

Project: WELD-NAD83-UTMFT13N  
Site: Wagner 8-22HZ Pad - PD 46  
Well: Wagner 27C-10HZ  
Wellbore: Original Wellbore  
Design: Final Surveys



## US ROCKIES WATTENBERG PLANNING

West(-)/East(+) (1200 usft/in)

Sec. 10, T1N R67W

~333' FSL, 924' FEL of Sec 10-T1N-R67W

Lat: 40.059193° Long: -104.870649° @15076.00MD

Straight Line Projection to TD @ 15076.00' MD

~333' FSL, ~881' FEL of Sec 10-T1N-R67W  
Wagner 27C-10HZ PBHL\_A4

WELL DETAILS: Wagner 27C-10HZ

Ground Level: 4971.00

RKB 21' @ 4992.00usft (Precision 464)

Design: Final Surveys (Wagner 27C-10HZ/Original Wellbore)

Created By: Jerry Popp Date: 16:50, November 01 2017

### ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Annotation
	0.22	328.23		0.22	-0.13	
1853.00	17.97	191.03	1810.41	-300.14	-69.50	Last Total MWD+IFR Surface Survey @ 1852.00' MD (KB 20')
1853.00	17.97	191.03	1810.41	-300.14	-69.50	Tie-On to Last Surface Survey @ 1853.00' MD
1917.00	17.80	190.22	1871.32	-319.46	-73.12	First Sperry MWD+IFR+SC Survey @ 1917.00' MD
7973.00	87.96	0.60	7580.22	86.71	-210.91	Landed Curve @ 7973.00' MD 87.96° INC 7580.22' TVD
7973.00	87.96	0.60	7580.22	86.71	-210.91	Lat: 40.039693° Long: -104.870748° @7973.00MD
8451.00	89.52	358.94	7586.04	564.64	-211.77	Exit 460' Rad 8451.00' MD 7586.04' TVD
14543.00	89.73	359.17	7580.01	6654.61	-169.32	Enter 460' Rad 14543.00' MD 7580.01' TVD
14994.00	89.63	358.58	7582.56	7105.43	-181.35	Last Sperry MWD+IFR+SC Survey @ 14994.00' MD
15076.00	89.63	358.58	7583.09	7187.40	-183.38	Straight Line Projection to TD @ 15076.00' MD
15076.00	89.63	358.58	7583.09	7187.40	-183.38	Lat: 40.059193° Long: -104.870649° @15076.00MD

Last Sperry MWD+IFR+SC Survey @ 14994.00' MD

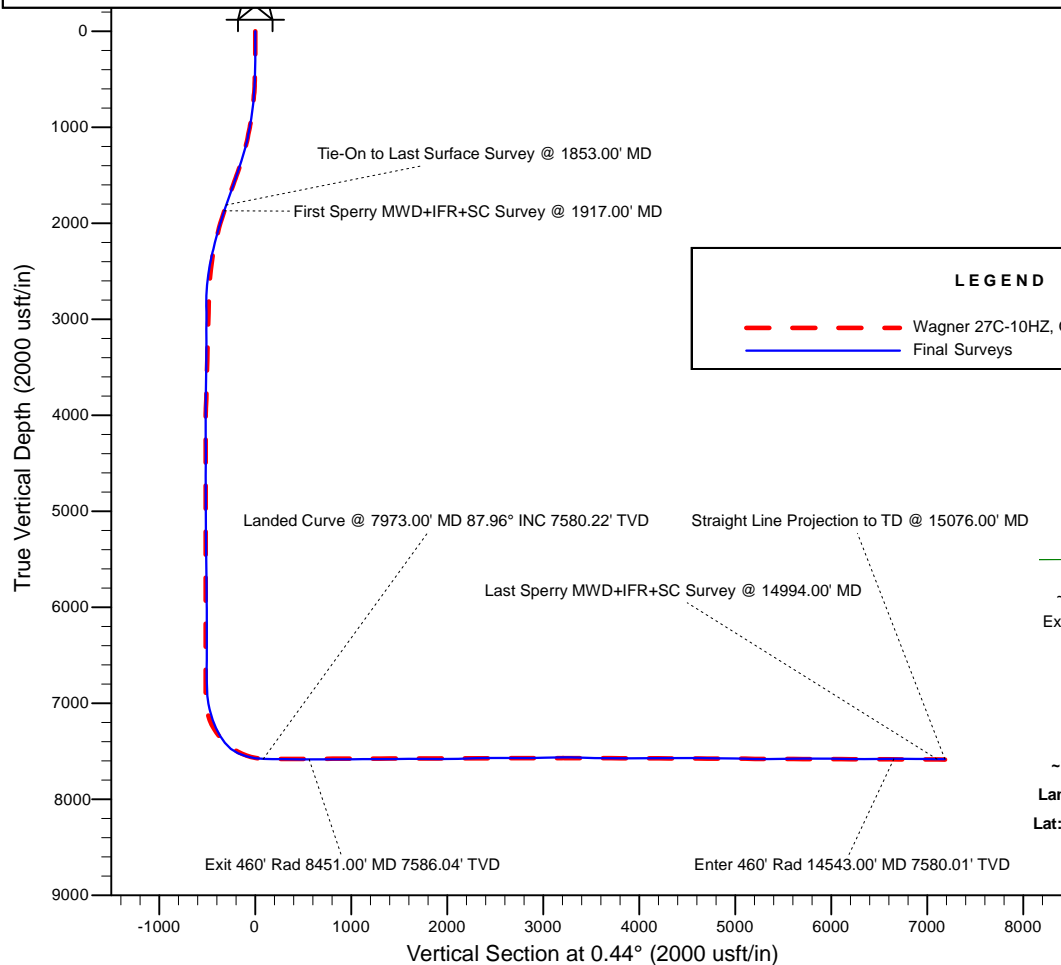
Enter 460' Rad 14543.00' MD 7580.01' TVD

