

Results of Directional Survey

API number:	30-025-41628		
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO
		Property:	HALLERTAU 4 FEDERAL # 6H

surface	ULSTR:	C	04	T 26S	R 32E
				330 FNL	2260 FWL ✓

BH Loc	ULSTR:	N	04	T 26S	R 32E
13739	MD	9456.4	TVD	264 FSL	2218 FWL ✓
5016 FNL					

Top Perf/OH	ULSTR:	C	04	T 26S	R 32E
9730	MD	9431.9	TVD	1013 FNL	2103 FWL

Bot Perf/OH	ULSTR:	N	04	T 26S	R 32E
13649	MD	9448.9	TVD	354 FSL	2214 FWL
4926 FNL					

	MD	N/S	E/W	VD
	9711.00	-664.61	-156.52	9429.52
TOP PERFS/OH	9730.00	-683.45	-156.60	9431.91
	9813.00	-765.76	-156.95	9442.36
	13612.00	-4559.16	-47.28	9445.88
BOT PERFS/OH	13649.00	-4596.01	-45.79	9448.88
	13672.00	-4618.92	-44.87	9450.75

NEXT TO LAST	13672.00	-4618.92	-44.87	9450.75
LAST READING	13739.00	-4685.61	-41.89	9456.35
TD	13739.00	-4685.61	-41.89	9456.35

Surface Location	330	FN	2260	FW
Projected BHL	5016	FN	2218	FW
Location of				
Top Perfs/OH	1013	FN	2103	FW
Bottom Perfs/OH	4926	FN	2214	FW

SUMMARY of Subsurface Locations

Surface Location	C-04-26S-32E	330	FN	2260	FW	Vert. Depth
Top Perfs/OH	C-04-26S-32E	1013	FN	2103	FW	9431.91
Bottom Perfs/OH	N-04-26S-32E	4926	FN	2214	FW	9448.88
Projected TD	N-04-26S-32E	5016	FN	2218	FW	9456.35

