12507.94	1101.94	1107.50	857.77	3.46	405538.32	769099.61	N 32 6 45.96	W 103 35 51.70	37.76	1400.83
	13553.00	90.89	4.00	12506.11	1195.79	1201.38	861.87	3.23	405632.19	769103.71	N 32 6 46.89	W 103 35 51.65	35.66	1478.56
	13648.00	88.80	5.38	12506.37	1290.42	1296.06	869.64	2.64	405726.88	769111.48	N 32 6 47.83	W 103 35 51.55	33.86	1560.78
	13742.00	89.69	6.10	12507.61	1383.87	1389.58	879.04	1.22	405820.38	769120.88	N 32 6 48.75	W 103 35 51.43	32.32	1644.27
	13837.00	88.97	4.44	12508.72	1478.40	1484.17	887.76	1.90	405914.97	769129.60	N 32 6 49.69	W 103 35 51.33	30.89	1729.41
	13930.00	85.49	1.02	12513.22	1571.13	1576.82	892.19	5.24	406007.72	769134.03	N 32 6 50.60	W 103 35 51.27	29.50	1811.82
	14025.00	86.59	357.62	12519.78	1665.89	1671.67	891.07	3.75	406102.47	769132.91	N 32 6 51.54	W 103 35 51.27	28.06	1894.33
	14120.00	87.90	357.29	12524.34	1760.71	1766.47	886.85	1.42	406197.26	769128.69	N 32 6 52.48	W 103 35 51.31	26.66	1978.59
	14215.00	90.28	356.67	12525.85	1855.58	1861.32	881.85	2.59	406292.10	769123.69	N 32 6 53.42	W 103 35 51.36	25.35	2059.65
	14309.00	89.11	357.54	12526.35	1949.49	1955.19	877.10	1.55	406385.98	769118.94	N 32 6 54.35	W 103 35 51.41	24.16	2142.92
	14402.00	87.66	0.77	12528.97	2042.43	2048.13	875.73	3.81	406478.91	769117.57	N 32 6 55.27	W 103 35 51.42	23.15	2227.50
	14497.00	92.13	1.24	12529.15	2137.38	2143.09	877.39	4.73	406573.87	769119.23	N 32 6 56.21	W 103 35 51.39	22.26	2315.74
	14591.00	90.34	1.92	12527.12	2231.30	2237.03	879.99	2.04	406667.81	769121.83	N 32 6 57.14	W 103 35 51.36	21.47	2403.89
	14683.00	89.62	359.54	12527.16	2323.28	2329.02	881.16	2.70	406759.79	769123.00	N 32 6 58.05	W 103 35 51.34	20.72	2490.13
	14777.00	89.28	359.46	12528.06	2417.27	2423.01	880.34	0.37	406853.78	769122.18	N 32 6 58.98	W 103 35 51.34	19.97	2577.98
	14872.00	88.76	359.38	12529.68	2512.26	2517.99	879.38	0.55	406948.75	769121.22	N 32 6 59.92	W 103 35 51.34	19.25	2667.13
	14967.00	87.49	358.39	12532.79	2607.20	2612.92	877.53	1.69	407043.68	769119.37	N 32 7 0.88	W 103 35 51.36	18.56	2756.34
	15061.00	86.52	359.30	12537.70	2701.06	2706.77	875.64	1.41	407137.53	769117.48	N 32 7 1.79	W 103 35 51.37	17.93	2844.88
	15155.00	86.52	359.57	12543.41	2794.88	2800.59	874.71	0.29	407231.34	769116.55	N 32 7 2.71	W 103 35 51.37	17.35	2934.01
	15249.00	87.28	359.85	12548.49	2888.74	2894.45	874.24	0.86	407325.20	769116.08	N 32 7 3.64	W 103 35 51.37	16.81	3023.60
	15347.00	88.07	0.25	12552.47	2986.66	2992.37	874.32	0.90	407423.12	769118.16	N 32 7 4.61	W 103 35 51.36	16.29	3117.48
	15441.00	90.96	0.90	12553.26	3080.63	3086.35	875.26	3.15	407517.10	769117.11	N 32 7 5.54	W 103 35 51.34	15.83	3208.06
	15535.00	90.79	0.49	12551.83	3174.61	3180.33	876.40	0.47	407611.07	769118.25	N 32 7 6.47	W 103 35 51.32	15.41	3298.88
	15629.00	88.93	0.33	12552.06	3268.59	3274.32	877.08	1.99	407705.06	769118.92	N 32 7 7.40	W 103 35 51.31	15.00	3389.76
	15724.00	89.59	1.04	12553.28	3363.57	3369.31	878.21	1.02	407800.04	769120.05	N 32 7 8.34	W 103 35 51.29	14.61	3481.88
	15818.00	89.59	0.84	12553.96	3457.54	3463.29	879.78	0.21	407894.03	769121.60	N 32 7 9.27	W 103 35 51.26	14.25	3573.29
	15912.00	89.52	0.69	12554.69	3551.52	3557.28	881.01	0.18	407988.01	769122.85	N 32 7 10.20	W 103 35 51.24	13.91	3664.76
	16006.00	90.07	1.24	12555.02	3645.49	3651.27	882.59	0.83	408081.99	769124.43	N 32 7 11.13	W 103 35 51.21	13.59	3756.43