~200' FNL, ~911' FEL of Sec 15-T1N-R67W

Sec. 15, T1N R67W

### LEGEND

--- Wagner 27C-10HZ, Original Wellbore, Rev A4 V0  
— Final Surveys



~1028' FNL, ~972' FEL of Sec 22-T1N-R67W  
Exit 460' Rad 8451.00' MD 7586.04' TVD

~1506' FNL, ~971' FEL of Sec 22-T1N-R67W  
Landed Curve @ 7973.00' MD 87.96° INC 7580.22' TVD  
Lat: 40.039693° Long: -104.870748° @7973.00MD

1594' FNL & 761' FEL Sec 22-T1N-R67W  
Wagner 27C-10HZ\_SHL

First Sperry MWD+IFR+SC Survey @ 1917.00' MD

Sec. 22, T1N R67W

Job# 904337678

Precision 464

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N Wagner 8-22HZ Pad - PD 464

API# 05-123-43474

Wagner 27C-10HZ

Original Wellbore

Design: Final Surveys

## Sperry Drilling Services

### Combo Report

01 November, 2017

Well Coordinates: 40° 02' 22.04" N  
104° 52' 11.98" W

North American Datum 1983  
Zone 13N (108 W to 102 W)  
14,541,127.24 N  
1,676,804.01 E

Ground Level: 4,971.00 usft

Local Coordinate Origin:

Centered on Well Wagner 27C-10HZ

Viewing Datum:

RKB 21' @ 4992.00usft (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 27C-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	-4,992.00	0.00	0.00 N	0.00 E	14,541,127.24	1,676,804.01	0.00	0.00	
133.00	0.22	328.23	-4,859.00	133.00	0.22 N	0.13 W	14,541,127.46	1,676,803.88	0.17	0.22	First Total MWD+IFR Surface Survey @ 132.00' MD (KB 20')
165.00	0.35	28.52	-4,827.00	165.00	0.36 N	0.12 W	14,541,127.60	1,676,803.89	0.96	0.35	
197.00	0.09	278.22	-4,795.00	197.00	0.44 N	0.10 W	14,541,127.69	1,676,803.91	1.22	0.44	
229.00	0.13	25.01	-4,763.00	229.00	0.48 N	0.11 W	14,541,127.72	1,676,803.90	0.56	0.48	
260.00	0.04	46.28	-4,732.00	260.00	0.52 N	0.09 W	14,541,127.76	1,676,803.93	0.30	0.52	
292.00	0.18	278.22	-4,700.00	292.00	0.54 N	0.13 W	14,541,127.78	1,676,803.88	0.65	0.53	
324.00	0.53	256.25	-4,668.00	324.00	0.51 N	0.32 W	14,541,127.75	1,676,803.69	1.15	0.50	
355.00	0.79	233.57	-4,637.00	355.00	0.35 N	0.63 W	14,541,127.59	1,676,803.38	1.17	0.34	
387.00	1.27	236.30	-4,605.01	386.99	0.02 N	1.10 W	14,541,127.26	1,676,802.91	1.51	0.01	
419.00	1.93	226.98	-4,573.02	418.98	0.55 S	1.79 W	14,541,126.69	1,676,802.22	2.21	-0.56	
451.00	2.07	232.60	-4,541.04	450.96	1.26 S	2.65 W	14,541,125.97	1,676,801.37	0.75	-1.28	
483.00	2.11	217.14	-4,509.06	482.94	2.09 S	3.46 W	14,541,125.15	1,676,800.55	1.76	-2.11	
514.00	2.24	207.12	-4,478.08	513.92	3.08 S	4.08 W	14,541,124.16	1,676,799.94	1.29	-3.11	