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Cactus 104

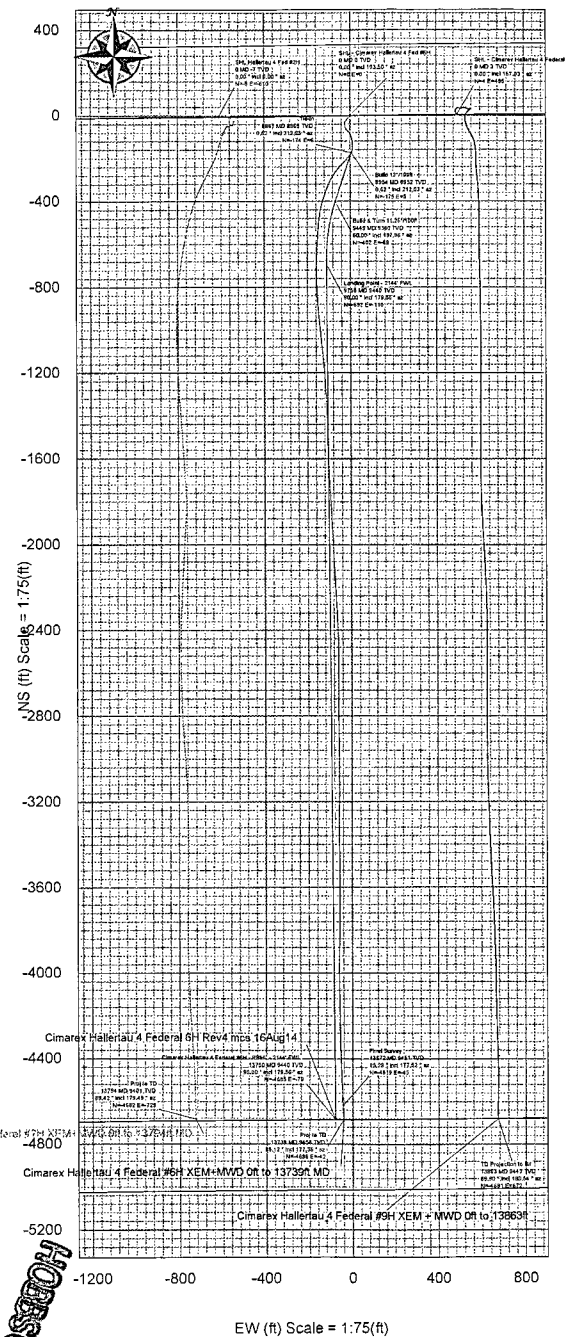
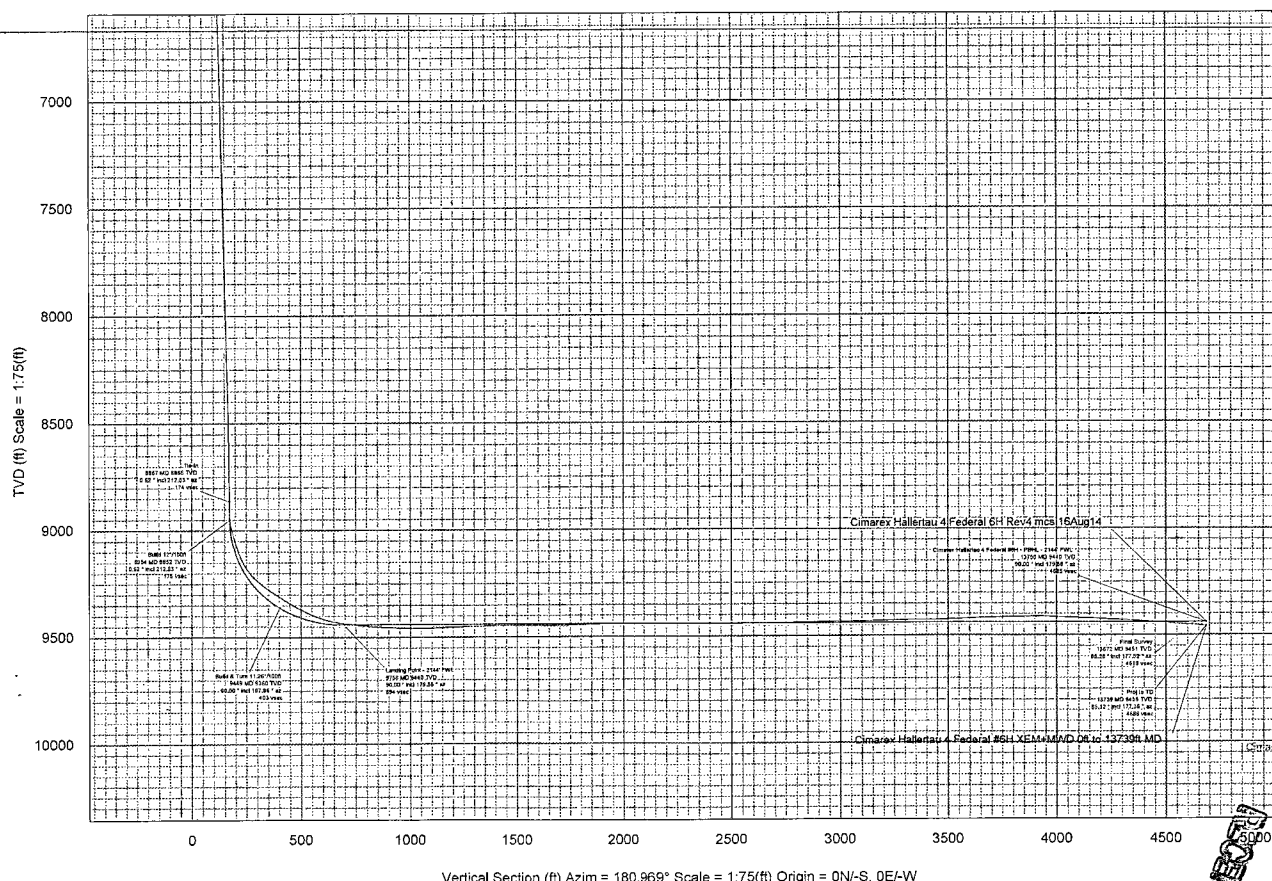
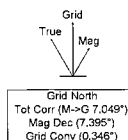
Ciamrex Energy

Rev4



Borehole:	Well:	Field:	Structure:
Original Borehole	Hallertau 4 Federal #6H	NM Lea County	Cactus 104
Gravity & Magnetic Parameters			
Model: BOGM 2014	Dip: 59.945°	Date: 16-Aug-2014	Surface Location: NAD83 New Mexico State Plane, Eastern Zone, US Feet
MagDec: 7.395°	FS: 48161.738nT	Gravity FS: 998.427mgm (9.80665 Based)	Lat: N 32 4 43.45 Northing: 352991.47NUS Grid Conv: 0.3463°
			Lon: W 103 40 52.96 Easting: 743265NUS Scale Fact: 0.99995579
Miscellaneous			
	Slot: Hallertau 4 Federal #6H	TVD Ref: RKB(3327ft above MSL)	Plan: Rev4 mcs 16Aug14

1. Gravity & Magnetic Parameters
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20. Gravity & Magnetic Parameters



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HOBSOND



Cimarex Hallertau 4 Federal #6H XEM+MWD 0ft to 13739ft MD



Cimarex Hallertau 4 Federal #6H XEM+MWD 0ft to 13739ft MD

(Def Survey)

