



Cimarex Riverbend 14 Federal #2H XEM + MWD 0ft to 12455ft Survey
Geodetic Report
(Def Survey)



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NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 08 2015

RECEIVED

15-41589
Report Date: February 21, 2015 - 11:40 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Riverbend 14 Federal #2H / Cimarex Riverbend 14 Federal #2H
Well: Cimarex Riverbend 14 Federal #2H
Borehole: Original Borehole
UWI / API#: Unknown / 30-015-41589
Survey Name: Cimarex Riverbend 14 Federal #2H XEM + MWD 0ft to 12455ft
Survey Date: December 18, 2014
Tort / AHD / DDI / ERD Ratio: 149.047 ° / 2180.267 ft / 5.575 / 0.203
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 8' 13.95939", W 104° 3' 36.37088"
Location Grid N/E Y/X: N 413760.300 ftUS, E 625909.400 ftUS
CRS Grid Convergence Angle: 0.1453 °
Grid Scale Factor: 0.99991728
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 179.221 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB
TVD Reference Elevation: 2957.000 ft above MSL
Seabed / Ground Elevation: 2939.000 ft above MSL
Magnetic Declination: 7.457 °
Total Gravity Field Strength: 998.4581mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48313.184 nT
Magnetic Dip Angle: 59.979 °
Declination Date: January 23, 2015
Magnetic Declination Model: HDGM 2014
North Reference: Grid North
Grid Convergence Used: 0.1453 °
Total Corr Mag North->Grid North: 7.3115 °
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 ° ' ")
SHL Riverbend 14 Fed #2H - 1980' FWL, 75' FNL	0.00	0.00	179.80	0.00	0.00	0.00	0.00	N/A	413760.30	625909.40	N 32 8 13.96	W 104 3 36.37
	143.00	2.12	232.47	142.97	1.58	-1.61	-2.10	1.48	413758.69	625907.30	N 32 8 13.94	W 104 3 36.40
	173.00	2.12	230.13	172.95	2.26	-2.31	-2.96	0.29	413758.00	625906.44	N 32 8 13.94	W 104 3 36.41
	201.00	2.43	232.96	200.92	2.94	-2.99	-3.84	1.18	413757.31	625905.57	N 32 8 13.93	W 104 3 36.42
	263.00	2.70	236.74	262.86	4.50	-4.59	-6.11	0.51	413755.71	625903.30	N 32 8 13.91	W 104 3 36.44
	321.00	2.92	237.19	320.79	6.02	-6.14	-8.49	0.38	413754.16	625900.91	N 32 8 13.90	W 104 3 36.47
	376.00	3.00	236.97	375.72	7.53	-7.68	-10.87	0.15	413752.62	625898.53	N 32 8 13.88	W 104 3 36.50
	437.00	3.00	235.07	436.64	9.28	-9.46	-13.52	0.16	413750.84	625895.88	N 32 8 13.87	W 104 3 36.53
	521.00	2.83	233.04	520.53	11.74	-11.97	-16.98	0.24	413748.33	625892.42	N 32 8 13.84	W 104 3 36.57
	579.00	2.92	231.63	578.45	13.48	-13.75	-19.28	0.20	413746.55	625890.12	N 32 8 13.82	W 104 3 36.60
	638.00	3.23	233.26	637.37	15.38	-15.68	-21.79	0.55	413744.63	625887.61	N 32 8 13.80	W 104 3 36.62
	728.00	2.12	221.32	727.27	18.10	-18.44	-24.92	1.37	413741.86	625884.48	N 32 8 13.78	W 104 3 36.66
	818.00	1.19	166.85	817.24	20.25	-20.60	-25.81	1.92	413739.70	625883.59	N 32 8 13.76	W 104 3 36.67
	910.00	1.10	150.24	909.22	21.96	-22.30	-25.15	0.37	413738.00	625884.25	N 32 8 13.74	W 104 3 36.66
	1001.00	1.02	153.72	1000.20	23.45	-23.78	-24.36	0.11	413736.52	625885.04	N 32 8 13.72	W 104 3 36.65
	1091.00	0.80	148.74	1090.19	24.72	-25.04	-23.68	0.26	413735.26	625885.72	N 32 8 13.71	W 104 3 36.65
	1185.00	0.80	134.38	1184.18	25.75	-26.06	-22.87	0.21	413734.24	625886.53	N 32 8 13.70	W 104 3 36.64
	1275.00	1.02	149.23	1274.17	26.89	-27.19	-22.01	0.36	413733.12	625887.39	N 32 8 13.69	W 104 3 36.63
	1368.00	1.02	137.28	1367.16	28.22	-28.51	-21.03	0.23	413731.80	625888.37	N 32 8 13.68	W 104 3 36.62
	1462.00	0.80	143.50	1461.14	29.37	-29.65	-20.07	0.26	413730.65	625889.33	N 32 8 13.67	W 104 3 36.61