546.00	2.81	206.59	-4,446.12	545.88	4.34 S	4.72 W	14,541,122.90	1,676,799.30	1.78	-4.37	
577.00	3.30	196.66	-4,415.16	576.84	5.87 S	5.31 W	14,541,121.36	1,676,798.71	2.32	-5.91	
609.00	3.56	197.98	-4,383.22	608.78	7.70 S	5.88 W	14,541,119.53	1,676,798.14	0.85	-7.74	
640.00	4.48	191.38	-4,352.29	639.71	9.80 S	6.42 W	14,541,117.43	1,676,797.61	3.32	-9.85	
672.00	5.19	192.62	-4,320.41	671.59	12.44 S	6.98 W	14,541,114.79	1,676,797.05	2.24	-12.49	
704.00	5.54	190.94	-4,288.55	703.45	15.37 S	7.59 W	14,541,111.86	1,676,796.44	1.20	-15.43	
736.00	6.06	189.36	-4,256.71	735.29	18.55 S	8.16 W	14,541,108.68	1,676,795.88	1.70	-18.61	
767.00	6.33	186.99	-4,225.89	766.11	21.86 S	8.63 W	14,541,105.37	1,676,795.41	1.20	-21.93	
799.00	6.81	188.75	-4,194.10	797.90	25.49 S	9.14 W	14,541,101.74	1,676,794.91	1.63	-25.56	
830.00	7.65	188.75	-4,163.35	828.65	29.34 S	9.73 W	14,541,097.88	1,676,794.32	2.71	-29.42	
862.00	8.26	190.94	-4,131.66	860.34	33.71 S	10.49 W	14,541,093.52	1,676,793.57	2.13	-33.79	
894.00	8.66	195.34	-4,100.01	891.99	38.29 S	11.57 W	14,541,088.94	1,676,792.50	2.38	-38.37	
925.00	9.01	196.83	-4,069.37	922.63	42.86 S	12.89 W	14,541,084.36	1,676,791.19	1.35	-42.96	
957.00	9.67	196.39	-4,037.80	954.20	47.84 S	14.37 W	14,541,079.38	1,676,789.71	2.07	-47.95	
988.00	9.71	195.69	-4,007.24	984.76	52.85 S	15.81 W	14,541,074.37	1,676,788.28	0.40	-52.97	
1,020.00	10.94	197.10	-3,975.76	1,016.24	58.35 S	17.43 W	14,541,068.86	1,676,786.66	3.92	-58.48	
1,052.00	11.56	197.36	-3,944.37	1,047.63	64.32 S	19.28 W	14,541,062.90	1,676,784.82	1.94	-64.46	
1,083.00	11.69	197.62	-3,914.01	1,077.99	70.27 S	21.16 W	14,541,056.94	1,676,782.95	0.45	-70.43	
1,115.00	12.57	196.04	-3,882.72	1,109.28	76.71 S	23.10 W	14,541,050.50	1,676,781.02	2.94	-76.88	
1,147.00	13.45	196.13	-3,851.55	1,140.45	83.63 S	25.10 W	14,541,043.57	1,676,779.03	2.75	-83.82	
1,178.00	14.63	196.83	-3,821.47	1,170.53	90.84 S	27.24 W	14,541,036.36	1,676,776.91	3.85	-91.05	
1,210.00	15.42	197.71	-3,790.57	1,201.43	98.76 S	29.70 W	14,541,028.43	1,676,774.46	2.57	-98.99	
1,242.00	15.34	195.51	-3,759.71	1,232.29	106.89 S	32.13 W	14,541,020.30	1,676,772.04	1.84	-107.14	
1,274.00	15.34	193.67	-3,728.85	1,263.15	115.09 S	34.26 W	14,541,012.11	1,676,769.92	1.52	-115.35	
1,305.00	16.04	194.72	-3,699.01	1,292.99	123.21 S	36.32 W	14,541,003.98	1,676,767.88	2.44	-123.49	
1,337.00	16.57	192.70	-3,668.29	1,323.71	131.94 S	38.44 W	14,540,995.25	1,676,765.76	2.43	-132.23	

