

S.G. Interests

Federal 15-4H SE
Proposed Well Plan
Revision #2

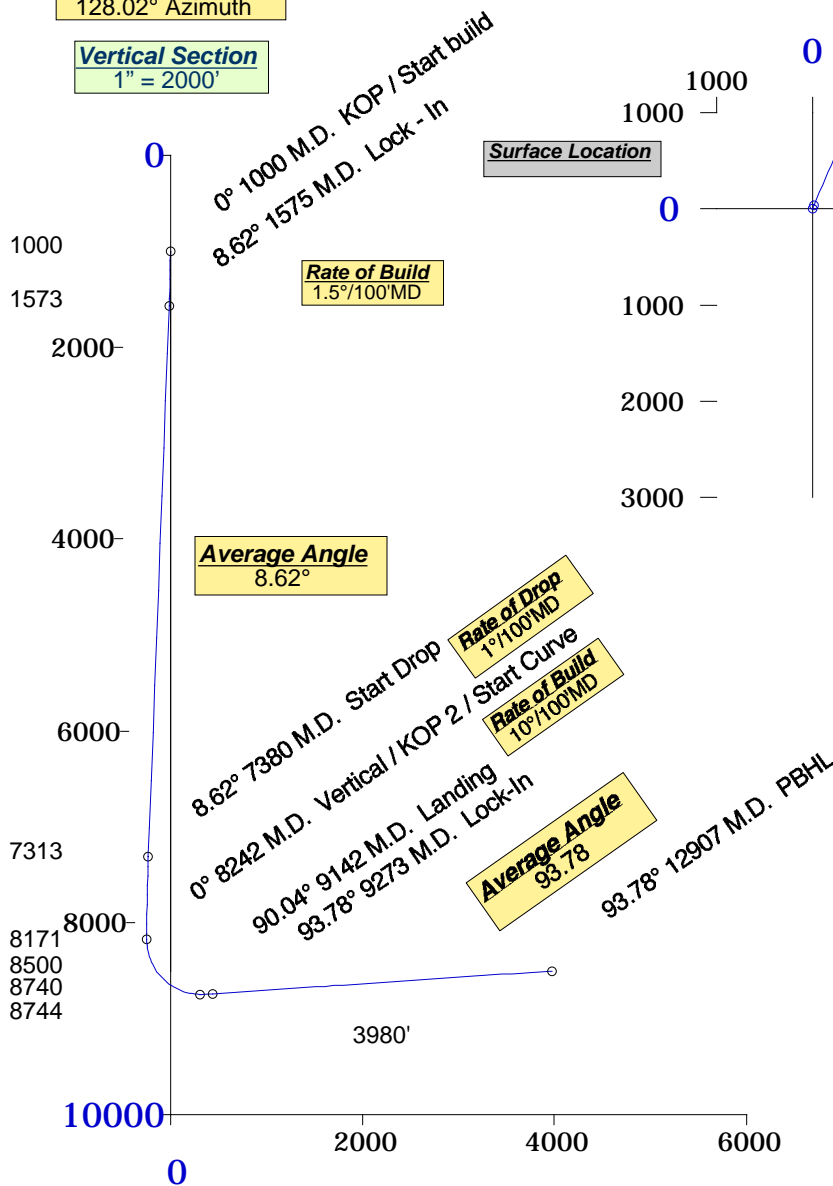
Horizontal Plan
1" = 2000'



Plane of Proposal
128.02° Azimuth

Vertical Section
1" = 2000'

Vertical/KOP2
978.25' Displacement from S/L
@ 23.53° Azimuth from S/L
North-896.91' East-390.55' of S/L
TVD-8171' MD-8242'



Surface Location

Landing/Start Reach
870.17' Displacement from S/L
@ 59.04° Azimuth from S/L
North-447.68' East-746.18' of S/L
TVD-8744' MD-9142'

Terminus
3979.78' Displacement from S/L
@ 128.02° Azimuth from S/L
South-2451.3' East-3135.24' of S/L
TVD-8500' MD-12907'



Helmer

DIRECTIONAL DRILLING, INC.
1-800-435-8983

Helmer Directional Drilling Inc.