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 ° ' ")
	1557.00	0.71	146.94	1556.14	30.41	-30.67	-19.35	0.11	413729.63	625890.05	N 32 8 13.66	W 104 3 36.60
	1651.00	0.62	158.75	1650.13	31.38	-31.64	-18.85	0.17	413728.67	625890.55	N 32 8 13.65	W 104 3 36.59
	1745.00	0.49	174.21	1744.13	32.25	-32.51	-18.63	0.21	413727.79	625890.77	N 32 8 13.64	W 104 3 36.59
	1841.00	0.31	166.15	1840.12	32.92	-33.17	-18.52	0.20	413727.13	625890.88	N 32 8 13.63	W 104 3 36.59
	1931.00	0.40	117.92	1930.12	33.30	-33.56	-18.19	0.33	413726.75	625891.21	N 32 8 13.63	W 104 3 36.58
	2028.00	1.41	86.87	2027.11	33.42	-33.65	-16.70	1.12	413726.65	625892.70	N 32 8 13.63	W 104 3 36.57
	2123.00	1.72	120.36	2122.08	34.11	-34.31	-14.30	1.00	413726.00	625895.10	N 32 8 13.62	W 104 3 36.54
	2217.00	2.43	111.90	2216.01	35.61	-35.76	-11.23	0.82	413724.54	625898.17	N 32 8 13.61	W 104 3 36.50
	2313.00	3.23	111.73	2311.90	37.43	-37.52	-6.83	0.83	413722.78	625902.57	N 32 8 13.59	W 104 3 36.45
	2408.00	1.81	102.52	2406.80	38.80	-38.84	-2.88	1.55	413721.47	625906.52	N 32 8 13.58	W 104 3 36.41
	2496.00	0.71	82.24	2494.78	39.05	-39.07	-0.98	1.33	413721.24	625908.42	N 32 8 13.57	W 104 3 36.38
	2601.00	1.33	81.63	2599.76	38.81	-38.80	0.87	0.59	413721.50	625910.27	N 32 8 13.58	W 104 3 36.36
	2695.00	1.19	90.97	2693.74	38.69	-38.66	2.92	0.26	413721.64	625912.32	N 32 8 13.58	W 104 3 36.34
	2790.00	1.19	87.14	2788.72	38.69	-38.63	4.89	0.08	413721.68	625914.29	N 32 8 13.58	W 104 3 36.32
	2883.00	1.33	88.15	2881.70	38.63	-38.54	6.94	0.15	413721.76	625916.34	N 32 8 13.58	W 104 3 36.29
	2977.00	1.33	82.73	2975.67	38.49	-38.37	9.11	0.13	413721.93	625918.51	N 32 8 13.58	W 104 3 36.27
	3072.00	1.33	85.86	3070.65	38.30	-38.15	11.30	0.08	413722.15	625920.70	N 32 8 13.58	W 104 3 36.24
	3166.00	1.19	81.32	3164.62	38.10	-37.92	13.35	0.18	413722.38	625922.75	N 32 8 13.58	W 104 3 36.22
	3260.00	1.50	84.05	3258.60	37.86	-37.65	15.54	0.34	413722.65	625924.94	N 32 8 13.59	W 104 3 36.19
	3354.00	1.50	87.97	3352.56	37.72	-37.48	18.00	0.11	413722.82	625927.39	N 32 8 13.59	W 104 3 36.16
	3448.00	1.33	84.54	3446.54	37.60	-37.33	20.31	0.20	413722.97	625929.71	N 32 8 13.59	W 104 3 36.14
	3543.00	1.10	86.74	3541.51	37.47	-37.17	22.32	0.25	413723.13	625931.72	N 32 8 13.59	W 104 3 36.11
	3637.00	1.19	82.93	3635.50	37.33	-37.00	24.19	0.13	413723.30	625933.59	N 32 8 13.59	W 104 3 36.09
	3731.00	1.10	87.27	3729.48	37.19	-36.84	26.06	0.13	413723.46	625935.46	N 32 8 13.59	W 104 3 36.07
	3823.00	0.88	93.79	3821.46	37.22	-36.84	27.65	0.27	413723.46	625937.04	N 32 8 13.59	W 104 3 36.05
	3920.00	1.10	100.09	3918.45	37.45	-37.06	29.31	0.25	413723.25	625938.70	N 32 8 13.59	W 104 3 36.03
	4013.00	0.80	96.39	4011.44	37.70	-37.29	30.83	0.33	413723.02	625940.23	N 32 8 13.59	W 104 3 36.01
	4107.00	0.88	103.88	4105.43	37.97	-37.53	32.18	0.14	413722.77	625941.58	N 32 8 13.59	W 104 3 36.00
	4204.00	0.88	109.61	4202.41	38.41	-37.96	33.61	0.09	413722.34	625943.01	N 32 8 13.58	W 104 3 35.98
	4299.00	0.88	125.56	4297.40	39.10	-38.63	34.89	0.26	413721.67	625944.29	N 32 8 13.58	W 104 3 35.97
	4393.00	0.71	122.35	4391.39	39.85	-39.36	35.97	0.19	413720.94	625945.36	N 32 8 13.57	W 104 3 35.95
	4488.00	0.80	126.05	4486.39	40.57	-40.07	37.00	0.11	413720.24	625946.40	N 32 8 13.56	W 104 3 35.94
	4677.00	0.71	128.38	4675.37	42.10	-41.57	38.99	0.05	413718.73	625948.38	N 32 8 13.55	W 104 3 35.92
	4772.00	0.62	142.62	4770.36	42.88	-42.34	39.76	0.20	413717.96	625949.16	N 32 8 13.54	W 104 3 35.91
	4866.00	0.71	154.56	4864.36	43.82	-43.27	40.32	0.18	413717.03	625949.72	N 32 8 13.53	W 104 3 35.90
	4959.00	0.62	156.63	4957.35	44.81	-44.26	40.77	0.10	413716.05	625950.16	N 32 8 13.52	W 104 3 35.90
	5056.00	0.71	154.25	5054.34	45.83	-45.28	41.23	0.10	413715.03	625950.63	N 32 8 13.51	W 104 3 35.89
	5151.00	0.80	139.31	5149.34	46.88	-46.31	41.92	0.23	413713.99	625951.32	N 32 8 13.50	W 104 3 35.88
	5246.00	0.80	146.32	5244.33	47.94	-47.37	42.72	0.10	413712.94	625952.12	N 32 8 13.49	W 104 3 35.88
	5339.00	1.02	142.22	5337.31	49.15	-48.56	43.59	0.25	413711.74	625952.99	N 32 8 13.48	W 104 3 35.87
	5434.00	1.02	150.95	5432.30	50.57	-49.97	44.52	0.16	413710.34	625953.92	N 32 8 13.46	W 104 3 35.85
	5527.00	0.88	168.40	5525.29	52.00	-51.39	45.06	0.34	413708.91	625954.46	N 32 8 13.45	W 104 3 35.85
	5625.00	1.02	176.11	5623.27	53.61	-53.00	45.27	0.19	413707.31	625954.67	N 32 8 13.43	W 104 3 35.85
	5719.00	1.02	176.28	5717.26	55.28	-54.67	45.39	0.00	413705.64	625954.78	N 32 8 13.42	W 104 3 35.84
	5813.00	1.02	180.03	5811.24	56.95	-56.34	45.44	0.07	413703.96	625954.84	N 32 8 13.40	W 104 3 35.84
	5907.00	1.19	189.64	5905.23	58.75	-58.14	45.28	0.27	413702.17	625954.67	N 32 8 13.38	W 104 3 35.85
	6002.00	1.33	185.32	6000.20	60.82	-60.21	45.01	0.18	413700.10	625954.40	N 32 8 13.36	W 104 3 35.85

