





SU 0680 2-4H R0 mdv 27Dec22 Proposal Geodetic Report



(Def Plan)

Report Date:	December 28, 2022 - 02:06 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Fulcrum Energy Operating	Vertical Section Azimuth:	351.113 ° (True North)
Field:	CO, Jackson County (NAD 83 NZ)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Fulcrum Energy 09-6N-80W (Surprise Unit 0680 S9 Pad) / SU 0680 2-4H	TVD Reference Datum:	KB 26ft
Well:	SU 0680 2-4H	TVD Reference Elevation:	8293.000 ft above MSL
Borehole:	SU 0680 2-4H	Seabed / Ground Elevation:	8267.000 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	8.414 °
Survey Name:	SU 0680 2-4H R0 mdv 27Dec22	Total Gravity Field Strength:	998.7744mgn (9.80665 Based)
Survey Date:	December 27, 2022	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	109.545 ° / 7097.328 ft / 6.144 / 0.946	Total Magnetic Field Strength:	51662.753 nT
Coordinate Reference System:	NAD83 Colorado State Plane, Northern Zone, US Feet	Magnetic Dip Angle:	66.399 °
Location Lat / Long:	N 40° 30' 36.01800", W 106° 23' 4.85880"	Declination Date:	December 27, 2022
Location Grid N/E Y/X:	N 1429862.469 ftUS, E 2754010.520 ftUS	Magnetic Declination Model:	HDGM 2022
CRS Grid Convergence Angle:	-0.5716 °	North Reference:	True North
Grid Scale Factor:	0.99996706	Grid Convergence Used:	0.0000 °
Version / Patch:	2.10.834.0	Total Corr Mag North->True North:	8.4145 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
Surface	0.00	0.00	0.00	0.00	-8293.00	0.00	0.00	0.00	N/A	1429862.47	2754010.52	40.510005	-106.384683
	100.00	0.00	90.00	100.00	-8193.00	0.00	0.00	0.00	0.00	1429862.47	2754010.52	40.510005	-106.384683
	200.00	0.00	90.00	200.00	-8093.00	0.00	0.00	0.00	0.00	1429862.47	2754010.52	40.510005	-106.384683
	300.00	0.00	90.00	300.00	-7993.00	0.00	0.00	0.00	0.00	1429862.47	2754010.52	40.510005	-106.384683
	350.00	0.00	90.00	350.00	-7943.00	0.00	0.00	0.00	0.00	1429862.47	2754010.52	40.510005	-106.384683
Build 1 DLS	400.00	0.50	90.00	400.00	-7893.00	-0.03	0.00	0.22	1.00	1429862.47	2754010.74	40.510005	-106.384682
	500.00	1.50	90.00	499.98	-7793.02	-0.30	0.00	1.96	1.00	1429862.45	2754012.48	40.510005	-106.384676
	600.00	2.50	90.00	599.92	-7693.08	-0.84	0.00	5.45	1.00	1429862.41	2754015.97	40.510005	-106.384663
	650.00	3.00	90.00	649.86	-7643.14	-1.21	0.00	7.85	1.00	1429862.39	2754018.37	40.510005	-106.384655
	700.00	3.00	90.00	699.79	-7593.21	-1.62	0.00	10.47	0.00	1429862.36	2754020.99	40.510005	-106.384645
Hold	800.00	3.00	90.00	799.66	-7493.34	-2.43	0.00	15.70	0.00	1429862.31	2754026.22	40.510005	-106.384627
	900.00	3.00	90.00	899.52	-7393.48	-3.23	0.00	20.94	0.00	1429862.26	2754031.45	40.510005	-106.384608