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Minimum of Curvature
Slot Location: 0.00', 0.00'
Plane of Vertical Section: 128.02°

Measured Depth Feet	BORE Inc Degrees	HOLE Direction Degrees	True Vertical Depth Feet	RECTANGULAR COORDINATES		LAMBERT COORDINATES		Vertical Section Feet	CLOSURES		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP / Start build											
1100.00	1.50	23.53	1099.99	1.20	0.52	1.20	0.52	-0.33	1.31	23.53	1.50
1200.00	3.00	23.53	1199.91	4.80	2.09	4.80	2.09	-1.31	5.23	23.53	1.50
1300.00	4.50	23.53	1299.69	10.80	4.70	10.80	4.70	-2.95	11.77	23.53	1.50
1400.00	6.00	23.53	1399.27	19.18	8.35	19.18	8.35	-5.24	20.92	23.53	1.50
1500.00	7.50	23.53	1498.57	29.96	13.05	29.96	13.05	-8.18	32.68	23.53	1.50
1574.77	8.62	23.53	1572.61	39.57	17.23	39.57	17.23	-10.80	43.16	23.53	1.50
Lock - In											
2074.77	8.62	23.53	2066.96	108.30	47.16	108.30	47.16	-29.56	118.12	23.53	0.00
2574.77	8.62	23.53	2561.31	177.02	77.08	177.02	77.08	-48.31	193.08	23.53	0.00
3074.77	8.62	23.53	3055.66	245.75	107.01	245.75	107.01	-67.07	268.04	23.53	0.00
3574.77	8.62	23.53	3550.01	314.47	136.93	314.47	136.93	-85.82	342.99	23.53	0.00
4074.77	8.62	23.53	4044.35	383.20	166.86	383.20	166.86	-104.58	417.95	23.53	0.00
4574.77	8.62	23.53	4538.70	451.92	196.78	451.92	196.78	-123.33	492.91	23.53	0.00
5074.77	8.62	23.53	5033.05	520.65	226.71	520.65	226.71	-142.09	567.87	23.53	0.00
5574.77	8.62	23.53	5527.40	589.37	256.63	589.37	256.63	-160.84	642.82	23.53	0.00
6074.77	8.62	23.53	6021.75	658.10	286.56	658.10	286.56	-179.60	717.78	23.53	0.00
6574.77	8.62	23.53	6516.10	726.82	316.48	726.82	316.48	-198.35	792.74	23.53	0.00
7074.77	8.62	23.53	7010.45	795.55	346.41	795.55	346.41	-217.11	867.70	23.53	0.00
7380.30	8.62	23.53	7312.53	837.54	364.70	837.54	364.70	-228.57	913.50	23.53	0.00
Start Drop											
7480.30	7.62	23.53	7411.52	850.50	370.34	850.50	370.34	-232.10	927.63	23.53	1.00
7580.30	6.62	23.53	7510.75	861.86	375.29	861.86	375.29	-235.20	940.03	23.53	1.00
7680.30	5.62	23.53	7610.18	871.64	379.54	871.64	379.54	-237.87	950.69	23.53	1.00
7780.30	4.62	23.53	7709.78	879.83	383.11	879.83	383.11	-240.11	959.62	23.53	1.00
7880.30	3.62	23.53	7809.52	886.42	385.98	886.42	385.98	-241.91	966.81	23.53	1.00
7980.30	2.62	23.53	7909.37	891.41	388.15	891.41	388.15	-243.27	972.25	23.53	1.00

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Minimum of Curvature
Slot Location: 0.00', 0.00'
Plane of Vertical Section: 128.02°