## Design Report for Wagner 27C-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 (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
1,368.00	17.36	191.12	-3,638.64	1,353.36	140.79 S	40.31 W	14,540,986.39	1,676,763.91	2.95	-141.10	
1,400.00	18.02	190.68	-3,608.16	1,383.84	150.34 S	42.14 W	14,540,976.84	1,676,762.09	2.10	-150.66	
1,432.00	18.85	191.74	-3,577.80	1,414.20	160.26 S	44.11 W	14,540,966.91	1,676,760.13	2.80	-160.60	
1,463.00	19.34	192.00	-3,548.50	1,443.50	170.19 S	46.20 W	14,540,956.99	1,676,758.06	1.60	-170.54	
1,495.00	20.08	191.21	-3,518.38	1,473.62	180.76 S	48.37 W	14,540,946.41	1,676,755.91	2.46	-181.13	
1,527.00	20.61	190.33	-3,488.38	1,503.62	191.69 S	50.45 W	14,540,935.48	1,676,753.85	1.91	-192.07	
1,558.00	20.79	188.75	-3,459.38	1,532.62	202.49 S	52.26 W	14,540,924.67	1,676,752.05	1.89	-202.89	
1,590.00	20.43	190.59	-3,429.42	1,562.58	213.60 S	54.15 W	14,540,913.56	1,676,750.17	2.32	-214.01	
1,622.00	20.65	190.77	-3,399.46	1,592.54	224.63 S	56.23 W	14,540,902.53	1,676,748.11	0.72	-225.06	
1,652.00	20.96	189.89	-3,371.42	1,620.58	235.11 S	58.14 W	14,540,892.04	1,676,746.21	1.47	-235.55	
1,684.00	20.08	191.12	-3,341.45	1,650.55	246.14 S	60.19 W	14,540,881.01	1,676,744.19	3.06	-246.60	
1,716.00	19.51	190.42	-3,311.34	1,680.66	256.79 S	62.21 W	14,540,870.36	1,676,742.18	1.93	-257.26	
1,748.00	19.16	190.07	-3,281.14	1,710.86	267.21 S	64.10 W	14,540,859.93	1,676,740.31	1.15	-267.70	
1,780.00	18.68	189.27	-3,250.87	1,741.13	277.44 S	65.84 W	14,540,849.70	1,676,738.58	1.70	-277.94	
1,811.00	18.46	188.04	-3,221.48	1,770.52	287.20 S	67.33 W	14,540,839.94	1,676,737.11	1.45	-287.71	
1,853.00	17.97	191.03	-3,181.59	1,810.41	300.14 S	69.50 W	14,540,827.00	1,676,734.95	2.51	-300.67	Last Total MWD+IFR Surface Survey @ 1852.00' MD (KB 20') - Tie-On to Last Surface Survey @ 1853.00' MD
1,917.00	17.80	190.22	-3,120.68	1,871.32	319.46 S	73.12 W	14,540,807.67	1,676,731.36	0.47	-320.01	First Sperry MWD+IFR+SC Survey @ 1917.00' MD
2,006.00	17.23	190.61	-3,035.81	1,956.19	345.81 S	77.96 W	14,540,781.32	1,676,726.56	0.65	-346.39	
2,096.00	16.35	189.83	-2,949.65	2,042.35	371.39 S	82.58 W	14,540,755.73	1,676,721.98	1.01	-372.01	
2,186.00	15.74	190.07	-2,863.15	2,128.85	395.89 S	86.88 W	14,540,731.22	1,676,717.71	0.68	-396.55	
2,275.00	15.60	189.21	-2,777.46	2,214.54	419.59 S	90.90 W	14,540,707.52	1,676,713.72	0.30	-420.27	
2,365.00	13.49	196.21	-2,690.34	2,301.66	441.62 S	95.77 W	14,540,685.48	1,676,708.89	3.05	-442.34	
2,545.00	10.55	200.34	-2,514.30	2,477.70	477.24 S	107.36 W	14,540,649.85	1,676,697.35	1.70	-478.05	
2,634.00	8.31	204.54	-2,426.51	2,565.49	490.73 S	112.86 W	14,540,636.35	1,676,691.86	2.63	-491.58	
2,724.00	5.71	206.52	-2,337.19	2,654.81	500.65 S	117.57 W	14,540,626.42	1,676,687.18	2.90	-501.54	
2,814.00	2.86	227.35	-2,247.45	2,744.55	506.18 S	121.22 W	14,540,620.88	1,676,683.53	3.56	-507.10	
2,904.00	3.56	276.87	-2,157.57	2,834.43	507.37 S	125.64 W	14,540,619.69	1,676,679.11	3.07	-508.32	
2,994.00	3.65	273.08	-2,067.75	2,924.25	506.88 S	131.28 W	14,540,620.17	1,676,673.47	0.28	-507.88	
3,083.00	3.30	267.47	-1,978.91	3,013.09	506.84 S	136.67 W	14,540,620.20	1,676,668.09	0.55	-507.88	
3,173.00	2.64	270.37	-1,889.04	3,102.96	506.94 S	141.33 W	14,540,620.09	1,676,663.42	0.75	-508.01	
3,263.00	2.77	262.60	-1,799.14	3,192.86	507.21 S	145.56 W	14,540,619.82	1,676,659.20	0.43	-508.31	
3,353.00	2.68	266.16	-1,709.24	3,282.76	507.63 S	149.81 W	14,540,619.39	1,676,654.94	0.21	-508.77	
3,442.00	2.11	270.16	-1,620.32	3,371.68	507.77 S	153.53 W	14,540,619.25	1,676,651.23	0.67	-508.93	
3,532.00	2.20	269.54	-1,530.38	3,461.62	507.78 S	156.91 W	14,540,619.24	1,676,647.84	0.10	-508.97	
3,622.00	2.24	269.87	-1,440.45	3,551.55	507.79 S	160.40 W	14,540,619.21	1,676,644.36	0.05	-509.01	
3,712.00	3.30	244.54	-1,350.55	3,641.45	508.91 S	164.50 W	14,540,618.09	1,676,640.26	1.77	-510.16	
3,802.00	3.60	249.62	-1,260.71	3,731.29	511.01 S	169.48 W	14,540,615.99	1,676,635.28	0.48	-512.30	
3,891.00	3.30	252.77	-1,171.87	3,820.13	512.74 S	174.55 W	14,540,614.25	1,676,630.21	0.40	-514.07	
3,981.00	3.21	254.56	-1,082.02	3,909.98	514.18 S	179.45 W	14,540,612.80	1,676,625.31	0.15	-515.54	
4,071.00	2.15	278.64	-992.12	3,999.88	514.60 S	183.55 W	14,540,612.38	1,676,621.21	1.69	-515.99	

