

CIMAREX

EW (ft) Scale = 1:475.41(ft)

Cimarex Marquardt 12-13 Fed #11H MWD Final Survey Geodetic Report

Report Date: April 18, 2017 - 09:58 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Marquardt 12-13 Fed #11H / Cimarex Marquardt 12-13 Fed #11H
Well: Cimarex Marquardt 12-13 Fed #11H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Marquardt 12-13 Fed #11H MWD Final
Survey Date: March 14, 2017
Tort / AHD / DDI / ERD Ratio: 292.808' / 10528.934 ft / 6.786 / 1.098
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 9' 0.91616", W 104° 15' 3.71453"
Location Grid N/E Y/X: N 418407.700 ftUS, E 566808.300 ftUS
CRS Grid Convergence Angle: 0.0438°
Grid Scale Factor: 0.99990983
Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 184.890° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3324.600 ft above MSL
Seabed / Ground Elevation: 3301.600 ft above MSL
Magnetic Declination: 7.498°
Total Gravity Field Strength: 998.4373mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48050.016 nT
Magnetic Dip Angle: 59.902°
Declination Date: March 14, 2017
Magnetic Declination Model: HDGM 2016
North Reference: Grid North
Grid Convergence Used: 0.0438°
Total Corr Mag North->Grid North: 7.4545°
Local Coord Referenced To: Structure Reference Point

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 ° ' ")
Tie-In SHL [565 FNL, 1309 FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	418407.70	566808.30	N 32 9 0.92	W 104 15 3.71
	182.00	0.62	185.53	182.00	0.98	-0.98	-0.09	0.34	418406.72	566808.21	N 32 9 0.91	W 104 15 3.72
	216.00	0.62	222.23	215.99	1.31	-1.30	-0.24	1.15	418406.40	566808.06	N 32 9 0.90	W 104 15 3.72
	248.00	0.40	192.97	247.99	1.56	-1.54	-0.38	1.04	418406.16	566807.92	N 32 9 0.90	W 104 15 3.72
	311.00	0.62	242.99	310.99	1.96	-1.91	-0.73	0.75	418405.79	566807.57	N 32 9 0.90	W 104 15 3.72
	379.00	0.71	236.69	378.99	2.42	-2.30	-1.41	0.17	418405.40	566806.89	N 32 9 0.89	W 104 15 3.73
	492.00	0.31	265.16	491.98	2.90	-2.71	-2.30	0.41	418404.99	566806.00	N 32 9 0.89	W 104 15 3.74
	584.00	0.49	251.23	583.98	3.10	-2.86	-2.92	0.22	418404.84	566805.38	N 32 9 0.89	W 104 15 3.75
	675.00	0.49	242.42	674.98	3.47	-3.17	-3.63	0.08	418404.53	566804.67	N 32 9 0.88	W 104 15 3.76
	766.00	0.49	245.41	765.97	3.87	-3.51	-4.33	0.03	418404.19	566803.97	N 32 9 0.88	W 104 15 3.76
	858.00	0.49	214.52	857.97	4.40	-4.00	-4.91	0.28	418403.70	566803.39	N 32 9 0.88	W 104 15 3.77
	952.00	0.49	222.76	951.97	5.07	-4.62	-5.41	0.07	418403.08	566802.89	N 32 9 0.87	W 104 15 3.78
	1047.00	0.09	324.51	1046.97	5.33	-4.86	-5.73	0.54	418402.84	566802.57	N 32 9 0.87	W 104 15 3.78
	1142.00	0.49	289.04	1141.96	5.18	-4.67	-6.16	0.44	418403.03	566802.14	N 32 9 0.87	W 104 15 3.79
	1236.00	0.40	224.66	1235.96	5.33	-4.77	-6.77	0.51	418402.93	566801.53	N 32 9 0.87	W 104 15 3.79
	1331.00	1.10	89.90	1330.96	5.51	-5.00	-6.09	1.48	418402.70	566802.21	N 32 9 0.87	W 104 15 3.79
	1427.00	1.90	93.38	1426.92	5.38	-5.10	-3.58	0.84	418402.60	566804.72	N 32 9 0.87	W 104 15 3.76
	1521.00	1.02	128.50	1520.89	5.81	-5.71	-1.37	1.29	418401.99	566806.93	N 32 9 0.86	W 104 15 3.73
	1615.00	1.19	108.54	1614.88	6.50	-6.54	0.21	0.44	418401.16	566808.51	N 32 9 0.85	W 104 15 3.71
