

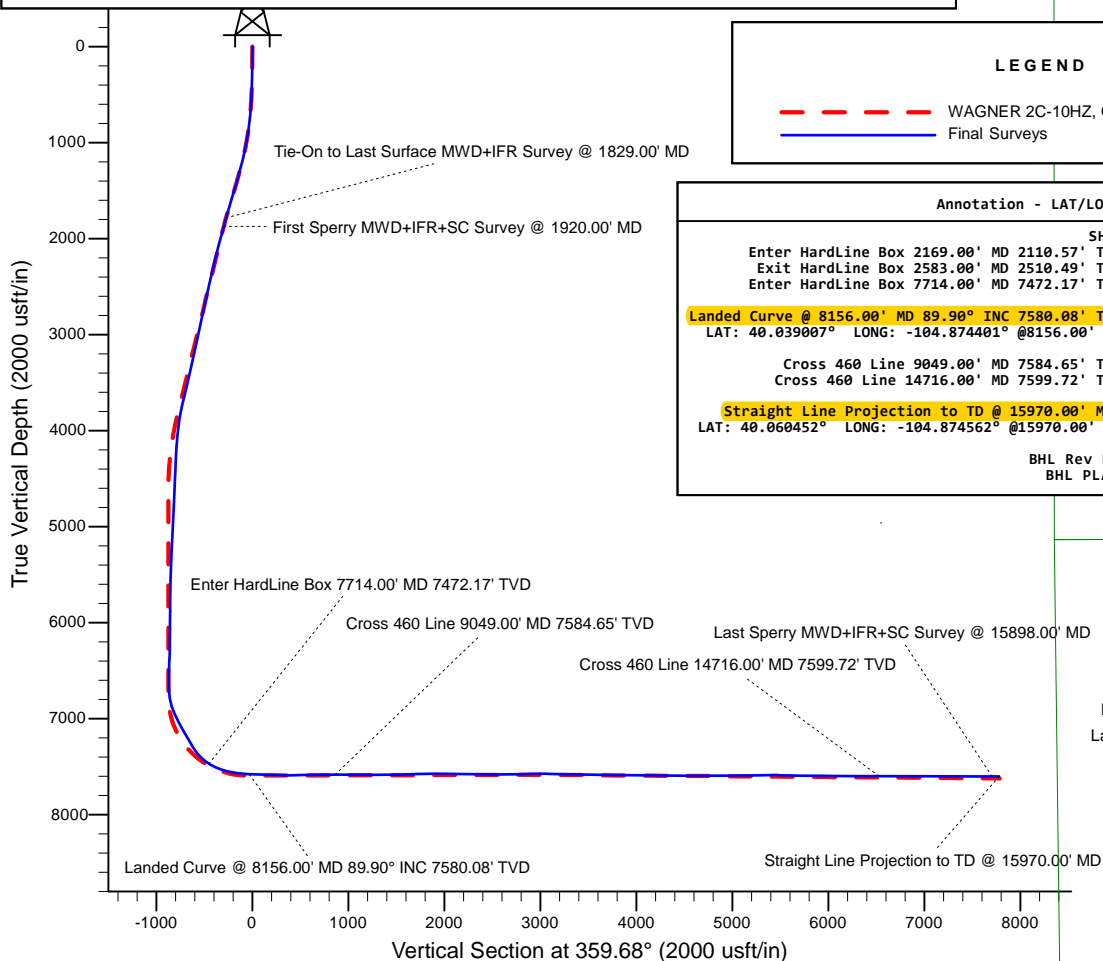
Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-22 Wagner 7-22HZ Pad
Well: WAGNER 2C-10HZ
Wellbore: Original Wellbore
Design: Final Surveys



US ROCKIES WATTENBERG PLANNING

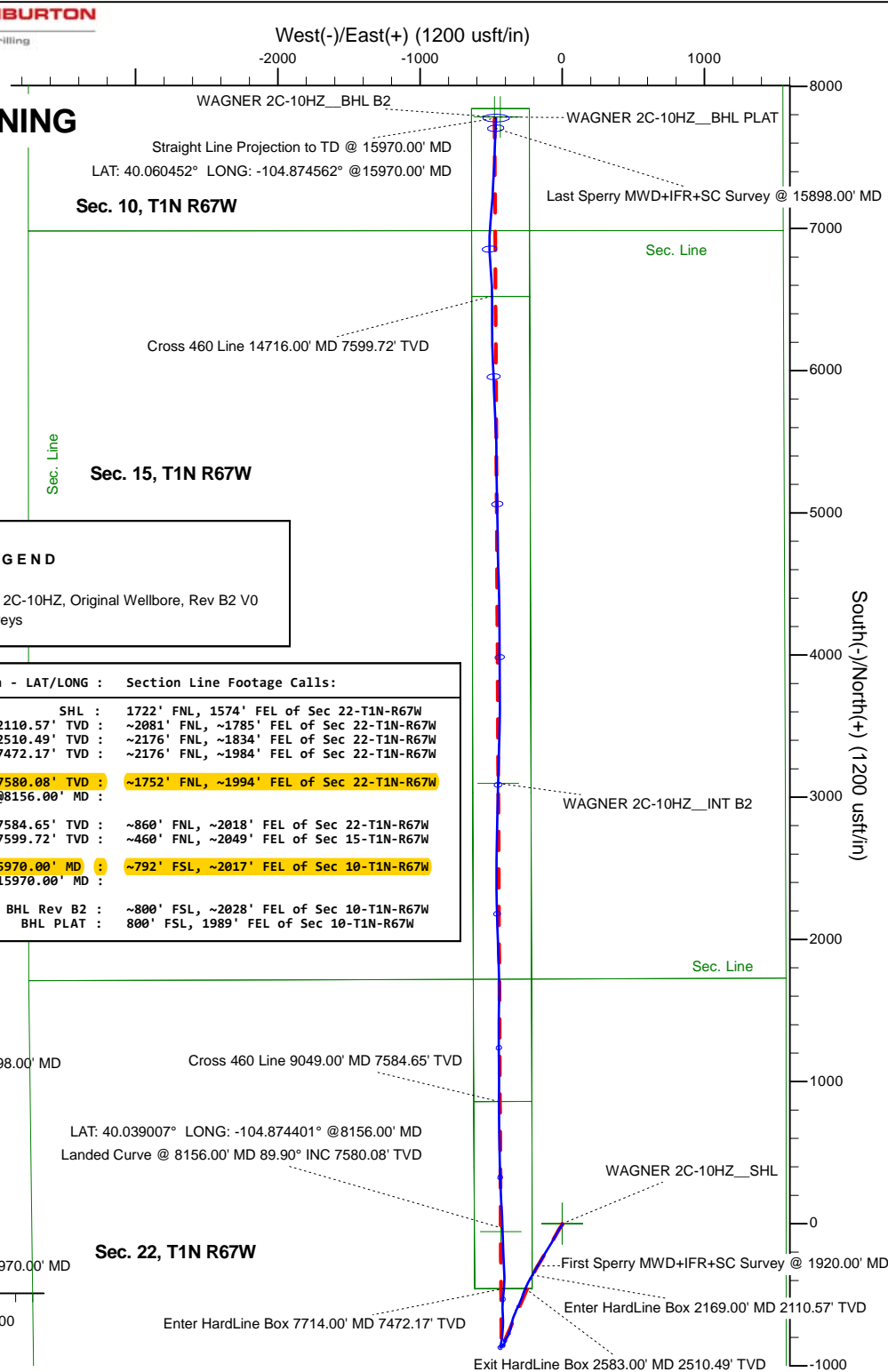
WELL DETAILS: WAGNER 2C-10HZ	Design: Final Surveys (WAGNER 2C-10HZ/Original Wellbore)
Ground Level: 4974.00 RKB 21' @ 4995.00usft (Precision 464)	Created By: Jerry Popp Date: 11:31, November 27 2017

