

30-015-43857

Final PvA

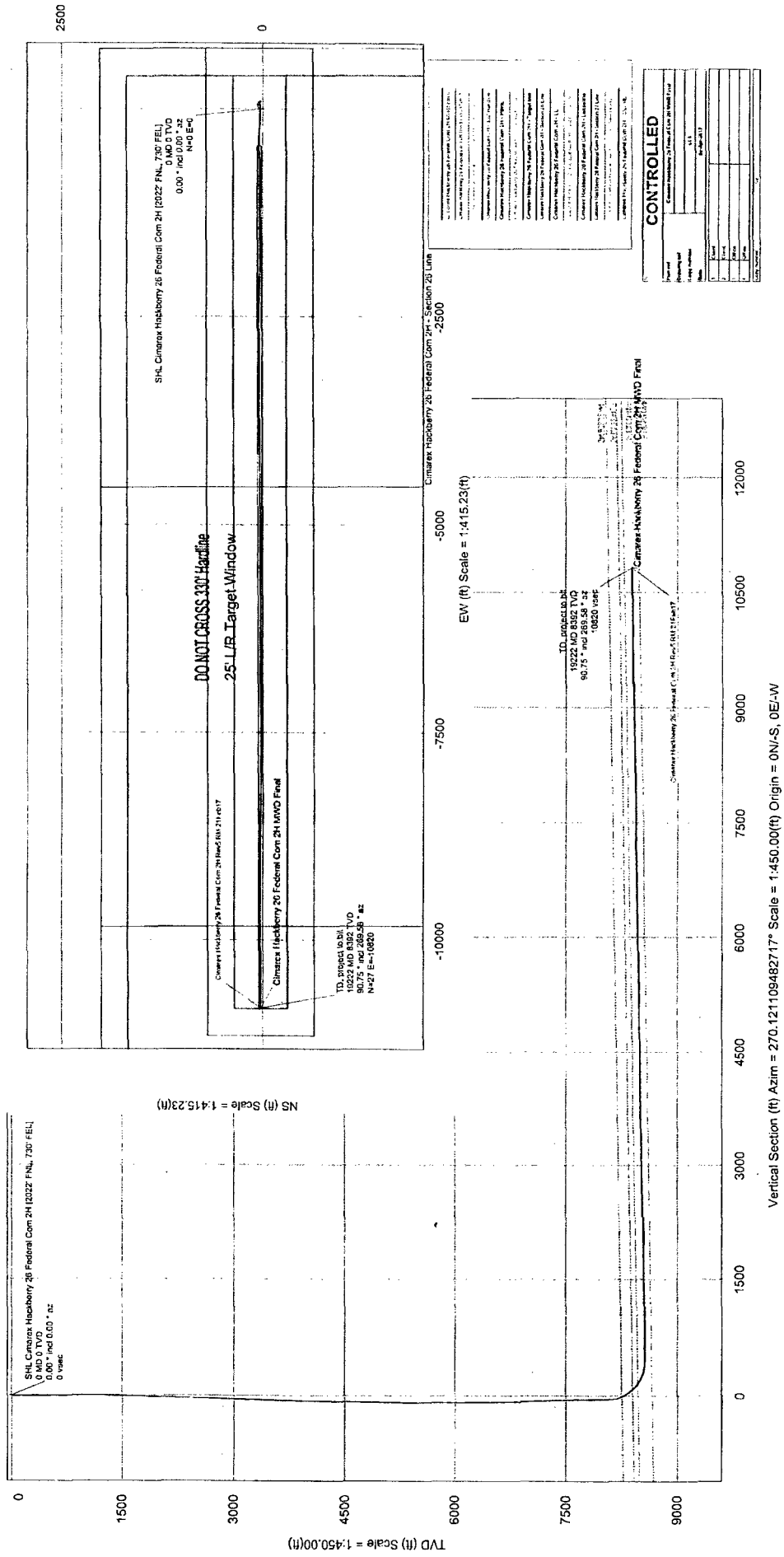
CIMAREX

Critical Points

Grid
True



Grid North
Tot Corr (M→G 7.278")
Mag Dec (7.492")
Grid Conv (0.214")



Cimarex Hackberry 26 Federal Com 2H MWD Final Survey Geodetic Report



NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 29 2017
RECEIVED

(Def Survey)