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 ° ' ")
	6098.00	0.88	178.22	6096.19	62.66	-62.06	44.93	0.49	413698.25	625954.32	N 32 8 13.34	W 104 3 35.85
	6193.00	0.71	171.88	6191.18	63.97	-63.37	45.03	0.20	413696.94	625954.43	N 32 8 13.33	W 104 3 35.85
	6287.00	0.71	178.88	6285.17	65.13	-64.53	45.13	0.09	413695.78	625954.52	N 32 8 13.32	W 104 3 35.85
	6381.00	0.71	170.86	6379.16	66.29	-65.68	45.23	0.11	413694.62	625954.63	N 32 8 13.31	W 104 3 35.85
	6475.00	0.80	56.47	6473.16	66.51	-65.90	45.87	1.35	413694.41	625955.27	N 32 8 13.31	W 104 3 35.84
	6570.00	1.19	48.36	6568.14	65.51	-64.87	47.16	0.44	413695.43	625956.56	N 32 8 13.32	W 104 3 35.82
	6664.00	1.41	44.83	6662.12	64.06	-63.41	48.71	0.25	413696.90	625958.10	N 32 8 13.33	W 104 3 35.81
	6760.00	1.33	27.47	6758.09	62.25	-61.58	50.05	0.44	413698.73	625959.45	N 32 8 13.35	W 104 3 35.79
	6855.00	0.88	45.93	6853.07	60.78	-60.09	51.09	0.60	413700.21	625960.48	N 32 8 13.36	W 104 3 35.78
	6949.00	0.80	303.07	6947.07	59.92	-59.23	51.05	1.40	413701.07	625960.45	N 32 8 13.37	W 104 3 35.78
	7044.00	1.10	268.34	7042.06	59.57	-58.90	49.59	0.67	413701.41	625958.98	N 32 8 13.38	W 104 3 35.80
	7138.00	0.71	302.36	7136.04	59.26	-58.61	48.19	0.69	413701.69	625957.59	N 32 8 13.38	W 104 3 35.81
	7233.00	0.80	305.27	7231.04	58.55	-57.91	47.15	0.10	413702.39	625956.55	N 32 8 13.39	W 104 3 35.82
	7327.00	1.19	291.61	7325.02	57.79	-57.18	45.71	0.48	413703.13	625955.11	N 32 8 13.39	W 104 3 35.84
	7422.00	1.19	295.93	7420.00	56.97	-56.38	43.91	0.09	413703.92	625953.30	N 32 8 13.40	W 104 3 35.86
	7486.00	1.33	296.32	7483.99	56.34	-55.76	42.64	0.22	413704.54	625952.04	N 32 8 13.41	W 104 3 35.88
	7610.00	2.03	287.51	7607.93	54.99	-54.46	39.26	0.60	413705.84	625948.66	N 32 8 13.42	W 104 3 35.92
	7704.00	2.43	284.51	7701.86	53.94	-53.46	35.74	0.44	413706.84	625945.14	N 32 8 13.43	W 104 3 35.96
	7799.00	2.43	267.46	7796.78	53.47	-53.05	31.78	0.76	413707.26	625941.18	N 32 8 13.43	W 104 3 36.00
	7896.00	1.59	262.44	7893.72	53.70	-53.32	28.39	0.88	413706.99	625937.79	N 32 8 13.43	W 104 3 36.04
	7990.00	0.49	255.12	7987.70	53.95	-53.59	26.71	1.18	413706.71	625936.11	N 32 8 13.43	W 104 3 36.06
	8084.00	0.31	109.43	8081.70	54.13	-53.78	26.56	0.82	413706.53	625935.96	N 32 8 13.43	W 104 3 36.06
	8179.00	0.31	118.73	8176.70	54.35	-53.99	27.03	0.05	413706.32	625936.43	N 32 8 13.42	W 104 3 36.06
	8274.00	0.22	196.86	8271.70	54.65	-54.29	27.20	0.36	413706.02	625936.60	N 32 8 13.42	W 104 3 36.06
	8369.00	0.71	233.97	8366.69	55.16	-54.81	26.67	0.58	413705.50	625936.07	N 32 8 13.42	W 104 3 36.06
	8557.00	1.19	228.24	8554.67	57.12	-56.79	24.27	0.26	413703.51	625933.67	N 32 8 13.40	W 104 3 36.09
	8652.00	2.03	212.90	8649.63	59.16	-58.86	22.63	0.99	413701.44	625932.02	N 32 8 13.38	W 104 3 36.11
	8746.00	2.30	208.10	8743.56	62.20	-61.92	20.83	0.35	413698.38	625930.23	N 32 8 13.35	W 104 3 36.13
	8824.00	2.83	210.61	8821.48	65.21	-64.96	19.11	0.69	413695.34	625928.51	N 32 8 13.32	W 104 3 36.15
	8935.00	2.83	210.00	8932.35	69.91	-69.69	16.35	0.03	413690.61	625925.75	N 32 8 13.27	W 104 3 36.18
	9031.00	2.52	197.04	9028.24	73.95	-73.76	14.55	0.71	413686.54	625923.94	N 32 8 13.23	W 104 3 36.20
	9126.00	2.30	191.53	9123.16	77.80	-77.63	13.55	0.34	413682.68	625922.95	N 32 8 13.19	W 104 3 36.22
	9219.00	2.43	191.05	9216.08	81.56	-81.39	12.80	0.14	413678.92	625922.20	N 32 8 13.15	W 104 3 36.22
	9315.00	2.30	190.12	9312.00	85.44	-85.28	12.07	0.14	413675.02	625921.47	N 32 8 13.12	W 104 3 36.23
	9409.00	2.21	190.83	9405.93	89.07	-88.92	11.40	0.10	413671.39	625920.80	N 32 8 13.08	W 104 3 36.24
	9505.00	2.30	190.34	9501.85	92.77	-92.63	10.71	0.10	413667.67	625920.11	N 32 8 13.04	W 104 3 36.25
	9597.00	2.43	187.43	9593.77	96.51	-96.38	10.12	0.19	413663.92	625919.52	N 32 8 13.01	W 104 3 36.26
	9694.00	2.21	189.64	9690.69	100.39	-100.27	9.55	0.24	413660.04	625918.94	N 32 8 12.97	W 104 3 36.26
	9789.00	2.52	190.83	9785.61	104.24	-104.12	8.85	0.33	413656.18	625918.25	N 32 8 12.93	W 104 3 36.27
	9884.00	2.52	196.07	9880.52	108.28	-108.18	7.88	0.24	413652.13	625917.27	N 32 8 12.89	W 104 3 36.28
	9978.00	2.30	212.68	9974.44	111.83	-111.76	6.29	0.78	413648.55	625915.68	N 32 8 12.85	W 104 3 36.30
	10073.00	2.43	238.86	10069.36	114.44	-114.40	3.53	1.14	413645.91	625912.93	N 32 8 12.83	W 104 3 36.33
Final Extreme Survey	10153.00	2.52	254.02	10149.29	115.76	-115.76	0.39	0.82	413644.55	625909.79	N 32 8 12.81	W 104 3 36.37
	10231.00	1.66	240.00	10227.24	116.76	-116.80	-2.24	1.27	413643.51	625907.16	N 32 8 12.80	W 104 3 36.40
	10262.00	3.65	190.32	10258.20	117.95	-118.00	-2.80	9.26	413642.31	625906.60	N 32 8 12.79	W 104 3 36.41
	10294.00	7.67	187.40	10290.04	121.06	-121.12	-3.26	12.59	413639.19	625906.14	N 32 8 12.76	W 104 3 36.41
	10324.00	10.27	187.74	10319.67	125.69	-125.75	-3.88	8.67	413634.56	625905.52	N 32 8 12.72	W 104 3 36.42

