

Results of Directional Survey

API number:	30-025-40784		
OGRID:		Operator:	CIMAREX ENERGY CO.
		Property:	COTTON DRAW 9L FEDERAL # 2H

surface	ULSTR:	N	09	T	25S	R	32E
				280	FSL	2290	FWL

BH Loc	ULSTR:	C	09	T	25S	R	32E
16265	MD	11845.7	TVD	336	FNL	2182	FWL
				4944	FSL		

Top Perf/OH	ULSTR:	N	09	T	25S	R	32E
11850	MD	11705.5	TVD	538	FSL	2246	FWL

Bot Perf/OH	ULSTR:	C	09	T	25S	R	32E
15997	MD	11839.4	TVD	604	FNL	2203	FWL
				4676	FSL		

	MD	N/S	E/W	VD
	11818	229.05	-45.58	11691.18
TOP PERFS/OH	11850	257.65	-44.38	11705.46
	11850	257.65	-44.38	11705.46
	15928	4327.64	-82.58	11837.01
BOT PERFS/OH	15997	4396.42	-87.45	11839.39
	16024	4423.34	-89.36	11840.32

NEXT TO LAST	16214	4612.74	-103.77	11844.99
LAST READING	16265	4663.58	-107.68	11845.66
TD	16265	4663.58	-107.68	11845.66

Surface Location	280	FS	2290	FW
Projected BHL	4944	FS	2182	FW
Location of				
Top Perfs/OH	538	FS	2246	FW
Bottom Perfs/OH	4676	FS	2203	FW

SUMMARY of Subsurface Locations

Surface Location	N-09-25S-32E	280	FS	2290	FW	Vert. Depth
Top Perfs/OH	N-09-25S-32E	538	FS	2246	FW	11705.46
Bottom Perfs/OH	C-09-25S-32E	4676	FS	2203	FW	11839.39
Projected TD	C-09-25S-32E	4944	FS	2182	FW	11845.66

AUG 29 2013

CIMAREX
Cotton Draw 9L Federal #2H
ST01 Rev3 mca 15-Dec-12



Cimarex

PATHFINDER
A Schlumberger Company

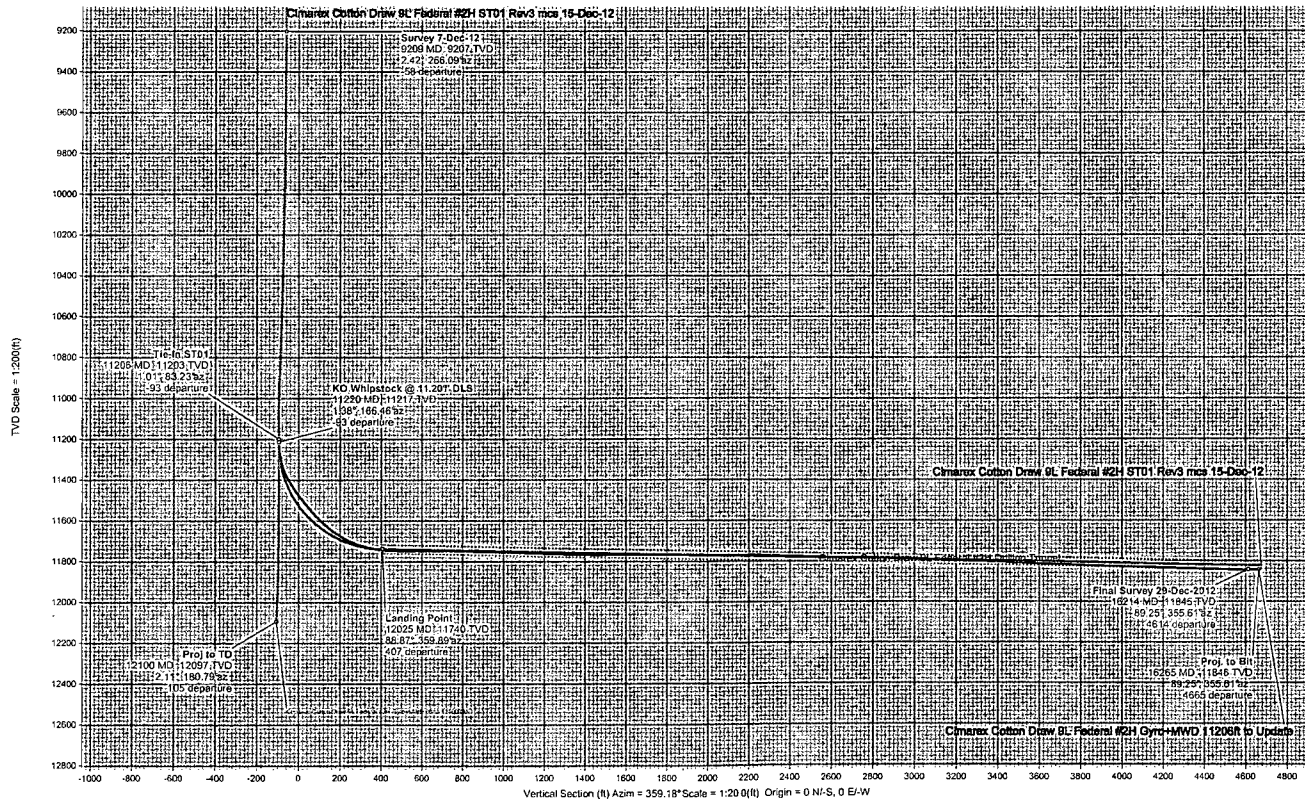
WELL: Cotton Draw 9L Federal #2H				FIELD: NM Lea County				STRUCTURE: Cactus 104			
Magnetic Parameters Magnet: HGM 2012 Dip: 60.00° Mag Dec: 7.549°				Surface Location Lat: N 32° 51' 41.41" Long: W 103° 40' 52.140" Northing: 418714.00 RLN Easting: 743186.90 RLN Scale Factor: 0.99995575				Miscellaneous Site: Cotton Draw 9L Federal #2H Plan: ST01 Rev3 mca 15-Dec-12 TVD Ref: RKB34638 above MSL Srv Date: December 13, 2012			
Date: December 13, 2012 F#: 40368.247				Survey Location Lat: N 32° 51' 41.41" Long: W 103° 40' 52.140" Northing: 418714.00 RLN Easting: 743186.90 RLN Scale Factor: 0.99995575				Miscellaneous Site: Cotton Draw 9L Federal #2H Plan: ST01 Rev3 mca 15-Dec-12 TVD Ref: RKB34638 above MSL Srv Date: December 13, 2012			