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Annotation			
13.00	0.00	0.00	13.00	0.00	0.00	Tie-On Surface @ 0.00' MD (KB 8')			
133.00	0.26	104.90	133.00	-0.07	0.26	First Total MWD+IFR Survey @ 120.00' MD (KB 8')			
1829.00	17.67	212.39	1785.89	-274.14	-159.42	Last Total MWD+IFR Survey @ 1816.00' MD (KB 8')			
1829.00	17.67	212.39	1785.89	-274.14	-159.42	Tie-On to Last Surface MWD+IFR Survey @ 1829.00' MD			
1920.00	17.86	211.75	1872.55	-297.67	-174.17	First Sperry MWD+IFR+SC Survey @ 1920.00'			
2169.00	16.58	209.77	2110.57	-360.71	-211.12	Enter HardLine Box 2169.00' MD 2110.57' TVD			
2583.00	14.23	203.92	2510.49	-455.82	-259.82	Exit HardLine Box 2583.00' MD 2510.49' TVD			
7714.00	58.08	4.67	7472.17	-455.88	-410.06	Enter HardLine Box 7714.00' MD 7472.17' TVD			
8156.00	89.90	358.09	7580.08	-32.35	-420.27	Landed Curve @ 8156.00' MD 89.90' INC 7580.08' TVD			
8156.00	89.90	358.09	7580.08	-32.35	-420.27	LAT: 40.039007° LONG: -104.874401° @8156.00' MD			
9049.00	90.44	0.47	7584.65	859.93	-444.86	Cross 460 Line 9049.00' MD 7584.65' TVD			
14716.00	90.97	359.21	7599.72	6524.57	-493.37	Cross 460 Line 14716.00' MD 7599.72' TVD			
15898.00	89.89	2.35	7603.19	7704.63	-468.28	Last Sperry MWD+IFR+SC Survey @ 15898.00' MD			
15970.00	89.89	2.35	7603.33	7776.57	-465.33	Straight Line Projection to TD @ 15970.00' MD			
15970.00	89.89	2.35	7603.33	7776.57	-465.33	LAT: 40.060452° LONG: -104.874562° @15970.00' MD			



LEGEND	
---	WAGNER 2C-10HZ, Original Wellbore, Rev B2 V0
---	Final Surveys

Annotation - LAT/LONG :		Section Line Footage Calls:	
Enter HardLine Box 2169.00' MD 2110.57' TVD :	SHL :	1722' FNL, 1574' FEL of Sec 22-T1N-R67W	
Exit HardLine Box 2583.00' MD 2510.49' TVD :	~2081' FNL, ~1785' FEL of Sec 22-T1N-R67W		
Enter HardLine Box 7714.00' MD 7472.17' TVD :	~2176' FNL, ~1834' FEL of Sec 22-T1N-R67W		
	~2176' FNL, ~1984' FEL of Sec 22-T1N-R67W		
Landed Curve @ 8156.00' MD 89.90' INC 7580.08' TVD :	~1752' FNL, ~1994' FEL of Sec 22-T1N-R67W		
LAT: 40.039007° LONG: -104.874401° @8156.00' MD :			
Cross 460 Line 9049.00' MD 7584.65' TVD :	~860' FNL, ~2018' FEL of Sec 22-T1N-R67W		
Cross 460 Line 14716.00' MD 7599.72' TVD :	~460' FNL, ~2049' FEL of Sec 15-T1N-R67W		
Straight Line Projection to TD @ 15970.00' MD :	~792' FSL, ~2017' FEL of Sec 10-T1N-R67W		
LAT: 40.060452° LONG: -104.874562° @15970.00' MD :			
BHL Rev B2 :	~800' FSL, ~2028' FEL of Sec 10-T1N-R67W		
BHL PLAT :	800' FSL, 1989' FEL of Sec 10-T1N-R67W		



Job# 904430235

Precision 464

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N 1N-67W-22 Wagner 7-22HZ Pad (PD 464)

API# 05-123-43473

WAGNER 2C-10HZ

Original Wellbore

Design: Final Surveys

Sperry Drilling Services

Combo Report

27 November, 2017

Well Coordinates: 40° 02' 20.75" N
104° 52' 22.44" W

North American Datum 1983
Zone 13N (108 W to 102 W)
14,540,995.34 N
1,675,991.12 E

Ground Level: 4,974.00 usft

Local Coordinate Origin:

Centered on Well WAGNER 2C-10HZ

Viewing Datum:

RKB 21' @ 4995.00usft (Precision 464)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 81D