	1000.00	3.00	90.00	999.38	-7293.62	-4.04	0.00	26.17	0.00	1429862.21	2754036.69	40.510005	-106.384589
	1100.00	3.00	90.00	1099.25	-7193.75	-4.85	0.00	31.40	0.00	1429862.16	2754041.92	40.510005	-106.384570
	1200.00	3.00	90.00	1199.11	-7093.89	-5.66	0.00	36.64	0.00	1429862.10	2754047.15	40.510005	-106.384551
Drop 1 DLS	1250.00	3.00	90.00	1249.04	-7043.96	-6.06	0.00	39.25	0.00	1429862.08	2754049.77	40.510005	-106.384542
	1300.00	2.50	90.00	1298.98	-6994.02	-6.43	0.00	41.65	1.00	1429862.05	2754052.17	40.510005	-106.384533
	1400.00	1.50	90.00	1398.92	-6894.08	-6.97	0.00	45.14	1.00	1429862.02	2754055.66	40.510005	-106.384521
	1500.00	0.50	90.00	1498.90	-6794.10	-7.24	0.00	46.89	1.00	1429862.00	2754057.40	40.510005	-106.384514
	1550.00	0.00	90.00	1548.90	-6744.10	-7.28	0.00	47.11	1.00	1429862.00	2754057.62	40.510005	-106.384514
Hold Vertical	1600.00	0.00	90.00	1598.90	-6694.10	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
	1700.00	0.00	90.00	1698.90	-6594.10	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
	1800.00	0.00	90.00	1798.90	-6494.10	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
	1900.00	0.00	90.00	1898.90	-6394.10	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
	2000.00	0.00	90.00	1998.90	-6294.10	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
Build 2 DLS	2056.10	0.00	90.00	2055.00	-6238.00	-7.28	0.00	47.11	0.00	1429862.00	2754057.62	40.510005	-106.384514
	2100.00	0.88	256.55	2098.90	-6194.10	-7.30	-0.08	46.78	2.00	1429861.92	2754057.29	40.510005	-106.384515
	2200.00	2.88	256.55	2198.84	-6094.16	-7.56	-0.84	43.59	2.00	1429861.19	2754054.10	40.510003	-106.384526
	2300.00	4.88	256.55	2298.61	-5994.39	-8.10	-2.41	37.01	2.00	1429859.69	2754047.51	40.509998	-106.384550
	2400.00	6.88	256.55	2398.08	-5894.92	-8.92	-4.80	27.05	2.00	1429857.40	2754037.52	40.509992	-106.384586
Hold	2500.00	8.88	256.55	2497.13	-5795.87	-10.01	-7.98	13.72	2.00	1429854.35	2754024.16	40.509983	-106.384634
	2600.00	10.88	256.55	2595.64	-5697.36	-11.37	-11.97	-2.96	2.00	1429850.53	2754007.44	40.509972	-106.384694
	2606.14	11.00	256.55	2601.67	-5691.33	-11.47	-12.24	-4.09	2.00	1429850.27	2754006.31	40.509971	-106.384698
	2700.00	11.00	256.55	2693.81	-5599.19	-12.89	-16.41	-21.51	0.00	1429846.27	2753988.85	40.509960	-106.384760
	2800.00	11.00	256.55	2791.97	-5501.03	-14.41	-20.85	-40.07	0.00	1429842.02	2753970.24	40.509948	-106.384827
Build 2 DLS	2900.00	11.00	256.55	2890.13	-5402.87	-15.93	-25.29	-58.63	0.00	1429837.77	2753951.64	40.509936	-106.384894
	3000.00	11.00	256.55	2988.29	-5304.71	-17.44	-29.73	-77.19	0.00	1429833.52	2753933.04	40.509923	-106.384961
	3100.00	11.00	256.55	3086.46	-5206.54	-18.96	-34.16	-95.75	0.00	1429829.26	2753914.44	40.509911	-106.385027
