

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



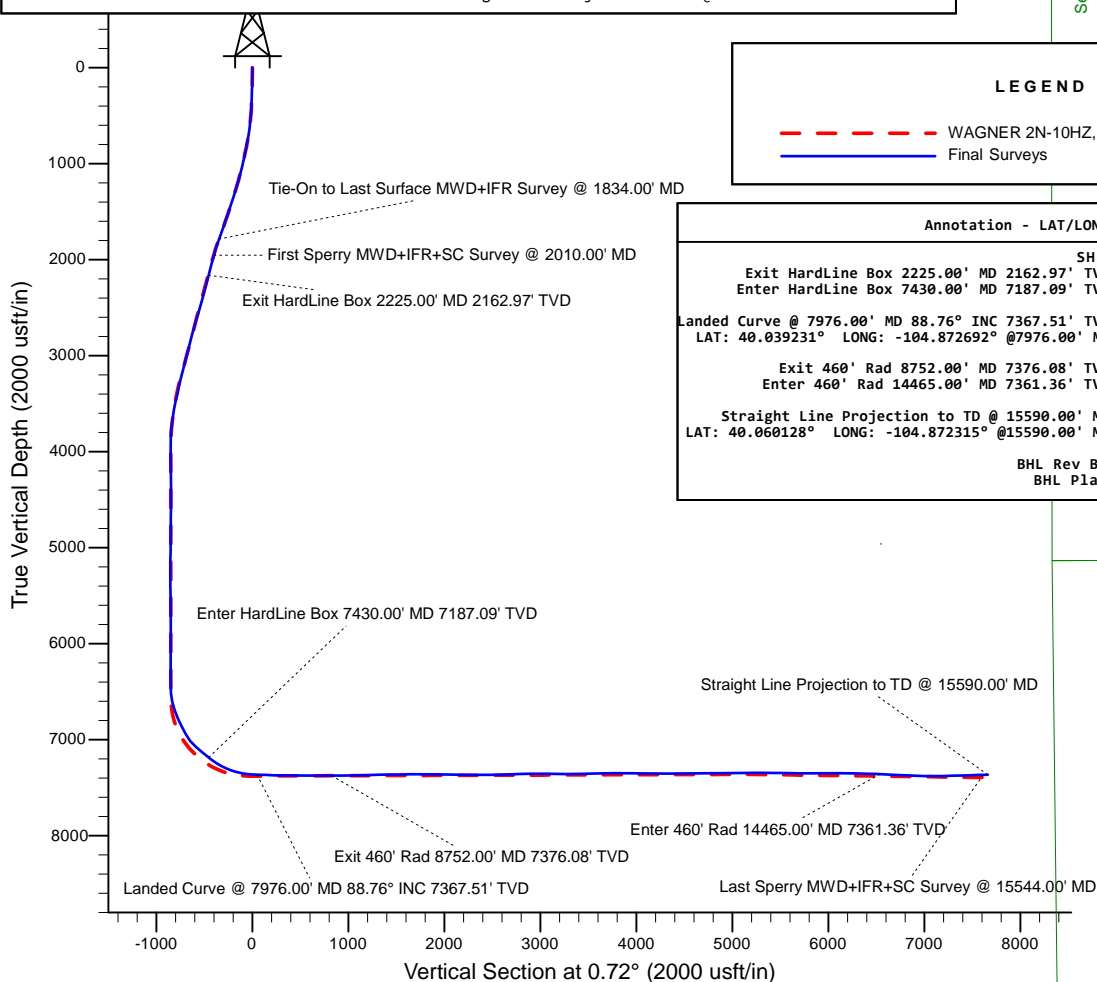
HALLIBURTON
Sperry Drilling

US ROCKIES WATTENBERG PLANNING

WELL DETAILS: WAGNER 2N-10HZ	Design: Final Surveys (WAGNER 2N-10HZ/Original Wellbore)
Ground Level: 4974.00 RKB 21' @ 4995.00usft (Precision 464)	Created By: Jerry Popp Date: 15:30, December 05 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 (KB 8')
133.00	0.57	209.23	133.00	-0.52	-0.29	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1834.00	19.34	175.21	1787.26	-346.92	19.78	Last Total MWD+IFR Survey @ 1821.00' MD (KB 8')
1834.00	19.34	175.21	1787.26	-346.92	19.78	Tie-On to Last Surface MWD+IFR Survey @ 1834.00' MD
2010.00	15.67	174.39	1955.08	-399.64	24.54	First Sperry MWD+IFR+SC Survey @ 2010.00' MD
2225.00	14.81	180.62	2162.97	-454.40	23.97	Exit HardLine Box 2225.00' MD 2162.97' TVD
7430.00	51.24	2.97	7187.09	-454.11	23.53	Enter HardLine Box 7430.00' MD 7187.09' TVD
7976.00	88.76	2.08	7367.51	49.42	42.76	Landed Curve @ 7976.00' MD 88.76° INC 7367.51' TVD
7976.00	88.76	2.08	7367.51	49.42	42.76	LAT: 40.039231° LONG: -104.872692° @7976.00' MD
8752.00	89.97	358.26	7376.08	825.10	53.97	Exit 460' Rad 8752.00' MD 7376.08' TVD
14465.00	88.01	359.28	7361.36	6535.24	114.27	Enter 460' Rad 14465.00' MD 7361.36' TVD
15544.00	92.16	0.77	7368.11	7612.91	147.68	Last Sperry MWD+IFR+SC Survey @ 15544.00' MD
15590.00	92.16	0.77	7366.38	7658.88	148.30	LAT: 40.060128° LONG: -104.872315° @15590.00' MD
15590.00	92.16	0.77	7366.38	7658.88	148.30	Straight Line Projection to TD @ 15590.00' MD