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 ° ' ")
	10357.00	14.71	186.88	10351.88	132.75	-132.83	-4.78	13.47	413627.48	625904.62	N 32 8 12.65	W 104 3 36.43
	10388.00	18.82	183.86	10381.56	141.64	-141.73	-5.59	13.55	413618.58	625903.81	N 32 8 12.56	W 104 3 36.44
	10420.00	23.14	181.25	10411.43	153.08	-153.17	-6.07	13.81	413607.14	625903.33	N 32 8 12.44	W 104 3 36.45
	10451.00	26.38	177.91	10439.58	166.05	-166.15	-5.95	11.38	413594.16	625903.45	N 32 8 12.32	W 104 3 36.45
	10483.00	28.31	174.99	10468.00	180.73	-180.81	-5.03	7.34	413579.50	625904.37	N 32 8 12.17	W 104 3 36.43
	10512.00	30.86	175.30	10493.22	195.01	-195.08	-3.82	8.81	413565.24	625905.58	N 32 8 12.03	W 104 3 36.42
	10545.00	34.11	175.10	10521.05	212.69	-212.74	-2.34	9.85	413547.58	625907.06	N 32 8 11.85	W 104 3 36.40
	10577.00	38.30	173.91	10546.87	231.52	-231.55	-0.52	13.28	413528.77	625908.88	N 32 8 11.67	W 104 3 36.38
	10607.00	41.96	175.24	10569.80	250.79	-250.79	1.30	12.53	413509.53	625910.70	N 32 8 11.48	W 104 3 36.36
	10640.00	45.77	176.09	10593.59	273.61	-273.59	3.02	11.68	413486.73	625912.42	N 32 8 11.25	W 104 3 36.34
	10672.00	49.83	177.96	10615.08	297.29	-297.26	4.24	13.40	413463.07	625913.64	N 32 8 11.02	W 104 3 36.33
	10701.00	53.42	178.22	10633.08	320.02	-319.98	5.00	12.40	413440.35	625914.40	N 32 8 10.79	W 104 3 36.32
	10734.00	57.12	178.26	10651.88	347.13	-347.08	5.83	11.21	413413.25	625915.23	N 32 8 10.52	W 104 3 36.31
	10796.00	65.30	178.91	10681.71	401.41	-401.35	7.16	13.23	413358.98	625916.56	N 32 8 9.99	W 104 3 36.30
	10835.00	71.37	178.80	10696.11	437.64	-437.58	7.88	15.57	413322.76	625917.28	N 32 8 9.63	W 104 3 36.29
	10965.00	80.92	181.35	10727.20	563.69	-563.64	7.66	7.59	413196.71	625917.06	N 32 8 8.38	W 104 3 36.30
	11060.00	85.25	179.81	10738.64	657.94	-657.91	6.71	4.83	413102.44	625916.11	N 32 8 7.45	W 104 3 36.31
	11155.00	87.77	179.50	10744.42	752.76	-752.73	7.28	2.67	413007.64	625916.68	N 32 8 6.51	W 104 3 36.31
	11250.00	89.72	181.29	10746.50	847.71	-847.69	6.63	2.79	412912.68	625916.03	N 32 8 5.57	W 104 3 36.32
	11345.00	89.45	181.10	10747.19	942.65	-942.67	4.65	0.35	412817.71	625914.05	N 32 8 4.63	W 104 3 36.34
	11440.00	88.76	178.58	10748.68	1037.62	-1037.65	4.91	2.75	412722.74	625914.31	N 32 8 3.69	W 104 3 36.34
	11534.00	88.52	178.77	10750.91	1131.59	-1131.60	7.09	0.33	412628.80	625916.49	N 32 8 2.76	W 104 3 36.32
	11629.00	89.31	179.74	10752.71	1226.57	-1226.57	8.32	1.32	412533.83	625917.72	N 32 8 1.82	W 104 3 36.31
	11724.00	88.90	179.10	10754.19	1321.56	-1321.56	9.28	0.80	412438.86	625918.68	N 32 8 0.88	W 104 3 36.30
	11819.00	89.24	181.03	10755.73	1416.53	-1416.54	9.17	2.06	412343.88	625918.57	N 32 7 59.94	W 104 3 36.31
	11913.00	90.00	181.39	10756.36	1510.47	-1510.51	7.19	0.89	412249.91	625916.59	N 32 7 59.01	W 104 3 36.33
	12008.00	90.07	181.94	10756.30	1605.39	-1605.47	4.43	0.58	412154.96	625913.83	N 32 7 58.07	W 104 3 36.37
	12103.00	90.31	179.67	10755.98	1700.34	-1700.46	3.09	2.40	412059.99	625912.49	N 32 7 57.13	W 104 3 36.39
	12198.00	89.28	179.08	10756.32	1795.34	-1795.45	4.13	1.25	411965.00	625913.53	N 32 7 56.19	W 104 3 36.38
	12293.00	89.97	179.03	10756.94	1890.34	-1890.43	5.70	0.73	411870.03	625915.10	N 32 7 55.25	W 104 3 36.36
Final Survey	12388.00	89.90	178.44	10757.05	1985.33	-1985.41	7.79	0.63	411775.06	625917.19	N 32 7 54.31	W 104 3 36.34
PTB Cimarex Riverbend 14 Fed 2H	12455.00	89.80	179.50	10757.23	2052.33	-2052.40	9.00	1.59	411708.08	625918.40	N 32 7 53.65	W 104 3 36.33

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	18.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +
	1	18.000	10153.000	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +

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 ° ' ")
		1	10153.000	12388.000	Act Stns	30.000	30.000	SLB_MWD-STD			Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +	
		1	12388.000	12455.000	Act Stns	30.000	30.000	SLB_BLIND+TREND			Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +	



Cimarex Riverbend 14 Federal #2H MWD 10734ft to 15325ft Survey Geodetic



Report (Def Survey)

Report Date: February 21, 2015 - 11:37 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Riverbend 14 Federal #2H / Cimarex Riverbend 14 Federal #2H
Well: Cimarex Riverbend 14 Federal #2H
Borehole: ST01 Borehole
UWI / API#: Unknown / 30-015-41589
Survey Name: Cimarex Riverbend 14 Federal #2H MWD 10734ft to 15325ft
Survey Date: February 03, 2015
Tort / AHD / DDI / ERD Ratio: 228.645 ° / 5045.408 ft / 6.216 / 0.469
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 8' 13.95939", W 104° 3' 36.37088"
Location Grid N/E Y/X: N 413760.300 ftUS, E 625909.400 ftUS
CRS Grid Convergence Angle: 0.1453 °
Grid Scale Factor: 0.99991728
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 179.221 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 2957.000 ft above MSL
Seabed / Ground Elevation: 2939.000 ft above MSL
Magnetic Declination: 7.450 °
Total Gravity Field Strength: 998.4581mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48305.242 nT
Magnetic Dip Angle: 59.979 °
Declination Date: February 17, 2015
Magnetic Declination Model: HDGM 2014
North Reference: Grid North
Grid Convergence Used: 0.1453 °
Total Corr Mag North->Grid North: 7.3044 °
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 ° ' ")
SHL Riverbend 14 Fed #2H - 1980' FWL, 75' FNL	0.00	0.00	179.80	0.00	0.00	0.00	0.00	N/A	413760.30	625909.40	N 32 8 13.96 W 104	3 36.37
	143.00	2.12	232.47	142.97	1.58	-1.61	-2.10	1.48	413758.69	625907.30	N 32 8 13.94 W 104	3 36.40
	173.00	2.12	230.13	172.95	2.26	-2.31	-2.96	0.29	413758.00	625906.44	N 32 8 13.94 W 104	3 36.41
	201.00	2.43	232.96	200.92	2.94	-2.99	-3.84	1.18	413757.31	625905.57	N 32 8 13.93 W 104	3 36.42
	263.00	2.70	236.74	262.86	4.50	-4.59	-6.11	0.51	413755.71	625903.30	N 32 8 13.91 W 104	3 36.44
	321.00	2.92	237.19	320.79	6.02	-6.14	-8.49	0.38	413754.16	625900.91	N 32 8 13.90 W 104	3 36.47
	376.00	3.00	236.97	375.72	7.53	-7.68	-10.87	0.15	413752.62	625898.53	N 32 8 13.88 W 104	3 36.50
	437.00	3.00	235.07	436.64	9.28	-9.46	-13.52	0.16	413750.84	625895.88	N 32 8 13.87 W 104	3 36.53
	521.00	2.83	233.04	520.53	11.74	-11.97	-16.98	0.24	413748.33	625892.42	N 32 8 13.84 W 104	3 36.57
	579.00	2.92	231.63	578.45	13.48	-13.75	-19.28	0.20	413746.55	625890.12	N 32 8 13.82 W 104	3 36.60
	638.00	3.23	233.26	637.37	15.38	-15.68	-21.79	0.55	413744.63	625887.61	N 32 8 13.80 W 104	3 36.62
	728.00	2.12	221.32	727.27	18.10	-18.44	-24.92	1.37	413741.86	625884.48	N 32 8 13.78 W 104	3 36.66
	818.00	1.19	166.85	817.24	20.25	-20.60	-25.81	1.92	413739.70	625883.59	N 32 8 13.76 W 104	3 36.67
	910.00	1.10	150.24	909.22	21.96	-22.30	-25.15	0.37	413738.00	625884.25	N 32 8 13.74 W 104	3 36.66
	1001.00	1.02	153.72	1000.20	23.45	-23.78	-24.36	0.11	413736.52	625885.04	N 32 8 13.72 W 104	3 36.65
	1091.00	0.80	148.74	1090.19	24.72	-25.04	-23.68	0.26	413735.26	625885.72	N 32 8 13.71 W 104	3 36.65
	1185.00	0.80	134.38	1184.18	25.75	-26.06	-22.87	0.21	413734.24	625886.53	N 32 8 13.70 W 104	3 36.64
	1275.00	1.02	149.23	1274.17	26.89	-27.19	-22.01	0.36	413733.12	625887.39	N 32 8 13.69 W 104	3 36.63
	1368.00	1.02	137.28	1367.16	28.22	-28.51	-21.03	0.23	413731.80	625888.37	N 32 8 13.68 W 104	3 36.62
	1462.00	0.80	143.50	1461.14	29.37	-29.65	-20.07	0.26	413730.65	625889.33	N 32 8 13.67 W 104	3 36.61