Report Version: Midcon Combo v1.11

HALLIBURTON

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
0.00	0.00	0.00	-4,995.00	0.00	0.00 N	0.00 E	14,540,995.34	1,675,991.12	0.00	0.00	
13.00	0.00	0.00	-4,982.00	13.00	0.00 N	0.00 E	14,540,995.34	1,675,991.12	0.00	0.00	Tie-On Surface @ 0.00' MD (KB 8')
133.00	0.26	104.90	-4,862.00	133.00	0.07 S	0.26 E	14,540,995.27	1,675,991.38	0.22	-0.07	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
165.00	0.22	146.74	-4,830.00	165.00	0.14 S	0.37 E	14,540,995.20	1,675,991.49	0.55	-0.14	
197.00	0.40	231.73	-4,798.00	197.00	0.26 S	0.31 E	14,540,995.08	1,675,991.43	1.37	-0.26	
228.00	0.66	173.45	-4,767.00	228.00	0.51 S	0.25 E	14,540,994.84	1,675,991.37	1.82	-0.51	
260.00	0.31	204.48	-4,735.00	260.00	0.77 S	0.23 E	14,540,994.57	1,675,991.35	1.33	-0.77	
292.00	1.01	170.38	-4,703.01	291.99	1.12 S	0.24 E	14,540,994.22	1,675,991.37	2.42	-1.13	
323.00	1.89	175.39	-4,672.02	322.98	1.90 S	0.33 E	14,540,993.44	1,675,991.45	2.87	-1.90	
355.00	2.02	172.66	-4,640.03	354.97	2.99 S	0.45 E	14,540,992.35	1,675,991.57	0.50	-2.99	
387.00	1.93	198.68	-4,608.05	386.95	4.06 S	0.35 E	14,540,991.28	1,675,991.47	2.79	-4.06	
419.00	1.80	198.33	-4,576.07	418.93	5.05 S	0.01 E	14,540,990.29	1,675,991.14	0.41	-5.05	
450.00	1.58	198.77	-4,545.08	449.92	5.91 S	0.28 W	14,540,989.43	1,675,990.85	0.71	-5.91	
482.00	2.20	197.71	-4,513.10	481.90	6.92 S	0.60 W	14,540,988.42	1,675,990.52	1.94	-6.91	
514.00	3.03	204.04	-4,481.13	513.87	8.27 S	1.14 W	14,540,987.07	1,675,989.99	2.74	-8.27	
546.00	3.21	203.34	-4,449.18	545.82	9.87 S	1.84 W	14,540,985.47	1,675,989.30	0.57	-9.86	
577.00	3.74	208.08	-4,418.24	576.76	11.56 S	2.66 W	14,540,983.78	1,675,988.48	1.94	-11.54	
608.00	4.92	218.45	-4,387.33	607.67	13.49 S	3.96 W	14,540,981.84	1,675,987.18	4.55	-13.47	
640.00	5.54	219.95	-4,355.46	639.54	15.75 S	5.80 W	14,540,979.58	1,675,985.34	1.98	-15.72	
672.00	6.20	218.63	-4,323.63	671.37	18.28 S	7.87 W	14,540,977.05	1,675,983.27	2.11	-18.24	
703.00	6.68	218.28	-4,292.82	702.18	21.01 S	10.04 W	14,540,974.32	1,675,981.11	1.55	-20.95	
735.00	6.81	215.82	-4,261.05	733.95	24.01 S	12.30 W	14,540,971.32	1,675,978.85	0.99	-23.94	
767.00	7.82	214.68	-4,229.31	765.69	27.33 S	14.65 W	14,540,967.99	1,675,976.51	3.19	-27.25	
798.00	8.39	213.18	-4,198.62	796.38	30.96 S	17.09 W	14,540,964.35	1,675,974.08	1.96	-30.87	
830.00	8.31	209.49	-4,166.96	828.04	34.93 S	19.50 W	14,540,960.38	1,675,971.67	1.69	-34.82	
862.00	8.53	209.93	-4,135.30	859.70	39.00 S	21.82 W	14,540,956.31	1,675,969.35	0.72	-38.87	
893.00	9.49	208.43	-4,104.68	890.32	43.24 S	24.19 W	14,540,952.07	1,675,966.99	3.19	-43.10	
925.00	10.24	210.28	-4,073.16	921.84	48.01 S	26.88 W	14,540,947.29	1,675,964.31	2.54	-47.86	
957.00	10.94	208.00	-4,041.70	953.30	53.15 S	29.74 W	14,540,942.15	1,675,961.46	2.55	-52.98	
988.00	11.73	210.28	-4,011.31	983.69	58.47 S	32.71 W	14,540,936.82	1,675,958.49	2.93	-58.29	
1,020.00	12.61	211.26	-3,980.03	1,014.97	64.26 S	36.16 W	14,540,931.02	1,675,955.05	2.82	-64.06	
1,051.00	12.17	212.21	-3,949.75	1,045.25	69.92 S	39.66 W	14,540,925.36	1,675,951.56	1.56	-69.70	
1,083.00	13.67	208.87	-3,918.56	1,076.44	76.09 S	43.28 W	14,540,919.19	1,675,947.95	5.23	-75.84	
1,114.00	14.28	209.93	-3,888.48	1,106.52	82.61 S	46.96 W	14,540,912.66	1,675,944.28	2.13	-82.35	
1,146.00	14.85	207.73	-3,857.50	1,137.50	89.66 S	50.84 W	14,540,905.61	1,675,940.41	2.48	-89.37	
1,178.00	15.91	210.10	-3,826.65	1,168.35	97.08 S	54.94 W	14,540,898.18	1,675,936.31	3.85	-96.78	
1,210.00	16.22	210.02	-3,795.90	1,199.10	104.75 S	59.38 W	14,540,890.51	1,675,931.89	0.97	-104.41	
1,241.00	16.61	207.56	-3,766.16	1,228.84	112.42 S	63.60 W	14,540,882.82	1,675,927.68	2.57	-112.07	
1,273.00	16.88	209.23	-3,735.52	1,259.48	120.53 S	67.98 W	14,540,874.71	1,675,923.31	1.72	-120.15	
1,305.00	17.18	208.79	-3,704.92	1,290.08	128.73 S	72.53 W	14,540,866.51	1,675,918.78	1.02	-128.32	
1,336.00	17.75	210.28	-3,675.35	1,319.65	136.82 S	77.11 W	14,540,858.41	1,675,914.20	2.34	-136.39	