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL Cimarex Hackberry 26 Federal Com 2H [2022' FNL, 730' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	594252.73	663507.73	N 32 37 58.88	W 103 56 11.30
	173.00	0.88	336.51	172.99	0.53	1.22	-0.53	0.51	594253.95	663507.20	N 32 37 58.89	W 103 56 11.30
	204.00	1.10	351.84	203.99	0.67	1.73	-0.67	1.10	594254.46	663507.06	N 32 37 58.90	W 103 56 11.30
	289.00	1.41	344.84	288.97	1.06	3.55	-1.06	0.41	594256.28	663506.67	N 32 37 58.92	W 103 56 11.31
	391.00	1.41	340.78	390.94	1.81	5.94	-1.80	0.10	594258.67	663505.93	N 32 37 58.94	W 103 56 11.32
	481.00	1.72	347.13	480.90	2.48	8.31	-2.46	0.39	594261.04	663505.27	N 32 37 58.96	W 103 56 11.32
	571.00	1.50	340.52	570.87	3.18	10.73	-3.16	0.32	594263.46	663504.57	N 32 37 58.99	W 103 56 11.33
	661.00	1.59	340.91	660.84	3.99	13.02	-3.96	0.10	594265.75	663503.77	N 32 37 59.01	W 103 56 11.34
	752.00	1.59	344.40	751.80	4.74	15.43	-4.71	0.11	594268.16	663503.02	N 32 37 59.04	W 103 56 11.35
	842.00	1.59	345.63	841.77	5.39	17.85	-5.36	0.04	594270.57	663501.85	N 32 37 59.09	W 103 56 11.36
	937.00	1.81	352.55	936.72	5.92	20.61	-5.88	0.32	594273.34	663501.59	N 32 37 59.19	W 103 56 11.37
	1031.00	2.03	357.44	1030.67	6.19	23.75	-6.14	0.29	594276.47	663501.73	N 32 37 59.12	W 103 56 11.37
	1126.00	2.21	6.78	1125.61	6.06	27.25	-6.00	0.41	594278.97	663501.36	N 32 37 59.15	W 103 56 11.36
	1221.00	2.52	11.38	1220.53	5.44	31.11	-5.37	0.38	594283.84	663502.36	N 32 37 59.19	W 103 56 11.36
	1315.00	2.70	14.29	1314.43	4.49	35.28	-4.42	0.24	594288.01	663503.31	N 32 37 59.23	W 103 56 11.35
	1410.00	2.43	29.93	1409.33	2.95	39.20	-2.86	0.79	594291.92	663504.87	N 32 37 59.27	W 103 56 11.33
	1505.00	2.12	49.89	1504.26	0.80	42.07	-0.51	0.89	594294.80	663507.22	N 32 37 59.30	W 103 56 11.30
	1600.00	2.12	47.91	1599.20	-2.04	44.38	2.13	0.08	594297.11	663509.86	N 32 37 59.32	W 103 56 11.27
	1695.00	2.21	49.50	1694.13	-4.73	46.75	4.83	0.11	594299.48	663512.56	N 32 37 59.34	W 103 56 11.24
	1821.00	2.21	48.00	1820.03	-8.38	49.95	8.48	0.05	594302.68	663516.21	N 32 37 59.38	W 103 56 11.19
	1854.00	2.30	49.28	1853.01	-9.35	50.81	9.46	0.31	594303.54	663517.19	N 32 37 59.38	W 103 56 11.16
	1879.00	2.83	48.88	1877.88	-13.57	54.48	13.68	0.42	594307.20	663521.41	N 32 37 59.42	W 103 56 11.13