## Design Report for Wagner 27C-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)			
4,161.00	2.11	275.79	-902.18	4,089.82	514.18 S	186.87 W	14,540,612.79	1,676,617.90	0.13	-515.60	
4,250.00	0.57	293.54	-813.21	4,178.79	513.83 S	188.90 W	14,540,613.13	1,676,615.86	1.77	-515.27	
4,340.00	0.84	312.33	-723.21	4,268.79	513.21 S	189.80 W	14,540,613.75	1,676,614.96	0.39	-514.65	
4,430.00	0.92	298.63	-633.22	4,358.78	512.42 S	190.92 W	14,540,614.54	1,676,613.84	0.25	-513.87	
4,520.00	0.40	231.83	-543.23	4,448.77	512.27 S	191.80 W	14,540,614.69	1,676,612.96	0.94	-513.73	
4,699.00	0.26	248.02	-364.23	4,627.77	512.81 S	192.67 W	14,540,614.15	1,676,612.09	0.09	-514.27	
4,789.00	0.44	300.03	-274.23	4,717.77	512.71 S	193.16 W	14,540,614.25	1,676,611.60	0.39	-514.18	
4,879.00	0.57	288.10	-184.24	4,807.76	512.40 S	193.89 W	14,540,614.56	1,676,610.87	0.19	-513.87	
4,968.00	0.53	299.67	-95.24	4,896.76	512.06 S	194.66 W	14,540,614.90	1,676,610.10	0.13	-513.54	
5,058.00	0.79	301.78	-5.25	4,986.75	511.52 S	195.55 W	14,540,615.43	1,676,609.21	0.29	-513.01	
5,148.00	1.01	288.34	84.74	5,076.74	510.95 S	196.83 W	14,540,616.01	1,676,607.92	0.34	-512.44	
5,238.00	1.19	286.65	174.73	5,166.73	510.43 S	198.48 W	14,540,616.52	1,676,606.28	0.20	-511.94	
5,417.00	1.19	291.70	353.69	5,345.69	509.21 S	201.99 W	14,540,617.74	1,676,602.77	0.06	-510.75	
5,507.00	0.40	7.02	443.68	5,435.68	508.55 S	202.82 W	14,540,618.39	1,676,601.93	1.28	-510.09	
5,597.00	0.48	345.86	533.68	5,525.68	507.87 S	202.87 W	14,540,619.07	1,676,601.88	0.20	-509.42	
5,687.00	0.79	339.33	623.67	5,615.67	506.93 S	203.18 W	14,540,620.02	1,676,601.57	0.35	-508.47	
5,777.00	0.84	339.92	713.66	5,705.66	505.73 S	203.63 W	14,540,621.22	1,676,601.12	0.06	-507.28	
5,826.00	0.70	327.77	762.66	5,754.66	505.14 S	203.91 W	14,540,621.81	1,676,600.84	0.44	-506.69	
5,908.00	0.70	22.20	844.65	5,836.65	504.25 S	203.99 W	14,540,622.69	1,676,600.76	0.78	-505.80	
5,998.00	0.80	16.33	934.64	5,926.64	503.14 S	203.61 W	14,540,623.81	1,676,601.14	0.14	-504.69	
6,088.00	0.92	21.64	1,024.63	6,016.63	501.86 S	203.16 W	14,540,625.08	1,676,601.58	0.16	-503.41	
6,177.00	0.97	37.06	1,113.62	6,105.62	500.60 S	202.45 W	14,540,626.35	1,676,602.30	0.29	-502.14	
6,267.00	1.01	189.85	1,203.62	6,195.62	500.77 S	202.12 W	14,540,626.17	1,676,602.62	2.14	-502.31	
6,357.00	0.53	187.28	1,293.61	6,285.61	501.97 S	202.31 W	14,540,624.98	1,676,602.43	0.53	-503.51	
6,447.00	0.18	288.60	1,383.61	6,375.61	502.33 S	202.50 W	14,540,624.61	1,676,602.25	0.66	-503.87	
6,537.00	0.13	283.08	1,473.61	6,465.61	502.27 S	202.73 W	14,540,624.68	1,676,602.01	0.06	-503.81	
6,626.00	0.22	137.31	1,562.61	6,554.61	502.37 S	202.71 W	14,540,624.58	1,676,602.03	0.38	-503.91	
6,716.00	0.26	86.60	1,652.61	6,644.61	502.48 S	202.39 W	14,540,624.46	1,676,602.35	0.23	-504.02	
6,806.00	0.62	29.64	1,742.60	6,734.60	502.05 S	201.95 W	14,540,624.90	1,676,602.80	0.58	-503.58	
6,895.00	0.84	41.14	1,831.60	6,823.60	501.14 S	201.28 W	14,540,625.81	1,676,603.46	0.30	-502.67	
6,985.00	4.09	351.38	1,921.51	6,913.51	497.47 S	201.33 W	14,540,629.48	1,676,603.41	4.01	-499.00	
7,075.00	10.33	354.79	2,010.75	7,002.75	486.25 S	202.54 W	14,540,640.70	1,676,602.18	6.95	-487.79	
7,165.00	15.56	0.74	2,098.44	7,090.44	466.13 S	203.12 W	14,540,660.82	1,676,601.57	5.99	-467.67	
7,255.00	19.12	357.65	2,184.34	7,176.34	439.32 S	203.57 W	14,540,687.62	1,676,601.09	4.08	-440.87	
7,344.00	23.30	356.32	2,267.29	7,259.29	407.18 S	205.30 W	14,540,719.77	1,676,599.31	4.73	-408.74	
7,434.00	32.22	357.65	2,346.85	7,338.85	365.36 S	207.43 W	14,540,761.58	1,676,597.12	9.93	-366.94	
7,524.00	37.98	356.21	2,420.45	7,412.45	313.71 S	210.24 W	14,540,813.23	1,676,594.23	6.47	-315.31	
7,614.00	51.03	355.75	2,484.50	7,476.50	250.91 S	214.69 W	14,540,876.01	1,676,589.69	14.50	-252.55	
7,703.00	66.68	359.34	2,530.40	7,522.40	175.06 S	217.74 W	14,540,951.86	1,676,586.53	17.92	-176.73	
7,793.00	72.92	3.17	2,561.47	7,553.47	90.68 S	215.84 W	14,541,036.25	1,676,588.31	8.00	-92.33	
7,883.00	82.42	1.33	2,580.67	7,572.67	2.92 S	212.41 W	14,541,124.01	1,676,591.60	10.74	-4.56	