Measured Depth Feet	BORE Inc Degrees	HOLE Direction Degrees	True Vertical Depth Feet	RECTANGULAR COORDINATES		LAMBERT COORDINATES		Vertical Section Feet	CLOSURES		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
8080.30	1.62	23.53	8009.30	894.80	389.63	894.80	389.63	-244.19	975.95	23.53	1.00
8180.30	0.62	23.53	8109.28	896.60	390.41	896.60	390.41	-244.68	977.91	23.53	1.00
8242.46	0.00	23.53	8171.44	896.91	390.55	896.91	390.55	-244.77	978.25	23.53	1.00
Vertical / KOP 2 / Start Curve											
8272.46	3.00	141.63	8201.42	896.29	391.03	896.29	391.03	-244.01	977.88	23.57	10.01
8302.46	6.00	141.63	8231.33	894.45	392.50	894.45	392.50	-241.72	976.77	23.69	10.01
8332.46	9.01	141.63	8261.07	891.37	394.93	891.37	394.93	-237.91	974.94	23.90	10.01
8362.46	12.01	141.63	8290.56	887.09	398.32	887.09	398.32	-232.59	972.41	24.18	10.01
8392.46	15.01	141.63	8319.73	881.59	402.67	881.59	402.67	-225.78	969.20	24.55	10.01
8422.46	18.01	141.63	8348.49	874.91	407.96	874.91	407.96	-217.50	965.35	25.00	10.01
8452.46	21.02	141.63	8376.76	867.05	414.18	867.05	414.18	-207.76	960.90	25.53	10.01
8482.46	24.02	141.63	8404.47	858.05	421.31	858.05	421.31	-196.59	955.90	26.15	10.01
8512.46	27.02	141.63	8431.54	847.91	429.33	847.91	429.33	-184.03	950.41	26.85	10.01
8542.46	30.02	141.63	8457.90	836.68	438.22	836.68	438.22	-170.11	944.50	27.64	10.01
8572.46	33.02	141.63	8483.47	824.39	447.96	824.39	447.96	-154.87	938.23	28.52	10.01
8602.46	36.03	141.63	8508.18	811.06	458.51	811.06	458.51	-138.35	931.69	29.48	10.01
8632.46	39.03	141.63	8531.97	796.73	469.85	796.73	469.85	-120.59	924.96	30.53	10.01
8662.46	42.03	141.63	8554.77	781.45	481.95	781.45	481.95	-101.65	918.12	31.66	10.01
8692.46	45.03	141.63	8576.52	765.25	494.77	765.25	494.77	-81.57	911.27	32.88	10.01
8722.46	48.03	141.63	8597.16	748.18	508.29	748.18	508.29	-60.41	904.51	34.19	10.01
8752.46	51.04	141.63	8616.62	730.29	522.45	730.29	522.45	-38.23	897.93	35.58	10.01
8782.46	54.04	141.63	8634.87	711.62	537.23	711.62	537.23	-15.09	891.64	37.05	10.01
8812.46	57.04	141.63	8651.84	692.23	552.58	692.23	552.58	8.95	885.74	38.60	10.01
8842.46	60.04	141.63	8667.50	672.17	568.46	672.17	568.46	33.82	880.32	40.22	10.01
8872.46	63.04	141.63	8681.79	651.49	584.83	651.49	584.83	59.45	875.48	41.91	10.01
8902.46	66.05	141.63	8694.68	630.26	601.64	630.26	601.64	85.77	871.32	43.67	10.01
8932.46	69.05	141.63	8706.14	608.52	618.85	608.52	618.85	112.72	867.91	45.48	10.01

Helmer Directional Drilling Inc.

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Measured Depth Feet	BORE Inc Degrees	HOLE Direction Degrees	True Vertical Depth Feet	RECTANGULAR COORDINATES		LAMBERT COORDINATES		Vertical Section Feet	CLOSURES		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
8962.46	72.05	141.63	8716.13	586.34	636.41	586.34	636.41	140.21	865.34	47.34	10.01
8992.46	75.05	141.63	8724.62	563.79	654.26	563.79	654.26	168.17	863.66	49.25	10.01
9022.46	78.05	141.63	8731.60	540.91	672.37	540.91	672.37	196.52	862.94	51.18	10.01
9052.46	81.06	141.63	8737.04	517.78	690.68	517.78	690.68	225.19	863.22	53.14	10.01
9082.46	84.06	141.63	8740.92	494.46	709.14	494.46	709.14	254.10	864.51	55.11	10.01
9112.46	87.06	141.63	8743.25	471.02	727.71	471.02	727.71	283.17	866.84	57.09	10.01
9142.24	90.04	141.63	8744.00	447.68	746.18	447.68	746.18	312.09	870.17	59.04	10.01
Landing											
9242.24	92.91	140.75	8741.43	369.79	808.82	369.79	808.82	409.42	889.34	65.43	3.00
9272.64	93.78	140.49	8739.65	346.33	828.08	346.33	828.08	439.04	897.58	67.30	3.00
Lock-In											
9372.64	93.78	140.49	8733.06	269.34	891.56	269.34	891.56	536.47	931.36	73.19	0.00
9472.64	93.78	140.49	8726.46	192.36	955.05	192.36	955.05	633.90	974.23	78.61	0.00
9572.64	93.78	140.49	8719.87	115.38	1018.53	115.38	1018.53	731.33	1025.05	83.54	0.00
9672.64	93.78	140.49	8713.28	38.40	1082.02	38.40	1082.02	828.76	1082.70	87.97	0.00
9772.64	93.78	140.49	8706.68	-38.58	1145.50	-38.58	1145.50	926.19	1146.15	91.93	0.00
9872.64	93.78	140.49	8700.09	-115.56	1208.99	-115.56	1208.99	1023.62	1214.50	95.46	0.00
9972.64	93.78	140.49	8693.49	-192.54	1272.47	-192.54	1272.47	1121.04	1286.96	98.60	0.00
10072.64	93.78	140.49	8686.90	-269.52	1335.96	-269.52	1335.96	1218.47	1362.88	101.41	0.00
10172.64	93.78	140.49	8680.30	-346.50	1399.45	-346.50	1399.45	1315.90	1441.70	103.91	0.00
10272.64	93.78	140.49	8673.71	-423.49	1462.93	-423.49	1462.93	1413.33	1522.99	106.14	0.00
10372.64	93.78	140.49	8667.12	-500.47	1526.42	-500.47	1526.42	1510.76	1606.37	108.15	0.00
10472.64	93.78	140.49	8660.52	-577.45	1589.90	-577.45	1589.90	1608.19	1691.52	109.96	0.00
10572.64	93.78	140.49	8653.93	-654.43	1653.39	-654.43	1653.39	1705.62	1778.19	111.59	0.00
10672.64	93.78	140.49	8647.33	-731.41	1716.87	-731.41	1716.87	1803.05	1866.18	113.07	0.00
10772.64	93.78	140.49	8640.74	-808.39	1780.36	-808.39	1780.36	1900.48	1955.29	114.42	0.00
10872.64	93.78	140.49	8634.14	-885.37	1843.84	-885.37	1843.84	1997.91	2045.40	115.65	0.00