Report Date: April 06, 2017 - 04:20 PM
 Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure / Slot: Cimarex Hackberry 26 Federal Com 2H / Cimarex Hackberry 26 Federal Com 2H
 Well: Hackberry 26 Federal Com 2H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Hackberry 26 Federal Com 2H MWD Final
 Survey Date: March 03, 2017
 Tort / AHD / DDI / ERD Ratio: 181.652° / 11083.168 ft / 6.655 / 1.294
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 37' 58.88215", W 103° 56' 11.29618"
 Location Grid N/E Y/X: N 594252.730 ftUS, E 663507.730 ftUS
 CRS Grid Convergence Angle: 0.2140°
 Grid Scale Factor: 0.99992618
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 270.121° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3287.300 ft above MSL
 Seabed / Ground Elevation: 3264.300 ft above MSL
 Magnetic Declination: 7.492°
 Total Gravity Field Strength: 998.5162mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48343.242 nT
 Magnetic Dip Angle: 60.546°
 Declination Date: March 21, 2017
 Magnetic Declination Model: HDGM 2016
 North Reference: Grid North
 Grid Convergence Used: 0.2140°
 Total Corr Mag North->Grid North: 7.2779°
 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 ° ' ")
	2074.00	2.30	65.63	2072.79	-17.07	56.81	17.19	0.96	594309.53	663524.92	N 32 37 59.44	W 103 56 11.09
	2168.00	1.90	83.30	2166.73	-20.33	57.77	20.45	0.80	594310.49	663528.18	N 32 37 59.45	W 103 56 11.05
	2264.00	1.90	73.87	2262.67	-23.44	58.40	23.56	0.33	594311.12	663531.29	N 32 37 59.46	W 103 56 11.02
	2358.00	1.81	78.36	2356.62	-26.39	59.13	26.51	0.18	594311.85	663534.24	N 32 37 59.47	W 103 56 10.98
	2453.00	1.72	83.69	2451.58	-29.27	59.59	29.40	0.20	594312.31	663537.13	N 32 37 59.47	W 103 56 10.95
	2548.00	1.90	68.84	2546.53	-32.16	60.31	32.28	0.53	594313.04	663540.01	N 32 37 59.48	W 103 56 10.92
	2642.00	1.81	72.68	2640.48	-35.03	61.32	35.16	0.16	594314.04	663542.88	N 32 37 59.49	W 103 56 10.88
	2737.00	1.81	71.75	2735.44	-37.88	62.23	38.01	0.03	594314.96	663545.74	N 32 37 59.50	W 103 56 10.85
	2832.00	1.81	79.77	2830.39	-40.78	62.97	40.91	0.27	594315.69	663548.64	N 32 37 59.50	W 103 56 10.82
	2927.00	1.81	80.48	2925.34	-43.74	63.48	43.87	0.02	594316.21	663551.60	N 32 37 59.51	W 103 56 10.78
	3022.00	1.59	90.83	3020.30	-46.53	63.71	46.67	0.40	594316.44	663554.39	N 32 37 59.51	W 103 56 10.75
	3117.00	1.50	95.81	3115.27	-49.09	63.57	49.22	0.17	594316.29	663556.95	N 32 37 59.51	W 103 56 10.72
	3211.00	1.33	91.62	3209.24	-51.40	63.41	51.54	0.21	594316.14	663559.26	N 32 37 59.51	W 103 56 10.69
	3307.00	1.59	96.52	3305.21	-53.84	63.23	53.97	0.30	594315.96	663561.70	N 32 37 59.51	W 103 56 10.66
	3362.00	1.41	90.30	3360.19	-55.27	63.14	55.41	0.44	594315.86	663563.13	N 32 37 59.50	W 103 56 10.65
	3486.00	1.19	94.40	3484.15	-58.08	63.03	58.22	0.19	594315.76	663565.94	N 32 37 59.50	W 103 56 10.61
	3580.00	1.50	95.72	3578.13	-60.28	62.84	60.42	0.33	594315.56	663568.14	N 32 37 59.50	W 103 56 10.59
	3675.00	1.72	97.93	3673.09	-62.93	62.51	63.06	0.24	594315.24	663570.79	N 32 37 59.50	W 103 56 10.56
	3770.00	1.90	97.31	3768.04	-65.91	62.12	66.04	0.19	594314.84	663573.76	N 32 37 59.49	W 103 56 10.52
	3865.00	1.10	123.09	3863.01	-68.23	61.42	68.36	1.08	594314.14	663576.09	N 32 37 59.49	W 103 56 10.49
	3960.00	1.10	138.64	3957.99	-70.66	60.24	69.73	0.31	594312.96	663577.46	N 32 37 59.48	W 103 56 10.48
	4055.00	1.02	148.08	4052.98	-72.56	58.84	70.78	0.20	594309.97	663578.51	N 32 37 59.46	W 103 56 10.47
	4150.00	1.19	152.00	4147.96	-74.44	57.25	71.69	0.20	594309.97	663579.42	N 32 37 59.45	W 103 56 10.46