	1709.00	2.70	111.32	1708.82	7.36	-7.66	3.20	0.61	418400.04	566811.50	N 32 9 0.84	W 104 15 3.68
	1824.00	1.19	161.16	1823.76	9.21	-9.77	6.11	1.86	418397.93	566814.41	N 32 9 0.82	W 104 15 3.64
	1982.00	0.80	192.89	1981.73	11.81	-12.40	6.39	0.42	418395.30	566814.69	N 32 9 0.79	W 104 15 3.64
	2076.00	0.71	246.43	2075.73	12.74	-13.27	5.71	0.73	418394.43	566814.01	N 32 9 0.78	W 104 15 3.65
	2171.00	0.62	239.91	2170.72	13.31	-13.76	4.73	0.12	418393.94	566813.02	N 32 9 0.78	W 104 15 3.66
	2266.00	0.49	281.59	2265.72	13.56	-13.94	3.88	0.43	418393.76	566812.18	N 32 9 0.78	W 104 15 3.67

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 ° ' '')
	2361.00	1.02	341.48	2360.71	12.74	-13.06	3.22	0.93	418394.64	566811.52	N 32 9 0.79	W 104 15 3.68
	2455.00	1.50	345.09	2455.68	10.79	-11.05	2.63	0.51	418396.65	566810.93	N 32 9 0.81	W 104 15 3.68
	2550.00	1.41	342.58	2549.65	8.56	-8.76	1.96	0.12	418398.94	566810.26	N 32 9 0.83	W 104 15 3.69
	2644.00	1.41	345.01	2643.63	6.40	-6.54	1.32	0.06	418401.16	566809.62	N 32 9 0.85	W 104 15 3.70
	2738.00	1.33	341.08	2737.60	4.32	-4.39	0.67	0.13	418403.31	566808.97	N 32 9 0.87	W 104 15 3.71
	2833.00	1.10	345.49	2832.58	2.45	-2.47	0.08	0.26	418405.23	566808.38	N 32 9 0.89	W 104 15 3.71
	2928.00	1.10	345.58	2927.56	0.73	-0.70	-0.38	0.00	418407.00	566807.92	N 32 9 0.91	W 104 15 3.72
	3023.00	0.88	338.71	3022.55	-0.79	0.86	-0.87	0.26	418408.56	566807.43	N 32 9 0.92	W 104 15 3.72
	3118.00	0.80	339.37	3117.54	-2.04	2.16	-1.37	0.08	418409.86	566806.93	N 32 9 0.94	W 104 15 3.73
	3212.00	1.33	286.44	3211.52	-2.85	3.09	-2.64	1.13	418410.79	566805.66	N 32 9 0.95	W 104 15 3.75
	3307.00	2.70	264.36	3306.46	-2.66	3.18	-5.93	1.63	418410.88	566802.37	N 32 9 0.95	W 104 15 3.75
	3402.00	4.24	262.56	3401.28	-1.50	2.50	-11.64	1.62	418410.20	566796.66	N 32 9 0.94	W 104 15 3.85
	3497.00	6.32	266.57	3495.88	0.00	1.74	-20.34	2.22	418409.44	566787.96	N 32 9 0.93	W 104 15 3.95
	3591.00	7.03	266.57	3589.24	1.59	1.08	-31.25	0.76	418408.78	566777.06	N 32 9 0.93	W 104 15 4.08
	3685.00	6.94	266.17	3682.54	3.28	0.36	-42.65	0.11	418408.06	566765.65	N 32 9 0.92	W 104 15 4.21
	3780.00	6.72	265.16	3776.87	5.09	-0.49	-53.92	0.26	418407.21	566754.39	N 32 9 0.91	W 104 15 4.34
	3874.00	6.54	263.88	3870.24	7.04	-1.53	-64.72	0.25	418406.17	566743.58	N 32 9 0.90	W 104 15 4.47
	3968.00	6.14	262.64	3963.66	9.13	-2.74	-75.03	0.45	418404.96	566733.28	N 32 9 0.88	W 104 15 4.59
	4063.00	5.74	262.86	4058.15	11.20	-3.98	-84.78	0.42	418403.72	566723.52	N 32 9 0.88	W 104 15 4.70
	4158.00	6.14	274.98	4152.65	12.18	-4.13	-94.56	1.38	418403.57	566713.75	N 32 9 0.88	W 104 15 4.81
	4251.00	5.92	273.79	4245.13	12.26	-3.39	-104.30	0.27	418404.32	566704.01	N 32 9 0.88	W 104 15 4.93
	4346.00	5.52	273.26	4339.66	12.49	-2.80	-113.75	0.42	418404.90	566694.56	N 32 9 0.89	W 104 15 5.04
	4440.00	5.35	272.78	4433.24	12.78	-2.33	-122.64	0.19	418405.37	566685.67	N 32 9 0.89	W 104 15 5.14
	4535.00	5.04	273.00	4527.85	13.08	-1.90	-131.23	0.33	418405.80	566677.08	N 32 9 0.90	W 104 15 5.24
	4630.00	4.73	271.50	4622.50	13.45	-1.58	-139.31	0.35	418406.12	566669.00	N 32 9 0.90	W 104 15 5.33
	4724.00	5.52	270.97	4716.12	13.99	-1.40	-147.71	0.84	418406.30	566660.60	N 32 9 0.90	W 104 15 5.43