	3200.00	11.00	256.55	3184.62	-5108.38	-20.48	-38.60	-114.31	0.00	1429825.01	2753895.84	40.509899	-106.385094
	3300.00	11.00	256.55	3282.78	-5010.22	-22.00	-43.04	-132.87	0.00	1429820.76	2753877.24	40.509887	-106.385161
Build 2 DLS	3400.00	11.00	256.55	3380.94	-4912.06	-23.52	-47.48	-151.43	0.00	1429816.50	2753858.63	40.509875	-106.385228
	3500.00	11.00	256.55	3479.11	-4813.89	-25.04	-51.92	-169.98	0.00	1429812.25	2753840.03	40.509862	-106.385294
	3600.00	11.00	256.55	3577.27	-4715.73	-26.55	-56.36	-188.54	0.00	1429808.00	2753821.43	40.509850	-106.385361
	3700.00	11.00	256.55	3675.43	-4617.57	-28.07	-60.80	-207.10	0.00	1429803.74	2753802.83	40.509838	-106.385428
	3800.00	11.00	256.55	3773.59	-4519.41	-29.59	-65.23	-225.66	0.00	1429799.49	2753784.23	40.509826	-106.385495
Hold	3900.00	11.00	256.55	3871.75	-4421.25	-31.11	-69.67	-244.22	0.00	1429795.24	2753765.63	40.509814	-106.385561
	4000.00	11.00	256.55	3969.92	-4323.08	-32.63	-74.11	-262.78	0.00	1429790.99	2753747.02	40.509802	-106.385628
	4100.00	11.00	256.55	4068.08	-4224.92	-34.14	-78.55	-281.34	0.00	1429786.73	2753728.42	40.509789	-106.385695
	4200.00	11.00	256.55	4166.24	-4126.76	-35.66	-82.99	-299.90	0.00	1429782.48	2753709.82	40.509777	-106.385761
	4300.00	11.00	256.55	4264.40	-4028.60	-37.18	-87.43	-318.46	0.00	1429778.23	2753691.22	40.509765	-106.385828
Build 2 DLS	4400.00	11.00	256.55	4362.57	-3930.43	-38.70	-91.87	-337.02	0.00	1429773.97	2753672.62	40.509753	-106.385895
	4500.00	11.00	256.55	4460.73	-3832.27	-40.22	-96.30	-355.57	0.00	1429769.72	2753654.02	40.509741	-106.385962
	4600.00	11.00	256.55	4558.89	-3734.11	-41.74	-100.74	-374.13	0.00	1429765.47	2753635.41	40.509728	-106.386028
	4700.00	11.00	256.55	4657.05	-3635.95	-43.25	-105.18	-392.69	0.00	1429761.21	2753616.81	40.509716	-106.386095
	4800.00	11.00	256.55	4755.22	-3537.78	-44.77	-109.62	-411.25	0.00	1429756.96	2753598.21	40.509704	-106.386162
Build 2 DLS	4900.00	11.00	256.55	4853.38	-3439.62	-46.29	-114.06	-429.81	0.00	1429752.71	2753579.61	40.509692	-106.386229
	5000.00	11.00	256.55	4951.54	-3341.46	-47.81	-118.50	-448.37	0.00	1429748.46	2753561.01	40.509680	-106.386295
	5100.00	11.00	256.55	5049.70	-3243.30	-49.33	-122.94	-466.93	0.00	1429744.20	2753542.40	40.509668	-106.386362
	5200.00	11.00	256.55	5147.87	-3145.13	-50.84	-127.37	-485.49	0.00	1429739.95	2753523.80	40.509655	-106.386429
	5300.00	11.00	256.55	5246.03	-3046.97	-52.36	-131.81	-504.05	0.00	1429735.70	2753505.20	40.509643	-106.386496
Build 2 DLS	5400.00	11.00	256.55	5344.19	-2948.81	-53.88	-136.25	-522.61	0.00	1429731.44	2753486.60	40.509631	-106.386562
	5500.00	11.00	256.55	5442.35	-2850.65	-55.40	-140.69	-541.16	0.00	1429727.19	2753468.00	40.509619	-106.386629