	4245.00	1.19	147.77	4242.94	-76.34	55.54	72.68	0.09	594308.27	663580.40	N 32 37 59.43	W 103 56 10.44
	4341.00	1.33	141.33	4338.92	-78.22	53.83	73.91	0.21	594306.55	663581.63	N 32 37 59.41	W 103 56 10.41
	4435.00	1.59	145.25	4432.89	-80.10	51.90	75.33	0.30	594304.63	663583.06	N 32 37 59.39	W 103 56 10.41
	4529.00	1.81	148.69	4526.84	-82.00	49.56	76.85	0.26	594302.29	663584.57	N 32 37 59.37	W 103 56 10.40
	4624.00	2.03	150.98	4621.79	-83.88	46.81	78.44	0.25	594299.54	663586.17	N 32 37 59.34	W 103 56 10.38
	4719.00	1.81	152.97	4716.74	-85.76	44.00	79.94	0.24	594296.73	663587.67	N 32 37 59.31	W 103 56 10.36
	4814.00	1.59	152.00	4811.70	-87.64	41.50	81.24	0.23	594294.23	663588.97	N 32 37 59.29	W 103 56 10.34
	4910.00	1.50	147.28	4907.66	-89.52	39.27	82.55	0.16	594292.00	663590.27	N 32 37 59.27	W 103 56 10.33
	5004.00	1.59	149.27	5001.63	-91.40	37.11	83.88	0.11	594289.84	663591.60	N 32 37 59.25	W 103 56 10.31
	5097.00	1.59	151.60	5094.59	-93.28	34.87	85.15	0.07	594287.60	663592.87	N 32 37 59.22	W 103 56 10.30
	5192.00	1.59	160.41	5189.55	-95.16	32.47	86.22	0.26	594285.20	663593.94	N 32 37 59.20	W 103 56 10.29
	5287.00	1.50	167.02	5284.52	-97.04	30.02	86.94	0.21	594282.74	663594.66	N 32 37 59.18	W 103 56 10.28
	5381.00	0.88	184.47	5378.50	-98.92	28.10	87.16	0.76	594280.83	663594.88	N 32 37 59.16	W 103 56 10.28
	5476.00	0.80	190.20	5473.49	-100.80	26.72	86.99	0.12	594279.45	663594.71	N 32 37 59.14	W 103 56 10.28
	5571.00	0.80	196.11	5568.48	-102.68	25.43	86.69	0.09	594278.16	663594.41	N 32 37 59.13	W 103 56 10.28
	5666.00	0.80	198.00	5663.47	-104.56	24.16	86.30	0.03	594276.89	663594.02	N 32 37 59.12	W 103 56 10.29
	5761.00	0.80	191.70	5758.46	-106.44	22.88	85.96	0.09	594275.61	663593.68	N 32 37 59.11	W 103 56 10.29
	5856.00	0.62	192.58	5853.45	-108.32	21.73	85.71	0.19	594274.46	663593.43	N 32 37 59.09	W 103 56 10.29
	5950.00	0.62	194.21	5947.45	-110.20	20.74	85.48	0.02	594273.47	663593.20	N 32 37 59.08	W 103 56 10.30
	6045.00	0.31	246.65	6042.45	-112.08	20.14	85.11	0.52	594272.87	663592.84	N 32 37 59.08	W 103 56 10.30
	6139.00	0.62	283.76	6136.44	-113.96	20.16	84.39	0.44	594272.89	663592.11	N 32 37 59.08	W 103 56 10.31
	6234.00	0.71	299.27	6231.44	-115.84	21.37	83.37	0.21	594273.30	663591.10	N 32 37 59.09	W 103 56 10.33
	6328.00	0.88	309.23	6325.43	-117.72	21.31	82.31	0.23	594274.04	663590.03	N 32 37 59.08	W 103 56 10.33
	6424.00	1.33	317.03	6421.41	-119.60	22.59	80.98	0.49	594275.32	663588.70	N 32 37 59.10	W 103 56 10.35
	6519.00	1.41	321.74	6516.38	-121.48	24.32	79.50	0.15	594277.04	663587.22	N 32 37 59.12	W 103 56 10.37
	6612.00	1.72	322.14	6609.35	-123.36	26.32	77.93	0.33	594279.04	663585.66	N 32 37 59.14	W 103 56 10.38
	6707.00	1.59	324.96	6704.31	-125.24	28.52	76.30	0.16	594281.25	663584.03	N 32 37 59.16	W 103 56 10.40
	6802.00	1.72	323.38	6799.27	-127.12	30.74	74.70	0.15	594283.47	663582.42	N 32 37 59.18	W 103 56 10.42
	6896.00	1.81	300.28	6893.22	-129.00	32.63	72.57	0.76	594285.35	663580.30	N 32 37 59.20	W 103 56 10.45
	6992.00	2.03	293.98	6989.17	-130.88	34.08	69.71	0.32	594286.81	663577.43	N 32 37 59.22	W 103 56 10.48
	7087.00	2.12	291.56	7084.11	-132.76	35.41	66.54	0.13	594288.14	663574.26	N 32 37 59.23	W 103 56 10.52
	7181.00	2.30	287.77	7178.04	-134.64	36.63	63.12	0.25	594289.35	663570.85	N 32 37 59.24	W 103 56 10.56
	7275.00	2.30	278.34	7271.96	-136.52	37.47	59.46	0.40	594290.20	663567.19	N 32 37 59.25	W 103 56 10.60
	7369.00	2.21	278.65	7365.89	-138.40	38.02	55.80	0.10	594290.75	663563.53	N 32 37 59.26	W 103 56 10.64
	7463.00	1.81	273.71	7459.83	-140.28	38.39	52.53	0.46	594291.12	663560.26	N 32 37 59.26	W 103 56 10.68