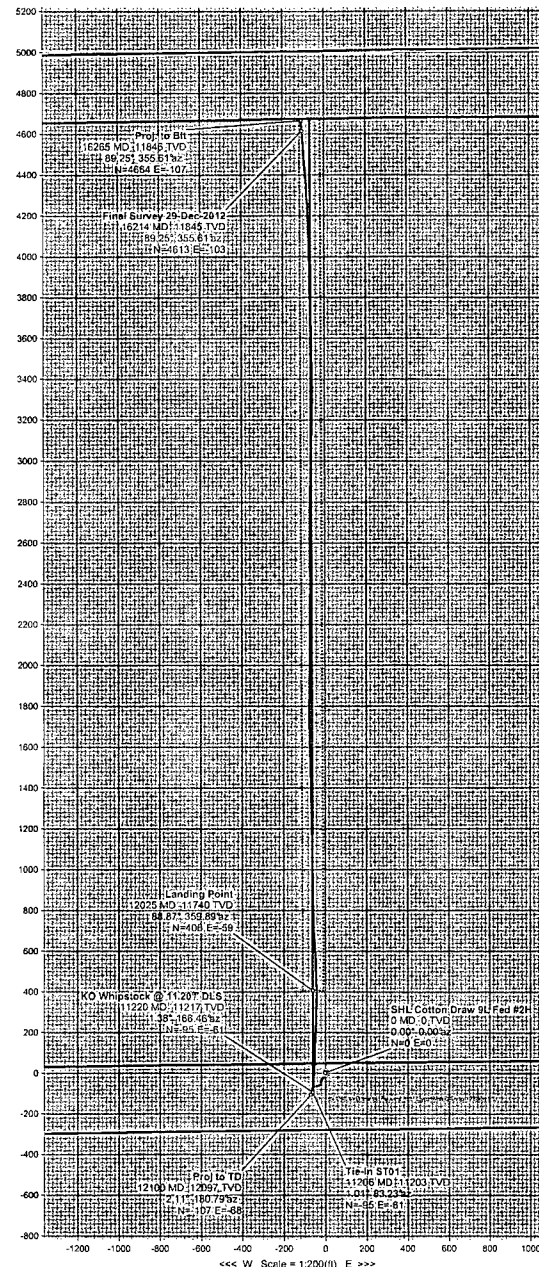
Legend

CIMAREX Cotton Draw 9L Federal #2H ST01 Rev3 mca 15-Dec-12
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Grid North
Tot Corr (M-G 7.2018°)
Mag Dec (7.549°)
Grid Conv (0.347°)