Report Date: August 23, 2014 - 12:19 PM
Client: Ciamrex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cactus 104 / Hallertau 4 Federal #6H
Well: Hallertau 4 Federal #6H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Hallertau 4 Federal #6H XEM+MWD 0ft to 13739ft MD
Survey Date: July 25, 2014
Tort / AHD / DDI / ERD Ratio: 176.646 ° / 4750.832 ft / 6.086 / 0.502
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 4' 43.44860", W 103° 40' 52.95956"
Location Grid N/E Y/X: N 392991.400 ftUS, E 743265.000 ftUS
CRS Grid Convergence Angle: 0.3463 °
Grid Scale Factor: 0.99995579
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 180.969 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3327.000 ft above MSL
Seabed / Ground Elevation: 3307.000 ft above MSL
Magnetic Declination: 7.395 °
Total Gravity Field Strength: 998.4267mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48161.739 nT
Magnetic Dip Angle: 59.946 °
Declination Date: August 16, 2014
Magnetic Declination Model: BGM 2014
North Reference: Grid North
Grid Convergence Used: 0.3463 °
Total Corr Mag North->Grid North: 7.0492 °

Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	DLS (°/100ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL - Cimarex Hallertau 4 Fed #6H	0.00	0.00	193.50	0.00	-3327.00	0.00	N/A	0.00	0.00	392991.40	743265.00	N 32 4 43.45	W 103 40 52.96
	290.71	0.80	212.69	290.70	-3036.30	1.73	0.28	-1.71	-1.10	392989.69	743263.90	N 32 4 43.43	W 103 40 52.97
	410.80	0.80	213.88	410.78	-2916.22	3.14	0.01	-3.11	-2.02	392988.29	743262.98	N 32 4 43.42	W 103 40 52.98
	527.35	1.02	223.05	527.31	-2799.69	4.60	0.23	-4.54	-3.18	392986.86	743261.82	N 32 4 43.40	W 103 40 53.00
	677.29	1.19	224.94	677.23	-2649.77	6.71	0.12	-6.62	-5.19	392984.78	743259.81	N 32 4 43.38	W 103 40 53.02
	739.84	1.10	225.96	739.76	-2587.24	7.60	0.15	-7.50	-6.08	392983.90	743258.92	N 32 4 43.37	W 103 40 53.03
	831.58	1.41	218.91	831.48	-2495.52	9.11	0.38	-8.99	-7.42	392982.41	743257.58	N 32 4 43.36	W 103 40 53.05
	924.01	1.81	222.34	923.87	-2403.13	11.10	0.44	-10.95	-9.12	392980.45	743255.88	N 32 4 43.34	W 103 40 53.07
	1014.67	1.90	219.13	1014.49	-2312.51	13.36	0.15	-13.18	-11.03	392978.22	743253.97	N 32 4 43.32	W 103 40 53.09
	1106.88	2.21	218.33	1106.64	-2220.36	15.98	0.34	-15.76	-13.10	392975.64	743251.90	N 32 4 43.29	W 103 40 53.11
	1248.93	2.43	215.20	1248.57	-2078.43	20.64	0.18	-20.37	-16.53	392971.04	743248.47	N 32 4 43.25	W 103 40 53.15
	1388.60	1.81	218.73	1388.15	-1938.85	24.83	0.45	-24.51	-19.62	392966.90	743245.38	N 32 4 43.21	W 103 40 53.19
	1483.50	1.90	222.21	1483.00	-1844.00	27.20	0.15	-26.84	-21.61	392964.56	743243.39	N 32 4 43.18	W 103 40 53.21
	1578.44	1.72	214.81	1577.89	-1749.11	29.57	0.31	-29.18	-23.49	392962.23	743241.52	N 32 4 43.16	W 103 40 53.23
	1673.21	0.80	202.47	1672.63	-1654.37	31.37	1.01	-30.96	-24.55	392960.45	743240.45	N 32 4 43.14	W 103 40 53.25
	1767.85	0.71	193.66	1767.27	-1559.73	32.55	0.15	-32.14	-24.94	392959.27	743240.06	N 32 4 43.13	W 103 40 53.25
	1862.64	0.49	189.42	1862.05	-1464.95	33.53	0.24	-33.11	-25.15	392958.30	743239.85	N 32 4 43.12	W 103 40 53.25
	1957.76	0.71	180.92	1957.17	-1369.83	34.52	0.25	-34.10	-25.22	392957.30	743239.78	N 32 4 43.11	W 103 40 53.26
	2052.66	0.49	163.25	2052.06	-1274.94	35.49	0.30	-35.07	-25.11	392956.33	743239.89	N 32 4 43.10	W 103 40 53.25
	2146.93	0.62	158.27	2146.33	-1180.67	36.35	0.15	-35.93	-24.81	392955.47	743240.19	N 32 4 43.09	W 103 40 53.25
	2242.10	0.62	158.27	2241.49	-1085.51	37.30	0.00	-36.89	-24.43	392954.51	743240.57	N 32 4 43.09	W 103 40 53.25
	2337.27	0.71	168.98	2336.65	-990.35	38.35	0.16	-37.95	-24.13	392953.46	743240.88	N 32 4 43.07	W 103 40 53.24
	2431.94	0.80	166.47	2431.32	-895.68	39.56	0.10	-39.16	-23.86	392952.24	743241.14	N 32 4 43.06	W 103 40 53.24
	2526.93	0.88	176.69	2526.30	-800.70	40.93	0.18	-40.54	-23.66	392950.86	743241.34	N 32 4 43.05	W 103 40 53.24
	2622.27	0.88	178.19	2621.62	-705.38	42.39	0.02	-42.00	-23.60	392949.40	743241.41	N 32 4 43.03	W 103 40 53.24
	2714.82	1.10	180.61	2714.16	-612.84	43.99	0.24	-43.60	-23.58	392947.80	743241.42	N 32 4 43.02	W 103 40 53.24