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 °.′.″)
	7557.00	1.41	269.00	7553.80	-49.81	38.47	49.89	0.45	594291.19	663557.62	N 32 37 59.26	W 103 56 10.71
	7653.00	0.71	242.51	7649.78	-48.10	38.17	48.18	0.87	594290.90	663555.91	N 32 37 59.26	W 103 56 10.73
	7747.00	0.62	229.20	7743.77	-47.20	37.57	47.28	0.19	594290.30	663555.01	N 32 37 59.25	W 103 56 10.74
	7842.00	0.71	217.75	7838.77	-46.46	36.77	46.53	0.17	594289.49	663554.26	N 32 37 59.24	W 103 56 10.75
	7937.00	1.19	206.33	7933.75	-45.66	35.42	45.74	0.54	594288.15	663553.46	N 32 37 59.23	W 103 56 10.76
	8019.00	1.10	188.66	8015.74	-45.17	33.88	45.24	0.44	594286.60	663552.97	N 32 37 59.22	W 103 56 10.77
	8065.00	1.14	180.88	8061.73	-45.10	32.98	45.17	0.34	594285.71	663552.89	N 32 37 59.21	W 103 56 10.77
	8096.00	1.92	245.03	8092.72	-44.62	32.46	44.69	5.66	594285.18	663552.42	N 32 37 59.20	W 103 56 10.77
	8128.00	5.53	271.98	8124.65	-42.59	32.28	42.66	12.24	594285.01	663550.39	N 32 37 59.20	W 103 56 10.80
	8160.00	10.15	271.07	8156.34	-38.23	32.39	38.30	14.44	594285.12	663546.03	N 32 37 59.20	W 103 56 10.85
	8192.00	15.35	269.27	8187.54	-31.17	32.39	31.24	16.30	594285.11	663538.97	N 32 37 59.20	W 103 56 10.93
	8223.00	19.51	268.65	8217.11	-21.89	32.21	21.96	13.43	594284.94	663529.69	N 32 37 59.20	W 103 56 11.04
	8255.00	22.45	269.14	8246.99	-10.44	31.99	10.51	9.20	594284.72	663518.23	N 32 37 59.20	W 103 56 11.17
	8286.00	24.78	270.76	8275.39	1.98	31.99	-1.91	7.80	594284.72	663505.82	N 32 37 59.20	W 103 56 11.32
	8317.00	27.60	272.74	8303.20	15.85	32.42	-15.58	9.52	594285.15	663492.15	N 32 37 59.20	W 103 56 11.48
	8349.00	31.63	271.54	8331.02	-31.45	33.00	-31.38	12.73	594285.73	663476.35	N 32 37 59.21	W 103 56 11.86
	8380.00	35.59	271.41	8356.83	-48.60	33.44	-48.53	12.78	594286.17	663459.20	N 32 37 59.21	W 103 56 11.86
	8412.00	39.20	271.15	8382.25	-68.03	33.87	-67.96	11.29	594286.60	663439.78	N 32 37 59.22	W 103 56 12.09
	8444.00	43.40	270.34	8406.28	-89.14	34.14	-89.07	13.23	594286.87	663418.67	N 32 37 59.22	W 103 56 12.34
	8476.00	47.40	270.28	8428.75	-111.92	34.27	-111.85	12.50	594286.99	663395.89	N 32 37 59.23	W 103 56 12.60
	8508.00	51.14	270.50	8449.62	-136.17	34.43	-136.10	11.70	594287.16	663371.65	N 32 37 59.23	W 103 56 13.17
	8539.00	54.25	270.84	8468.41	-160.82	34.72	-160.75	12.46	594287.45	663346.99	N 32 37 59.24	W 103 56 13.48
	8571.00	58.06	272.25	8486.23	-187.38	35.45	-187.31	9.51	594288.17	663320.43	N 32 37 59.24	W 103 56 13.81
	8603.00	60.91	273.49	8502.48	-214.92	36.83	-214.84	9.20	594289.56	663292.91	N 32 37 59.25	W 103 56 13.81
	8634.00	63.76	273.59	8516.87	-242.32	38.53	-242.24	11.78	594291.25	663265.51	N 32 37 59.27	W 103 56 14.13
	8666.00	67.52	273.32	8530.07	-271.42	40.28	-271.33	14.38	594293.01	663236.42	N 32 37 59.29	W 103 56 14.47
	8697.00	71.97	273.02	8540.79	-300.45	41.89	-300.36	12.90	594294.61	663207.39	N 32 37 59.31	W 103 56 14.81
	8729.00	76.08	272.61	8549.60	-331.18	43.40	-331.09	12.47	594296.12	663176.67	N 32 37 59.32	W 103 56 15.17
	8761.00	80.26	272.05	8556.16	-362.37	44.67	-362.37	13.17	594297.40	663145.39	N 32 37 59.34	W 103 56 15.53
	8792.00	83.80	270.91	8560.46	-393.15	45.46	-393.06	11.99	594298.19	663114.70	N 32 37 59.35	W 103 56 15.89
	8824.00	87.66	269.89	8562.84	-425.06	45.68	-424.96	12.47	594298.41	663082.80	N 32 37 59.35	W 103 56 16.26
	8856.00	89.72	269.38	8563.57	-457.05	45.48	-456.95	0.59	594297.82	663019.82	N 32 37 59.35	W 103 56 16.64
	8887.00	89.76	269.20	8563.71	-488.04	45.09	-487.95	2.65	594295.62	662947.86	N 32 37 59.33	W 103 56 17.00
	8959.00	89.72	267.29	8564.04	-560.00	42.89	-559.91	1.02	594295.58	662901.91	N 32 37 59.31	W 103 56 18.38
	9005.00	90.03	267.64	8564.14	-605.95	40.86	-605.86	2.27	594292.04	662852.94	N 32 37 59.30	W 103 56 18.95
	9054.00	90.10	268.75	8564.08	-654.92	39.31	-654.84	1.81	594291.36	662805.95	N 32 37 59.29	W 103 56 19.50
	9101.00	90.24	269.59	8563.94	-701.91	38.63	-701.83	0.51	594291.07	662757.95	N 32 37 59.29	W 103 56 20.06
	9149.00	90.03	269.72	8563.83	-749.91	38.34	-749.83	1.31	594290.65	662662.97	N 32 37 59.29	W 103 56 21.17
	9244.00	91.27	269.78	8562.75	-844.90	37.93	-844.82	0.28	594290.31	662568.00	N 32 37 59.29	W 103 56 22.28
	9339.00	91.00	269.80	8560.87	-939.80	37.58	-939.80	0.08	594289.95	662473.02	N 32 37 59.29	W 103 56 23.39
	9434.00	91.27	269.77	8558.99	-1034.79	37.22	-1034.79	0.26	594289.63	662378.05	N 32 37 59.29	W 103 56 24.51
	9529.00	91.24	269.84	8556.91	-1129.84	36.90	-1129.76	0.21	594289.33	662284.08	N 32 37 59.29	W 103 56 25.60
	9623.00	91.00	269.80	8555.07	-1223.82	36.60	-1223.74	0.26	594289.14	662189.10	N 32 37 59.29	W 103 56 26.71
	9718.00	91.10	269.97	8553.33	-1318.80	36.41	-1318.73	0.24	594288.90	662093.13	N 32 37 59.29	W 103 56 27.84
	9814.00	91.10	269.74	8551.49	-1414.78	36.17	-1414.71	0.26	594288.67	661998.15	N 32 37 59.29	W 103 56 28.95
	9909.00	91.03	269.98	8549.72	-1509.77	35.94	-1509.69	0.20	594288.76	661904.18	N 32 37 59.30	W 103 56 30.05
	10003.00	91.13	270.14	8547.95	-1603.68	36.04	-1603.68	0.07	594288.95	661809.20	N 32 37 59.30	W 103 56 31.16
	10098.00	91.17	270.09	8546.04	-1698.73	36.23	-1698.66	0.58	594289.16	661714.22	N 32 37 59.31	W 103 56 32.27
	10193.00	90.62	270.16	8544.56	-1793.64	36.43	-1793.64	2.66	594289.42	661617.24	N 32 37 59.32	W 103 56 33.40
	10290.00	88.04	270.15	8545.69	-1890.70	36.70	-1890.63	3.36	594289.98	661522.27	N 32 37 59.32	W 103 56 34.51
	10385.00	91.21	270.52	8546.31	-1985.69	37.25	-1985.67	0.85	594291.27	661427.32	N 32 37 59.34	W 103 56 35.62
	10480.00	91.83	271.04	8543.79	-2080.65	38.55	-2080.57	0.20	594293.06	661332.39	N 32 37 59.36	W 103 56 36.73
	10575.00	92.00	271.12	8540.62	-2175.58	40.34	-2175.50	0.53	594295.33	661237.49	N 32 37 59.39	W 103 56 37.84
	10670.00	92.07	271.62	8537.25	-2270.50	42.60	-2270.41	0.65	594297.78	661142.58	N 32 37 59.41	W 103 56 38.95
	10765.00	91.52	271.33	8534.27	-2365.42	45.05	-2365.33	1.07	594299.54	661047.64	N 32 37 59.44	W 103 56 40.06
	10860.00	91.72	270.80	8531.59	-2460.37	46.81	-2460.28	1.37	594300.20	660952.71	N 32 37 59.45	W 103 56 41.17
	10955.00	92.34	269.99	8528.22	-2555.31	47.47	-2555.22	1.37	594300.20	660857.76	N 32 37 59.44	W 103 56 42.28
	11050.00	91.14	269.48	8525.34	-2650.26	47.03	-2650.17					