<<< S Scale = 1:200 (ft) N >>>



<<< W Scale = 1:200 (ft) E >>>

Drawn By: R. Schneider
Date Created: December 18, 2012 10:20:13 AM
Checked By:
Checked Date:
Approved By:
Approved Date:



Cimarex Cotton Draw 9L Federal #2H Gyro+MWD 11206ft to Update Survey Report (Non-Def Survey)



Report Date:	December 28, 2012 - 09:59 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	359.182 ° (Grid North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cotton Draw 9L Federal #2H / Cimarex Cotton Draw 9L Federal #2H	TVD Reference Datum:	RKB
Well:	Cimarex Cotton Draw 9L Federal #2H	TVD Reference Elevation:	3463.000 ft above MSL
Borehole:	ST01	Seabed / Ground Elevation:	3443.000 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.549 °
Survey Name:	Cimarex Cotton Draw 9L Federal #2H Gyro+MWD 11206ft to Update	Total Gravity Field Strength:	999.1533 mgn (9.8 based)
Survey Date:	December 13, 2012	Total Magnetic Field Strength:	48386.246 nT
Tort / AHD / DDI / ERD Ratio:	187.051 ° / 5012.744 ft / 6.110 / 0.423	Magnetic Dip Angle:	60.009 °
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Declination Date:	December 13, 2012
Location Lat / Long:	N 32° 8' 18.41150", W 103° 40' 52.33983"	Magnetic Declination Model:	BGGM 2012
Location Grid N/E Y/X:	N 414714.000 ftUS, E 743186.900 ftUS	North Reference:	Grid North
CRS Grid Convergence Angle:	0.3469 °	Grid Convergence Used:	0.3469 °
Grid Scale Factor:	0.99995575	Total Corr Mag North->Grid North:	7.2018 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	DLS (°/100ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	TF (°)
SHL Cotton Draw 9L Fed #2H	0.00	0.00	0.00	0.00	N/A	0.00	N 0.00	E 0.00	0.00	0.00	196.94M
	100.00	0.59	196.94	100.00	0.59	-0.49	S 0.49	W 0.15	0.51	196.94	187.24M
	200.00	0.38	187.24	199.99	0.22	-1.31	S 1.31	W 0.34	1.36	194.58	130.01M
	300.00	0.45	130.01	299.99	0.40	-1.89	S 1.90	W 0.08	1.90	182.50	112.06M
	400.00	0.88	112.06	399.99	0.47	-2.45	S 2.44	E 0.93	2.61	159.11	111.87M
	500.00	1.12	111.87	499.97	0.24	-3.12	S 3.09	E 2.55	4.00	140.48	124.39M
	600.00	1.02	124.39	599.95	0.25	-4.02	S 3.96	E 4.19	5.76	133.35	125.65M
	631.60	1.01	125.65	631.55	0.08	-4.34	S 4.28	E 4.65	6.32	132.62	114.09M
	726.70	0.72	114.09	726.64	0.35	-5.09	S 5.01	E 5.87	7.72	130.45	118.83M
	821.70	0.46	118.83	821.63	0.28	-5.53	S 5.44	E 6.75	8.67	128.83	138.5M
	916.80	0.34	138.50	916.73	0.19	-5.94	S 5.83	E 7.28	9.32	128.72	118.79M
	1011.90	0.56	118.79	1011.83	0.28	-6.38	S 6.27	E 7.87	10.06	128.53	126.12M
	1107.00	0.80	126.12	1106.92	0.27	-7.01	S 6.88	E 8.81	11.18	127.99	120.35M
	1202.00	0.93	120.35	1201.91	0.16	-7.81	S 7.66	E 10.01	12.61	127.42	89.23M
	1297.10	0.96	89.23	1297.00	0.53	-8.21	S 8.04	E 11.48	14.01	125.02	66.37M
	1392.20	1.08	66.37	1392.08	0.44	-7.86	S 7.67	E 13.09	15.18	120.37	51.86M
	1487.20	1.01	51.86	1487.07	0.29	-7.00	S 6.80	E 14.57	16.08	115.00	32.86M
	1582.30	0.98	32.86	1582.15	0.35	-5.82	S 5.60	E 15.67	16.64	109.65	14.88M