## Design Report for Wagner 27C-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)			
7,973.00	87.96	0.60	2,588.22	7,580.22	86.71 N	210.91 W	14,541,213.64	1,676,592.98	6.21	85.09	Landed Curve @ 7973.00' MD 87.96° INC 7580.22' TVD - Lat: 40.039693° Long: -104.870748° @7973.00MD
8,067.00	89.76	0.38	2,590.09	7,582.09	180.68 N	210.10 W	14,541,307.62	1,676,593.65	1.93	179.07	
8,161.00	88.70	359.00	2,591.35	7,583.35	274.67 N	210.61 W	14,541,401.60	1,676,593.00	1.85	273.05	
8,256.00	89.71	0.61	2,592.67	7,584.67	369.66 N	210.93 W	14,541,496.59	1,676,592.54	2.00	368.03	
8,444.00	89.49	358.96	2,593.98	7,585.98	557.64 N	211.64 W	14,541,684.58	1,676,591.56	0.89	556.00	
8,451.00	89.52	358.94	2,594.04	7,586.04	564.64 N	211.77 W	14,541,691.57	1,676,591.42	0.44	563.00	Exit 460' Rad 8451.00' MD 7586.04' TVD
8,538.00	89.85	358.75	2,594.52	7,586.52	651.62 N	213.52 W	14,541,778.55	1,676,589.54	0.44	649.97	
8,632.00	90.64	0.71	2,594.12	7,586.12	745.62 N	213.96 W	14,541,872.54	1,676,588.96	2.25	743.95	
8,727.00	90.64	0.22	2,593.06	7,585.06	840.61 N	213.19 W	14,541,967.54	1,676,589.60	0.52	838.95	
8,821.00	90.15	2.17	2,592.41	7,584.41	934.58 N	211.23 W	14,542,061.51	1,676,591.42	2.14	932.93	
8,915.00	90.20	0.85	2,592.12	7,584.12	1,028.54 N	208.75 W	14,542,155.48	1,676,593.76	1.41	1,026.91	
9,009.00	90.55	1.32	2,591.51	7,583.51	1,122.53 N	206.97 W	14,542,249.46	1,676,595.40	0.62	1,120.90	
9,103.00	90.02	0.17	2,591.04	7,583.04	1,216.51 N	205.75 W	14,542,343.45	1,676,596.49	1.35	1,214.90	
9,198.00	89.63	358.74	2,591.33	7,583.33	1,311.51 N	206.65 W	14,542,438.44	1,676,595.44	1.56	1,309.88	
9,292.00	91.03	0.41	2,590.79	7,582.79	1,405.50 N	207.35 W	14,542,532.43	1,676,594.61	2.32	1,403.86	
9,386.00	90.55	358.92	2,589.49	7,581.49	1,499.48 N	207.90 W	14,542,626.42	1,676,593.92	1.67	1,497.84	
9,566.00	90.07	1.02	2,588.52	7,580.52	1,679.47 N	208.00 W	14,542,806.41	1,676,593.57	1.20	1,677.82	
9,655.00	89.89	0.25	2,588.55	7,580.55	1,768.46 N	207.01 W	14,542,895.40	1,676,594.42	0.89	1,766.82	
9,745.00	89.19	1.41	2,589.27	7,581.27	1,858.45 N	205.71 W	14,542,985.39	1,676,595.59	1.51	1,856.82	
9,835.00	90.15	2.87	2,589.79	7,581.79	1,948.38 N	202.34 W	14,543,075.33	1,676,598.82	1.94	1,946.77	
9,925.00	90.11	1.99	2,589.59	7,581.59	2,038.30 N	198.53 W	14,543,165.25	1,676,602.51	0.98	2,036.72	
10,015.00	91.69	2.45	2,588.17	7,580.17	2,128.22 N	195.04 W	14,543,255.17	1,676,605.86	1.83	2,126.66	
10,104.00	92.13	1.91	2,585.21	7,577.21	2,217.10 N	191.66 W	14,543,344.06	1,676,609.12	0.78	2,215.57	
10,194.00	92.04	1.81	2,581.93	7,573.93	2,307.00 N	188.74 W	14,543,433.96	1,676,611.90	0.15	2,305.48	
10,284.00	90.99	0.66	2,579.55	7,571.55	2,396.94 N	186.80 W	14,543,523.91	1,676,613.71	1.73	2,395.44	
10,374.00	90.42	0.17	2,578.45	7,570.45	2,486.93 N	186.15 W	14,543,613.90	1,676,614.23	0.84	2,485.43	
10,463.00	89.32	359.52	2,578.65	7,570.65	2,575.93 N	186.39 W	14,543,702.90	1,676,613.86	1.44	2,574.42	
10,553.00	89.80	358.71	2,579.34	7,571.34	2,665.92 N	187.78 W	14,543,792.88	1,676,612.34	1.05	2,664.39	
10,643.00	89.98	358.16	2,579.51	7,571.51	2,755.88 N	190.24 W	14,543,882.84	1,676,609.75	0.64	2,754.34	
10,733.00	89.89	357.49	2,579.61	7,571.61	2,845.82 N	193.65 W	14,543,972.77	1,676,606.20	0.75	2,844.24	
10,822.00	91.21	359.32	2,578.76	7,570.76	2,934.77 N	196.13 W	14,544,061.72	1,676,603.60	2.54	2,933.18	
10,912.00	91.52	358.69	2,576.62	7,568.62	3,024.73 N	197.69 W	14,544,151.68	1,676,601.90	0.78	3,023.12	
11,002.00	91.21	0.81	2,574.47	7,566.47	3,114.70 N	198.09 W	14,544,241.65	1,676,601.38	2.38	3,113.09	
11,092.00	89.85	1.15	2,573.64	7,565.64	3,204.68 N	196.55 W	14,544,331.63	1,676,602.79	1.56	3,203.08	
11,181.00	89.80	0.47	2,573.91	7,565.91	3,293.67 N	195.29 W	14,544,420.62	1,676,603.92	0.77	3,292.07	
11,271.00	88.79	2.30	2,575.02	7,567.02	3,383.63 N	193.11 W	14,544,510.59	1,676,605.96	2.32	3,382.05	
11,361.00	88.53	2.23	2,577.12	7,569.12	3,473.54 N	189.56 W	14,544,600.50	1,676,609.38	0.30	3,471.98	
11,451.00	88.88	2.40	2,579.16	7,571.16	3,563.44 N	185.92 W	14,544,690.41	1,676,612.89	0.43	3,561.91	
11,541.00	88.53	1.58	2,581.19	7,573.19	3,653.36 N	182.80 W	14,544,780.33	1,676,615.88	0.99	3,651.85	
11,630.00	89.54	1.69	2,582.69	7,574.69	3,742.31 N	180.26 W	14,544,869.29	1,676,618.29	1.14	3,740.82	