	16101.00	88.83	0.49	12555.93	3740.46	3746.25	884.03	1.53	408176.97	769125.87	N 32 7 12.07	W 103 35 51.19	13.28	3849.14
	16195.00	89.76	358.31	12557.09	3834.45	3840.23	883.04	2.52	408270.95	769124.88	N 32 7 13.00	W 103 35 51.19	12.95	3940.45
	16289.00	91.10	357.71	12556.39	3928.41	3934.17	879.78	1.56	408364.89	769121.62	N 32 7 13.93	W 103 35 51.22	12.61	4031.34
	16383.00	90.89	358.03	12554.75	4022.35	4028.09	876.29	0.41	408458.80	769118.13	N 32 7 14.86	W 103 35 51.26	12.27	4122.30
	16477.00	89.62	357.69	12554.34	4116.30	4122.02	872.78	1.40	408552.73	769114.62	N 32 7 15.79	W 103 35 51.29	11.95	4213.41
	16571.00	89.66	357.52	12554.93	4210.24	4215.94	868.85	0.19	408646.84	769110.69	N 32 7 16.72	W 103 35 51.33	11.64	4304.54
	16666.00	89.52	357.82	12555.61	4305.18	4310.86	864.99	0.35	408741.56	769106.83	N 32 7 17.66	W 103 35 51.37	11.35	4396.78
	16760.00	90.24	358.48	12555.80	4399.15	4404.81	861.95	1.04	408835.51	769103.79	N 32 7 18.59	W 103 35 51.39	11.07	4488.35
	16854.00	91.34	358.05	12554.51	4493.11	4498.75	859.11	1.26	408929.45	769100.95	N 32 7 19.52	W 103 35 51.42	10.81	4580.05
	16949.00	88.21	358.25	12554.88	4588.07	4593.69	856.04	3.30	409024.38	769097.88	N 32 7 20.46	W 103 35 51.45	10.56	4672.77
	17043.00	89.17	358.56	12557.03	4682.02	4687.63	853.42	1.07	409118.32	769095.26	N 32 7 21.39	W 103 35 51.47	10.32	4764.88
	17137.00	89.45	358.24	12558.16	4775.99	4781.58	850.80	0.45	409212.27	769092.64	N 32 7 22.32	W 103 35 51.49	10.09	4856.69
	17232.00	90.89	358.03	12557.88	4870.96	4876.53	847.71	1.53	409307.22	769089.55	N 32 7 23.26	W 103 35 51.52	9.86	4949.66
Section Line Crossing [1608' FWL]	17310.00	90.63	359.52	12556.84	4948.94	4954.50	846.04	1.94	409385.19	769087.88	N 32 7 24.03	W 103 35 51.54	9.69	5026.22
	17326.00	90.58	359.83	12556.67	4984.84	4970.50	845.95	1.94	409401.18	769087.79	N 32 7 24.19	W 103 35 51.54	9.66	5041.98
	17420.00	89.79	1.78	12556.37	5058.91	5064.49	847.26	2.22	409495.17	769089.10	N 32 7 25.12	W 103 35 51.51	9.50	5134.87
	17514.00	90.96	2.68	12555.75	5152.81	5158.41	850.90	1.58	409589.09	769092.74	N 32 7 26.05	W 103 35 51.46	9.37	5228.12
	17608.00	93.41	2.66	12552.17	5246.60	5252.24	855.27	2.61	409682.91	769097.11	N 32 7 26.97	W 103 35 51.40	9.25	5321.42
	17702.00	92.10	1.08	12547.85	5340.42	5346.07	858.34	2.18	409776.74	769100.18	N 32 7 27.90	W 103 35 51.36	9.12	5414.54
	17796.00	90.58	1.81	12545.45	5434.34	5440.01	860.71	1.79	409870.68	769102.55	N 32 7 28.83	W 103 35 51.33	8.99	5507.68
	17890.00	91.48	2.95	12543.76	5528.22	5533.91	864.61	1.54	409964.58	769106.45	N 32 7 29.76	W 103 35 51.27	8.88	5601.05
	17984.00	91.31	1.43	12541.48	5622.09	5627.81	868.20	1.63	410058.47	769110.04	N 32 7 30.69	W 103 35 51.22	8.77	5694.39
	18078.00	90.28	359.18	12540.17	5716.07	5721.80	868.70	2.63	410152.45	769110.54	N 32 7 31.62	W 103 35 51.21	8.63	5787.37
	18172.00	90.79	359.67	12539.29	5810.06	5815.79	867.76	0.75	410246.44	769109.60	N 32 7 32.55	W 103 35 51.21	8.49	5880.17
	18266.00	90.14	358.35	12538.53	5904.05	5909.77	866.13	1.57	410340.42	769107.97	N 32 7 33.48	W 103 35 51.23	8.34	5972.90
	18360.00	89.90	359.26	12538.50	5998.04	6003.75	864.17	1.00	410434.39	769106.01	N 32 7 34.41	W 103 35 51.24	8.19	6065.62
	18454.00	90.17	0.08	12538.44	6092.04	6097.74	863.63	0.92	410528.39	769105.47	N 32 7 35.34	W 103 35 51.24	8.06	6158.60