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	DLS (°/100ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2809.57	1.10	165.28	2808.89	-518.11	45.78	0.31	-45.39	-23.36	392946.01	743241.64	N 32 4 43.00	W 103 40 53.23
	2904.84	1.10	164.17	2904.15	-422.85	47.53	0.02	-47.15	-22.88	392944.25	743242.12	N 32 4 42.98	W 103 40 53.23
	2999.43	1.02	197.89	2998.72	-328.28	49.21	0.66	-48.83	-22.89	392942.57	743242.11	N 32 4 42.97	W 103 40 53.23
	3094.63	1.19	172.90	3093.90	-233.10	51.00	0.53	-50.61	-23.03	392940.79	743241.97	N 32 4 42.95	W 103 40 53.23
	3189.99	1.33	167.39	3189.24	-137.76	53.05	0.19	-52.68	-22.66	392938.73	743242.34	N 32 4 42.93	W 103 40 53.23
	3284.93	1.19	166.86	3284.16	-42.84	55.08	0.15	-54.71	-22.20	392936.69	743242.80	N 32 4 42.91	W 103 40 53.22
	3379.04	1.41	160.65	3378.24	51.24	57.11	0.28	-56.76	-21.59	392934.65	743243.41	N 32 4 42.89	W 103 40 53.21
	3474.03	1.50	145.00	3473.20	146.20	59.22	0.43	-58.88	-20.49	392932.52	743244.51	N 32 4 42.87	W 103 40 53.20
	3568.43	1.41	151.35	3567.57	240.57	61.23	0.20	-60.91	-19.23	392930.49	743245.77	N 32 4 42.85	W 103 40 53.19
	3663.77	1.41	140.20	3662.88	335.88	63.13	0.29	-62.84	-17.92	392928.56	743247.09	N 32 4 42.83	W 103 40 53.17
	3759.92	1.50	145.09	3759.00	432.00	65.05	0.16	-64.78	-16.44	392926.62	743248.56	N 32 4 42.81	W 103 40 53.16
	3854.40	1.41	137.29	3853.45	526.45	66.89	0.23	-66.65	-14.94	392924.75	743250.06	N 32 4 42.79	W 103 40 53.14
	3950.41	1.90	139.28	3949.42	622.42	68.93	0.51	-68.72	-13.10	392922.68	743251.90	N 32 4 42.77	W 103 40 53.12
	4045.15	0.88	145.31	4044.13	717.13	70.70	1.09	-70.51	-11.66	392920.89	743253.34	N 32 4 42.75	W 103 40 53.10
	4139.90	0.80	137.27	4138.87	811.87	71.77	0.15	-71.60	-10.80	392919.81	743254.20	N 32 4 42.74	W 103 40 53.09
	4233.36	1.19	136.90	4232.32	905.32	72.94	0.42	-72.78	-9.69	392918.62	743255.31	N 32 4 42.73	W 103 40 53.08
	4327.89	1.72	136.10	4326.82	999.82	74.65	0.56	-74.52	-8.04	392916.88	743256.96	N 32 4 42.71	W 103 40 53.06
	4423.18	1.33	143.02	4422.07	1095.07	76.53	0.45	-76.44	-6.38	392914.97	743258.62	N 32 4 42.69	W 103 40 53.04
	4525.32	1.33	138.48	4524.19	1197.19	78.34	0.10	-78.27	-4.88	392913.13	743260.12	N 32 4 42.67	W 103 40 53.02
	4620.88	1.33	141.39	4619.72	1292.72	80.01	0.07	-79.97	-3.46	392911.44	743261.54	N 32 4 42.66	W 103 40 53.01
	4715.07	1.50	140.29	4713.88	1386.88	81.79	0.18	-81.77	-1.99	392909.63	743263.01	N 32 4 42.64	W 103 40 52.99
	4810.43	0.88	147.43	4809.22	1482.22	83.35	0.67	-83.35	-0.80	392908.06	743264.20	N 32 4 42.62	W 103 40 52.97
	4906.38	1.02	155.85	4905.16	1578.16	84.74	0.21	-84.75	-0.05	392906.66	743264.95	N 32 4 42.61	W 103 40 52.97
	5094.99	1.41	158.36	5093.73	1766.73	88.40	0.21	-88.44	1.49	392902.97	743266.49	N 32 4 42.57	W 103 40 52.95
	5198.81	1.33	158.75	5197.52	1870.52	90.69	0.08	-90.75	2.40	392900.66	743267.40	N 32 4 42.55	W 103 40 52.94
	5283.77	1.33	153.33	5282.45	1955.45	92.48	0.15	-92.55	3.20	392898.86	743268.20	N 32 4 42.53	W 103 40 52.93