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
1,368.00	17.89	209.93	-3,644.89	1,350.11	145.30 S	82.02 W	14,540,849.93	1,675,909.30	0.55	-144.83	
1,400.00	18.46	211.25	-3,614.48	1,380.52	153.89 S	87.11 W	14,540,841.33	1,675,904.23	2.20	-153.40	
1,431.00	18.33	212.57	-3,585.07	1,409.93	162.19 S	92.28 W	14,540,833.02	1,675,899.07	1.41	-161.67	
1,463.00	18.54	212.83	-3,554.71	1,440.29	170.71 S	97.74 W	14,540,824.50	1,675,893.62	0.70	-170.16	
1,494.00	18.81	211.60	-3,525.34	1,469.66	179.10 S	103.03 W	14,540,816.09	1,675,888.34	1.54	-178.53	
1,526.00	19.07	211.51	-3,495.07	1,499.93	187.95 S	108.47 W	14,540,807.23	1,675,882.92	0.82	-187.35	
1,558.00	19.12	210.28	-3,464.84	1,530.16	196.94 S	113.84 W	14,540,798.24	1,675,877.56	1.27	-196.30	
1,621.00	19.51	210.63	-3,405.38	1,589.62	214.90 S	124.41 W	14,540,780.26	1,675,867.02	0.65	-214.20	
1,652.00	20.00	209.84	-3,376.21	1,618.79	223.95 S	129.68 W	14,540,771.20	1,675,861.76	1.80	-223.22	
1,684.00	20.26	209.14	-3,346.16	1,648.84	233.54 S	135.10 W	14,540,761.61	1,675,856.35	1.11	-232.78	
1,715.00	19.69	211.60	-3,317.03	1,677.97	242.67 S	140.45 W	14,540,752.47	1,675,851.01	3.28	-241.89	
1,747.00	19.07	210.02	-3,286.84	1,708.16	251.79 S	145.89 W	14,540,743.34	1,675,845.59	2.54	-250.97	
1,779.00	19.03	210.46	-3,256.59	1,738.41	260.82 S	151.15 W	14,540,734.31	1,675,840.34	0.47	-259.97	
1,811.00	18.02	212.57	-3,226.25	1,768.75	269.48 S	156.46 W	14,540,725.63	1,675,835.04	3.79	-268.61	
1,829.00	17.67	212.39	-3,209.11	1,785.89	274.14 S	159.42 W	14,540,720.98	1,675,832.09	1.97	-273.24	Last Total MWD+IFR Survey @ 1816.00' MD (KB 8') - Tie-On to Last Surface MWD+IFR Survey @ 1829.00' MD
1,920.00	17.86	211.75	-3,122.45	1,872.55	297.67 S	174.17 W	14,540,697.43	1,675,817.38	0.30	-296.69	First Sperry MWD+IFR+SC Survey @ 1920.00' MD
2,010.00	17.08	209.81	-3,036.61	1,958.39	320.87 S	188.00 W	14,540,674.20	1,675,803.58	1.08	-319.82	
2,100.00	16.82	210.46	-2,950.51	2,044.49	343.56 S	201.17 W	14,540,651.49	1,675,790.44	0.36	-342.43	
2,169.00	16.58	209.77	-2,884.43	2,110.57	360.71 S	211.12 W	14,540,634.33	1,675,780.51	0.45	-359.53	Enter HardLine Box 2169.00' MD 2110.57' TVD
2,190.00	16.51	209.56	-2,864.30	2,130.70	365.91 S	214.08 W	14,540,629.12	1,675,777.56	0.45	-364.71	
2,280.00	15.59	208.31	-2,777.80	2,217.20	387.68 S	226.12 W	14,540,607.34	1,675,765.55	1.09	-386.41	
2,369.00	15.00	207.48	-2,691.96	2,303.04	408.43 S	237.11 W	14,540,586.57	1,675,754.59	0.71	-407.10	
2,459.00	13.83	205.82	-2,604.79	2,390.21	428.45 S	247.17 W	14,540,566.54	1,675,744.56	1.38	-427.06	
2,549.00	14.21	204.31	-2,517.47	2,477.53	448.20 S	256.40 W	14,540,546.78	1,675,735.36	0.59	-446.76	
2,583.00	14.23	203.92	-2,484.51	2,510.49	455.82 S	259.82 W	14,540,539.15	1,675,731.95	0.28	-454.36	Exit HardLine Box 2583.00' MD 2510.49' TVD
2,639.00	14.26	203.29	-2,430.24	2,564.76	468.44 S	265.33 W	14,540,526.52	1,675,726.45	0.28	-466.95	
2,729.00	14.63	199.74	-2,343.08	2,651.92	489.32 S	273.56 W	14,540,505.63	1,675,718.26	1.07	-487.79	
2,818.00	13.48	199.80	-2,256.74	2,738.26	509.66 S	280.87 W	14,540,485.28	1,675,710.98	1.29	-508.09	
2,908.00	11.81	196.21	-2,168.93	2,826.07	528.38 S	286.99 W	14,540,466.55	1,675,704.88	2.05	-526.77	
2,998.00	11.74	205.41	-2,080.82	2,914.18	545.49 S	293.49 W	14,540,449.43	1,675,698.41	2.09	-543.85	
3,088.00	14.29	205.89	-1,993.13	3,001.87	563.76 S	302.27 W	14,540,431.15	1,675,689.65	2.84	-562.06	
3,177.00	12.94	205.55	-1,906.64	3,088.36	582.63 S	311.37 W	14,540,412.26	1,675,680.59	1.52	-580.89	
3,267.00	14.17	205.02	-1,819.15	3,175.85	601.71 S	320.37 W	14,540,393.18	1,675,671.61	1.37	-599.91	
3,357.00	15.30	201.89	-1,732.11	3,262.89	622.71 S	329.46 W	14,540,372.16	1,675,662.55	1.54	-620.86	
3,447.00	13.28	202.09	-1,644.90	3,350.10	643.31 S	337.77 W	14,540,351.55	1,675,654.26	2.25	-641.41	
3,536.00	12.72	197.99	-1,558.17	3,436.83	662.10 S	344.64 W	14,540,332.75	1,675,647.42	1.21	-660.16	
3,626.00	13.20	197.69	-1,470.47	3,524.53	681.31 S	350.83 W	14,540,313.53	1,675,641.27	0.54	-679.34	
3,716.00	14.22	190.94	-1,383.03	3,611.97	701.96 S	356.05 W	14,540,292.87	1,675,636.07	2.11	-699.96	
3,806.00	14.23	192.51	-1,295.79	3,699.21	723.61 S	360.54 W	14,540,271.22	1,675,631.61	0.43	-721.59	
3,896.00	11.92	195.33	-1,208.12	3,786.88	743.38 S	365.39 W	14,540,251.44	1,675,626.79	2.66	-741.32	