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 ° ' ")	Closure Azimuth (°)	Closure (ft)
	18548.00	90.72	0.06	12537.71	6186.03	6191.74	863.74	0.59	410622.38	769105.59	N 32 7 36.27	W 103 35 51.23	7.94	6251.70
	18642.00	88.87	358.97	12538.05	6280.03	6285.73	862.95	2.28	410716.37	769104.79	N 32 7 37.20	W 103 35 51.23	7.82	6344.69
	18737.00	89.86	358.80	12539.10	6375.01	6380.71	861.10	1.06	410811.34	769102.94	N 32 7 38.14	W 103 35 51.25	7.89	6438.55
	18831.00	89.93	359.00	12539.27	6469.00	6474.69	859.30	0.23	410905.32	769101.14	N 32 7 39.07	W 103 35 51.26	7.56	6531.46
	18925.00	90.14	359.15	12539.21	6563.00	6568.68	857.78	0.27	410999.30	769099.62	N 32 7 40.00	W 103 35 51.27	7.44	6624.45
	19019.00	89.17	357.36	12539.78	6656.97	6662.63	854.92	2.17	411093.25	769096.76	N 32 7 40.93	W 103 35 51.30	7.31	6717.25
	19113.00	88.31	359.34	12541.85	6750.91	6756.56	852.21	2.30	411187.18	769094.05	N 32 7 41.86	W 103 35 51.32	7.19	6810.09
	19207.00	90.72	0.63	12542.64	6844.90	6850.55	852.19	2.91	411281.16	769094.03	N 32 7 42.79	W 103 35 51.31	7.09	6903.35
	19300.00	91.20	1.30	12541.08	6937.86	6943.52	853.75	0.89	411374.13	769095.59	N 32 7 43.71	W 103 35 51.29	7.01	6995.81
	19394.00	91.00	0.87	12539.28	7031.82	7037.49	855.37	0.70	411468.10	769097.21	N 32 7 44.64	W 103 35 51.26	6.93	7089.28
	19489.00	90.41	357.94	12538.11	7126.80	7132.46	854.22	2.94	411563.07	769096.06	N 32 7 45.58	W 103 35 51.27	6.83	7183.43
	19583.00	90.17	358.80	12537.64	7220.77	7226.42	851.54	0.95	411657.03	769093.38	N 32 7 46.51	W 103 35 51.29	6.72	7276.42
	19677.00	90.31	359.39	12537.24	7314.77	7320.41	850.06	0.65	411751.01	769091.90	N 32 7 47.44	W 103 35 51.30	6.62	7369.60
	19770.00	90.55	0.87	12538.54	7407.76	7413.41	850.27	1.81	411844.00	769092.11	N 32 7 48.36	W 103 35 51.29	6.54	7462.01
	19865.00	90.34	1.22	12535.81	7502.73	7508.39	852.00	0.43	411938.88	769093.84	N 32 7 49.30	W 103 35 51.26	6.47	7556.57
	19958.00	90.34	359.18	12535.25	7595.72	7601.38	852.33	2.19	412031.87	769094.17	N 32 7 50.22	W 103 35 51.25	6.40	7649.02
	20052.00	90.10	358.17	12534.89	7689.70	7695.35	850.15	1.10	412125.94	769091.99	N 32 7 51.15	W 103 35 51.27	6.30	7742.17
	20147.00	89.69	358.02	12535.07	7784.87	7790.30	848.99	0.46	412220.89	769088.83	N 32 7 52.09	W 103 35 51.30	6.21	7836.21
	20241.00	89.55	358.14	12535.69	7878.63	7884.24	843.84	0.20	412314.83	769085.69	N 32 7 53.02	W 103 35 51.33	6.11	7929.27
	20335.00	91.03	359.65	12535.21	7972.62	7978.22	842.03	2.25	412408.80	769083.87	N 32 7 53.95	W 103 35 51.34	6.02	8022.53
	20429.00	91.62	0.32	12533.04	8066.59	8072.19	842.01	0.95	412502.77	769083.85	N 32 7 54.88	W 103 35 51.33	5.95	8115.99