	1677.40	1.08	14.88	1677.24	0.35	-4.28	S 4.05	E 16.35	16.84	103.90	358.51M
	1772.40	1.21	358.51	1772.22	0.37	-2.41	S 2.18	E 16.55	16.69	97.50	341.23M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	DLS (°/100ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	TF (°)
	1867.50	1.35	341.23	1867.30	0.43	-0.34	S 0.11	E 16.16	16.16	90.40	336.19M
	1962.60	1.37	336.19	1962.37	0.13	1.77	N 1.99	E 15.34	15.47	82.62	323.96M
	2057.70	1.26	323.96	2057.44	0.32	3.67	N 3.87	E 14.27	14.78	74.82	316.95M
	2152.70	1.19	316.95	2152.42	0.17	5.25	N 5.44	E 12.98	14.07	67.27	304.59M
	2247.80	1.16	304.59	2247.50	0.27	6.54	N 6.71	E 11.51	13.32	59.78	290.63M
	2342.90	0.96	290.63	2342.59	0.34	7.39	N 7.53	E 9.98	12.50	52.94	289.45M
	2437.90	0.79	289.45	2437.57	0.18	7.91	N 8.03	E 8.61	11.78	47.00	331.5M
	2533.00	1.00	331.50	2532.66	0.71	8.87	N 8.98	E 7.60	11.76	40.24	329.17M
	2628.10	1.36	329.17	2627.74	0.38	10.58	N 10.68	E 6.63	12.57	31.82	313.05M
	2723.10	1.51	313.05	2722.71	0.45	12.43	N 12.50	E 5.13	13.51	22.32	285.24M
	2818.20	1.36	285.24	2817.79	0.74	13.61	N 13.65	E 3.13	14.01	12.91	261.16M
	2913.30	1.25	261.16	2912.86	0.58	13.77	N 13.79	E 1.01	13.83	4.21	227.98M
	3008.30	0.88	227.98	3007.85	0.74	13.15	N 13.14	W 0.55	13.15	357.60	185.18M
	3103.40	0.95	185.18	3102.93	0.71	11.88	N 11.87	W 1.17	11.93	354.39	142.65M
	3198.50	0.79	142.65	3198.02	0.68	10.57	N 10.56	W 0.84	10.59	355.46	101.14M
	3293.60	0.61	101.14	3293.12	0.55	9.94	N 9.94	E 0.06	9.94	0.32	23.15M
	3388.60	1.23	23.15	3388.11	1.32	10.77	N 10.78	E 0.95	10.82	5.05	340.66M
	3483.70	1.51	340.66	3483.18	1.08	12.89	N 12.90	E 0.94	12.94	4.16	300.31M
	3578.80	1.75	300.31	3578.25	1.21	14.83	N 14.82	W 0.73	14.84	357.18	264.07M
	3673.80	1.91	264.07	3673.20	1.21	15.44	N 15.39	W 3.56	15.79	346.99	233.69M
	3768.90	1.80	233.69	3768.26	1.03	14.43	N 14.34	W 6.34	15.68	336.16	187.42M
	3864.00	1.54	187.42	3863.32	1.40	12.30	N 12.19	W 7.71	14.42	327.70	141.57M
	3959.10	1.96	141.57	3958.38	1.49	9.74	N 9.65	W 6.86	11.84	324.58	110.33M
	4054.10	1.83	110.33	4053.33	1.08	7.91	N 7.85	W 4.43	9.01	330.57	92.58M
	4149.20	2.50	92.58	4148.36	0.99	7.24	N 7.23	W 0.93	7.29	352.66	85.55M
	4244.30	2.78	85.55	4243.36	0.45	7.26	N 7.31	E 3.44	8.08	25.20	75.01M
	4339.30	2.44	75.01	4338.26	0.62	7.90	N 8.01	E 7.69	11.11	43.82	45.79M
	4434.40	1.75	45.79	4433.30	1.31	9.40	N 9.55	E 10.69	14.33	48.22	6.93M
	4529.50	1.47	6.93	4528.37	1.16	11.60	N 11.77	E 11.87	16.72	45.25	317.85M
	4624.50	1.28	317.85	4623.34	1.22	13.61	N 13.77	E 11.31	17.82	39.40	292.64M
	4719.00	1.27	292.64	4717.82	0.59	14.82	N 14.95	E 9.64	17.79	32.79	252.59M
	4814.70	1.13	252.59	4813.50	0.87	14.97	N 15.08	E 7.76	16.96	27.22	239.44M
	4909.80	1.15	239.44	4908.58	0.28	14.23	N 14.31	E 6.04	15.54	22.87	205.39M
	5004.80	0.90	205.39	5003.57	0.68	13.08	N 13.16	E 4.90	14.04	20.42	201.5M
Final Gyro	5099.90	0.90	201.50	5098.66	0.06	11.72	N 11.79	E 4.30	12.55	20.06	213.22M