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
Depth (usft)	Inclination (°)	Azimuth (°)	System (usft)	Depth (usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	Rate (°/100usft)	Section (usft)	
3,985.00	9.32	197.73	-1,120.66	3,874.34	759.11 S	370.02 W	14,540,235.71	1,675,622.18	2.96	-757.03	
4,075.00	7.77	203.00	-1,031.66	3,963.34	771.65 S	374.62 W	14,540,223.16	1,675,617.60	1.93	-769.55	
4,164.00	6.03	209.12	-943.30	4,051.70	781.27 S	379.24 W	14,540,213.53	1,675,612.99	2.12	-779.14	
4,254.00	4.91	205.65	-853.71	4,141.29	788.88 S	383.21 W	14,540,205.92	1,675,609.03	1.30	-786.72	
4,344.00	4.09	209.52	-763.99	4,231.01	795.14 S	386.46 W	14,540,199.65	1,675,605.79	0.97	-792.97	
4,434.00	2.99	210.17	-674.17	4,320.83	799.96 S	389.22 W	14,540,194.82	1,675,603.04	1.22	-797.78	
4,523.00	3.07	220.20	-585.29	4,409.71	803.79 S	391.93 W	14,540,190.99	1,675,600.34	0.60	-801.59	
4,613.00	2.77	221.31	-495.41	4,499.59	807.26 S	394.92 W	14,540,187.51	1,675,597.35	0.34	-805.05	
4,703.00	2.96	230.84	-405.52	4,589.48	810.36 S	398.15 W	14,540,184.41	1,675,594.12	0.57	-808.13	
4,793.00	3.00	185.07	-315.63	4,679.37	814.18 S	400.16 W	14,540,180.59	1,675,592.12	2.57	-811.93	
4,883.00	2.97	187.93	-225.75	4,769.25	818.83 S	400.69 W	14,540,175.94	1,675,591.59	0.17	-816.58	
4,972.00	3.00	199.23	-136.87	4,858.13	823.32 S	401.78 W	14,540,171.45	1,675,590.51	0.66	-821.06	
5,062.00	2.90	194.31	-46.99	4,948.01	827.75 S	403.12 W	14,540,167.02	1,675,589.18	0.30	-825.48	
5,152.00	2.73	195.84	42.90	5,037.90	832.01 S	404.27 W	14,540,162.75	1,675,588.04	0.21	-829.74	
5,242.00	3.16	190.90	132.78	5,127.78	836.51 S	405.32 W	14,540,158.25	1,675,586.99	0.55	-834.24	
5,331.00	2.80	201.37	221.66	5,216.66	840.95 S	406.58 W	14,540,153.82	1,675,585.74	0.73	-838.66	
5,421.00	2.48	205.05	311.57	5,306.57	844.76 S	408.20 W	14,540,150.00	1,675,584.12	0.40	-842.46	
5,511.00	2.25	199.47	401.49	5,396.49	848.19 S	409.61 W	14,540,146.57	1,675,582.72	0.36	-845.89	
5,601.00	1.98	201.00	491.43	5,486.43	851.30 S	410.76 W	14,540,143.45	1,675,581.57	0.31	-849.00	
5,690.00	1.70	216.12	580.38	5,575.38	853.81 S	412.09 W	14,540,140.95	1,675,580.25	0.63	-851.49	
5,780.00	1.24	226.19	670.35	5,665.35	855.56 S	413.58 W	14,540,139.19	1,675,578.76	0.58	-853.23	
5,870.00	1.31	217.13	760.33	5,755.33	857.05 S	414.90 W	14,540,137.70	1,675,577.44	0.24	-854.72	
5,938.00	0.94	240.49	828.32	5,823.32	857.95 S	415.86 W	14,540,136.80	1,675,576.49	0.86	-855.61	
6,002.00	0.91	266.18	892.31	5,887.31	858.24 S	416.82 W	14,540,136.51	1,675,575.52	0.64	-855.90	
6,092.00	0.78	260.73	982.30	5,977.30	858.39 S	418.14 W	14,540,136.36	1,675,574.20	0.17	-856.04	
6,182.00	2.74	241.84	1,072.26	6,067.26	859.50 S	420.64 W	14,540,135.24	1,675,571.71	2.24	-857.14	
6,272.00	2.38	255.43	1,162.17	6,157.17	860.98 S	424.35 W	14,540,133.75	1,675,568.00	0.78	-858.60	
6,361.00	2.21	243.73	1,251.10	6,246.10	862.21 S	427.67 W	14,540,132.52	1,675,564.68	0.56	-859.81	
6,451.00	2.64	238.11	1,341.01	6,336.01	864.07 S	430.99 W	14,540,130.65	1,675,561.36	0.55	-861.65	
6,541.00	2.85	205.96	1,430.92	6,425.92	867.18 S	433.73 W	14,540,127.54	1,675,558.63	1.70	-864.74	
6,631.00	1.94	215.87	1,520.84	6,515.84	870.43 S	435.60 W	14,540,124.29	1,675,556.76	1.11	-867.98	
6,720.00	0.58	350.65	1,609.82	6,604.82	871.20 S	436.56 W	14,540,123.52	1,675,555.81	2.68	-868.75	
6,810.00	1.37	305.56	1,699.81	6,694.81	870.13 S	437.51 W	14,540,124.59	1,675,554.85	1.16	-867.67	
6,900.00	7.57	20.94	1,789.53	6,784.53	863.96 S	436.26 W	14,540,130.76	1,675,556.09	8.16	-861.51	
6,990.00	19.02	11.06	1,876.98	6,871.98	843.96 S	431.31 W	14,540,150.77	1,675,561.01	12.92	-841.54	
7,079.00	26.37	9.77	1,959.03	6,954.03	810.20 S	425.17 W	14,540,184.54	1,675,567.11	8.28	-807.81	
7,169.00	26.42	2.60	2,039.67	7,034.67	770.49 S	420.87 W	14,540,224.25	1,675,571.35	3.54	-768.13	
7,259.00	29.76	5.78	2,119.06	7,114.06	728.25 S	417.71 W	14,540,266.50	1,675,574.45	4.07	-725.91	
7,348.00	30.17	356.77	2,196.21	7,191.21	683.92 S	416.74 W	14,540,310.82	1,675,575.35	5.07	-681.58	
7,438.00	31.96	357.43	2,273.30	7,268.30	637.54 S	419.09 W	14,540,357.20	1,675,572.94	2.02	-635.19	
7,528.00	35.40	359.19	2,348.18	7,343.18	587.67 S	420.52 W	14,540,407.08	1,675,571.44	3.97	-585.31	