	4819.00	6.05	269.56	4810.64	14.76	-1.36	-157.28	0.58	418406.34	566651.03	N 32 9 0.90	W 104 15 5.54
	4913.00	5.83	267.36	4904.14	15.85	-1.62	-167.01	0.34	418406.08	566641.31	N 32 9 0.90	W 104 15 5.66
	5008.00	5.52	265.95	4998.67	17.19	-2.16	-176.38	0.36	418405.54	566631.93	N 32 9 0.90	W 104 15 5.77
	5103.00	5.35	265.16	5093.24	18.65	-2.86	-185.35	0.20	418404.84	566622.96	N 32 9 0.89	W 104 15 5.87
	5197.00	5.04	264.45	5186.86	20.14	-3.63	-193.83	0.34	418404.07	566614.49	N 32 9 0.88	W 104 15 5.97
	5292.00	6.05	268.68	5281.41	21.44	-4.15	-202.99	1.15	418403.55	566605.33	N 32 9 0.88	W 104 15 6.08
	5386.00	6.72	271.99	5374.83	22.25	-4.07	-213.44	0.81	418403.63	566594.88	N 32 9 0.88	W 104 15 6.20
	5481.00	6.05	268.37	5469.24	23.10	-4.02	-224.00	0.82	418403.68	566584.32	N 32 9 0.88	W 104 15 6.32
	5576.00	5.35	268.99	5563.77	24.12	-4.24	-233.43	0.74	418403.46	566574.89	N 32 9 0.88	W 104 15 6.43
	5671.00	5.52	270.80	5658.34	24.90	-4.26	-242.43	0.25	418403.44	566565.89	N 32 9 0.88	W 104 15 6.53
	5765.00	5.13	273.48	5751.94	25.33	-3.94	-251.14	0.49	418403.76	566557.18	N 32 9 0.88	W 104 15 6.64
	5860.00	5.52	275.38	5846.53	25.40	-3.25	-259.93	0.45	418404.45	566548.39	N 32 9 0.89	W 104 15 6.74
	5954.00	5.44	273.09	5940.10	25.50	-2.59	-268.88	0.25	418405.11	566539.44	N 32 9 0.89	W 104 15 6.84
	6049.00	5.74	270.88	6034.64	25.97	-2.27	-278.13	0.39	418405.43	566530.20	N 32 9 0.90	W 104 15 6.95
	6143.00	6.23	269.69	6128.13	26.76	-2.23	-287.93	0.54	418405.47	566520.40	N 32 9 0.90	W 104 15 7.06
	6238.00	6.23	268.68	6222.57	27.79	-2.37	-298.24	0.12	418405.33	566510.09	N 32 9 0.89	W 104 15 7.18
	6332.00	6.05	264.98	6316.03	29.19	-2.92	-308.27	0.46	418404.78	566500.06	N 32 9 0.89	W 104 15 7.30
	6427.00	6.45	273.00	6410.47	30.23	-3.08	-318.59	1.01	418404.62	566489.74	N 32 9 0.89	W 104 15 7.42
	6522.00	6.14	278.60	6504.90	30.07	-2.04	-328.94	0.72	418405.66	566479.39	N 32 9 0.90	W 104 15 7.54
	6617.00	5.21	282.61	6599.43	29.17	-0.34	-338.17	1.06	418407.36	566470.16	N 32 9 0.92	W 104 15 7.65
	6711.00	5.92	278.29	6692.99	28.31	1.29	-347.13	0.88	418408.99	566461.20	N 32 9 0.93	W 104 15 7.75
	6806.00	7.64	270.49	6787.32	28.50	2.05	-358.30	2.05	418409.75	566450.03	N 32 9 0.94	W 104 15 7.88
	6901.00	8.35	271.28	6881.40	29.42	2.26	-371.51	0.76	418409.96	566436.82	N 32 9 0.94	W 104 15 8.04
	6996.00	8.53	268.68	6975.37	30.61	2.25	-385.45	0.44	418409.95	566422.89	N 32 9 0.94	W 104 15 8.20
	7090.00	7.34	270.97	7068.47	31.78	2.19	-398.42	1.31	418409.89	566409.91	N 32 9 0.94	W 104 15 8.35
	7165.00	6.30	275.01	7142.94	32.10	2.63	-407.31	1.53	418410.33	566401.02	N 32 9 0.95	W 104 15 8.45
	7260.00	6.10	271.68	7257.26	32.43	3.36	-419.71	0.36	418411.06	566388.63	N 32 9 0.95	W 104 15 8.60
	7375.00	6.45	259.16	7351.70	34.16	2.50	-429.99	1.48	418410.20	566378.35	N 32 9 0.94	W 104 15 8.72
	7470.00	6.32	263.66	7446.11	36.62	0.92	-440.43	0.54	418408.62	566367.91	N 32 9 0.93	W 104 15 8.84
	7565.00	5.13	266.48	7540.67	38.26	0.09	-449.87	1.29	418407.79	566358.47	N 32 9 0.92	W 104 15 8.95
	7659.00	5.04	272.16	7634.27	39.07	-0.02	-458.19	0.54	418407.68	566350.15	N 32 9 0.92	W 104 15 9.04