	5379.18	1.33	157.04	5377.84	2050.84	94.47	0.09	-94.56	4.13	392896.85	743269.13	N 32 4 42.51	W 103 40 52.92
	5473.95	1.33	165.67	5472.58	2145.58	96.54	0.21	-96.63	4.83	392894.77	743269.83	N 32 4 42.49	W 103 40 52.91
	5568.53	1.19	165.67	5567.14	2240.14	98.55	0.15	-98.65	5.35	392892.76	743270.35	N 32 4 42.47	W 103 40 52.90
	5663.84	1.33	168.58	5662.43	2335.43	100.58	0.16	-100.69	5.81	392890.71	743270.81	N 32 4 42.45	W 103 40 52.90
	5759.23	1.10	170.70	5757.79	2430.79	102.56	0.25	-102.68	6.18	392888.72	743271.18	N 32 4 42.43	W 103 40 52.89
	5854.57	1.19	167.66	5853.12	2526.12	104.43	0.11	-104.55	6.54	392886.85	743271.54	N 32 4 42.41	W 103 40 52.89
	5950.01	1.19	167.96	5948.53	2621.53	106.36	0.01	-106.49	6.95	392884.92	743271.95	N 32 4 42.39	W 103 40 52.89
	6042.95	1.50	167.66	6041.45	2714.45	108.48	0.33	-108.62	7.42	392882.78	743272.42	N 32 4 42.37	W 103 40 52.88
	6137.89	1.50	169.20	6136.36	2809.36	110.91	0.04	-111.06	7.91	392880.35	743272.91	N 32 4 42.35	W 103 40 52.88
	6233.35	1.59	167.26	6231.78	2904.78	113.42	0.11	-113.57	8.44	392877.83	743273.44	N 32 4 42.32	W 103 40 52.87
	6329.09	1.59	166.16	6327.48	3000.48	115.99	0.03	-116.16	9.05	392875.25	743274.05	N 32 4 42.30	W 103 40 52.86
	6423.61	1.59	175.19	6421.97	3094.97	118.56	0.26	-118.74	9.47	392872.67	743274.47	N 32 4 42.27	W 103 40 52.86
	6517.57	1.72	176.91	6515.89	3188.89	121.27	0.15	-121.45	9.66	392869.96	743274.66	N 32 4 42.25	W 103 40 52.86
	6612.59	1.72	173.69	6610.87	3283.87	124.10	0.10	-124.29	9.89	392867.12	743274.89	N 32 4 42.22	W 103 40 52.85
	6707.66	1.59	175.98	6705.90	3378.90	126.83	0.15	-127.02	10.14	392864.38	743275.14	N 32 4 42.19	W 103 40 52.85
	6805.00	1.81	172.37	6803.19	3476.19	129.70	0.25	-129.89	10.44	392861.51	743275.44	N 32 4 42.16	W 103 40 52.85
	6901.57	1.41	175.90	6899.73	3572.73	132.39	0.43	-132.59	10.73	392858.82	743275.73	N 32 4 42.14	W 103 40 52.84
	6996.44	1.41	170.17	6994.57	3667.57	134.70	0.15	-134.90	11.01	392856.50	743276.01	N 32 4 42.11	W 103 40 52.84
	7092.52	0.49	184.00	7090.63	3763.63	136.27	0.98	-136.48	11.19	392854.93	743276.18	N 32 4 42.10	W 103 40 52.84
	7187.04	1.50	185.33	7185.14	3858.14	137.91	1.07	-138.11	11.04	392853.29	743276.04	N 32 4 42.08	W 103 40 52.84
	7281.84	1.81	180.30	7279.90	3952.90	140.64	0.36	-140.85	10.92	392850.56	743275.92	N 32 4 42.05	W 103 40 52.84
	7377.15	1.19	171.00	7375.17	4048.17	143.12	0.70	-143.33	11.07	392848.08	743276.07	N 32 4 42.03	W 103 40 52.84
	7470.57	1.19	175.01	7468.57	4141.57	145.04	0.09	-145.25	11.30	392846.15	743276.30	N 32 4 42.01	W 103 40 52.84
	7565.12	1.19	169.46	7563.10	4236.10	146.98	0.12	-147.20	11.57	392844.21	743276.57	N 32 4 41.99	W 103 40 52.84
	7660.58	1.19	175.59	7658.54	4331.54	148.94	0.13	-149.16	11.82	392842.25	743276.82	N 32 4 41.97	W 103 40 52.83
	7755.84	1.19	186.12	7753.78	4426.78	150.91	0.23	-151.13	11.80	392840.28	743276.79	N 32 4 41.95	W 103 40 52.83
	7850.25	1.33	189.56	7848.17	4521.17	152.97	0.17	-153.18	11.51	392838.22	743276.51	N 32 4 41.93	W 103 40 52.84