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
7,618.00	44.30	6.36	2,417.24	7,412.24	530.22 S	417.40 W	14,540,464.53	1,675,574.47	11.12	-527.88	
7,707.00	57.22	5.15	2,473.42	7,468.42	461.78 S	410.57 W	14,540,532.98	1,675,581.21	14.55	-459.48	
7,714.00	58.08	4.67	2,477.17	7,472.17	455.88 S	410.06 W	14,540,538.87	1,675,581.71	13.56	-453.59	Enter HardLine Box 7714.00' MD 7472.17' TVD
7,797.00	68.38	359.58	2,514.52	7,509.52	381.96 S	407.47 W	14,540,612.80	1,675,584.19	13.56	-379.68	
7,887.00	73.41	356.98	2,543.97	7,538.97	296.99 S	410.05 W	14,540,697.76	1,675,581.49	6.22	-294.70	
7,977.00	77.84	357.57	2,566.31	7,561.31	209.93 S	414.19 W	14,540,784.82	1,675,577.23	4.96	-207.61	
8,066.00	84.04	358.24	2,580.32	7,575.32	122.14 S	417.40 W	14,540,872.60	1,675,573.90	7.01	-119.81	
8,156.00	89.90	358.09	2,585.08	7,580.08	32.35 S	420.27 W	14,540,962.39	1,675,570.89	6.51	-30.01	Landed Curve @ 8156.00' MD 89.90° INC 7580.08' TVD - LAT: 40.039007° LONG: -104.874401° @8156.00' MD
8,246.00	88.51	356.80	2,586.32	7,581.32	57.54 N	424.28 W	14,541,052.28	1,675,566.75	2.11	59.91	
8,336.00	87.67	356.15	2,589.32	7,584.32	147.32 N	429.82 W	14,541,142.05	1,675,561.09	1.18	149.72	
8,426.00	87.79	357.95	2,592.89	7,587.89	237.13 N	434.44 W	14,541,231.85	1,675,556.34	2.00	239.55	
8,516.00	89.39	358.86	2,595.10	7,590.10	327.06 N	436.95 W	14,541,321.78	1,675,553.71	2.05	329.50	
8,605.00	90.57	359.37	2,595.13	7,590.13	416.05 N	438.32 W	14,541,410.76	1,675,552.20	1.44	418.49	
8,695.00	91.07	359.01	2,593.85	7,588.85	506.03 N	439.59 W	14,541,500.74	1,675,550.80	0.68	508.48	
8,785.00	90.65	358.57	2,592.50	7,587.50	596.00 N	441.49 W	14,541,590.71	1,675,548.77	0.68	598.46	
8,875.00	90.82	358.12	2,591.34	7,586.34	685.96 N	444.09 W	14,541,680.66	1,675,546.05	0.53	688.42	
8,964.00	90.48	0.23	2,590.33	7,585.33	774.94 N	445.37 W	14,541,769.64	1,675,544.64	2.40	777.41	
9,049.00	90.44	0.47	2,589.65	7,584.65	859.93 N	444.86 W	14,541,854.64	1,675,545.03	0.28	862.40	Cross 460 Line 9049.00' MD 7584.65' TVD
9,054.00	90.44	0.48	2,589.61	7,584.61	864.93 N	444.82 W	14,541,859.63	1,675,545.07	0.28	867.40	
9,144.00	90.06	359.99	2,589.22	7,584.22	954.93 N	444.45 W	14,541,949.63	1,675,545.31	0.69	957.40	
9,238.00	90.23	359.70	2,588.98	7,583.98	1,048.93 N	444.70 W	14,542,043.63	1,675,544.92	0.36	1,051.40	
9,333.00	89.27	359.31	2,589.39	7,584.39	1,143.92 N	445.52 W	14,542,138.63	1,675,543.96	1.09	1,146.39	
9,427.00	89.35	359.85	2,590.53	7,585.53	1,237.91 N	446.21 W	14,542,232.61	1,675,543.14	0.58	1,240.39	
9,521.00	89.27	359.53	2,591.66	7,586.66	1,331.90 N	446.72 W	14,542,326.61	1,675,542.50	0.35	1,334.38	
9,616.00	91.28	0.85	2,591.20	7,586.20	1,426.90 N	446.41 W	14,542,421.60	1,675,542.68	2.53	1,429.37	
9,710.00	91.24	1.04	2,589.13	7,584.13	1,520.86 N	444.86 W	14,542,515.56	1,675,544.09	0.21	1,523.32	
9,804.00	90.90	0.72	2,587.38	7,582.38	1,614.83 N	443.41 W	14,542,609.54	1,675,545.40	0.50	1,617.28	
9,898.00	92.17	358.59	2,584.86	7,579.86	1,708.79 N	443.98 W	14,542,703.49	1,675,544.70	2.64	1,711.24	
9,993.00	91.66	358.31	2,581.69	7,576.69	1,803.70 N	446.55 W	14,542,798.40	1,675,542.00	0.61	1,806.17	
10,087.00	90.11	357.65	2,580.23	7,575.23	1,897.63 N	449.86 W	14,542,892.32	1,675,538.55	1.79	1,900.11	
10,181.00	89.06	358.56	2,580.92	7,575.92	1,991.57 N	452.97 W	14,542,986.26	1,675,535.31	1.48	1,994.07	
10,276.00	89.01	358.12	2,582.51	7,577.51	2,086.52 N	455.72 W	14,543,081.21	1,675,532.42	0.47	2,089.03	
10,370.00	89.01	357.72	2,584.14	7,579.14	2,180.44 N	459.13 W	14,543,175.12	1,675,528.88	0.43	2,182.97	
10,464.00	89.81	359.95	2,585.11	7,580.11	2,274.41 N	461.04 W	14,543,269.09	1,675,526.83	2.52	2,276.95	
10,558.00	89.85	358.69	2,585.39	7,580.39	2,368.40 N	462.16 W	14,543,363.08	1,675,525.58	1.34	2,370.95	
10,648.00	89.14	0.08	2,586.18	7,581.18	2,458.39 N	463.12 W	14,543,453.07	1,675,524.49	1.73	2,460.94	
10,738.00	89.73	0.60	2,587.07	7,582.07	2,548.38 N	462.59 W	14,543,543.06	1,675,524.89	0.87	2,550.93	
10,828.00	90.82	1.81	2,586.63	7,581.63	2,638.36 N	460.70 W	14,543,633.04	1,675,526.66	1.81	2,640.89	
10,918.00	90.90	1.11	2,585.28	7,580.28	2,728.32 N	458.40 W	14,543,723.00	1,675,528.82	0.78	2,730.84	
11,007.00	91.07	0.60	2,583.75	7,578.75	2,817.30 N	457.07 W	14,543,811.98	1,675,530.02	0.60	2,819.81	