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 ° ' '')
	11144.00	90.79	269.57	8523.75	2744.24	46.25	-2744.15	0.38	594298.98	660763.79	N 32 37 59.44	W 103 56 43.38
	11239.00	91.14	269.81	8522.15	2839.23	45.74	-2839.14	0.45	594298.46	660668.81	N 32 37 59.44	W 103 56 44.49
	11334.00	90.97	269.59	8520.40	2934.21	45.24	-2934.12	0.29	594297.97	660573.83	N 32 37 59.44	W 103 56 45.60
	11427.00	90.93	269.62	8518.86	3027.19	44.60	-3027.11	0.05	594297.32	660480.85	N 32 37 59.43	W 103 56 46.69
	11522.00	90.97	269.75	8517.29	3122.18	44.08	-3122.09	0.14	594296.80	660385.88	N 32 37 59.43	W 103 56 47.80
	11617.00	90.31	269.65	8516.22	3217.17	43.58	-3217.08	0.70	594296.31	660290.89	N 32 37 59.43	W 103 56 48.91
	11712.00	91.65	269.84	8514.60	3312.15	43.16	-3312.07	1.42	594295.88	660195.92	N 32 37 59.43	W 103 56 50.02
	11807.00	91.04	269.62	8512.37	3407.12	42.71	-3407.04	0.68	594295.43	660100.95	N 32 37 59.43	W 103 56 51.13
	11901.00	91.07	269.63	8510.64	3501.10	42.09	-3501.02	0.03	594294.82	660006.98	N 32 37 59.43	W 103 56 52.23
	12090.00	90.62	269.52	8509.25	3595.09	41.40	-3595.01	0.49	594294.12	659913.00	N 32 37 59.42	W 103 56 53.33
	12090.00	90.86	269.60	8508.03	3690.07	40.67	-3690.00	0.27	594293.39	659818.01	N 32 37 59.42	W 103 56 54.44
	12185.00	91.34	269.42	8506.20	3785.05	39.85	-3784.97	0.54	594292.58	659723.04	N 32 37 59.41	W 103 56 55.55
	12273.00	91.41	269.22	8503.97	3878.01	38.75	-3877.94	0.23	594291.48	659630.08	N 32 37 59.41	W 103 56 56.64
	12373.00	91.86	269.59	8501.26	3972.97	37.76	-3972.90	0.61	594290.49	659535.13	N 32 37 59.40	W 103 56 57.75
	12487.00	91.07	269.70	8498.86	4066.93	37.18	-4066.86	0.85	594289.91	659441.17	N 32 37 59.40	W 103 56 58.85
	12560.00	89.83	269.58	8496.13	4159.83	36.60	-4159.86	1.34	594289.33	659348.19	N 32 37 59.39	W 103 57 1.05
	12655.00	91.83	269.32	8496.75	4254.90	35.69	-4254.84	2.12	594288.41	659253.21	N 32 37 59.38	W 103 57 2.13
	12748.00	90.61	268.89	8494.77	4347.87	34.23	-4347.80	1.39	594286.96	659160.26	N 32 37 59.37	W 103 57 3.25
	12843.00	90.09	269.47	8492.85	4442.85	32.87	-4442.79	0.82	594285.60	659065.28	N 32 37 59.37	W 103 57 4.36
	12938.00	90.40	269.88	8493.78	4537.79	32.34	-4537.79	0.54	594284.77	658970.29	N 32 37 59.37	W 103 57 5.45
	13032.00	90.47	269.76	8493.07	4631.84	32.04	-4631.79	0.15	594284.33	658876.30	N 32 37 59.37	W 103 57 6.55
	13126.00	90.78	269.71	8492.05	4725.84	31.61	-4725.78	0.33	594283.78	658782.31	N 32 37 59.36	W 103 57 7.65
	13220.00	90.37	269.62	8491.10	4819.83	31.06	-4819.77	0.45	594283.35	658688.32	N 32 37 59.36	W 103 57 8.74
	13313.00	90.57	269.85	8490.34	4912.82	30.63	-4912.77	0.33	594283.02	658595.33	N 32 37 59.36	W 103 57 9.84
	13407.00	90.71	269.74	8489.29	5006.81	30.29	-5006.76	0.19	594282.37	658501.35	N 32 37 59.36	W 103 57 10.95
	13502.00	91.16	269.88	8487.74	5101.80	29.97	-5101.75	0.50	594281.90	658406.37	N 32 37 59.36	W 103 57 12.05
	13596.00	91.09	269.71	8485.89	5195.78	29.64	-5195.73	0.20	594281.47	658312.39	N 32 37 59.36	W 103 57 13.14
	13689.00	91.12	269.78	8484.04	5288.76	29.17	-5288.71	0.11	594281.05	658219.42	N 32 37 59.36	W 103 57 14.25
	13784.00	91.19	269.71	8482.13	5383.74	28.74	-5383.69	0.10	594280.54	658124.45	N 32 37 59.36	W 103 57 15.36