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 ° ' ")
	1557.00	0.71	146.94	1556.14	30.41	-30.67	-19.35	0.11	413729.63	625890.05	N 32 8 13.66	W 104 3 36.60
	1651.00	0.62	158.75	1650.13	31.38	-31.64	-18.85	0.17	413728.67	625890.55	N 32 8 13.65	W 104 3 36.59
	1745.00	0.49	174.21	1744.13	32.25	-32.51	-18.63	0.21	413727.79	625890.77	N 32 8 13.64	W 104 3 36.59
	1841.00	0.31	166.15	1840.12	32.92	-33.17	-18.52	0.20	413727.13	625890.88	N 32 8 13.63	W 104 3 36.59
	1931.00	0.40	117.92	1930.12	33.30	-33.56	-18.19	0.33	413726.75	625891.21	N 32 8 13.63	W 104 3 36.58
	2028.00	1.41	86.87	2027.11	33.42	-33.65	-16.70	1.12	413726.65	625892.70	N 32 8 13.63	W 104 3 36.57
	2123.00	1.72	120.36	2122.08	34.11	-34.31	-14.30	1.00	413726.00	625895.10	N 32 8 13.62	W 104 3 36.54
	2217.00	2.43	111.90	2216.01	35.61	-35.76	-11.23	0.82	413724.54	625898.17	N 32 8 13.61	W 104 3 36.50
	2313.00	3.23	111.73	2311.90	37.43	-37.52	-6.83	0.83	413722.78	625902.57	N 32 8 13.59	W 104 3 36.45
	2408.00	1.81	102.52	2406.80	38.80	-38.84	-2.88	1.55	413721.47	625906.52	N 32 8 13.58	W 104 3 36.41
	2496.00	0.71	82.24	2494.78	39.05	-39.07	-0.98	1.33	413721.24	625908.42	N 32 8 13.57	W 104 3 36.38
	2601.00	1.33	81.63	2599.76	38.81	-38.80	0.87	0.59	413721.50	625910.27	N 32 8 13.58	W 104 3 36.36
	2695.00	1.19	90.97	2693.74	38.69	-38.66	2.92	0.26	413721.64	625912.32	N 32 8 13.58	W 104 3 36.34
	2790.00	1.19	87.14	2788.72	38.69	-38.63	4.89	0.08	413721.68	625914.29	N 32 8 13.58	W 104 3 36.32
	2883.00	1.33	88.15	2881.70	38.63	-38.54	6.94	0.15	413721.76	625916.34	N 32 8 13.58	W 104 3 36.29
	2977.00	1.33	82.73	2975.67	38.49	-38.37	9.11	0.13	413721.93	625918.51	N 32 8 13.58	W 104 3 36.27
	3072.00	1.33	85.86	3070.65	38.30	-38.15	11.30	0.08	413722.15	625920.70	N 32 8 13.58	W 104 3 36.24
	3166.00	1.19	81.32	3164.62	38.10	-37.92	13.35	0.18	413722.38	625922.75	N 32 8 13.58	W 104 3 36.22
	3260.00	1.50	84.05	3258.60	37.86	-37.65	15.54	0.34	413722.65	625924.94	N 32 8 13.59	W 104 3 36.19
	3354.00	1.50	87.97	3352.56	37.72	-37.48	18.00	0.11	413722.82	625927.39	N 32 8 13.59	W 104 3 36.16
	3448.00	1.33	84.54	3446.54	37.60	-37.33	20.31	0.20	413722.97	625929.71	N 32 8 13.59	W 104 3 36.14
	3543.00	1.10	86.74	3541.51	37.47	-37.17	22.32	0.25	413723.13	625931.72	N 32 8 13.59	W 104 3 36.11
	3637.00	1.19	82.93	3635.50	37.33	-37.00	24.19	0.13	413723.30	625933.59	N 32 8 13.59	W 104 3 36.09
	3731.00	1.10	87.27	3729.48	37.19	-36.84	26.06	0.13	413723.46	625935.46	N 32 8 13.59	W 104 3 36.07
	3823.00	0.88	93.79	3821.46	37.22	-36.84	27.65	0.27	413723.46	625937.04	N 32 8 13.59	W 104 3 36.05
	3920.00	1.10	100.09	3918.45	37.45	-37.06	29.31	0.25	413723.25	625938.70	N 32 8 13.59	W 104 3 36.03
	4013.00	0.80	96.39	4011.44	37.70	-37.29	30.83	0.33	413723.02	625940.23	N 32 8 13.59	W 104 3 36.01
	4107.00	0.88	103.88	4105.43	37.97	-37.53	32.18	0.14	413722.77	625941.58	N 32 8 13.59	W 104 3 36.00
	4204.00	0.88	109.61	4202.41	38.41	-37.96	33.61	0.09	413722.34	625943.01	N 32 8 13.58	W 104 3 35.98
	4299.00	0.88	125.56	4297.40	39.10	-38.63	34.89	0.26	413721.67	625944.29	N 32 8 13.58	W 104 3 35.97
	4393.00	0.71	122.35	4391.39	39.85	-39.36	35.97	0.19	413720.94	625945.36	N 32 8 13.57	W 104 3 35.95
	4488.00	0.80	126.05	4486.39	40.57	-40.07	37.00	0.11	413720.24	625946.40	N 32 8 13.56	W 104 3 35.94
	4677.00	0.71	128.38	4675.37	42.10	-41.57	38.99	0.05	413718.73	625948.38	N 32 8 13.55	W 104 3 35.92
	4772.00	0.62	142.62	4770.36	42.88	-42.34	39.76	0.20	413717.96	625949.16	N 32 8 13.54	W 104 3 35.91
	4866.00	0.71	154.56	4864.36	43.82	-43.27	40.32	0.18	413717.03	625949.72	N 32 8 13.53	W 104 3 35.90
	4959.00	0.62	156.63	4957.35	44.81	-44.26	40.77	0.10	413716.05	625950.16	N 32 8 13.52	W 104 3 35.90
	5056.00	0.71	154.25	5054.34	45.83	-45.28	41.23	0.10	413715.03	625950.63	N 32 8 13.51	W 104 3 35.89
	5151.00	0.80	139.31	5149.34	46.88	-46.31	41.92	0.23	413713.99	625951.32	N 32 8 13.50	W 104 3 35.88
	5246.00	0.80	146.32	5244.33	47.94	-47.37	42.72	0.10	413712.94	625952.12	N 32 8 13.49	W 104 3 35.88
	5339.00	1.02	142.22	5337.31	49.15	-48.56	43.59	0.25	413711.74	625952.99	N 32 8 13.48	W 104 3 35.87
	5434.00	1.02	150.95	5432.30	50.57	-49.97	44.52	0.16	413710.34	625953.92	N 32 8 13.46	W 104 3 35.85
	5527.00	0.88	168.40	5525.29	52.00	-51.39	45.06	0.34	413708.91	625954.46	N 32 8 13.45	W 104 3 35.85
	5625.00	1.02	176.11	5623.27	53.61	-53.00	45.27	0.19	413707.31	625954.67	N 32 8 13.43	W 104 3 35.85
	5719.00	1.02	176.28	5717.26	55.28	-54.67	45.39	0.00	413705.64	625954.78	N 32 8 13.42	W 104 3 35.84
	5813.00	1.02	180.03	5811.24	56.95	-56.34	45.44	0.07	413703.96	625954.84	N 32 8 13.40	W 104 3 35.84
	5907.00	1.19	189.64	5905.23	58.75	-58.14	45.28	0.27	413702.17	625954.67	N 32 8 13.38	W 104 3 35.85
	6002.00	1.33	185.32	6000.20	60.82	-60.21	45.01	0.18	413700.10	625954.40	N 32 8 13.36	W 104 3 35.85