	7754.00	5.52	267.49	7728.86	39.86	-0.06	-466.92	0.68	418407.64	566341.42	N 32 9 0.92	W 104 15 9.15

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 ° ' '')
	7848.00	5.92	265.95	7822.39	41.20	-0.60	-476.27	0.46	418407.10	566332.07	N 32 9 0.91	W 104 15 9.25
	7923.00	5.92	270.97	7896.99	42.06	-0.81	-484.00	0.69	418406.89	566324.34	N 32 9 0.91	W 104 15 9.34
	8036.00	5.35	267.58	8009.45	43.13	-0.93	-495.09	0.58	418406.77	566313.26	N 32 9 0.91	W 104 15 9.47
	8131.00	5.13	264.36	8104.05	44.47	-1.54	-503.74	0.39	418406.16	566304.60	N 32 9 0.90	W 104 15 9.57
	8225.00	5.13	264.98	8197.67	45.96	-2.32	-512.11	0.06	418405.38	566296.24	N 32 9 0.90	W 104 15 9.67
	8319.00	5.13	264.56	8291.30	47.44	-3.08	-520.48	0.04	418404.62	566287.87	N 32 9 0.89	W 104 15 9.77
	8413.00	5.10	264.31	8384.92	48.96	-3.90	-528.82	0.04	418403.80	566279.53	N 32 9 0.88	W 104 15 9.87
	8508.00	5.13	265.24	8479.55	50.44	-4.67	-537.26	0.09	418403.03	566271.09	N 32 9 0.87	W 104 15 9.96
	8603.00	4.73	264.58	8574.19	51.86	-5.39	-545.39	0.43	418402.31	566262.96	N 32 9 0.87	W 104 15 10.06
	8675.00	4.11	265.55	8645.98	52.81	-5.87	-550.92	0.87	418401.83	566257.44	N 32 9 0.86	W 104 15 10.12
	8724.00	3.44	267.95	8694.87	53.27	-6.06	-554.14	1.40	418401.64	566254.22	N 32 9 0.86	W 104 15 10.16
	8756.00	5.15	271.39	8726.78	53.47	-6.06	-556.53	5.40	418401.64	566251.82	N 32 9 0.86	W 104 15 10.19
	8787.00	8.85	277.01	8757.55	53.47	-5.73	-560.29	12.12	418401.97	566248.06	N 32 9 0.86	W 104 15 10.23
	8819.00	12.77	274.15	8788.97	53.43	-5.18	-566.26	12.36	418402.52	566242.09	N 32 9 0.87	W 104 15 10.30
	8851.00	17.21	270.11	8819.88	53.87	-4.91	-574.53	14.25	418402.79	566233.82	N 32 9 0.87	W 104 15 10.40
	8883.00	22.14	269.48	8850.00	54.83	-4.96	-585.30	15.42	418402.74	566223.06	N 32 9 0.87	W 104 15 10.52
	8915.00	25.85	270.60	8879.23	55.92	-4.94	-598.31	11.68	418402.76	566210.05	N 32 9 0.87	W 104 15 10.67
	8946.00	28.65	271.96	8906.79	56.81	-4.61	-612.50	9.25	418403.09	566195.86	N 32 9 0.88	W 104 15 10.84
	8978.00	31.27	271.82	8934.51	57.64	-4.09	-628.47	8.19	418403.61	566179.89	N 32 9 0.88	W 104 15 11.02
	9010.00	34.67	271.03	8961.35	58.70	-3.66	-645.87	10.71	418404.04	566162.49	N 32 9 0.88	W 104 15 11.23
	9042.00	37.70	269.64	8987.18	60.21	-3.56	-664.76	9.81	418404.14	566143.60	N 32 9 0.89	W 104 15 11.45
	9073.00	37.80	265.37	9011.69	62.65	-4.38	-683.71	8.44	418403.32	566124.65	N 32 9 0.88	W 104 15 11.67
	9104.00	36.63	259.82	9036.38	66.62	-6.79	-702.29	11.46	418400.91	566106.07	N 32 9 0.85	W 104 15 11.88
	9136.00	36.48	253.70	9062.10	72.55	-11.15	-720.82	11.40	418396.56	566087.54	N 32 9 0.81	W 104 15 12.10
	9168.00	38.44	247.43	9087.51	80.58	-17.64	-739.15	13.39	418390.07	566069.22	N 32 9 0.75	W 104 15 12.31
	9199.00	40.49	242.62	9111.44	90.40	-25.97	-756.99	11.87	418381.74	566051.38	N 32 9 0.66	W 104 15 12.52
	9231.00	41.64	236.54	9135.58	102.54	-36.61	-775.09	12.98	418371.09	566033.28	N 32 9 0.56	W 104 15 12.93
	9262.00	42.10	230.08	9158.68	116.26	-48.96	-791.66	13.98	418358.74	566016.71	N 32 9 0.44	W 104 15 12.92
	9294.00	44.04	224.95	9182.06	132.34	-63.72	-807.75	12.51	418343.98	566000.62	N 32 9 0.29	W 104 15 13.11
	9326.00	46.44	219.50	9204.60	150.41	-80.55	-822.99	14.23	418327.16	565985.38	N 32 9 0.13	W 104 15 13.29