	20524.00	90.93	359.39	12530.83	8161.56	8167.17	841.77	1.22	412597.74	769083.61	N 32 7 55.82	W 103 35 51.33	5.88	8210.43
	20618.00	91.10	359.83	12529.26	8255.55	8261.15	841.13	0.50	412691.72	769082.97	N 32 7 56.75	W 103 35 51.33	5.81	8303.86
	20712.00	91.00	359.42	12527.54	8348.53	8355.13	840.51	0.45	412785.70	769082.35	N 32 7 57.68	W 103 35 51.33	5.74	8397.30
	20805.00	91.65	359.23	12525.39	8442.51	8448.10	839.42	0.73	412878.67	769081.26	N 32 7 58.60	W 103 35 51.33	5.67	8489.70
	20900.00	90.83	359.36	12523.33	8537.48	8543.07	838.25	0.87	412973.63	769080.09	N 32 7 59.54	W 103 35 51.34	5.60	8584.10
	20994.00	90.79	359.56	12522.00	8631.47	8637.06	837.36	0.22	413067.62	769079.20	N 32 8 0 0.47	W 103 35 51.34	5.54	8677.55
	21088.00	89.59	359.51	12521.69	8725.47	8731.05	836.60	1.28	413161.61	769078.44	N 32 8 1 40	W 103 35 51.35	5.47	8771.04
	21182.00	90.31	359.45	12521.77	8819.47	8825.05	835.75	0.77	413255.60	769077.59	N 32 8 2 33	W 103 35 51.35	5.41	8864.53
	21276.00	89.76	359.66	12521.72	8913.47	8919.05	835.02	0.63	413349.59	769076.86	N 32 8 3 26	W 103 35 51.35	5.35	8958.05
	21370.00	89.55	0.33	12522.28	9007.46	9013.04	835.01	0.75	413443.59	769076.85	N 32 8 4 19	W 103 35 51.34	5.29	9051.64
	21465.00	89.66	0.87	12522.94	9102.45	9108.04	836.00	0.58	413538.58	769077.84	N 32 8 5 13	W 103 35 51.32	5.24	9146.32
	21559.00	89.52	359.33	12523.61	9196.44	9202.03	836.17	1.65	413632.57	769078.01	N 32 8 6 06	W 103 35 51.31	5.19	9239.94
	21653.00	90.17	359.36	12523.87	9290.44	9296.02	835.09	0.69	413726.56	769076.93	N 32 8 6 99	W 103 35 51.32	5.13	9333.46
	21748.00	90.58	0.14	12523.24	9385.43	9391.02	834.68	0.93	413821.55	769076.52	N 32 8 7 93	W 103 35 51.32	5.08	9428.04
	21842.00	90.76	0.48	12522.14	9479.42	9485.01	835.19	0.41	413915.54	769077.03	N 32 8 8 86	W 103 35 51.30	5.03	9521.71
	21935.00	90.86	359.42	12520.83	9572.41	9578.00	835.10	1.14	414008.53	769076.95	N 32 8 9 78	W 103 35 51.30	4.98	9614.34
	22029.00	91.55	359.67	12518.85	9666.39	9671.98	834.38	0.78	414102.50	769076.20	N 32 8 10 71	W 103 35 51.30	4.93	9707.90
	22123.00	90.76	0.01	12516.96	9760.37	9765.96	834.10	0.91	414196.47	769075.94	N 32 8 11 64	W 103 35 51.29	4.88	9801.51
	22217.00	90.72	0.80	12515.74	9854.35	9859.94	834.76	0.84	414290.46	769076.60	N 32 8 12 57	W 103 35 51.28	4.84	9895.22
	22311.00	90.17	359.68	12515.01	9948.34	9953.94	835.15	1.33	414384.45	769077.00	N 32 8 13 50	W 103 35 51.26	4.80	9988.81
	22404.00	89.83	359.78	12515.01	10041.34	10046.94	834.72	0.38	414477.45	769076.56	N 32 8 14 42	W 103 35 51.26	4.75	10081.55