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 ° ' ")
	6098.00	0.88	178.22	6096.19	62.66	-62.06	44.93	0.49	413698.25	625954.32	N 32 8 13.34	W 104 3 35.85
	6193.00	0.71	171.88	6191.18	63.97	-63.37	45.03	0.20	413696.94	625954.43	N 32 8 13.33	W 104 3 35.85
	6287.00	0.71	178.88	6285.17	65.13	-64.53	45.13	0.09	413695.78	625954.52	N 32 8 13.32	W 104 3 35.85
	6381.00	0.71	170.86	6379.16	66.29	-65.68	45.23	0.11	413694.62	625954.63	N 32 8 13.31	W 104 3 35.85
	6475.00	0.80	56.47	6473.16	66.51	-65.90	45.87	1.35	413694.41	625955.27	N 32 8 13.31	W 104 3 35.84
	6570.00	1.19	48.36	6568.14	65.51	-64.87	47.16	0.44	413695.43	625956.56	N 32 8 13.32	W 104 3 35.82
	6664.00	1.41	44.83	6662.12	64.06	-63.41	48.71	0.25	413696.90	625958.10	N 32 8 13.33	W 104 3 35.81
	6760.00	1.33	27.47	6758.09	62.25	-61.58	50.05	0.44	413698.73	625959.45	N 32 8 13.35	W 104 3 35.79
	6855.00	0.88	45.93	6853.07	60.78	-60.09	51.09	0.60	413700.21	625960.48	N 32 8 13.36	W 104 3 35.78
	6949.00	0.80	303.07	6947.07	59.92	-59.23	51.05	1.40	413701.07	625960.45	N 32 8 13.37	W 104 3 35.78
	7044.00	1.10	268.34	7042.06	59.57	-58.90	49.59	0.67	413701.41	625958.98	N 32 8 13.38	W 104 3 35.80
	7138.00	0.71	302.36	7136.04	59.26	-58.61	48.19	0.69	413701.69	625957.59	N 32 8 13.38	W 104 3 35.81
	7233.00	0.80	305.27	7231.04	58.55	-57.91	47.15	0.10	413702.39	625956.55	N 32 8 13.39	W 104 3 35.82
	7327.00	1.19	291.61	7325.02	57.79	-57.18	45.71	0.48	413703.13	625955.11	N 32 8 13.39	W 104 3 35.84
	7422.00	1.19	295.93	7420.00	56.97	-56.38	43.91	0.09	413703.92	625953.30	N 32 8 13.40	W 104 3 35.86
	7486.00	1.33	296.32	7483.99	56.34	-55.76	42.64	0.22	413704.54	625952.04	N 32 8 13.41	W 104 3 35.88
	7610.00	2.03	287.51	7607.93	54.99	-54.46	39.26	0.60	413705.84	625948.66	N 32 8 13.42	W 104 3 35.92
	7704.00	2.43	284.51	7701.86	53.94	-53.46	35.74	0.44	413706.84	625945.14	N 32 8 13.43	W 104 3 35.96
	7799.00	2.43	267.46	7796.78	53.47	-53.05	31.78	0.76	413707.26	625941.18	N 32 8 13.43	W 104 3 36.00
	7896.00	1.59	262.44	7893.72	53.70	-53.32	28.39	0.88	413706.99	625937.79	N 32 8 13.43	W 104 3 36.04
	7990.00	0.49	255.12	7987.70	53.95	-53.59	26.71	1.18	413706.71	625936.11	N 32 8 13.43	W 104 3 36.06
	8084.00	0.31	109.43	8081.70	54.13	-53.78	26.56	0.82	413706.53	625935.96	N 32 8 13.43	W 104 3 36.06
	8179.00	0.31	118.73	8176.70	54.35	-53.99	27.03	0.05	413706.32	625936.43	N 32 8 13.42	W 104 3 36.06
	8274.00	0.22	196.86	8271.70	54.65	-54.29	27.20	0.36	413706.02	625936.60	N 32 8 13.42	W 104 3 36.06
	8369.00	0.71	233.97	8366.69	55.16	-54.81	26.67	0.58	413705.50	625936.07	N 32 8 13.42	W 104 3 36.06
	8557.00	1.19	228.24	8554.67	57.12	-56.79	24.27	0.26	413703.51	625933.67	N 32 8 13.40	W 104 3 36.09
	8652.00	2.03	212.90	8649.63	59.16	-58.86	22.63	0.99	413701.44	625932.02	N 32 8 13.38	W 104 3 36.11
	8746.00	2.30	208.10	8743.56	62.20	-61.92	20.83	0.35	413698.38	625930.23	N 32 8 13.35	W 104 3 36.13
	8824.00	2.83	210.61	8821.48	65.21	-64.96	19.11	0.69	413695.34	625928.51	N 32 8 13.32	W 104 3 36.15
	8935.00	2.83	210.00	8932.35	69.91	-69.69	16.35	0.03	413690.61	625925.75	N 32 8 13.27	W 104 3 36.18
	9031.00	2.52	197.04	9028.24	73.95	-73.76	14.55	0.71	413686.54	625923.94	N 32 8 13.23	W 104 3 36.20
	9126.00	2.30	191.53	9123.16	77.80	-77.63	13.55	0.34	413682.68	625922.95	N 32 8 13.19	W 104 3 36.22
	9219.00	2.43	191.05	9216.08	81.56	-81.39	12.80	0.14	413678.92	625922.20	N 32 8 13.15	W 104 3 36.22
	9315.00	2.30	190.12	9312.00	85.44	-85.28	12.07	0.14	413675.02	625921.47	N 32 8 13.12	W 104 3 36.23
	9409.00	2.21	190.83	9405.93	89.07	-88.92	11.40	0.10	413671.39	625920.80	N 32 8 13.08	W 104 3 36.24
	9505.00	2.30	190.34	9501.85	92.77	-92.63	10.71	0.10	413667.67	625920.11	N 32 8 13.04	W 104 3 36.25
	9597.00	2.43	187.43	9593.77	96.51	-96.38	10.12	0.19	413663.92	625919.52	N 32 8 13.01	W 104 3 36.26
	9694.00	2.21	189.64	9690.69	100.39	-100.27	9.55	0.24	413660.04	625918.94	N 32 8 12.97	W 104 3 36.26
	9789.00	2.52	190.83	9785.61	104.24	-104.12	8.85	0.33	413656.18	625918.25	N 32 8 12.93	W 104 3 36.27
	9884.00	2.52	196.07	9880.52	108.28	-108.18	7.88	0.24	413652.13	625917.27	N 32 8 12.89	W 104 3 36.28
	9978.00	2.30	212.68	9974.44	111.83	-111.76	6.29	0.78	413648.55	625915.68	N 32 8 12.85	W 104 3 36.30
	10073.00	2.43	238.86	10069.36	114.44	-114.40	3.53	1.14	413645.91	625912.93	N 32 8 12.83	W 104 3 36.33
Final Extreme Survey	10153.00	2.52	254.02	10149.29	115.76	-115.76	0.39	0.82	413644.55	625909.79	N 32 8 12.81	W 104 3 36.37
	10231.00	1.66	240.00	10227.24	116.76	-116.80	-2.24	1.27	413643.51	625907.16	N 32 8 12.80	W 104 3 36.40
	10262.00	3.65	190.32	10258.20	117.95	-118.00	-2.80	9.26	413642.31	625906.60	N 32 8 12.79	W 104 3 36.41
	10294.00	7.67	187.40	10290.04	121.06	-121.12	-3.26	12.59	413639.19	625906.14	N 32 8 12.76	W 104 3 36.41
	10324.00	10.27	187.74	10319.67	125.69	-125.75	-3.88	8.67	413634.56	625905.52	N 32 8 12.72	W 104 3 36.42