	9358.00	48.22	214.93	9226.29	170.29	-99.29	-837.21	11.88	418308.42	565971.17	N 32 8 59.94	W 104 15 13.45
	9390.00	50.39	210.37	9247.16	191.75	-119.71	-850.27	12.75	418288.00	565958.10	N 32 8 59.74	W 104 15 13.61
	9421.00	52.49	206.62	9266.49	213.96	-141.01	-861.82	11.63	418266.70	565946.55	N 32 8 59.53	W 104 15 13.74
	9453.00	54.43	203.53	9285.54	238.09	-164.30	-872.71	9.84	418243.42	565935.67	N 32 8 59.30	W 104 15 13.87
	9484.00	56.09	200.95	9303.21	262.40	-187.88	-882.34	8.69	418219.84	565926.04	N 32 8 59.06	W 104 15 13.98
	9516.00	57.90	198.07	9320.64	288.36	-213.17	-891.30	9.43	418194.55	565917.08	N 32 8 58.81	W 104 15 14.08
	9548.00	59.95	194.16	9337.16	315.24	-239.49	-898.89	12.27	418168.23	565909.49	N 32 8 58.55	W 104 15 14.17
	9579.00	62.68	191.13	9352.04	342.18	-266.02	-904.84	12.29	418141.70	565903.55	N 32 8 58.29	W 104 15 14.24
	9611.00	64.47	189.07	9366.29	370.72	-294.23	-909.86	8.03	418113.49	565898.53	N 32 8 58.01	W 104 15 14.30
	9642.00	66.20	186.52	9379.22	398.85	-322.14	-913.67	9.33	418085.59	565894.71	N 32 8 57.74	W 104 15 14.34
	9676.00	68.29	184.72	9386.19	415.44	-338.66	-915.30	14.83	418069.07	565893.09	N 32 8 57.57	W 104 15 14.36
	9776.00	76.76	180.52	9421.00	525.87	-449.06	-920.25	8.08	417958.68	565888.13	N 32 8 56.48	W 104 15 14.42
	9839.00	79.62	179.36	9433.90	587.30	-510.72	-920.19	4.88	417897.02	565888.20	N 32 8 55.87	W 104 15 14.42
	9893.00	83.37	178.82	9447.80	679.77	-603.66	-918.71	4.03	417804.10	565889.68	N 32 8 54.95	W 104 15 14.41
	10027.00	87.01	176.72	9455.68	772.70	-697.24	-915.06	4.47	417710.53	565893.32	N 32 8 54.02	W 104 15 14.36
	10121.00	90.34	177.30	9457.85	865.77	-791.07	-910.16	3.60	417616.70	565898.22	N 32 8 53.10	W 104 15 14.31
	10214.00	90.28	180.28	9457.35	958.23	-884.04	-908.20	3.20	417523.74	565900.19	N 32 8 52.18	W 104 15 14.29
	10308.00	89.76	180.18	9457.31	1051.92	-978.04	-908.57	0.56	417429.75	565899.81	N 32 8 51.24	W 104 15 14.29
	10403.00	89.69	180.83	9457.77	1146.64	-1073.03	-909.41	0.69	417334.77	565898.97	N 32 8 50.30	W 104 15 14.30
	10497.00	88.55	179.91	9459.21	1240.34	-1167.02	-910.02	1.56	417240.79	565898.37	N 32 8 49.37	W 104 15 14.31
	10592.00	88.52	180.64	9461.64	1335.00	-1261.98	-910.47	0.77	417145.83	565897.91	N 32 8 48.44	W 104 15 14.32
	10686.00	88.56	181.36	9464.04	1428.75	-1355.94	-912.11	0.77	417051.89	565896.27	N 32 8 47.51	W 104 15 14.34
	10779.00	88.56	180.22	9466.38	1521.48	-1448.90	-913.39	1.23	416958.94	565894.99	N 32 8 46.59	W 104 15 14.35
	10873.00	89.14	179.22	9468.26	1615.08	-1542.88	-912.94	1.23	416864.97	565895.45	N 32 8 45.66	W 104 15 14.35
	10968.00	89.00	177.89	9469.80	1709.48	-1637.83	-910.54	1.41	416770.02	565897.84	N 32 8 44.72	W 104 15 14.32
	11062.00	89.14	179.77	9471.33	1802.94	-1731.79	-908.62	2.01	416676.07	565899.76	N 32 8 43.79	W 104 15 14.30
	11156.00	89.31	180.52	9472.60	1896.61	-1825.78	-908.86	0.82	416582.08	565899.52	N 32 8 42.86	W 104 15 14.30
	11250.00	89.11	179.42	9473.90	1990.25	-1919.77	-908.81	1.19	416488.10	565899.57	N 32 8 41.93	W 104 15 14.30

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 ° ' ")
	11344.00	89.21	179.47	9475.28	2083.82	-2013.76	-907.90	0.12	416394.13	565900.48	N 32 8 41.00	W 104 15 14.29