	5600.00	11.00	256.55	5540.52	-2752.48	-56.92	-145.13	-559.72	0.00	1429722.94	2753449.40	40.509607	-106.386696
	5700.00	11.00	256.55	5638.68	-2654.32	-58.44	-149.57	-578.28	0.00	1429718.68	2753430.79	40.509594	-106.386763
	5800.00	11.00	256.55	5736.84	-2556.16	-							

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
Landing Point, Hold to TD	7100.00	20.56	329.74	7009.77	-1283.23	-36.06	-167.45	-837.51	8.00	1429703.39	2753171.41	40.509545	-106.387695
	7200.00	27.66	338.86	7101.01	-1191.99	3.05	-130.57	-854.76	8.00	1429740.44	2753154.53	40.509647	-106.387757
	7300.00	35.13	344.41	7186.33	-1106.67	54.39	-81.12	-870.89	8.00	1429790.04	2753138.90	40.509782	-106.387815
	7400.00	42.77	348.21	7264.05	-1028.95	116.98	-20.07	-885.58	8.00	1429851.24	2753124.81	40.509950	-106.387868
	7500.00	50.50	351.03	7332.67	-960.33	189.59	51.39	-898.56	8.00	1429922.82	2753112.55	40.510146	-106.387914
	7600.00	58.29	353.29	7390.85	-902.15	270.81	131.88	-909.55	8.00	1430003.41	2753102.36	40.510367	-106.387954
	7700.00	66.11	355.20	7437.45	-855.55	359.06	219.82	-918.37	8.00	1430091.44	2753094.42	40.510608	-106.387986
	7800.00	73.95	356.88	7471.58	-821.42	452.62	313.51	-924.82	8.00	1430185.18	2753088.91	40.510865	-106.388009
	7900.00	81.81	358.44	7492.56	-800.44	549.67	411.12	-928.78	8.00	1430282.82	2753085.92	40.511133	-106.388023
	8000.00	89.67	359.94	7499.99	-793.01	648.32	510.76	-930.19	8.00	1430382.46	2753085.51	40.511407	-106.388028
	8004.24	90.00	0.00	7500.00	-793.00	652.51	515.00	-930.19	8.00	1430386.70	2753085.55	40.511419	-106.388028
	8100.00	90.00	0.00	7500.00	-793.00	747.12	610.76	-930.19	0.00	1430482.45	2753086.50	40.511681	-106.388028
	8200.00	90.00	0.00	7500.00	-793.00	845.92	710.76	-930.19	0.00	1430582.44	2753087.50	40.511956	-106.388028
	8300.00	90.00	0.00	7500.00	-793.00	944.72	810.76	-930.19	0.00	1430682.44	2753088.50	40.512230	-106.388028
	8400.00	90.00	0.00	7500.00	-793.00	1043.52	910.76	-930.19	0.00	1430782.43	2753089.49	40.512505	-106.388028
	8500.00	90.00	0.00	7500.00	-793.00	1142.32	1010.76	-930.19	0.00	1430882.42	2753090.49	40.512779	-106.388028
	8600.00	90.00	0.00	7500.00	-793.00	1241.12	1110.76	-930.19	0.00	1430982.41	2753091.49	40.513054	-106.388028
	8700.00	90.00	0.00	7500.00	-793.00	1339.92	1210.76	-930.19	0.00	1431082.40	2753092.49	40.513328	-106.388028
	8800.00	90.00	0.00	7500.00	-793.00	1438.72	1310.76	-930.19	0.00	1431182.39	2753093.48	40.513603	-106.388028
	8900.00	90.00	0.00	7500.00	-793.00	1537.52	1410.76	-930.19	0.00	1431282.38	2753094.48	40.513877	-106.388028
	9000.00	90.00	0.00	7500.00	-793.00	1636.32	1510.76	-930.19	0.00	1431382.38	2753095.48	40.514152	-106.388028