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 ° ' ")
	10357.00	14.71	186.88	10351.88	132.75	-132.83	-4.78	13.47	413627.48	625904.62	N 32 8 12.65	W 104 3 36.43
	10388.00	18.82	183.86	10381.56	141.64	-141.73	-5.59	13.55	413618.58	625903.81	N 32 8 12.56	W 104 3 36.44
	10420.00	23.14	181.25	10411.43	153.08	-153.17	-6.07	13.81	413607.14	625903.33	N 32 8 12.44	W 104 3 36.45
	10451.00	26.38	177.91	10439.58	166.05	-166.15	-5.95	11.38	413594.16	625903.45	N 32 8 12.32	W 104 3 36.45
	10483.00	28.31	174.99	10468.00	180.73	-180.81	-5.03	7.34	413579.50	625904.37	N 32 8 12.17	W 104 3 36.43
	10512.00	30.86	175.30	10493.22	195.01	-195.08	-3.82	8.81	413565.24	625905.58	N 32 8 12.03	W 104 3 36.42
	10545.00	34.11	175.10	10521.05	212.69	-212.74	-2.34	9.85	413547.58	625907.06	N 32 8 11.85	W 104 3 36.40
	10577.00	38.30	173.91	10546.87	231.52	-231.55	-0.52	13.28	413528.77	625908.88	N 32 8 11.67	W 104 3 36.38
	10607.00	41.96	175.24	10569.80	250.79	-250.79	1.30	12.53	413509.53	625910.70	N 32 8 11.48	W 104 3 36.36
	10640.00	45.77	176.09	10593.59	273.61	-273.59	3.02	11.68	413486.73	625912.42	N 32 8 11.25	W 104 3 36.34
	10672.00	49.83	177.96	10615.08	297.29	-297.26	4.24	13.40	413463.07	625913.64	N 32 8 11.02	W 104 3 36.33
Tie-In ST01	10701.00	53.42	178.22	10633.08	320.02	-319.98	5.00	12.40	413440.35	625914.40	N 32 8 10.79	W 104 3 36.32
	10734.00	57.12	178.26	10651.88	347.13	-347.08	5.83	11.21	413413.25	625915.23	N 32 8 10.52	W 104 3 36.31
	10829.00	67.01	188.70	10696.43	430.53	-430.56	0.40	14.22	413329.77	625909.80	N 32 8 9.70	W 104 3 36.38
	10926.00	75.02	184.76	10727.97	521.38	-521.57	-10.26	9.11	413238.77	625899.14	N 32 8 8.80	W 104 3 36.51
	10956.00	76.38	182.70	10735.38	550.36	-550.58	-12.15	8.05	413209.77	625897.25	N 32 8 8.51	W 104 3 36.53
	10989.00	77.92	182.10	10742.72	582.48	-582.72	-13.50	4.99	413177.63	625895.91	N 32 8 8.19	W 104 3 36.55
	11021.00	80.02	182.02	10748.84	613.85	-614.11	-14.62	6.57	413146.25	625894.78	N 32 8 7.88	W 104 3 36.56
	11051.00	81.68	181.69	10753.61	643.44	-643.71	-15.58	5.64	413116.65	625893.82	N 32 8 7.59	W 104 3 36.57
	11147.00	88.28	182.82	10762.01	738.88	-739.21	-19.35	6.97	413021.15	625890.05	N 32 8 6.65	W 104 3 36.62
	11251.00	90.45	189.49	10763.16	842.05	-842.54	-30.49	6.74	412917.83	625878.91	N 32 8 5.62	W 104 3 36.75
	11346.00	91.03	190.73	10761.93	935.33	-936.06	-47.17	1.44	412824.32	625862.24	N 32 8 4.70	W 104 3 36.95
	11441.00	90.83	188.72	10760.39	1028.72	-1029.67	-63.21	2.13	412730.71	625846.19	N 32 8 3.77	W 104 3 37.14
	11536.00	90.55	186.84	10759.25	1122.65	-1123.79	-76.07	2.00	412636.61	625833.34	N 32 8 2.84	W 104 3 37.29
	11631.00	90.65	183.06	10758.25	1217.15	-1218.41	-84.27	3.98	412541.99	625825.14	N 32 8 1.91	W 104 3 37.39
	11725.00	90.00	183.55	10757.72	1310.91	-1312.25	-89.68	0.87	412448.16	625819.72	N 32 8 0.98	W 104 3 37.45
	11820.00	89.90	183.28	10757.80	1405.66	-1407.08	-95.34	0.30	412353.34	625814.06	N 32 8 0.04	W 104 3 37.52
	11915.00	89.97	182.20	10757.91	1500.48	-1501.97	-99.88	1.14	412258.45	625809.52	N 32 7 59.10	W 104 3 37.58
	12010.00	90.55	180.20	10757.48	1595.41	-1596.95	-101.87	2.19	412163.49	625807.53	N 32 7 58.16	W 104 3 37.60
	12105.00	91.17	180.82	10756.05	1690.38	-1691.93	-102.72	0.92	412068.51	625806.69	N 32 7 57.22	W 104 3 37.62
	12200.00	89.83	180.47	10755.22	1785.34	-1786.92	-103.79	1.46	411973.53	625805.62	N 32 7 56.28	W 104 3 37.63
	12295.00	90.65	180.71	10754.82	1880.31	-1881.91	-104.77	0.90	411878.55	625804.64	N 32 7 55.34	W 104 3 37.64
	12390.00	90.10	176.32	10754.20	1975.28	-1976.86	-102.31	4.66	411783.61	625807.10	N 32 7 54.40	W 104 3 37.62
	12484.00	90.10	169.48	10754.04	2068.65	-2070.08	-90.69	7.28	411690.40	625818.71	N 32 7 53.48	W 104 3 37.49
	12579.00	87.66	166.58	10755.89	2161.81	-2162.98	-71.00	3.99	411597.50	625838.41	N 32 7 52.56	W 104 3 37.26
	12674.00	89.55	172.16	10758.21	2255.34	-2256.28	-53.49	6.20	411504.21	625855.91	N 32 7 51.63	W 104 3 37.06
	12769.00	91.31	174.07	10757.50	2349.79	-2350.58	-42.10	2.73	411409.91	625867.30	N 32 7 50.70	W 104 3 36.93
	12864.00	91.92	175.21	10754.82	2444.45	-2445.13	-33.23	1.36	411315.38	625876.17	N 32 7 49.77	W 104 3 36.83
	12959.00	90.31	176.11	10752.97	2539.25	-2539.83	-26.04	1.94	411220.68	625883.36	N 32 7 48.83	W 104 3 36.75
	13054.00	91.24	176.98	10751.69	2634.13	-2634.65	-20.32	1.34	411125.87	625889.08	N 32 7 47.89	W 104 3 36.68
	13149.00	91.20	176.77	10749.66	2729.03	-2729.49	-15.14	0.22	411031.04	625894.26	N 32 7 46.95	W 104 3 36.63
	13244.00	90.52	178.56	10748.24	2823.98	-2824.39	-11.27	2.02	410936.14	625898.13	N 32 7 46.01	W 104 3 36.59
	13338.00	89.28	178.16	10748.40	2917.97	-2918.35	-8.58	1.39	410842.19	625900.82	N 32 7 45.08	W 104 3 36.56
	13433.00	89.62	175.53	10749.31	3012.87	-3013.20	-3.35	2.79	410747.36	625906.05	N 32 7 44.14	W 104 3 36.50
	13528.00	91.34	178.16	10748.52	3107.78	-3108.04	1.87	3.31	410652.53	625911.27	N 32 7 43.20	W 104 3 36.44
	13623.00	89.97	178.77	10747.43	3202.76	-3202.99	4.42	1.58	410557.58	625913.82	N 32 7 42.26	W 104 3 36.41
	13718.00	91.14	179.69	10746.51	3297.75	-3297.98	5.69	1.57	410462.60	625915.09	N 32 7 41.32	W 104 3 36.40