Last Legal Takepoint [100' FNL, 1630' FWL]	22492.00	90.53	359.03	12514.74	10129.34	10134.93	833.80	1.17	414565.44	769075.64	N 32 8 15 29	W 103 35 51.27	4.70	10169.17
Last Survey	22495.00	90.55	359.00	12514.71	10132.34	10137.93	833.75	1.17	414568.44	769075.59	N 32 8 15 32	W 103 35 51.27	4.70	10172.16
TD, PTB [50' FNL, 1629' FWL]	22542.00	90.55	359.00	12514.26	10179.33	10184.92	832.93	0.00	414615.43	769074.77	N 32 8 15 79	W 103 35 51.27	4.68	10218.92

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 85.000% 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
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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 ° ' ")	Closure	Azimuth (°)	Closure (ft)
		1	0.000	23.000	1/98.425	30.000	30.000	NAL_MWD_IFR1+MS-Depth Only							
		1	23.000	23.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS-Depth Only							
		1	23.000	196.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS							
		1	196.000	11941.000	Act Stns	12.250	9.625	NAL_MWD_IFR1+MS							
		1	11941.000	12704.000	Act Stns	8.750	7.000	NAL_MWD_IFR1+MS							
		1	12704.000	22542.000	Act Stns	6.750	4.500	NAL_MWD_IFR1+MS							