	9100.00	90.00	0.00	7500.00	-793.00	1735.12	1610.76	-930.19	0.00	1431482.37	2753096.48	40.514426	-106.388028
	9200.00	90.00	0.00	7500.00	-793.00	1833.92	1710.76	-930.19	0.00	1431582.36	2753097.47	40.514701	-106.388028
	9300.00	90.00	0.00	7500.00	-793.00	1932.72	1810.76	-930.19	0.00	1431682.35	2753098.47	40.514975	-106.388028
	9400.00	90.00	0.00	7500.00	-793.00	2031.52	1910.76	-930.19	0.00	1431782.34	2753099.47	40.515250	-106.388028
	9500.00	90.00	0.00	7500.00	-793.00	2130.32	2010.76	-930.19	0.00	1431882.33	2753100.47	40.515524	-106.388028
	9600.00	90.00	0.00	7500.00	-793.00	2229.12	2110.76	-930.19	0.00	1431982.33	2753101.46	40.515799	-106.388028
	9700.00	90.00	0.00	7500.00	-793.00	2327.92	2210.76	-930.19	0.00	1432082.32	2753102.46	40.516073	-106.388028
	9800.00	90.00	0.00	7500.00	-793.00	2426.72	2310.76	-930.19	0.00	1432182.31	2753103.46	40.516348	-106.388029
	9900.00	90.00	0.00	7500.00	-793.00	2525.51	2410.76	-930.19	0.00	1432282.30	2753104.46	40.516622	-106.388029
	10000.00	90.00	0.00	7500.00	-793.00	2624.31	2510.76	-930.19	0.00	1432382.29	2753105.46	40.516897	-106.388029
	10100.00	90.00	0.00	7500.00	-793.00	2723.11	2610.76	-930.19	0.00	1432482.28	2753106.45	40.517171	-106.388029
	10200.00	90.00	0.00	7500.00	-793.00	2821.91	2710.76	-930.19	0.00	1432582.27	2753107.45	40.517446	-106.388029
	10300.00	90.00	0.00	7500.00	-793.00	2920.71	2810.76	-930.19	0.00	1432682.27	2753108.45	40.517720	-106.388029
	10400.00	90.00	0.00	7500.00	-793.00	3019.51	2910.76	-930.19	0.00	1432782.26	2753109.45	40.517995	-106.388029
	10500.00	90.00	0.00	7500.00	-793.00	3118.31	3010.76	-930.19	0.00	1432882.25	2753110.44	40.518269	-106.388029
	10600.00	90.00	0.00	7500.00	-793.00	3217.11	3110.76	-930.19	0.00	1432982.24	2753111.44	40.518543	-106.388029
	10700.00	90.00	0.00	7500.00	-793.00	3315.91	3210.76	-930.19	0.00	1433082.23	2753112.44	40.518818	-106.388029
	10800.00	90.00	0.00	7500.00	-793.00	3414.71	3310.76	-930.19	0.00	1433182.22	2753113.44	40.519092	-106.388029
	10900.00	90.00	0.00	7500.00	-793.00	3513.51	3410.76	-930.19	0.00	1433282.22	2753114.43	40.519367	-106.388029
	11000.00	90.00	0.00	7500.00	-793.00	3612.31	3510.76	-930.19	0.00	1433382.21	2753115.43	40.519641	-106.388029
	11100.00	90.00	0.00	7500.00	-793.00	3711.11	3610.76	-930.19	0.00	1433482.20	2753116.43	40.519916	-106.388029
	11200.00	90.00	0.00	7500.00	-793.00	3809.91	3710.76	-930.19	0.00	1433582.19	2753117.43	40.520190	-106.388029
	11300.00	90.00	0.00	7500.00	-793.00	3908.71	3810.76	-930.19	0.00	1433682.18	2753118.42	40.520465	-106.388029
	11400.00	90.00	0.00	7500.00	-793.00	4007.51	3910.76	-930.19	0.00	1433782.17	2753119.42	40.520739	-106.388029
	11500.00	90.00	0.00	7500.00	-793.00	4106.31	4010.76	-930.19	0.00	1433882.16	2753120.42	40.521014	-106.388029