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 ° ' ")
	13813.00	91.20	180.53	10744.57	3392.72	-3392.96	5.51	0.89	410367.63	625914.91	N 32 7 40.39	W 104 3 36.41
	13908.00	91.62	183.53	10742.23	3487.57	-3487.86	2.15	3.19	410272.74	625911.55	N 32 7 39.45	W 104 3 36.45
	14003.00	90.83	184.88	10740.20	3582.18	-3582.58	-4.82	1.65	410178.02	625904.58	N 32 7 38.51	W 104 3 36.53
	14098.00	91.24	184.26	10738.49	3676.75	-3677.26	-12.38	0.78	410083.35	625897.02	N 32 7 37.57	W 104 3 36.62
	14193.00	91.62	183.02	10736.11	3771.44	-3772.04	-18.41	1.36	409988.58	625890.99	N 32 7 36.63	W 104 3 36.70
	14288.00	91.00	180.35	10733.94	3866.32	-3866.96	-21.21	2.88	409893.67	625888.20	N 32 7 35.70	W 104 3 36.73
	14382.00	91.27	178.48	10732.08	3960.29	-3960.93	-20.25	2.01	409799.70	625889.16	N 32 7 34.77	W 104 3 36.72
	14477.00	91.41	177.03	10729.86	4055.23	-4055.83	-16.53	1.53	409704.81	625892.88	N 32 7 33.83	W 104 3 36.68
	14572.00	90.58	176.25	10728.21	4150.12	-4150.65	-10.96	1.20	409610.00	625898.44	N 32 7 32.89	W 104 3 36.62
	14667.00	90.52	177.70	10727.30	4245.04	-4245.51	-5.95	1.53	409515.14	625903.46	N 32 7 31.95	W 104 3 36.57
	14762.00	91.68	179.76	10725.47	4340.01	-4340.47	-3.84	2.49	409420.20	625905.56	N 32 7 31.01	W 104 3 36.54
	14857.00	90.31	180.85	10723.82	4434.98	-4435.45	-4.35	1.84	409325.23	625905.05	N 32 7 30.07	W 104 3 36.55
	14952.00	91.20	181.03	10722.57	4529.93	-4530.43	-5.90	0.96	409230.26	625903.50	N 32 7 29.13	W 104 3 36.57
	15047.00	90.65	176.33	10721.04	4624.88	-4625.36	-3.72	4.98	409135.33	625905.68	N 32 7 28.19	W 104 3 36.55
Final Survey	15237.00	91.00	177.19	10718.30	4814.69	-4815.04	7.02	0.49	408945.67	625916.42	N 32 7 26.31	W 104 3 36.43
	15280.00	90.41	177.25	10717.77	4857.66	-4857.98	9.11	1.38	408902.73	625918.51	N 32 7 25.89	W 104 3 36.41
Projection to Bit	15325.00	90.41	177.25	10717.45	4902.63	-4902.93	11.27	0.00	408857.79	625920.66	N 32 7 25.44	W 104 3 36.38

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	18.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +
	1	18.000	10153.000	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +
	1	10153.000	10734.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Riverbend 14 Federal #2H XEM +
	1	10734.000	15280.000	Act Stns	30.000	30.000	SLB_MWD-STD	ST01 Borehole / Cimarex Riverbend 14 Federal #2H MWD
	1	15280.000	15325.000	Act Stns	30.000	30.000	SLB_BLIND+TREND	ST01 Borehole / Cimarex Riverbend 14 Federal #2H MWD