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
11,097.00	91.54	0.95	2,581.70	7,576.70	2,907.26 N	455.86 W	14,543,901.95	1,675,531.11	0.65	2,909.77	
11,187.00	90.19	1.64	2,580.35	7,575.35	2,997.23 N	453.82 W	14,543,991.92	1,675,533.02	1.68	2,999.72	
11,277.00	87.79	1.23	2,581.93	7,576.93	3,087.18 N	451.57 W	14,544,081.87	1,675,535.14	2.71	3,089.65	
11,366.00	89.06	1.63	2,584.38	7,579.38	3,176.12 N	449.35 W	14,544,170.81	1,675,537.24	1.50	3,178.58	
11,456.00	88.68	1.56	2,586.15	7,581.15	3,266.06 N	446.85 W	14,544,260.76	1,675,539.61	0.43	3,268.51	
11,546.00	88.97	2.05	2,588.00	7,583.00	3,356.00 N	444.01 W	14,544,350.70	1,675,542.32	0.63	3,358.43	
11,636.00	88.85	1.44	2,589.71	7,584.71	3,445.94 N	441.27 W	14,544,440.65	1,675,544.93	0.69	3,448.35	
11,725.00	88.97	1.14	2,591.40	7,586.40	3,534.90 N	439.27 W	14,544,529.61	1,675,546.81	0.36	3,537.30	
11,815.00	89.01	0.17	2,592.99	7,587.99	3,624.88 N	438.24 W	14,544,619.59	1,675,547.71	1.08	3,627.27	
11,905.00	89.43	359.95	2,594.22	7,589.22	3,714.87 N	438.15 W	14,544,709.58	1,675,547.67	0.53	3,717.26	
11,995.00	89.69	359.47	2,594.91	7,589.91	3,804.87 N	438.60 W	14,544,799.58	1,675,547.09	0.61	3,807.26	
12,084.00	89.73	359.58	2,595.36	7,590.36	3,893.86 N	439.34 W	14,544,888.57	1,675,546.22	0.13	3,896.26	
12,174.00	89.85	359.32	2,595.69	7,590.69	3,983.86 N	440.20 W	14,544,978.57	1,675,545.23	0.32	3,986.26	
12,264.00	89.98	359.25	2,595.82	7,590.82	4,073.85 N	441.33 W	14,545,068.56	1,675,543.98	0.16	4,076.25	
12,354.00	89.10	0.12	2,596.54	7,591.54	4,163.85 N	441.82 W	14,545,158.55	1,675,543.36	1.37	4,166.25	
12,443.00	89.48	0.23	2,597.65	7,592.65	4,252.84 N	441.55 W	14,545,247.55	1,675,543.50	0.44	4,255.24	
12,623.00	89.56	358.30	2,599.15	7,594.15	4,432.81 N	443.86 W	14,545,427.51	1,675,540.94	1.07	4,435.22	
12,713.00	90.19	358.34	2,599.35	7,594.35	4,522.77 N	446.50 W	14,545,517.47	1,675,538.17	0.70	4,525.19	
12,803.00	88.17	357.64	2,600.64	7,595.64	4,612.70 N	449.65 W	14,545,607.39	1,675,534.88	2.38	4,615.14	
12,893.00	88.47	358.26	2,603.28	7,598.28	4,702.60 N	452.87 W	14,545,697.29	1,675,531.54	0.77	4,705.06	
12,982.00	90.65	359.59	2,603.96	7,598.96	4,791.58 N	454.54 W	14,545,786.26	1,675,529.74	2.87	4,794.04	
13,072.00	91.41	359.65	2,602.34	7,597.34	4,881.56 N	455.14 W	14,545,876.25	1,675,529.02	0.85	4,884.03	
13,252.00	90.06	358.71	2,600.03	7,595.03	5,061.52 N	457.71 W	14,546,056.20	1,675,526.18	0.91	5,064.00	
13,342.00	90.94	358.69	2,599.25	7,594.25	5,151.49 N	459.75 W	14,546,146.17	1,675,524.01	0.98	5,153.98	
13,431.00	91.28	358.90	2,597.52	7,592.52	5,240.46 N	461.63 W	14,546,235.13	1,675,522.02	0.45	5,242.95	
13,521.00	91.66	359.87	2,595.22	7,590.22	5,330.42 N	462.59 W	14,546,325.10	1,675,520.92	1.16	5,332.92	
13,611.00	89.94	359.85	2,593.96	7,588.96	5,420.41 N	462.81 W	14,546,415.08	1,675,520.57	1.91	5,422.91	
13,701.00	87.21	357.66	2,596.20	7,591.20	5,510.35 N	464.76 W	14,546,505.02	1,675,518.49	3.89	5,512.86	
13,790.00	87.80	357.34	2,600.07	7,595.07	5,599.18 N	468.64 W	14,546,593.84	1,675,514.49	0.75	5,601.71	
13,880.00	88.51	357.21	2,602.97	7,597.97	5,689.03 N	472.92 W	14,546,683.69	1,675,510.08	0.80	5,691.58	
13,970.00	89.81	357.83	2,604.29	7,599.29	5,778.93 N	476.81 W	14,546,773.59	1,675,506.06	1.60	5,781.50	
14,060.00	90.27	358.00	2,604.23	7,599.23	5,868.87 N	480.09 W	14,546,863.52	1,675,502.66	0.54	5,871.46	
14,149.00	90.90	358.07	2,603.32	7,598.32	5,957.81 N	483.14 W	14,546,952.46	1,675,499.48	0.71	5,960.42	
14,239.00	90.27	357.26	2,602.40	7,597.40	6,047.73 N	486.81 W	14,547,042.37	1,675,495.68	1.14	6,050.36	
14,329.00	88.84	357.81	2,603.10	7,598.10	6,137.64 N	490.68 W	14,547,132.28	1,675,491.68	1.70	6,140.29	
14,419.00	88.55	359.56	2,605.15	7,600.15	6,227.59 N	492.74 W	14,547,222.22	1,675,489.49	1.97	6,230.25	
14,509.00	90.11	359.76	2,606.20	7,601.20	6,317.58 N	493.28 W	14,547,312.21	1,675,488.83	1.75	6,320.24	
14,598.00	89.81	0.21	2,606.26	7,601.26	6,406.58 N	493.30 W	14,547,401.21	1,675,488.68	0.61	6,409.24	
14,688.00	91.41	359.96	2,605.30	7,600.30	6,496.57 N	493.16 W	14,547,491.20	1,675,488.68	1.80	6,499.23	
14,716.00	90.97	359.21	2,604.72	7,599.72	6,524.57 N	493.37 W	14,547,519.20	1,675,488.44	3.11	6,527.22	Cross 460 Line 14716.00' MD 7599.72' TVD
14,778.00	89.98	357.55	2,604.21	7,599.21	6,586.54 N	495.12 W	14,547,581.16	1,675,486.60	3.11	6,589.20	