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Measured Depth Feet	B O R E Inc Degrees	H O L E Direction Degrees	True Vertical Depth Feet	RECTANGULAR COORDINATES		L A M B E R T COORDINATES		Vertical Section Feet	C L O S U R E S		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
10972.64	93.78	140.49	8627.55	-962.35	1907.33	-962.35	1907.33	2095.33	2136.36	116.77	0.00
11072.64	93.78	140.49	8620.96	-1039.34	1970.81	-1039.34	1970.81	2192.76	2228.08	117.81	0.00
11172.64	93.78	140.49	8614.36	-1116.32	2034.30	-1116.32	2034.30	2290.19	2320.46	118.76	0.00
11272.64	93.78	140.49	8607.77	-1193.30	2097.79	-1193.30	2097.79	2387.62	2413.43	119.63	0.00
11372.64	93.78	140.49	8601.17	-1270.28	2161.27	-1270.28	2161.27	2485.05	2506.93	120.44	0.00
11472.64	93.78	140.49	8594.58	-1347.26	2224.76	-1347.26	2224.76	2582.48	2600.89	121.20	0.00
11572.64	93.78	140.49	8587.98	-1424.24	2288.24	-1424.24	2288.24	2679.91	2695.28	121.90	0.00
11672.64	93.78	140.49	8581.39	-1501.22	2351.73	-1501.22	2351.73	2777.34	2790.03	122.55	0.00
11772.64	93.78	140.49	8574.80	-1578.20	2415.21	-1578.20	2415.21	2874.77	2885.13	123.16	0.00
11872.64	93.78	140.49	8568.20	-1655.18	2478.70	-1655.18	2478.70	2972.20	2980.53	123.73	0.00
11972.64	93.78	140.49	8561.61	-1732.17	2542.18	-1732.17	2542.18	3069.63	3076.22	124.27	0.00
12072.64	93.78	140.49	8555.01	-1809.15	2605.67	-1809.15	2605.67	3167.06	3172.15	124.77	0.00
12172.64	93.78	140.49	8548.42	-1886.13	2669.16	-1886.13	2669.16	3264.48	3268.31	125.25	0.00
12272.64	93.78	140.49	8541.82	-1963.11	2732.64	-1963.11	2732.64	3361.91	3364.69	125.69	0.00
12372.64	93.78	140.49	8535.23	-2040.09	2796.13	-2040.09	2796.13	3459.34	3461.26	126.11	0.00
12472.64	93.78	140.49	8528.64	-2117.07	2859.61	-2117.07	2859.61	3556.77	3558.00	126.51	0.00
12572.64	93.78	140.49	8522.04	-2194.05	2923.10	-2194.05	2923.10	3654.20	3654.91	126.89	0.00
12672.64	93.78	140.49	8515.45	-2271.03	2986.58	-2271.03	2986.58	3751.63	3751.97	127.25	0.00
12772.64	93.78	140.49	8508.85	-2348.02	3050.07	-2348.02	3050.07	3849.06	3849.17	127.59	0.00
12872.64	93.78	140.49	8502.26	-2425.00	3113.55	-2425.00	3113.55	3946.49	3946.50	127.91	0.00
12906.81	93.78	140.49	8500.00	-2451.30	3135.24	-2451.30	3135.24	3979.78	3979.78	128.02	0.00

PBHL

Final Station Closure Distance: 3979.78' Direction: 128.02°