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	DLS (°/100ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7945.96	1.41	191.23	7943.85	4616.85	155.23	0.09	-155.43	11.09	392835.97	743276.09	N 32 4 41.91	W 103 40 52.84
	8043.51	1.50	187.93	8041.37	4714.37	157.67	0.13	-157.88	10.68	392833.53	743275.68	N 32 4 41.89	W 103 40 52.85
	8136.97	1.50	190.66	8134.80	4807.80	160.09	0.08	-160.29	10.29	392831.12	743275.29	N 32 4 41.86	W 103 40 52.85
	8232.13	1.50	193.13	8229.93	4902.93	162.54	0.07	-162.73	9.78	392828.68	743274.78	N 32 4 41.84	W 103 40 52.86
	8327.03	1.50	193.13	8324.79	4997.79	164.97	0.00	-165.15	9.21	392826.26	743274.21	N 32 4 41.81	W 103 40 52.86
	8419.90	1.19	195.64	8417.64	5090.64	167.09	0.34	-167.26	8.68	392824.15	743273.68	N 32 4 41.79	W 103 40 52.87
	8515.39	1.19	200.75	8513.11	5186.11	168.98	0.11	-169.14	8.06	392822.27	743273.06	N 32 4 41.77	W 103 40 52.88
	8611.05	1.19	202.69	8608.75	5281.75	170.84	0.04	-170.99	7.32	392820.42	743272.32	N 32 4 41.76	W 103 40 52.89
	8706.19	0.88	207.10	8703.87	5376.87	172.41	0.34	-172.55	6.61	392818.86	743271.61	N 32 4 41.74	W 103 40 52.89
	8803.38	0.70	205.84	8801.05	5474.05	173.62	0.19	-173.75	6.01	392817.66	743271.01	N 32 4 41.73	W 103 40 52.90
	8867.00	0.62	212.03	8864.67	5537.67	174.27	0.17	-174.39	5.66	392817.02	743270.66	N 32 4 41.72	W 103 40 52.91
	8920.00	1.60	219.29	8917.66	5590.66	175.09	1.86	-175.20	5.04	392816.20	743270.04	N 32 4 41.71	W 103 40 52.91
	8952.00	5.51	213.02	8949.59	5622.59	176.75	12.26	-176.84	3.92	392814.57	743268.92	N 32 4 41.70	W 103 40 52.93
	8984.00	11.02	215.19	8981.25	5654.25	180.58	17.24	-180.63	1.31	392810.78	743266.31	N 32 4 41.66	W 103 40 52.96
	9015.00	15.78	211.71	9011.39	5684.39	186.66	15.57	-186.64	-2.61	392804.77	743262.39	N 32 4 41.60	W 103 40 53.00
	9047.00	19.09	212.79	9041.92	5714.92	194.85	10.39	-194.74	-7.73	392796.67	743257.27	N 32 4 41.52	W 103 40 53.06
	9079.00	23.00	219.24	9071.78	5744.78	204.21	14.18	-203.99	-14.52	392787.42	743250.48	N 32 4 41.43	W 103 40 53.14
	9110.00	26.97	226.47	9099.88	5772.88	213.89	16.14	-213.53	-23.46	392777.88	743241.54	N 32 4 41.34	W 103 40 53.25
	9142.00	30.79	225.55	9127.90	5800.90	224.82	12.02	-224.26	-34.57	392767.15	743230.43	N 32 4 41.23	W 103 40 53.38
	9174.00	35.70	220.54	9154.66	5827.66	237.86	17.57	-237.11	-46.50	392754.31	743218.51	N 32 4 41.11	W 103 40 53.52
	9205.00	39.64	218.20	9179.19	5852.19	252.71	13.52	-251.76	-58.49	392739.65	743206.51	N 32 4 40.96	W 103 40 53.66
	9237.00	44.35	215.38	9202.97	5875.97	270.08	15.85	-268.91	-71.29	392722.50	743193.71	N 32 4 40.79	W 103 40 53.81
	9268.00	49.07	210.10	9224.23	5897.23	289.26	19.63	-287.89	-83.45	392703.52	743181.55	N 32 4 40.60	W 103 40 53.95
	9300.00	52.52	204.76	9244.46	5917.46	311.46	16.83	-309.90	-94.84	392681.52	743170.17	N 32 4 40.39	W 103 40 54.08
	9331.00	54.82	202.08	9262.83	5935.83	334.53	10.18	-332.81	-104.75	392658.60	743160.25	N 32 4 40.16	W 103 40 54.20
	9363.00	56.78	199.49	9280.82	5953.82	359.43	9.07	-357.55	-114.14	392633.86	743150.87	N 32 4 39.92	W 103 40 54.31