## Design Report for Wagner 27C-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)			
11,720.00	89.76	1.30	2,583.24	7,575.24	3,832.28 N	177.91 W	14,544,959.26	1,676,620.51	0.50	3,830.80	
11,810.00	89.58	0.33	2,583.76	7,575.76	3,922.27 N	176.63 W	14,545,049.25	1,676,621.66	1.10	3,920.80	
11,900.00	90.55	1.57	2,583.66	7,575.66	4,012.25 N	175.14 W	14,545,139.23	1,676,623.02	1.75	4,010.79	
11,989.00	90.99	0.75	2,582.46	7,574.46	4,101.23 N	173.34 W	14,545,228.21	1,676,624.69	1.05	4,099.77	
12,079.00	90.55	359.52	2,581.25	7,573.25	4,191.22 N	173.13 W	14,545,318.20	1,676,624.77	1.45	4,189.76	
12,169.00	90.37	358.67	2,580.53	7,572.53	4,281.20 N	174.55 W	14,545,408.18	1,676,623.22	0.97	4,279.73	
12,259.00	90.55	358.24	2,579.81	7,571.81	4,371.17 N	176.97 W	14,545,498.14	1,676,620.66	0.52	4,369.68	
12,348.00	90.15	359.40	2,579.26	7,571.26	4,460.14 N	178.81 W	14,545,587.12	1,676,618.69	1.38	4,458.64	
12,438.00	90.11	359.05	2,579.06	7,571.06	4,550.13 N	180.02 W	14,545,677.11	1,676,617.35	0.39	4,548.62	
12,528.00	88.88	0.06	2,579.85	7,571.85	4,640.13 N	180.72 W	14,545,767.10	1,676,616.52	1.77	4,638.60	
12,618.00	89.19	1.52	2,581.37	7,573.37	4,730.10 N	179.48 W	14,545,857.08	1,676,617.63	1.66	4,728.58	
12,707.00	89.19	2.11	2,582.62	7,574.62	4,819.05 N	176.66 W	14,545,946.03	1,676,620.31	0.66	4,817.55	
12,887.00	89.01	0.86	2,585.45	7,577.45	4,998.96 N	172.00 W	14,546,125.95	1,676,624.72	0.70	4,997.49	
12,977.00	88.53	359.84	2,587.38	7,579.38	5,088.94 N	171.45 W	14,546,215.92	1,676,625.13	1.25	5,087.47	
13,066.00	89.49	1.68	2,588.92	7,580.92	5,177.91 N	170.27 W	14,546,304.90	1,676,626.18	2.33	5,176.45	
13,156.00	90.07	2.07	2,589.27	7,581.27	5,267.86 N	167.32 W	14,546,394.85	1,676,629.00	0.78	5,266.42	
13,246.00	90.15	1.63	2,589.09	7,581.09	5,357.81 N	164.42 W	14,546,484.81	1,676,631.77	0.50	5,356.39	
13,336.00	90.24	0.69	2,588.79	7,580.79	5,447.79 N	162.60 W	14,546,574.79	1,676,633.46	1.05	5,446.39	
13,425.00	90.33	0.16	2,588.35	7,580.35	5,536.79 N	161.94 W	14,546,663.79	1,676,633.99	0.60	5,535.38	
13,515.00	90.77	1.03	2,587.48	7,579.48	5,626.78 N	161.00 W	14,546,753.78	1,676,634.80	1.08	5,625.38	
13,605.00	90.95	0.82	2,586.13	7,578.13	5,716.76 N	159.55 W	14,546,843.76	1,676,636.12	0.31	5,715.36	
13,695.00	89.63	0.01	2,585.68	7,577.68	5,806.75 N	158.90 W	14,546,933.76	1,676,636.64	1.72	5,805.36	
13,784.00	89.54	359.75	2,586.32	7,578.32	5,895.75 N	159.08 W	14,547,022.75	1,676,636.32	0.31	5,894.35	
13,874.00	89.10	358.87	2,587.39	7,579.39	5,985.74 N	160.17 W	14,547,112.74	1,676,635.11	1.09	5,984.33	
14,054.00	89.36	358.98	2,589.81	7,581.81	6,165.69 N	163.54 W	14,547,292.68	1,676,631.47	0.16	6,164.25	
14,143.00	89.45	358.16	2,590.73	7,582.73	6,254.65 N	165.77 W	14,547,381.65	1,676,629.12	0.93	6,253.20	
14,233.00	90.59	359.83	2,590.70	7,582.70	6,344.64 N	167.34 W	14,547,471.63	1,676,627.41	2.25	6,343.16	
14,323.00	90.73	0.05	2,589.66	7,581.66	6,434.63 N	167.44 W	14,547,561.62	1,676,627.18	0.29	6,433.15	
14,413.00	90.86	359.46	2,588.41	7,580.41	6,524.62 N	167.82 W	14,547,651.61	1,676,626.66	0.67	6,523.14	
14,502.00	89.85	359.31	2,587.86	7,579.86	6,613.61 N	168.78 W	14,547,740.60	1,676,625.58	1.15	6,612.12	
14,543.00	89.73	359.17	2,588.01	7,580.01	6,654.61 N	169.32 W	14,547,781.59	1,676,624.98	0.45	6,653.11	Enter 460' Rad 14543.00' MD 7580.01' TVD
14,592.00	89.58	359.01	2,588.31	7,580.31	6,703.60 N	170.10 W	14,547,830.59	1,676,624.13	0.45	6,702.10	
14,682.00	89.27	358.30	2,589.21	7,581.21	6,793.57 N	172.21 W	14,547,920.55	1,676,621.88	0.86	6,792.05	
14,772.00	89.98	358.36	2,589.80	7,581.80	6,883.53 N	174.83 W	14,548,010.51	1,676,619.13	0.79	6,881.98	
14,862.00	90.02	358.21	2,589.80	7,581.80	6,973.49 N	177.53 W	14,548,100.46	1,676,616.31	0.17	6,971.92	
14,951.00	89.45	358.35	2,590.21	7,582.21	7,062.45 N	180.20 W	14,548,189.42	1,676,613.50	0.66	7,060.86	
14,994.00	89.63	358.58	2,590.56	7,582.56	7,105.43 N	181.35 W	14,548,232.40	1,676,612.29	0.68	7,103.83	Last Sperry MWD+IFR+SC Survey @ 14994.00' MD
15,076.00	89.63	358.58	2,591.09	7,583.09	7,187.40 N	183.38 W	14,548,314.37	1,676,610.14	0.00	7,185.78	Straight Line Projection to TD @ 15076.00' MD - Lat: 40.059193° Long: -104.870649° @15076.00MD