Design Report for WAGNER 2C-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
					Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)			
14,868.00	88.59	356.02	2,605.33	7,600.33	6,676.38 N	500.17 W	14,547,671.00	1,675,481.42	2.30	6,679.07	
14,957.00	90.73	355.67	2,605.86	7,600.86	6,765.14 N	506.61 W	14,547,759.75	1,675,474.85	2.44	6,767.87	
15,047.00	89.64	357.97	2,605.57	7,600.57	6,855.00 N	511.61 W	14,547,849.60	1,675,469.73	2.83	6,857.75	
15,137.00	88.97	2.36	2,606.66	7,601.66	6,944.97 N	511.35 W	14,547,939.57	1,675,469.86	4.93	6,947.72	
15,227.00	89.43	4.89	2,607.92	7,602.92	7,034.77 N	505.66 W	14,548,029.38	1,675,475.42	2.86	7,037.49	
15,316.00	89.73	4.79	2,608.57	7,603.57	7,123.45 N	498.15 W	14,548,118.07	1,675,482.80	0.36	7,126.12	
15,406.00	89.81	3.88	2,608.93	7,603.93	7,213.19 N	491.35 W	14,548,207.82	1,675,489.48	1.02	7,215.82	
15,496.00	90.10	3.17	2,609.01	7,604.01	7,303.02 N	485.81 W	14,548,297.66	1,675,494.88	0.85	7,305.62	
15,586.00	90.15	2.75	2,608.81	7,603.81	7,392.90 N	481.17 W	14,548,387.55	1,675,499.40	0.47	7,395.47	
15,676.00	90.27	2.40	2,608.48	7,603.48	7,482.81 N	477.12 W	14,548,477.46	1,675,503.32	0.41	7,485.36	
15,765.00	90.15	2.12	2,608.15	7,603.15	7,571.74 N	473.61 W	14,548,566.40	1,675,506.70	0.34	7,574.27	
15,855.00	89.90	2.40	2,608.11	7,603.11	7,661.67 N	470.06 W	14,548,656.33	1,675,510.12	0.42	7,664.18	
15,898.00	89.89	2.35	2,608.19	7,603.19	7,704.63 N	468.28 W	14,548,699.30	1,675,511.84	0.12	7,707.13	Last Sperry MWD+IFR+SC Survey @ 15898.00' MD
15,970.00	89.89	2.35	2,608.33	7,603.33	7,776.57 N	465.33 W	14,548,771.24	1,675,514.69	0.00	7,779.05	Straight Line Projection to TD @ 15970.00' MD - LAT: 40.060452° LONG: -104.874562° @15970.00' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
13.00	13.00	0.00	0.00	Tie-On Surface @ 0.00' MD (KB 8')
133.00	133.00	-0.07	0.26	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1,829.00	1,785.89	-274.14	-159.42	Last Total MWD+IFR Survey @ 1816.00' MD (KB 8')
1,829.00	1,785.89	-274.14	-159.42	Tie-On to Last Surface MWD+IFR Survey @ 1829.00' MD
1,920.00	1,872.55	-297.67	-174.17	First Sperry MWD+IFR+SC Survey @ 1920.00' MD
2,169.00	2,110.57	-360.71	-211.12	Enter HardLine Box 2169.00' MD 2110.57' TVD
2,583.00	2,510.49	-455.82	-259.82	Exit HardLine Box 2583.00' MD 2510.49' TVD
7,714.00	7,472.17	-455.88	-410.06	Enter HardLine Box 7714.00' MD 7472.17' TVD
8,156.00	7,580.08	-32.35	-420.27	Landed Curve @ 8156.00' MD 89.90° INC 7580.08' TVD
8,156.00	7,580.08	-32.35	-420.27	LAT: 40.039007° LONG: -104.874401° @8156.00' MD
9,049.00	7,584.65	859.93	-444.86	Cross 460 Line 9049.00' MD 7584.65' TVD
14,716.00	7,599.72	6,524.57	-493.37	Cross 460 Line 14716.00' MD 7599.72' TVD
15,898.00	7,603.19	7,704.63	-468.28	Last Sperry MWD+IFR+SC Survey @ 15898.00' MD
15,970.00	7,603.33	7,776.57	-465.33	Straight Line Projection to TD @ 15970.00' MD
15,970.00	7,603.33	7,776.57	-465.33	LAT: 40.060452° LONG: -104.874562° @15970.00' MD

Design Report for WAGNER 2C-10HZ - Final Surveys

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	359.68	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
13.00	1,829.00	Total MWD+IFR Surface Surveys	APC_ISCWSA REV 2 MWD+IFR1
1,829.00	15,898.00	Sperry MWD+IFR+SC Surveys	APC_ISCWSA REV 2 MWD+IFR1+SC
15,898.00	15,970.00	PTB	APC_BLIND

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (°)	+N/-S (°)	+E/-W (°)	Northing (°)	Easting (°)	Latitude	Longitude
()									

Directional Difficulty Index

Average Dogleg over Survey:	1.78 °/100usft	Maximum Dogleg over Survey:	14.55 °/100usft at 7,707.00 usft
Net Tortousity applicable to Plans:	0.88 °/100usft	Directional Difficulty Index:	6.759

Audit Info

North Reference Sheet for 1N-67W-22 Wagner 7-22HZ Pad (PD 464) - WAGNER 2C-10HZ - Original Wellbore

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 21' @ 4995.00usft (Precision 464). Northing and Easting are relative to WAGNER 2C-10HZ

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N (108 W to 102 W) using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -105.000000°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99960145

Grid Coordinates of Well: 14,540,995.34 usft N, 1,675,991.12 usft E

Geographical Coordinates of Well: 40° 02' 20.75" N, 104° 52' 22.44" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,970.00usft
the Bottom Hole Displacement is 7,790.48usft in the Direction of 356.58° (True).

Magnetic Convergence at surface is: -8.30° (21 November 2017, , BGGM2017)