	13879.00	91.19	269.71	8480.21	5478.72	28.32	-5478.67	0.10	594280.10	658029.48	N 32 37 59.36	W 103 57 16.47
	13974.00	91.12	269.67	8478.30	5573.70	27.81	-5573.65	0.08	594279.89	657934.50	N 32 37 59.36	W 103 57 17.58
	14069.00	91.16	269.55	8476.41	5668.67	27.16	-5668.63	0.13	594279.48	657839.53	N 32 37 59.35	W 103 57 18.69
	14164.00	90.95	269.69	8474.66	5763.65	26.53	-5763.61	0.27	594278.87	657744.56	N 32 37 59.35	W 103 57 19.81
	14260.00	91.19	269.84	8472.87	5859.63	26.14	-5859.59	0.29	594278.48	657648.58	N 32 37 59.35	W 103 57 20.92
	14355.00	90.98	269.69	8471.07	5954.61	25.75	-5954.57	0.27	594278.00	657553.61	N 32 37 59.35	W 103 57 22.02
	14449.00	90.30	269.73	8470.02	6048.61	25.27	-6048.57	0.72	594277.67	657459.62	N 32 37 59.35	W 103 57 23.12
	14543.00	91.19	269.87	8468.80	6142.60	24.94	-6142.56	0.96	594277.39	657365.64	N 32 37 59.35	W 103 57 24.22
	14637.00	91.54	269.78	8466.56	6236.57	24.67	-6236.53	0.38	594277.10	657271.67	N 32 37 59.35	W 103 57 25.33
	14732.00	91.05	269.86	8464.41	6331.54	24.38	-6331.50	0.52	594276.92	657176.71	N 32 37 59.35	W 103 57 26.44
	14827.00	91.09	269.92	8462.63	6426.52	24.19	-6426.49	0.08	594276.80	657081.73	N 32 37 59.35	W 103 57 27.54
	14921.00	91.09	269.93	8460.85	6520.51	24.07	-6520.47	0.01	594276.65	656987.75	N 32 37 59.36	W 103 57 28.66
	15017.00	90.47	269.89	8459.54	6616.50	23.92	-6616.46	0.65	594276.65	656891.77	N 32 37 59.36	W 103 57 29.76
	15111.00	91.33	270.11	8458.06	6710.48	23.92	-6710.45	0.94	594276.46	656797.79	N 32 37 59.36	W 103 57 30.87
	15206.00	90.88	269.66	8456.23	6805.47	23.73	-6805.43	0.67	594276.31	656702.82	N 32 37 59.36	W 103 57 31.97
	15300.00	91.02	269.79	8454.67	6899.45	23.28	-6899.43	0.20	594275.57	656608.84	N 32 37 59.36	W 103 57 33.08
	15395.00	92.37	269.68	8451.86	6994.40	22.84	-6994.37	1.43	594275.23	656513.89	N 32 37 59.36	W 103 57 34.20
	15491.00	92.92	269.92	8447.43	7090.30	22.50	-7090.27	0.62	594275.12	656418.00	N 32 37 59.35	W 103 57 35.30
	15585.00	91.54	268.05	8443.77	7184.20	20.84	-7184.18	2.47	594273.57	656324.10	N 32 37 59.32	W 103 57 36.40
	15679.00	89.99	267.74	8442.52	7278.12	17.39	-7278.10	1.68	594270.12	656230.18	N 32 37 59.30	W 103 57 37.00
	15730.00	91.40	268.79	8441.90	7329.09	15.84	-7329.07	3.45	594268.57	656139.21	N 32 37 59.29	W 103 57 37.50
	15773.00	90.68	268.77	8441.12	7372.07	14.93	-7372.05	1.68	594267.66	656046.25	N 32 37 59.29	W 103 57 38.04
	15819.00	89.65	268.74	8440.99	7418.06	13.93	-7418.04	2.24	594266.66	655953.28	N 32 37 59.28	W 103 57 38.59
	15866.00	89.15	269.63	8441.48	7465.05	13.26	-7465.04	2.17	594265.99	655860.43	N 32 37 59.28	W 103 57 39.69
	15960.00	90.34	271.16	8441.90	7559.04	13.91	-7559.03	2.06	594265.64	655767.58	N 32 37 59.29	W 103 57 40.80
	16055.00	90.68	270.84	8441.05	7654.02	15.57	-7654.01	0.49	594265.29	655674.30	N 32 37 59.31	W 103 57 41.91
	16150.00	90.72	271.29	8439.89	7749.00	17.33	-7748.99	0.48	594270.06	655581.33	N 32 37 59.33	W 103 57 43.01
	16244.00	90.83	271.46	8438.62	7842.97	19.59	-7842.95	0.22	594272.32	655488.38	N 32 37 59.36	W 103 57 44.13
	16340.00	90.86	271.30	8437.21	7938.94	21.90	-7938.91	0.17	594274.63	655395.42	N 32 37 59.38	W 103 57 45.25