	11438.00	89.07	178.42	9476.69	2177.30	-2107.73	-906.17	0.13	416300.16	565902.21	N 32 8 40.07	W 104 15 14.27
	11532.00	89.21	179.28	9478.10	2270.77	-2201.70	-904.28	0.93	416206.20	565904.10	N 32 8 39.14	W 104 15 14.25
	11627.00	89.24	179.23	9479.38	2365.30	-2296.68	-903.05	0.06	416111.23	565905.34	N 32 8 38.20	W 104 15 14.24
	11721.00	89.04	179.42	9480.79	2458.85	-2390.67	-901.94	0.29	416017.25	565906.44	N 32 8 37.27	W 104 15 14.23
	11814.00	89.04	179.15	9482.35	2551.39	-2483.65	-900.78	0.29	415924.28	565907.60	N 32 8 36.35	W 104 15 14.21
	11908.00	89.24	179.42	9483.76	2644.93	-2577.63	-899.61	0.36	415830.31	565908.78	N 32 8 35.42	W 104 15 14.20
	12002.00	89.07	178.11	9485.21	2738.38	-2671.59	-897.58	1.42	415736.35	565910.80	N 32 8 34.49	W 104 15 14.18
	12095.00	89.07	178.90	9486.77	2830.79	-2764.55	-895.16	0.85	415643.41	565913.23	N 32 8 33.57	W 104 15 14.15
	12189.00	88.93	178.41	9488.41	2924.22	-2858.51	-892.95	0.54	415549.46	565915.43	N 32 8 32.64	W 104 15 14.13
	12283.00	89.28	178.60	9489.88	3017.62	-2952.46	-890.50	0.42	415455.51	565917.89	N 32 8 31.71	W 104 15 14.10
	12377.00	89.17	179.64	9491.15	3111.14	-3046.44	-889.05	1.11	415361.54	565919.33	N 32 8 30.78	W 104 15 14.08
	12471.00	89.14	178.47	9492.54	3204.64	-3140.42	-887.50	1.24	415267.57	565920.88	N 32 8 29.85	W 104 15 14.06
	12565.00	89.28	179.45	9493.83	3298.13	-3234.39	-885.80	1.05	415173.60	565922.58	N 32 8 28.92	W 104 15 14.05
	12661.00	89.04	180.73	9495.24	3393.78	-3330.38	-885.95	1.36	415077.63	565924.43	N 32 8 27.97	W 104 15 14.05
	12754.00	88.69	180.20	9497.08	3486.48	-3423.36	-886.70	0.88	414984.66	565921.68	N 32 8 27.05	W 104 15 14.06
	12848.00	89.14	180.35	9498.86	3580.16	-3517.34	-887.15	0.50	414890.68	565921.23	N 32 8 26.12	W 104 15 14.06
	12941.00	89.38	180.08	9500.07	3672.84	-3610.33	-887.50	0.39	414797.70	565920.88	N 32 8 25.20	W 104 15 14.07
	13035.00	90.00	180.36	9500.57	3766.53	-3704.33	-887.86	0.72	414703.71	565920.52	N 32 8 24.27	W 104 15 14.07
	13129.00	90.00	179.82	9500.57	3860.20	-3798.33	-888.01	0.57	414609.72	565920.37	N 32 8 23.34	W 104 15 14.08
	13223.00	89.97	179.16	9500.60	3953.78	-3892.32	-887.17	0.70	414515.73	565921.21	N 32 8 22.41	W 104 15 14.07
	13317.00	89.93	179.01	9500.68	4047.30	-3986.31	-885.67	0.17	414421.75	565922.71	N 32 8 21.48	W 104 15 14.05
	13412.00	89.97	179.38	9500.76	4141.83	-4081.30	-884.34	0.39	414326.77	565924.04	N 32 8 20.54	W 104 15 14.04
	13506.00	90.38	179.20	9500.48	4235.38	-4175.30	-883.17	0.48	414232.79	565925.21	N 32 8 19.61	W 104 15 14.02
	13600.00	89.97	178.94	9500.19	4328.90	-4269.28	-881.65	0.52	414138.81	565926.73	N 32 8 18.68	W 104 15 14.01
	13694.00	89.72	178.16	9500.44	4422.32	-4363.25	-879.27	0.87	414044.85	565928.11	N 32 8 17.75	W 104 15 13.98
	13788.00	90.03	177.78	9500.65	4515.63	-4457.19	-875.94	0.52	413950.92	565932.44	N 32 8 16.82	W 104 15 13.94
	13881.00	90.10	177.96	9500.54	4607.94	-4550.13	-872.48	0.21	413857.99	565935.90	N 32 8 15.90	W 104 15 13.90
	13976.00	89.24	177.09	9501.09	4702.15	-4645.04	-868.38	1.29	413763.09	565940.00	N 32 8 14.96	W 104 15 13.85
	14070.00	88.25	176.82	9503.15	4795.23	-4738.88	-863.39	1.09	413669.26	565944.99	N 32 8 14.03	W 104 15 13.80