	11600.00	90.00	0.00	7500.00	-793.00	4205.11	4110.76	-930.19	0.00	1433982.16	2753121.42	40.521288	-106.388029
	11700.00	90.00	0.00	7500.00	-793.00	4303.91	4210.76	-930.19	0.00	1434082.15	2753122.41	40.521563	-106.388029
	11800.00	90.00	0.00	7500.00	-793.00	4402.71	4310.76	-930.19	0.00	1434182.14	2753123.41	40.521837	-106.388029
	11900.00	90.00	0.00	7500.00	-793.00	4501.51	4410.76	-930.19	0.00	1434282.13	2753124.41	40.522112	-106.388029
	12000.00	90.00	0.00	7500.00	-793.00	4600.31	4510.76	-930.19	0.00	1434382.12	2753125.41	40.522386	-106.388029
	12100.00	90.00	0.00	7500.00	-793.00	4699.10	4610.76	-930.19	0.00	1434482.11	2753126.41	40.522661	-106.388029
	12200.00	90.00	0.00	7500.00	-793.00	4797.90	4710.76	-930.19	0.00	1434582.11	2753127.40	40.522935	-106.388029
	12300.00	90.00	0.00	7500.00	-793.00	4896.70	4810.76	-930.19	0.00	1434682.10	2753128.40	40.523210	-106.388029
	12400.00	90.00	0.00	7500.00	-793.00	4995.50	4910.76	-930.19	0.00	1434782.09	2753129.40	40.523484	-106.388029
	12500.00	90.00	0.00	7500.00	-793.00	5094.30	5010.76	-930.19	0.00	1434882.08	2753130.40	40.523759	-106.388029
	12600.00	90.00	0.00	7500.00	-793.00	5193.10	5110.76	-930.19	0.00	1434982.07	2753131.39	40.524033	-106.388029
	12700.00	90.00	0.00	7500.00	-793.00	5291.90	5210.76	-930.19	0.00	1435082.06	2753132.39	40.524308	-106.388029
	12800.00	90.00	0.00	7500.00	-793.00	5390.70	5310.76	-930.19	0.00	1435182.05	2753133.39	40.524582	-106.388029
	12900.00	90.00	0.00	7500.00	-793.00	5489.50	5410.76	-930.19	0.00	1435282.05	2753134.39	40.524857	-106.388029
	13000.00	90.00	0.00	7500.00	-793.00	5588.30	5510.76	-930.19	0.00	1435382.04	2753135.38	40.525131	-106.388029
	13100.00	90.00	0.00	7500.00	-793.00	5687.10	5610.76	-930.19	0.00	1435482.03	2753136.38	40.525406	-106.388029
	13200.00	90.00	0.00	7500.00	-793.00	5785.90	5710.76	-930.19	0.00	1435582.02	2753137.38	40.525680	-106.388029
	13300.00	90.00	0.00	7500.00	-793.00	5884.70	5810.76	-930.19	0.00	1435682.01	2753138.38	40.525955	-106.388029
	13400.00	90.00	0.00	7500.00	-793.00	5983.50	5910.76	-930.19	0.00	1435782.00	2753139.37	40.526229	-106.388029
SU 0680 2-4H BHL	13438.24	90.00	0.00	7500.00	-793.00	6021.28	5949.00	-930.19	0.00	1435820.24	2753139.76	40.526334	-106.388029

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 3 *** 3-D 97.071% Confidence 3.0000 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	13.500	9.625		A001Mb_MWD-Depth Only	SU 0680 2-4H / SU 0680 2-4H R0 mdv 27Dec22
	1	26.000	2400.000	1/100.000	13.500	9.625		A001Mb_MWD	SU 0680 2-4H / SU 0680 2-4H R0 mdv 27Dec22
	1	2400.000	13438.240	1/100.000	8.500	5.500		B001Mb_MWD+HRGM	SU 0680 2-4H / SU 0680 2-4H R0 mdv 27Dec22