## Design Report for Wagner 27C-10HZ - Final Surveys

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
133.00	133.00	0.22	-0.13	First Total MWD+IFR Surface Survey @ 132.00' MD (KB 20')
1,853.00	1,810.41	-300.14	-69.50	Last Total MWD+IFR Surface Survey @ 1852.00' MD (KB 20')
1,853.00	1,810.41	-300.14	-69.50	Tie-On to Last Surface Survey @ 1853.00' MD
1,917.00	1,871.32	-319.46	-73.12	First Sperry MWD+IFR+SC Survey @ 1917.00' MD
7,973.00	7,580.22	86.71	-210.91	Landed Curve @ 7973.00' MD 87.96° INC 7580.22' TVD
7,973.00	7,580.22	86.71	-210.91	Lat: 40.039693° Long: -104.870748° @7973.00MD
8,451.00	7,586.04	564.64	-211.77	Exit 460' Rad 8451.00' MD 7586.04' TVD
14,543.00	7,580.01	6,654.61	-169.32	Enter 460' Rad 14543.00' MD 7580.01' TVD
14,994.00	7,582.56	7,105.43	-181.35	Last Sperry MWD+IFR+SC Survey @ 14994.00' MD
15,076.00	7,583.09	7,187.40	-183.38	Straight Line Projection to TD @ 15076.00' MD
15,076.00	7,583.09	7,187.40	-183.38	Lat: 40.059193° Long: -104.870649° @15076.00MD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.44	Slot	0.00	0.00	0.00

### Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
133.00	1,853.00	Total MWD+IFR Surface Surveys	APC_ISCWSA REV 2 MWD+IFR1
1,853.00	14,994.00	Sperry MWD+IFR+SC Surveys	APC_ISCWSA REV 2 MWD+IFR1+SC
15,076.00	15,076.00	PTB	APC_BLIND



## Design Report for Wagner 27C-10HZ - Final Surveys

### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Wagner 27C-10HZ_SHL ()	0.00	0.00	0.00	0.00	0.00	14,541,127.24	1,676,804.01	40.039455	-104.869994
- actual wellpath hits target center									
- Point									
Wagner 27C-10HZ PBHL_A4 (334' FSL 881' FEL Sec 10 NEW)	0.00	0.00	7,588.00	7,188.13	-141.00	14,548,315.15	1,676,652.52	40.059195	-104.870498
- actual wellpath misses target center by 42.67usft at 15075.70usft MD (7583.09 TVD, 7187.11 N, -183.37 E)									
- Point									

### Directional Difficulty Index

Average Dogleg over Survey:	1.58 °/100usft	Maximum Dogleg over Survey:	17.92 °/100usft at 7,703.00 usft
Net Tortousity applicable to Plans:	0.63 °/100usft	Directional Difficulty Index:	6.595

### Audit Info

## North Reference Sheet for Wagner 8-22HZ Pad - PD 464 - Wagner 27C-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' @ 4992.00usft (Precision 464). Northing and Easting are relative to Wagner 27C-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: 0.99960151

Grid Coordinates of Well: 14,541,127.24 usft N, 1,676,804.01 usft E

Geographical Coordinates of Well: 40° 02' 22.04" N, 104° 52' 11.98" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,076.00usft  
the Bottom Hole Displacement is 7,189.74usft in the Direction of 358.54° ( True).

Magnetic Convergence at surface is: -8.30° (25 October 2017, , BGGM2017)