	5125.00	1.10	213.22	5123.75	1.14	11.34	N 11.40	E 4.10	12.12	19.78	201M
	5220.00	0.79	201.00	5218.74	0.39	9.98	N 10.03	E 3.37	10.58	18.56	180.79M
	5315.00	1.01	180.79	5313.73	0.40	8.53	N 8.58	E 3.12	9.13	19.98	189.23M
	5410.00	0.79	189.23	5408.72	0.27	7.05	N 7.09	E 3.00	7.70	22.94	194.02M
	5503.00	0.79	194.02	5501.71	0.07	5.80	N 5.84	E 2.74	6.45	25.18	201.4M
	5599.00	1.01	201.40	5597.69	0.26	4.38	N 4.41	E 2.28	4.96	27.30	184.39M
	5887.00	0.88	184.39	5885.66	0.11	-0.18	S 0.16	E 1.18	1.19	97.64	202.41M
	5980.00	1.01	202.41	5978.64	0.35	-1.64	S 1.63	E 0.81	1.82	153.46	204.61M
	6024.00	1.01	204.61	6022.64	0.09	-2.35	S 2.34	E 0.50	2.39	167.84	191.2M
	6170.00	1.01	191.20	6168.61	0.16	-4.77	S 4.77	W 0.28	4.78	183.38	192.39M
	6265.00	0.88	192.39	6263.60	0.14	-6.30	S 6.31	W 0.60	6.33	185.44	206.89M
	6360.00	1.41	206.89	6358.58	0.63	-8.04	S 8.06	W 1.29	8.16	189.07	200.3M
	6453.00	1.01	200.30	6451.56	0.45	-9.82	S 9.85	W 2.09	10.07	191.97	219.99M
	6548.00	1.10	219.99	6546.55	0.39	-11.29	S 11.33	W 2.96	11.71	194.66	209.79M
	6644.00	1.19	209.79	6642.53	0.23	-12.85	S 12.90	W 4.05	13.53	197.43	223.42M
	6739.00	1.10	223.42	6737.51	0.30	-14.35	S 14.42	W 5.17	15.32	199.72	208.39M
	6834.00	1.19	208.39	6832.49	0.33	-15.86	S 15.95	W 6.26	17.14	201.44	200.13M
	6929.00	1.01	200.13	6927.47	0.25	-17.51	S 17.61	W 7.02	18.96	201.74	197.23M
	7024.00	1.41	197.23	7022.45	0.43	-19.40	S 19.51	W 7.66	20.96	201.43	209.71M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	DLS (°/100ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	TF (°)
	7120.00	1.49	209.71	7118.42	0.34	-21.60	S 21.72	W 8.62	23.37	201.66	224.21M
	7212.00	1.19	224.21	7210.39	0.49	-23.30	S 23.45	W 9.88	25.44	202.86	218.49M
	7308.00	1.49	218.49	7306.37	0.34	-24.97	S 25.14	W 11.36	27.58	204.31	221.79M
	7430.00	1.58	221.79	7428.32	0.10	-27.44	S 27.63	W 13.46	30.74	205.98	216.91M
	7499.00	1.19	216.91	7497.30	0.59	-28.70	S 28.91	W 14.53	32.36	206.68	209.71M
	7594.00	0.79	209.71	7592.29	0.44	-30.05	S 30.27	W 15.44	33.98	207.03	212.91M
	7690.00	0.88	212.91	7688.28	0.11	-31.23	S 31.47	W 16.17	35.38	207.20	202.19M
	7785.00	0.79	202.19	7783.27	0.19	-32.44	S 32.68	W 16.82	36.76	207.23	202.19M
	7880.00	1.32	202.19	7878.25	0.56	-34.05	S 34.30	W 17.48	38.50	207.00	199.99M
	7976.00	1.11	199.99	7974.23	0.22	-35.94	S 36.20	W 18.21	40.53	206.71	193.09M
	8072.00	1.49	193.09	8070.21	0.43	-38.02	S 38.29	W 18.81	42.66	206.17	180M
	8166.00	1.19	180.00	8164.18	0.45	-40.18	S 40.46	W 19.09	44.74	205.26	186.41M
	8261.00	1.49	186.41	8259.15	0.35	-42.39	S 42.67	W 19.23	46.80	204.26	195.91M
	8356.00	1.41	195.91	8354.12	0.27	-44.74	S 45.02	W 19.69	49.14	203.62	193.8M
	8450.00	1.71	193.80	8448.09	0.32	-47.20	S 47.50	W 20.34	51.67	203.18	185.4M
	8545.00	1.32	185.40	8543.06	0.47	-49.66	S 49.96	W 20.78	54.11	202.58	204.39M
	8640.00	1.71	204.39	8638.02	0.66	-52.03	S 52.34	W 21.47	56.58	202.30	213.31M
	8735.00	1.50	213.31	8732.99	0.34	-54.34	S 54.67	W 22.74	59.21	202.58	219.59M