Schlumberger

Cimarex

Final Pva

CIMAREX

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Vaca Draw 20-17 Federal #13H	NM Lea County (NAD 83)	Cimarex Vaca Draw 20-17 Federal #13H

Gravity & Magnetic Parameters	Surface Location	MADEP New Mexico State Plane, Eastern Zone, US Feet	Structure
Model: HDGM 2019	Lat: N 32 6 58.06	Northings: 40400.861145	Slot: Cimarex Vaca Draw 20-17 Federal #13H
MagDec: 8.671°	Lon: W 103 38 1.76	Easting: 788241.871025	Plan: Final Surveys - Cimarex Vaca Draw 20-17 Federal #13H MWD DB-225-CH (Surcon Corrected)
Dip: 88.73°		Grid Conv: 0.3388°	TVD Ref: RKB(94488 above MSL)
FB: 47801.0881T		Scale Fact: 0.88888888	
Date: 11-Mar-2019			
Gravity FB: 986.423mgals (8.8888 Base)			

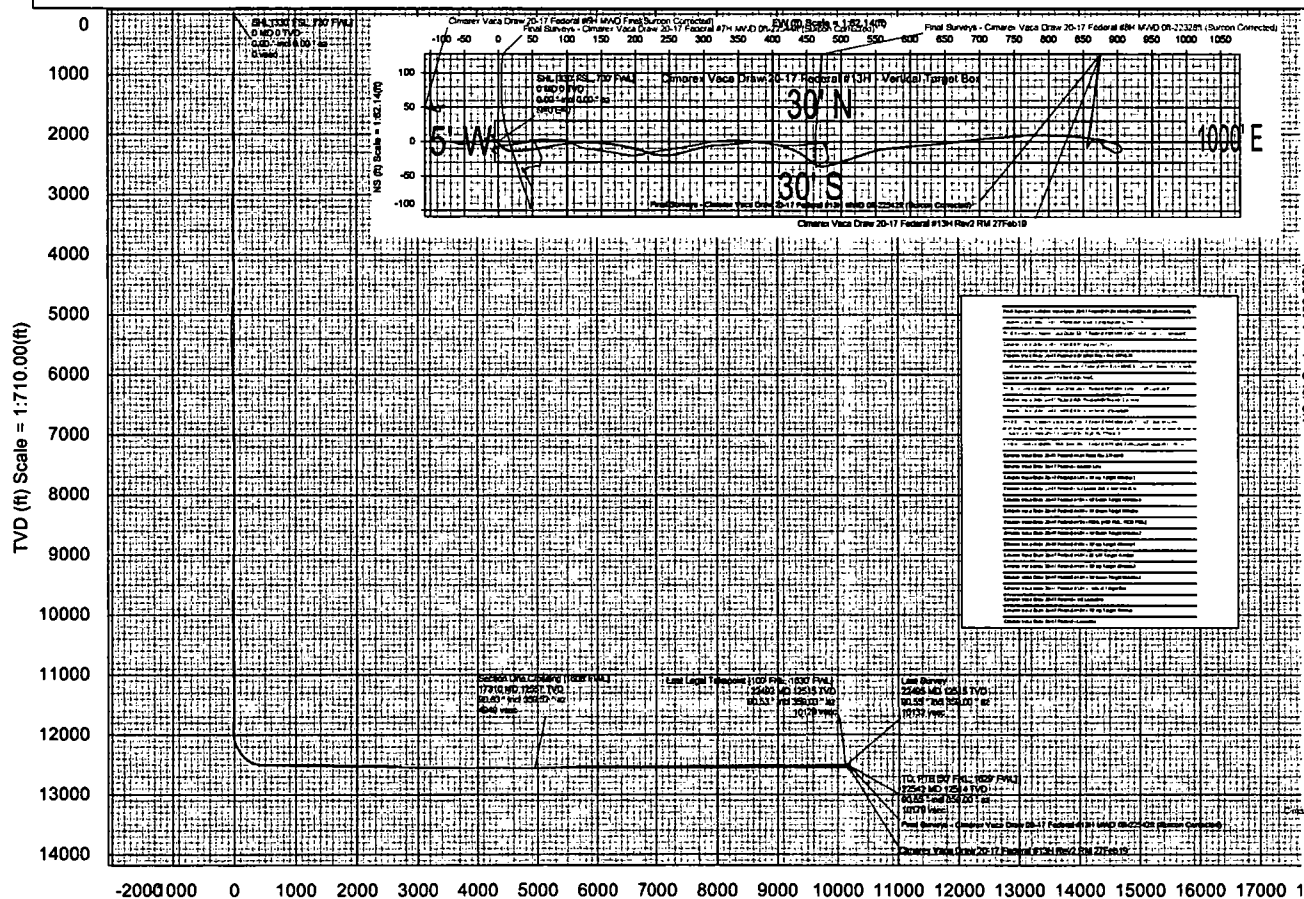
Critical Points