	9395.00	57.03	199.17	9298.29	5971.29	384.88	1.15	-382.85	-123.01	392608.57	743141.99	N 32 4 39.67	W 103 40 54.42
	9426.00	57.15	196.01	9315.13	5988.13	409.81	8.57	-407.65	-130.87	392583.76	743134.13	N 32 4 39.42	W 103 40 54.51
	9458.00	58.03	191.94	9332.29	6005.29	436.12	11.08	-433.86	-137.39	392557.56	743127.61	N 32 4 39.16	W 103 40 54.59
	9489.00	59.79	188.37	9348.30	6021.30	462.32	11.38	-459.99	-142.06	392531.43	743122.94	N 32 4 38.91	W 103 40 54.64
	9522.00	61.47	186.68	9364.49	6037.49	490.89	6.77	-488.50	-145.83	392502.93	743119.18	N 32 4 38.62	W 103 40 54.69
	9552.00	63.57	184.90	9378.33	6051.33	517.41	8.76	-514.97	-148.51	392476.45	743116.50	N 32 4 38.36	W 103 40 54.72
	9585.00	65.82	183.68	9392.43	6065.43	547.19	7.59	-544.72	-150.73	392446.71	743114.27	N 32 4 38.07	W 103 40 54.75
	9616.00	68.85	183.21	9404.38	6077.38	575.77	9.87	-573.27	-152.45	392418.16	743112.55	N 32 4 37.79	W 103 40 54.77
	9648.00	72.60	182.72	9414.94	6087.94	605.95	11.81	-603.43	-154.01	392388.00	743110.99	N 32 4 37.49	W 103 40 54.79
	9680.00	76.59	182.26	9423.44	6096.44	636.78	12.55	-634.25	-155.35	392357.18	743109.66	N 32 4 37.18	W 103 40 54.81
	9711.00	80.78	182.13	9429.52	6102.52	667.17	13.52	-664.61	-156.52	392326.82	743108.49	N 32 4 36.88	W 103 40 54.83
	9813.00	84.76	178.38	9442.36	6115.36	768.31	5.34	-765.76	-156.95	392225.67	743108.06	N 32 4 35.88	W 103 40 54.84
	9907.00	85.35	176.43	9450.46	6123.46	861.77	2.16	-859.31	-152.71	392132.13	743112.30	N 32 4 34.95	W 103 40 54.79
	10002.00	87.35	174.22	9456.51	6129.51	956.11	3.13	-953.79	-144.98	392037.65	743120.02	N 32 4 34.02	W 103 40 54.71
	10098.00	90.83	174.02	9458.04	6131.04	1051.40	3.63	-1049.26	-135.15	391942.19	743129.86	N 32 4 33.07	W 103 40 54.60
	10193.00	92.03	174.78	9455.66	6128.66	1145.74	1.50	-1143.78	-125.88	391847.68	743139.12	N 32 4 32.14	W 103 40 54.50
	10287.00	92.96	175.90	9451.57	6124.57	1239.20	1.55	-1237.37	-118.25	391754.08	743146.75	N 32 4 31.21	W 103 40 54.42
	10382.00	91.55	177.31	9447.83	6120.83	1333.84	2.10	-1332.13	-112.63	391659.33	743152.37	N 32 4 30.27	W 103 40 54.36
	10477.00	90.41	178.71	9446.21	6119.21	1428.70	1.90	-1427.05	-109.33	391564.41	743155.67	N 32 4 29.33	W 103 40 54.33
	10572.00	90.07	178.54	9445.81	6118.81	1523.62	0.40	-1522.03	-107.05	391469.44	743157.95	N 32 4 28.39	W 103 40 54.31
	10667.00	89.00	176.73	9446.58	6119.58	1618.45	2.21	-1616.94	-103.14	391374.54	743161.87	N 32 4 27.45	W 103 40 54.27
	10762.00	91.48	177.03	9446.18	6119.18	1713.20	2.63	-1711.79	-97.96	391279.69	743167.04	N 32 4 26.52	W 103 40 54.22
	10857.00	91.12	176.83	9444.03	6117.03	1807.94	0.43	-1806.63	-92.88	391184.86	743172.13	N 32 4 25.58	W 103 40 54.17
	10952.00	91.58	177.16	9441.79	6114.79	1902.68	0.60	-1901.47	-87.90	391090.02	743177.10	N 32 4 24.64	W 103 40 54.11
	11046.00	90.69	177.11	9439.93	6112.93	1996.45	0.95	-1995.33	-83.20	390996.16	743181.80	N 32 4 23.71	W 103 40 54.07
	11142.00	89.55	177.07	9439.73	6112.73	2092.23	1.19	-2091.21	-78.33	390900.29	743186.68	N 32 4 22.76	W 103 40 54.02