	8831.00	1.19	219.59	8828.96	0.36	-56.14	S 56.49	W 24.06	61.40	203.07	215.29M
	8926.00	1.10	215.29	8923.94	0.13	-57.63	S 58.00	W 25.22	63.24	203.50	254.93M
	9019.00	1.49	254.93	9016.92	1.02	-58.65	S 59.04	W 26.90	64.88	204.50	259.41M
	9114.00	1.49	259.41	9111.89	0.12	-59.16	S 59.59	W 29.31	66.40	206.19	266.09M
Survey 7-Dec-12	9209.00	2.42	266.09	9206.83	1.01	-59.48	S 59.95	W 32.52	68.20	208.48	257.61M
	9303.00	2.68	257.61	9300.74	0.49	-60.03	S 60.56	W 36.65	70.78	211.18	249.3M
	9398.00	3.52	249.30	9395.60	1.00	-61.47	S 62.07	W 41.55	74.69	213.80	263.71M
	9493.00	2.50	263.71	9490.47	1.33	-62.66	S 63.32	W 46.33	78.46	216.19	255.01M
	9589.00	2.29	255.01	9586.38	0.44	-63.33	S 64.05	W 50.27	81.42	218.13	249.12M
	9685.00	1.71	249.12	9682.32	0.64	-64.29	S 65.06	W 53.46	84.20	219.41	255.58M
	9780.00	1.58	255.58	9777.29	0.24	-65.08	S 65.89	W 56.05	86.50	220.39	241.3M
	9875.00	1.58	241.30	9872.25	0.41	-66.00	S 66.84	W 58.47	88.81	221.18	231.72M
	9973.00	1.41	231.72	9970.22	0.31	-67.37	S 68.24	W 60.60	91.26	221.61	223.2M
	10066.00	1.41	223.20	10063.19	0.23	-68.88	S 69.78	W 62.28	93.53	221.75	228.43M
	10160.00	1.32	228.43	10157.16	0.16	-70.42	S 71.34	W 63.88	95.76	221.84	222.8M
	10256.00	1.49	222.80	10253.13	0.23	-72.05	S 72.99	W 65.56	98.11	221.93	197.09M
	10351.00	1.19	197.09	10348.11	0.70	-73.88	S 74.84	W 66.69	100.24	221.70	191.12M
	10446.00	1.41	191.12	10443.08	0.27	-75.96	S 76.93	W 67.20	102.15	221.14	191.12M
	10541.00	1.89	191.12	10538.04	0.51	-78.64	S 79.62	W 67.73	104.53	220.39	162.42M
	10637.00	1.89	162.42	10633.99	0.98	-81.70	S 82.68	W 67.56	106.77	219.25	162.11M
	10732.00	2.42	162.11	10728.93	0.56	-85.12	S 86.08	W 66.47	108.76	217.67	146.42M
	10827.00	1.41	146.42	10823.87	1.19	-88.02	S 88.96	W 65.21	110.30	216.24	171.83M
	10922.00	1.71	171.83	10918.84	0.79	-90.41	S 91.34	W 64.36	111.74	215.17	173.32M
	11018.00	2.20	173.32	11014.78	0.51	-93.66	S 94.59	W 63.94	114.17	214.06	57.83M
	11111.00	1.58	57.83	11107.75	3.46	-94.77	S 95.68	W 62.65	114.36	213.22	83.23M
Tie-In ST01	11206.00	1.01	83.23	11202.73	0.84	-94.01	S 94.88	W 60.71	112.64	212.61	2.62M
BHA #4	11279.00	8.00	2.62	11275.49	10.82	-88.86	S 89.72	W 59.83	107.84	213.70	5.08M
	11311.00	12.66	5.08	11306.96	14.62	-83.15	S 84.00	W 59.42	102.89	215.27	1.19R
	11343.00	17.85	5.43	11337.82	16.22	-74.78	S 75.62	W 58.65	95.70	217.79	4.93L
	11374.00	23.57	4.20	11366.80	18.50	-63.87	S 64.70	W 57.74	86.72	221.75	7.27L
	11406.00	28.93	2.79	11395.49	16.86	-49.76	S 50.58	W 56.90	76.13	228.36	1.68L
	11436.00	32.01	2.62	11421.35	10.27	-34.58	S 35.39	W 56.18	66.39	237.79	6.04R
	11469.00	35.35	3.23	11448.81	10.17	-16.32	S 17.11	W 55.24	57.83	252.79	3.46R
	11501.00	36.23	3.32	11474.76	2.75	2.34	N 1.57	W 54.17	54.19	271.66	113.68R
	11533.00	36.14	3.67	11500.59	0.70	21.18	N 20.43	W 53.02	56.82	291.07	15.92L
	11564.00	38.25	2.70	11525.28	7.06	39.88	N 39.14	W 51.98	65.07	306.98	7.26L