	14234.00	90.00	176.47	9505.65	4957.51	-4902.57	-853.79	1.09	413505.58	565954.58	N 32 8 12.41	W 104 15 13.69
	14328.00	89.50	181.03	9506.06	5050.94	-4996.52	-851.74	4.88	413411.64	565956.64	N 32 8 11.48	W 104 15 13.66
	14423.00	90.95	185.46	9505.69	5145.87	-5091.34	-857.12	4.91	413316.82	565951.26	N 32 8 10.54	W 104 15 13.73
	14517.00	88.43	178.77	9506.25	5239.70	-5185.22	-860.59	7.60	413222.96	565947.79	N 32 8 9.61	W 104 15 13.77
	14611.00	91.51	180.38	9507.11	5333.28	-5279.20	-859.89	3.70	413128.99	565948.49	N 32 8 8.68	W 104 15 13.76
	14705.00	91.74	181.57	9503.58	5427.02	-5373.15	-861.49	1.29	413035.05	565946.89	N 32 8 7.75	W 104 15 13.78
	14802.00	88.38	181.63	9503.48	5523.85	-5470.10	-864.20	3.46	412938.11	565944.18	N 32 8 6.79	W 104 15 13.81
	14900.00	86.52	177.29	9512.26	5617.42	-5564.01	-864.19	3.70	412844.20	565944.19	N 32 8 5.87	W 104 15 13.81
	15083.00	87.48	178.57	9517.12	5710.57	-5657.80	-860.63	1.35	412750.42	565947.75	N 32 8 4.94	W 104 15 13.77
	15177.00	88.48	179.22	9520.44	5802.75	-5750.61	-857.27	1.72	412657.62	565951.11	N 32 8 4.02	W 104 15 13.74
	15271.00	88.54	178.56	9522.88	5896.18	-5844.53	-855.46	1.27	412563.71	565952.92	N 32 8 3.09	W 104 15 13.71
	15365.00	88.49	178.21	9525.32	5989.63	-5938.48	-853.64	0.70	412469.76	565954.74	N 32 8 2.16	W 104 15 13.69
	15459.00	89.89	180.74	9526.65	6083.00	-6032.41	-850.99	3.08	412375.84	565957.39	N 32 8 1.23	W 104 15 13.66
	15553.00	88.54	180.47	9527.93	6176.56	-6126.39	-850.13	1.46	412281.87	565958.25	N 32 8 0.30	W 104 15 13.66
	15647.00	88.43	180.18	9530.34	6270.28	-6220.37	-851.12	0.33	412187.90	565957.25	N 32 7 59.37	W 104 15 13.67
	15742.00	89.10	180.65	9532.84	6363.99	-6314.34	-852.15	0.64	412093.94	565956.23	N 32 7 58.44	W 104 15 13.68
	15836.00	89.07	180.85	9534.87	6458.68	-6409.30	-852.95	0.87	411998.99	565955.43	N 32 7 57.50	W 104 15 13.69
	15930.00	88.60	179.40	9536.75	6552.37	-6503.28	-853.63	1.43	411905.02	565954.75	N 32 7 56.57	W 104 15 13.70
	16024.00	87.59	178.91	9539.47	6646.01	-6597.25	-853.67	0.61	411811.05	565954.71	N 32 7 55.64	W 104 15 13.70
	16117.00	89.07	179.14	9542.97	6739.52	-6691.21	-852.47	0.51	411717.11	565955.91	N 32 7 54.71	W 104 15 13.69
	16211.00	89.50	178.78	9545.36	6831.97	-6784.13	-850.89	2.04	411624.20	565957.49	N 32 7 53.79	W 104 15 13.67
	16306.00	90.17	179.30	9545.63	6925.41	-6878.07	-848.99	0.89	411530.26	565959.38	N 32 7 52.86	W 104 15 13.65
	16399.00	89.94	179.59	9545.54	7019.91	-6973.06	-847.40	0.40	411435.28	565960.98	N 32 7 51.92	W 104 15 13.63
	16494.00	89.33	178.33	9546.15	7112.49	-7066.05	-846.50	1.47	411342.30	565961.88	N 32 7 51.00	W 104 15 13.62
	16588.00	89.50	178.34	9547.11	7206.98	-7161.03	-844.78	0.81	411247.33	565963.60	N 32 7 50.06	W 104 15 13.60
	16682.00	89.10	178.99	9548.26	7300.36	-7254.99	-842.05	0.81	411153.38	565966.33	N 32 7 49.13	W 104 15 13.57
	16776.00	88.60	178.15	9550.14	7393.80	-7348.96	-839.86	1.04	411059.42	565968.52	N 32 7 48.20	W 104 15 13.55
					7487.21	-7442.91	-837.51		410965.48	565970.87	N 32 7 47.27	W 104 15 13.52

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 ° ' ")