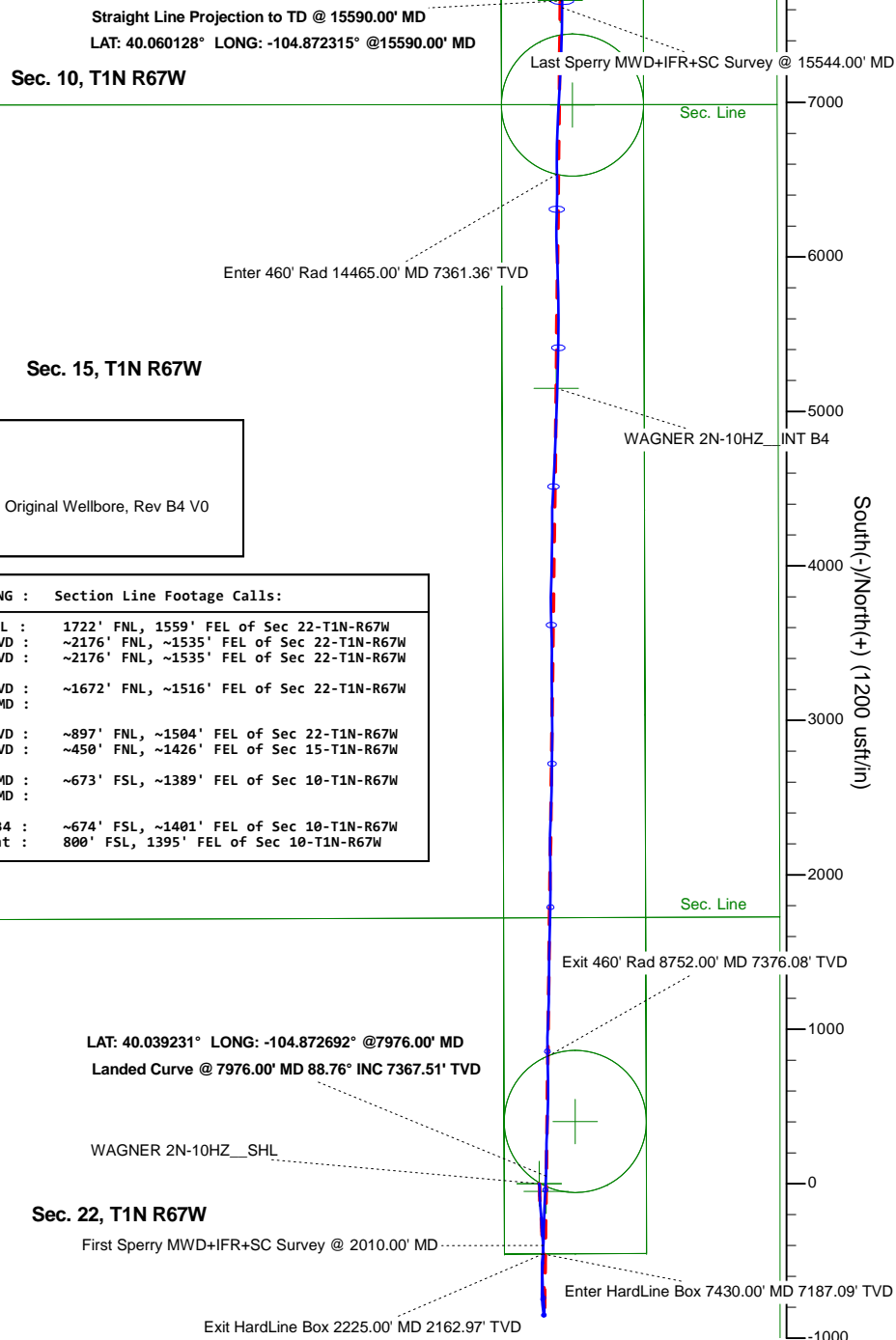


LEGEND

--- WAGNER 2N-10HZ, Original Wellbore, Rev B4 V0
— Final Surveys

Annotation - LAT/LONG : Section Line Footage Calls:

Exit HardLine Box 2225.00' MD 2162.97' TVD :	SHL :	1722' FNL, 1559' FEL of Sec 22-T1N-R67W
Enter HardLine Box 7430.00' MD 7187.09' TVD :	~2176' FNL, ~1535' FEL of Sec 22-T1N-R67W	
Landed Curve @ 7976.00' MD 88.76° INC 7367.51' TVD :	~2176' FNL, ~1535' FEL of Sec 22-T1N-R67W	
LAT: 40.039231° LONG: -104.872692° @7976.00' MD :	~1672' FNL, ~1516' FEL of Sec 22-T1N-R67W	
Exit 460' Rad 8752.00' MD 7376.08' TVD :	~897' FNL, ~1504' FEL of Sec 22-T1N-R67W	
Enter 460' Rad 14465.00' MD 7361.36' TVD :	~450' FNL, ~1426' FEL of Sec 15-T1N-R67W	
Straight Line Projection to TD @ 15590.00' MD :	~673' FSL, ~1389' FEL of Sec 10-T1N-R67W	
LAT: 40.060128° LONG: -104.872315° @15590.00' MD :		
BHL Rev B4 :	~674' FSL, ~1401' FEL of Sec 10-T1N-R67W	
BHL Plat :	800' FSL, 1395' FEL of Sec 10-T1N-R67W	



Job# 904430236

Precision 464

US ROCKIES WATTENBERG PLANNING

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

API# 05-123-43471

WAGNER 2N-10HZ

Original Wellbore

Design: Final Surveys

Sperry Drilling Services

Combo Report

05 December, 2017

Well Coordinates: 40° 02' 20.74" N
104° 52' 22.24" W

North American Datum 1983
Zone 13N (108 W to 102 W)
14,540,995.00 N
1,676,006.23 E

Ground Level: 4,974.00 usft

Local Coordinate Origin:

Centered on Well WAGNER 2N-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 2N-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	14,540,995.00	1,676,006.23	0.00	0.00	
13.00	0.00	0.00	-4,982.00	13.00	0.00 N	0.00 E	14,540,995.00	1,676,006.23	0.00	0.00	Tie-On @ Surface (KB 8')
133.00	0.57	209.23	-4,862.00	133.00	0.52 S	0.29 W	14,540,994.48	1,676,005.94	0.47	-0.52	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
165.00	0.66	192.09	-4,830.00	165.00	0.84 S	0.41 W	14,540,994.16	1,676,005.83	0.64	-0.85	
197.00	1.45	168.09	-4,798.01	196.99	1.42 S	0.36 W	14,540,993.58	1,676,005.87	2.78	-1.42	
228.00	1.98	172.05	-4,767.02	227.98	2.33 S	0.21 W	14,540,992.67	1,676,006.03	1.75	-2.33	
260.00	2.15	170.64	-4,735.04	259.96	3.47 S	0.03 W	14,540,991.53	1,676,006.20	0.55	-3.47	
292.00	2.24	170.91	-4,703.07	291.93	4.68 S	0.16 E	14,540,990.32	1,676,006.40	0.28	-4.68	
323.00	2.42	170.38	-4,672.09	322.91	5.92 S	0.37 E	14,540,989.07	1,676,006.61	0.58	-5.92	
355.00	2.02	169.24	-4,640.12	354.88	7.14 S	0.59 E	14,540,987.85	1,676,006.83	1.26	-7.14	
387.00	2.64	169.41	-4,608.14	386.86	8.42 S	0.83 E	14,540,986.58	1,676,007.07	1.94	-8.41	
419.00	2.94	174.68	-4,576.18	418.82	9.96 S	1.04 E	14,540,985.04	1,676,007.29	1.23	-9.95	
450.00	3.74	178.20	-4,545.23	449.77	11.77 S	1.14 E	14,540,983.23	1,676,007.39	2.66	-11.75	
482.00	4.13	179.52	-4,513.31	481.69	13.96 S	1.19 E	14,540,981.04	1,676,007.44	1.25	-13.95	
514.00	5.01	175.48	-4,481.41	513.59	16.51 S	1.31 E	14,540,978.49	1,676,007.56	2.93	-16.49	
546.00	4.92	177.50	-4,449.53	545.47	19.27 S	1.48 E	14,540,975.73	1,676,007.74	0.61	-19.25	
577.00	5.93	174.42	-4,418.67	576.33	22.19 S	1.69 E	14,540,972.81	1,676,007.95	3.39	-22.17	
608.00	6.64	177.67	-4,387.86	607.14	25.58 S	1.92 E	14,540,969.42	1,676,008.19	2.56	-25.55	
640.00	7.38	177.85	-4,356.10	638.90	29.48 S	2.07 E	14,540,965.52	1,676,008.35	2.31	-29.45	
672.00	8.53	177.85	-4,324.41	670.59	33.90 S	2.24 E	14,540,961.10	1,676,008.52	3.59	-33.87	