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 °.′.″)
	16435.00	90.48	270.81	8436.09	8033.92	23.65	-8033.99	0.65	594276.38	655474.45	N 32 37 59.40	W 103 57 45.24
	16530.00	90.69	270.71	8435.12	8128.91	24.91	-8128.87	0.24	594277.64	655379.47	N 32 37 59.42	W 103 57 46.35
	16625.00	90.93	270.55	8433.78	8223.90	25.95	-8223.86	0.30	594278.68	655284.49	N 32 37 59.43	W 103 57 47.46
	16719.00	91.10	270.40	8432.12	8317.88	26.73	-8317.84	0.24	594279.46	655190.52	N 32 37 59.44	W 103 57 48.56
	16814.00	91.41	270.26	8430.04	8412.86	27.28	-8412.82	0.36	594280.01	655095.55	N 32 37 59.45	W 103 57 49.67
	16910.00	91.44	270.54	8427.95	8508.82	27.95	-8508.78	0.29	594280.88	654999.59	N 32 37 59.46	W 103 57 50.79
	17005.00	91.51	270.79	8425.20	8603.75	29.05	-8603.75	0.27	594281.78	654904.64	N 32 37 59.48	W 103 57 51.90
	17099.00	91.44	270.62	8422.78	8697.75	30.21	-8697.71	0.20	594282.93	654810.68	N 32 37 59.49	W 103 57 53.00
	17193.00	91.00	270.28	8420.78	8791.73	30.94	-8791.68	0.59	594283.67	654716.71	N 32 37 59.50	W 103 57 54.10
	17288.00	90.76	270.20	8419.32	8886.72	31.34	-8886.67	0.27	594284.07	654621.73	N 32 37 59.51	W 103 57 55.21
	17383.00	91.34	270.76	8417.58	8981.70	32.14	-8981.65	0.85	594284.87	654526.76	N 32 37 59.52	W 103 57 56.32
	17477.00	91.38	270.94	8415.35	9075.67	33.53	-9075.61	0.20	594285.26	654432.80	N 32 37 59.54	W 103 57 57.42
	17572.00	91.93	271.00	8412.61	9170.62	35.14	-9170.56	0.58	594287.87	654337.86	N 32 37 59.57	W 103 57 58.53
	17666.00	92.54	270.20	8408.94	9264.54	36.12	-9264.48	1.07	594288.85	654243.95	N 32 37 59.57	W 103 57 59.63
	17710.00	92.58	269.92	8406.98	9308.50	36.17	-9308.44	0.64	594288.90	654200.00	N 32 37 59.57	W 103 58 0.14
	17759.00	91.86	269.90	8405.08	9357.46	36.09	-9357.40	1.47	594288.82	654151.04	N 32 37 59.57	W 103 58 0.71
	17844.00	90.24	269.17	8403.37	9452.43	35.32	-9452.38	1.91	594288.05	654056.07	N 32 37 59.57	W 103 58 1.82
	17949.00	90.20	269.34	8403.01	9547.42	34.09	-9547.37	0.18	594286.81	653961.08	N 32 37 59.56	W 103 58 2.93
	18044.00	90.17	269.82	8402.67	9642.42	33.39	-9642.37	0.51	594286.12	653866.09	N 32 37 59.55	W 103 58 4.05
	18138.00	90.31	269.82	8402.27	9736.41	33.09	-9736.37	0.15	594285.82	653772.10	N 32 37 59.56	W 103 58 5.14
	18234.00	90.27	269.87	8401.79	9832.41	32.84	-9832.36	0.07	594285.56	653676.11	N 32 37 59.56	W 103 58 6.27
	18329.00	90.31	269.83	8401.31	9927.41	32.59	-9927.36	0.06	594285.31	653581.12	N 32 37 59.56	W 103 58 7.38
	18424.00	90.34	269.66	8400.77	10022.41	32.16	-10022.36	0.18	594284.89	653486.13	N 32 37 59.56	W 103 58 8.49
	18519.00	90.37	269.49	8400.18	10117.40	31.46	-10117.36	0.18	594284.19	653391.14	N 32 37 59.55	W 103 58 9.60
	18614.00	90.34	270.01	8399.59	10212.40	31.04	-10212.35	0.55	594283.77	653296.15	N 32 37 59.55	W 103 58 10.71
	18709.00	90.72	269.40	8398.71	10307.39	30.56	-10307.35	0.76	594283.28	653201.16	N 32 37 59.55	W 103 58 11.82
	18804.00	90.93	269.88	8397.34	10402.38	29.96	-10402.34	0.55	594282.69	653106.18	N 32 37 59.55	W 103 58 12.93
	18900.00	90.72	269.64	8395.96	10498.36	29.56	-10498.32	0.33	594282.28	653010.20	N 32 37 59.55	W 103 58 14.05
	18995.00	90.72	269.40	8394.77	10593.35	28.76	-10593.31	0.25	594281.49	652915.22	N 32 37 59.54	W 103 58 15.17
	19090.00	90.76	269.47	8393.54	10688.34	27.82	-10688.30	0.08	594280.55	652820.24	N 32 37 59.54	W 103 58 16.28
	19183.00	90.75	269.58	8392.31	10781.32	27.05	-10781.29	0.12	594279.78	652727.26	N 32 37 59.53	W 103 58 17.36
TD, project to bit	19222.00	90.75	269.58	8391.80	10820.32	26.77	-10820.29	0.00	594279.50	652688.27	N 32 37 59.53	W 103 58 17.82

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 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 Hackberry 26 Federal Com 2H MWD Final
	1	23.000	23.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hackberry 26 Federal Com 2H MWD Final
	1	23.000	19222.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Hackberry 26 Federal Com 2H