Critical Point	MD	INCL	AZIM	TVD	VBEC	N(+)/S(-)	E(+)/W(-)	DLB
S4L (330° FSL, 730° FNL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Section Line Crossing (180° FNL)	17310.00	90.53	359.52	12558.84	4948.84	4854.50	848.04	1.94
Last Legal Takopoint (100° FNL, 1630° FNL)	22492.00	90.53	359.03	12514.74	10129.34	10134.83	833.80	1.17
Last Survey	22485.00	90.55	359.00	12514.71	10132.34	10137.83	833.78	1.17
TD, P78 (50° FNL, 1629° FNL)	22542.00	90.55	359.00	12514.28	10179.33	10184.82	832.83	0.00

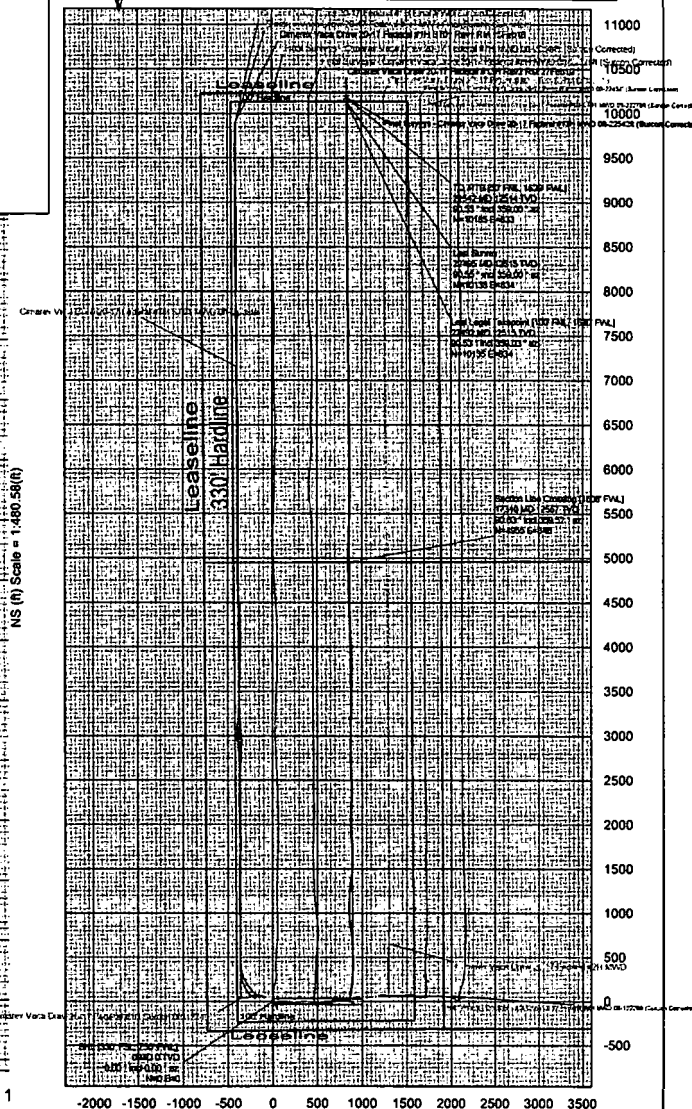


Grid North
Tol Cor (M=0.3381°)
Mag Dec (8.671°)
Grid Conv (0.300°)

CONTROLLED	
Plan no	
Revised	
Copy number	
Date	
By	
For	
Check	
Release	
Cancel	



Vertical Section (ft) Azim = 359.63° Scale = 1:710.00(ft) Origin = 0N-S, 0E-W



EW (ft) Scale = 1:480.58(ft)