703.00	9.54	179.52	-4,293.79	701.21	38.77 S	2.34 E	14,540,956.23	1,676,008.63	3.37	-38.74	
767.00	10.68	179.87	-4,230.79	764.21	50.01 S	2.40 E	14,540,945.00	1,676,008.71	1.78	-49.97	
798.00	10.59	179.61	-4,200.32	794.68	55.73 S	2.43 E	14,540,939.27	1,676,008.74	0.33	-55.69	
830.00	11.03	180.75	-4,168.89	826.11	61.73 S	2.41 E	14,540,933.27	1,676,008.73	1.53	-61.69	
862.00	11.34	178.64	-4,137.49	857.51	67.93 S	2.44 E	14,540,927.07	1,676,008.77	1.60	-67.90	
893.00	11.56	179.87	-4,107.11	887.89	74.09 S	2.52 E	14,540,920.91	1,676,008.86	1.06	-74.05	
925.00	12.08	178.82	-4,075.79	919.21	80.64 S	2.60 E	14,540,914.36	1,676,008.95	1.76	-80.60	
957.00	12.30	177.23	-4,044.51	950.49	87.39 S	2.83 E	14,540,907.61	1,676,009.19	1.25	-87.35	
988.00	13.49	176.97	-4,014.29	980.71	94.30 S	3.18 E	14,540,900.70	1,676,009.55	3.84	-94.25	
1,020.00	14.24	178.02	-3,983.23	1,011.77	101.96 S	3.52 E	14,540,893.04	1,676,009.90	2.47	-101.91	
1,051.00	14.24	176.88	-3,953.18	1,041.82	109.58 S	3.86 E	14,540,885.42	1,676,010.25	0.90	-109.52	
1,083.00	14.02	174.77	-3,922.15	1,072.85	117.37 S	4.42 E	14,540,877.63	1,676,010.82	1.75	-117.31	
1,114.00	13.84	174.95	-3,892.06	1,102.94	124.80 S	5.09 E	14,540,870.20	1,676,011.50	0.60	-124.73	
1,146.00	14.59	175.48	-3,861.04	1,133.96	132.63 S	5.75 E	14,540,862.37	1,676,012.17	2.38	-132.55	
1,178.00	15.03	174.60	-3,830.10	1,164.90	140.78 S	6.45 E	14,540,854.22	1,676,012.89	1.54	-140.69	
1,210.00	16.39	175.74	-3,799.30	1,195.70	149.42 S	7.18 E	14,540,845.59	1,676,013.63	4.36	-149.31	
1,241.00	16.79	175.74	-3,769.59	1,225.41	158.24 S	7.84 E	14,540,836.77	1,676,014.30	1.29	-158.13	
1,273.00	17.40	175.65	-3,739.00	1,256.00	167.62 S	8.54 E	14,540,827.39	1,676,015.02	1.91	-167.50	
1,305.00	16.70	175.74	-3,708.41	1,286.59	176.98 S	9.25 E	14,540,818.03	1,676,015.73	2.19	-176.85	
1,336.00	16.17	175.65	-3,678.67	1,316.33	185.72 S	9.91 E	14,540,809.29	1,676,016.41	1.71	-185.59	
1,368.00	16.13	174.07	-3,647.94	1,347.06	194.59 S	10.70 E	14,540,800.42	1,676,017.21	1.38	-194.44	