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	DLS (°/100ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	TF (°)
BHA #5	11596.00	41.42	2.09	11549.85	9.98	60.34	N 59.62	W 51.13	78.54	319.38	13.36L
	11628.00	43.18	1.48	11573.52	5.65	81.85	N 81.14	W 50.46	95.55	328.12	2.81R
	11660.00	44.32	1.56	11596.64	3.57	103.96	N 103.26	W 49.87	114.68	334.22	1.01L
	11691.00	47.66	1.48	11618.17	10.78	126.24	N 125.55	W 49.28	134.87	338.57	1.82R
	11723.00	51.88	1.65	11638.83	13.19	150.64	N 149.96	W 48.62	157.65	342.04	7.07R
	11755.00	54.78	2.09	11657.94	9.13	176.28	N 175.61	W 47.78	182.00	344.78	4.96R
	11787.00	58.21	2.44	11675.60	10.76	202.92	N 202.27	W 46.72	207.60	346.99	HS
	11818.00	61.47	2.44	11691.18	10.52	229.67	N 229.05	W 45.58	233.54	348.75	1.16L
	11850.00	65.51	2.35	11705.46	12.63	258.26	N 257.65	W 44.38	261.45	350.23	2.67L
	11882.00	70.79	2.09	11717.36	16.52	287.91	N 287.32	W 43.23	290.55	351.44	13.64L
	11914.00	75.71	0.86	11726.58	15.81	318.51	N 317.94	W 42.45	320.76	352.40	7.17L
	11945.00	77.73	0.60	11733.70	6.57	348.67	N 348.11	W 42.07	350.64	353.11	9.38L
	11977.00	80.90	0.07	11739.63	10.04	380.11	N 379.55	W 41.88	381.85	353.70	7.95L
	12009.00	84.68	359.54	11743.65	11.93	411.85	N 411.29	W 41.99	413.43	354.17	15.34L
	12035.00	87.23	358.84	11745.48	10.17	437.78	N 437.22	W 42.36	439.27	354.47	25.76L
BHA #6	12103.00	89.78	357.61	11747.26	4.16	505.74	N 505.16	W 44.46	507.11	354.97	27.22L
	12198.00	90.13	357.43	11747.33	0.41	600.70	N 600.07	W 48.57	602.03	355.37	33.44L
	12293.00	90.66	357.08	11746.68	0.67	695.64	N 694.96	W 53.12	696.98	355.63	149.29R
	12388.00	87.85	358.75	11747.91	3.44	790.60	N 789.87	W 56.58	791.90	355.90	16.64R
	12483.00	88.72	359.01	11750.76	0.96	885.55	N 884.81	W 58.44	886.74	356.22	125.85R
	12577.00	88.46	359.37	11753.07	0.47	979.53	N 978.77	W 59.76	980.60	356.51	163.55R
	12672.00	87.58	359.63	11756.35	0.97	1074.47	N 1073.71	W 60.59	1075.42	356.77	18.75L
	12767.00	88.11	359.45	11759.92	0.59	1169.40	N 1168.64	W 61.36	1170.25	356.99	99.83L
	12862.00	88.02	358.93	11763.13	0.56	1264.34	N 1263.58	W 62.70	1265.13	357.16	30.14L
	12957.00	88.64	358.57	11765.90	0.75	1359.30	N 1358.51	W 64.77	1360.06	357.27	7.33R
	13052.00	90.04	358.75	11766.99	1.49	1454.29	N 1453.48	W 66.99	1455.02	357.36	18.43L
	13146.00	90.31	358.66	11766.71	0.30	1548.28	N 1547.45	W 69.11	1549.00	357.44	11.56L
	13241.00	90.75	358.57	11765.83	0.47	1643.27	N 1642.42	W 71.41	1643.97	357.51	144.12R
	13335.00	89.16	359.72	11765.90	2.09	1737.27	N 1736.41	W 72.81	1737.93	357.60	59.44R
	13431.00	89.78	0.77	11766.79	1.27	1833.25	N 1832.40	W 72.40	1833.83	357.74	167.17R
BHA #7	13525.00	88.99	0.95	11767.80	0.86	1927.20	N 1926.38	W 70.99	1927.69	357.89	59.42L
	13620.00	89.25	0.51	11769.26	0.54	2022.15	N 2021.36	W 69.78	2022.57	358.02	38.9L
	13715.00	90.13	359.80	11769.77	1.19	2117.14	N 2116.36	W 69.52	2117.50	358.12	133.92R
	13810.00	89.87	0.07	11769.77	0.39	2212.13	N 2211.36	W 69.63	2212.46	358.20	177.45R
	13904.00	87.85	0.16	11771.64	2.15	2306.09	N 2305.34	W 69.44	2306.38	358.27	27.88L
	13999.00	88.02	0.07	11775.07	0.20	2401.02	N 2400.27	W 69.25	2401.27	358.35	62.78L
	14094.00	88.20	359.72	11778.20	0.41	2495.96	N 2495.22	W 69.43	2496.19	358.41	10.77L
	14189.00	90.04	359.37	11779.66	1.97	2590.94	N 2590.20	W 70.18	2591.16	358.45	129.45R
	14284.00	89.25	0.33	11780.25	1.31	2685.93	N 2685.20	W 70.43	2686.12	358.50	143.71R
	14379.00	87.93	1.30	11782.58	1.72	2780.86	N 2780.16	W 69.08	2781.02	358.58	18.43R
	14474.00	88.20	1.39	11785.79	0.30	2875.74	N 2875.08	W 66.85	2875.86	358.67	16.44L
	14568.00	88.81	1.21	11788.24	0.68	2969.64	N 2969.02	W 64.72	2969.73	358.75	169.74R
	14663.00	87.32	1.48	11791.45	1.59	3064.52	N 3063.94	W 62.49	3064.58	358.83	54.14L
	14758.00	87.58	1.12	11795.68	0.47	3159.36	N 3158.82	W 60.34	3159.40	358.91	59.58L
	14883.00	87.85	0.66	11800.66	0.43	3284.20	N 3283.71	W 58.40	3284.22	358.98	86.58L
	14978.00	87.93	359.33	11804.16	1.40	3379.13	N 3378.64	W 58.41	3379.14	359.01	143.15L
	15073.00	87.85	359.27	11807.66	0.11	3474.06	N 3473.57	W 59.57	3474.08	359.02	46.62L
	15168.00	88.02	359.09	11811.08	0.26	3569.00	N 3568.50	W 60.92	3569.02	359.02	90L
	15263.00	88.02	358.92	11814.36	0.18	3663.94	N 3663.42	W 62.57	3663.96	359.02	106.31L
	15358.00	87.76	358.03	11817.86	0.98	3758.87	N 3758.33	W 65.10	3758.89	359.01	104.45R
	15453.00	87.58	358.73	11821.72	0.76	3853.78	N 3853.21	W 67.78	3853.80	358.99	56.19R
	15547.00	88.29	359.79	11825.11	1.36	3947.72	N 3947.14	W 69.00	3947.74	359.00	78.01L
	15642.00	88.46	358.99	11827.80	0.86	4042.68	N 4042.09	W 70.01	4042.70	359.01	97.89L
	15737.00	88.29	357.76	11830.50	1.31	4137.63	N 4137.01	W 72.70	4137.65	358.99	111.11L