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	DLS (°/100ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11236.00	90.28	176.89	9439.87	6112.87	2186.00	0.80	-2185.08	-73.38	390806.43	743191.63	N 32 4 21.83	W 103 40 53.97
	11331.00	89.07	176.72	9440.41	6113.41	2260.75	1.29	-2279.92	-68.08	390711.58	743196.92	N 32 4 20.89	W 103 40 53.91
	11426.00	89.72	177.43	9441.41	6114.41	2375.52	1.01	-2374.79	-63.23	390616.72	743201.77	N 32 4 19.95	W 103 40 53.86
	11521.00	90.10	179.18	9441.56	6114.56	2470.42	1.89	-2469.75	-60.42	390521.77	743204.58	N 32 4 19.01	W 103 40 53.84
	11616.00	91.38	180.49	9440.33	6113.33	2565.39	1.93	-2564.74	-60.15	390426.78	743204.85	N 32 4 18.07	W 103 40 53.84
	11711.00	90.41	179.73	9438.85	6111.85	2660.36	1.30	-2659.72	-60.33	390331.80	743204.67	N 32 4 17.13	W 103 40 53.85
	11806.00	91.34	179.69	9437.40	6110.40	2755.33	0.98	-2754.71	-59.85	390236.82	743205.15	N 32 4 16.19	W 103 40 53.85
	11901.00	91.41	179.55	9435.12	6108.12	2850.27	0.16	-2849.68	-59.22	390141.85	743205.78	N 32 4 15.25	W 103 40 53.85
	11996.00	90.55	179.37	9433.49	6106.49	2945.23	0.92	-2944.66	-58.33	390046.87	743206.68	N 32 4 14.31	W 103 40 53.84
	12091.00	90.45	179.25	9432.66	6105.66	3040.18	0.16	-3039.65	-57.18	389951.89	743207.82	N 32 4 13.37	W 103 40 53.84
	12186.00	90.79	180.45	9431.64	6104.64	3135.16	1.31	-3134.64	-56.93	389856.90	743208.07	N 32 4 12.43	W 103 40 53.84
	12281.00	91.31	181.10	9429.90	6102.90	3230.14	0.88	-3229.62	-58.22	389761.93	743206.78	N 32 4 11.49	W 103 40 53.86
	12375.00	90.24	179.75	9428.62	6101.62	3324.12	1.83	-3323.60	-58.92	389667.95	743206.09	N 32 4 10.56	W 103 40 53.88
	12470.00	90.79	178.93	9427.77	6100.77	3419.08	1.04	-3418.59	-57.82	389572.97	743207.18	N 32 4 9.62	W 103 40 53.87
	12565.00	92.48	180.24	9425.06	6098.06	3514.01	2.25	-3513.54	-57.13	389478.02	743207.87	N 32 4 8.68	W 103 40 53.87
	12660.00	92.92	180.10	9420.58	6093.58	3608.89	0.49	-3608.44	-57.42	389383.13	743207.59	N 32 4 7.75	W 103 40 53.88
	12755.00	91.51	179.37	9416.91	6089.91	3703.80	1.67	-3703.36	-56.98	389288.21	743208.03	N 32 4 6.81	W 103 40 53.88
	12850.00	91.38	181.13	9414.52	6087.52	3798.76	1.86	-3798.33	-57.39	389193.25	743207.61	N 32 4 5.87	W 103 40 53.89
	12945.00	90.55	180.73	9412.92	6085.92	3893.74	0.97	-3893.30	-58.93	389098.28	743206.07	N 32 4 4.93	W 103 40 53.92
	13041.00	88.00	179.90	9414.13	6087.13	3989.72	2.79	-3989.28	-59.46	389002.30	743205.54	N 32 4 3.98	W 103 40 53.93
	13136.00	88.07	179.51	9417.39	6090.39	4084.64	0.42	-4084.23	-58.97	388907.36	743206.03	N 32 4 3.04	W 103 40 53.93
	13231.00	87.32	179.33	9421.21	6094.21	4179.53	0.81	-4179.14	-58.01	388812.45	743206.99	N 32 4 2.10	W 103 40 53.93
	13327.00	86.66	178.93	9426.25	6099.25	4275.34	0.80	-4275.00	-56.55	388716.60	743208.45	N 32 4 1.15	W 103 40 53.92
	13422.00	86.21	178.19	9432.16	6105.16	4370.08	0.91	-4369.79	-54.17	388621.82	743210.83	N 32 4 0.21	W 103 40 53.90
	13517.00	85.90	177.80	9438.69	6111.69	4464.72	0.52	-4464.50	-50.86	388527.10	743214.15	N 32 3 59.27	W 103 40 53.86
	13612.00	85.42	177.87	9445.88	6118.88	4559.31	0.51	-4559.16	-47.28	388432.45	743217.72	N 32 3 58.34	W 103 40 53.83
Final Survey	13672.00	85.28	177.52	9450.75	6123.75	4619.01	0.63	-4618.92	-44.87	388372.70	743220.13	N 32 3 57.75	W 103 40 53.81
Proj to TD	13739.00	85.12	177.36	9456.35	6129.35	4685.65	0.34	-4685.61	-41.89	388306.00	743223.11	N 32 3 57.09	W 103 40 53.78

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	20.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Hallertau 4 Federal #6H
	1	20.000	8867.000	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Hallertau 4 Federal #6H
	1	8867.000	13672.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Hallertau 4 Federal #6H
	1	13672.000	13739.000	Act Stns	30.000	30.000	SLB_BLIND+TREND	Original Borehole / Cimarex Hallertau 4 Federal #6H