	16871.00	88.43	179.31	9552.61	7581.63	-7537.85	-835.41	1.23	410870.54	565972.97	N 32 7 46.33	W 104 15 13.50
	16966.00	87.98	180.44	9555.58	7676.21	-7632.80	-835.20	1.28	410775.60	565973.18	N 32 7 45.39	W 104 15 13.49
	17059.00	87.64	180.83	9559.14	7768.89	-7725.73	-836.23	0.56	410682.88	565972.15	N 32 7 44.47	W 104 15 13.51
	17154.00	89.89	180.42	9561.18	7863.60	-7820.69	-837.27	2.41	410587.73	565971.11	N 32 7 43.53	W 104 15 13.52
	17248.00	89.66	179.92	9561.55	7957.28	-7914.69	-837.54	0.59	410493.74	565970.83	N 32 7 42.60	W 104 15 13.52
	17342.00	89.16	179.42	9562.52	8050.88	-8008.68	-837.00	0.75	410399.75	565971.37	N 32 7 41.67	W 104 15 13.52
	17437.00	89.21	179.25	9563.87	8145.43	-8103.67	-835.90	0.19	410304.78	565972.48	N 32 7 40.73	W 104 15 13.51
	17531.00	89.55	180.42	9564.89	8239.05	-8197.66	-835.63	1.30	410210.79	565972.75	N 32 7 39.80	W 104 15 13.50
	17625.00	88.09	178.95	9566.83	8332.64	-8291.63	-835.11	2.20	410116.83	565973.26	N 32 7 38.87	W 104 15 13.50
	17720.00	90.45	179.71	9568.04	8427.18	-8386.61	-834.00	2.61	410021.86	565974.37	N 32 7 37.93	W 104 15 13.49
	17814.00	90.22	178.61	9567.49	8520.71	-8480.60	-832.62	1.20	409927.88	565975.75	N 32 7 37.00	W 104 15 13.47
	17908.00	89.94	178.08	9567.35	8614.09	-8574.56	-829.91	0.64	409833.93	565978.47	N 32 7 36.07	W 104 15 13.44
	18002.00	90.45	179.06	9567.03	8707.52	-8668.53	-827.56	1.18	409739.97	565980.81	N 32 7 35.14	W 104 15 13.41
	18097.00	89.27	178.26	9567.27	8801.96	-8763.50	-825.34	1.50	409645.01	565983.03	N 32 7 34.21	W 104 15 13.39
	18191.00	88.54	179.38	9569.06	8895.41	-8857.46	-823.41	1.42	409551.06	565984.97	N 32 7 33.28	W 104 15 13.37
	18285.00	88.60	179.80	9571.41	8988.98	-8951.43	-822.73	0.45	409457.10	565985.64	N 32 7 32.35	W 104 15 13.36
	18379.00	88.04	179.42	9574.16	9082.54	-9045.39	-822.10	0.72	409363.15	565986.28	N 32 7 31.42	W 104 15 13.35
	18473.00	88.43	181.28	9577.06	9176.20	-9139.34	-822.67	2.02	409269.21	565985.71	N 32 7 30.49	W 104 15 13.36
	18568.00	87.92	180.85	9580.09	9270.94	-9234.27	-824.43	0.70	409174.28	565983.94	N 32 7 29.55	W 104 15 13.38
	18662.00	87.25	180.74	9584.05	9364.61	-9328.18	-825.74	0.72	409080.38	565982.64	N 32 7 28.62	W 104 15 13.40
	18756.00	87.65	178.94	9588.23	9458.15	-9422.08	-825.47	1.96	408986.49	565982.90	N 32 7 27.69	W 104 15 13.40
	18850.00	89.38	178.94	9590.66	9551.61	-9516.03	-823.74	1.84	408892.55	565984.64	N 32 7 26.76	W 104 15 13.38
	18944.00	89.83	178.88	9591.31	9645.10	-9610.01	-821.95	0.48	408798.58	565986.43	N 32 7 25.83	W 104 15 13.36
	18976.00	89.72	178.75	9591.44	9676.92	-9642.00	-821.29	0.53	408766.59	565987.09	N 32 7 25.51	W 104 15 13.35
TD, project to bit	19027.00	89.72	178.75	9591.69	9727.62	-9692.99	-820.17	0.00	408715.60	565988.20	N 32 7 25.01	W 104 15 13.34

Survey Type: Def Survey

Survey Error Model: ISOWSA 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 Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	1/98.425	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Marquardt 12-13 Fed #11H MWD Final
	1	23.000	23.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Marquardt 12-13 Fed #11H MWD Final
	1	23.000	19027.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Marquardt 12-13 Fed #11H MWD