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	DLS (°/100ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	TF (°)
	15833.00	88.02	357.06	11833.59	0.78	4233.53	N 4232.87	W 77.04	4233.57	358.96	101.73L
	15928.00	87.85	356.24	11837.01	0.88	4328.38	N 4327.64	W 82.58	4328.43	358.91	58.89L
	16024.00	88.20	355.66	11840.32	0.71	4424.17	N 4423.34	W 89.36	4424.25	358.84	HS
	16119.00	88.46	355.66	11843.09	0.27	4518.95	N 4518.03	W 96.55	4519.06	358.78	3.62L
	16214.00	89.25	355.61	11844.99	0.83	4613.75	N 4612.74	W 103.77	4613.90	358.71	HS
PTB	16265.00	89.25	355.61	11845.66	0.00	4664.64	N 4663.58	W 107.68	4664.83	358.68	

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	20.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Pilot Borehole / Cimarex Cotton Draw 9L Federal #2H Gyro+MWD 0ft to 12100ft MD
	20.000	5099.900	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Pilot Borehole / Cimarex Cotton Draw 9L Federal #2H Gyro+MWD
	5099.900	11206.000	Act Stns	30.000	30.000	SLB_MWD-STD	Pilot Borehole / Cimarex Cotton Draw 9L Federal #2H Gyro+MWD
	11206.000	16265.000	Act Stns	30.000	30.000	SLB_MWD-STD	ST01 / Cimarex Cotton Draw 9L Federal #2H Gyro+MWD 11206ft