Design Report for WAGNER 2N-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)			
1,400.00	17.23	174.07	-3,617.28	1,377.72	203.72 S	11.65 E	14,540,791.29	1,676,018.18	3.44	-203.56	
1,431.00	17.40	175.21	-3,587.69	1,407.31	212.91 S	12.51 E	14,540,782.11	1,676,019.05	1.22	-212.74	
1,463.00	18.24	177.23	-3,557.22	1,437.78	222.68 S	13.16 E	14,540,772.34	1,676,019.71	3.26	-222.50	
1,494.00	18.72	178.29	-3,527.82	1,467.18	232.50 S	13.54 E	14,540,762.52	1,676,020.10	1.89	-232.31	
1,558.00	19.07	177.76	-3,467.27	1,527.73	253.21 S	14.25 E	14,540,741.81	1,676,020.85	0.61	-253.01	
1,590.00	19.64	178.02	-3,437.08	1,557.92	263.81 S	14.64 E	14,540,731.21	1,676,021.25	1.80	-263.61	
1,621.00	19.73	177.59	-3,407.89	1,587.11	274.24 S	15.04 E	14,540,720.77	1,676,021.67	0.55	-274.03	
1,652.00	20.04	177.15	-3,378.74	1,616.26	284.78 S	15.53 E	14,540,710.24	1,676,022.17	1.11	-284.56	
1,684.00	20.17	176.18	-3,348.69	1,646.31	295.76 S	16.17 E	14,540,699.26	1,676,022.82	1.12	-295.53	
1,715.00	20.83	176.00	-3,319.65	1,675.35	306.59 S	16.91 E	14,540,688.43	1,676,023.58	2.14	-306.35	
1,747.00	20.52	176.53	-3,289.71	1,705.29	317.86 S	17.64 E	14,540,677.16	1,676,024.33	1.13	-317.62	
1,779.00	19.64	176.27	-3,259.66	1,735.34	328.83 S	18.33 E	14,540,666.20	1,676,025.04	2.76	-328.57	
1,811.00	19.03	175.04	-3,229.46	1,765.54	339.39 S	19.14 E	14,540,655.63	1,676,025.85	2.29	-339.12	
1,834.00	19.34	175.21	-3,207.74	1,787.26	346.92 S	19.78 E	14,540,648.10	1,676,026.51	1.37	-346.65	Last Total MWD+IFR Survey @ 1821.00' MD (KB 8') - Tie-On to Last Surface MWD+IFR Survey @ 1834.00' MD
2,010.00	15.67	174.39	-3,039.92	1,955.08	399.64 S	24.54 E	14,540,595.40	1,676,031.34	2.09	-399.30	First Sperry MWD+IFR+SC Survey @ 2010.00' MD
2,100.00	14.04	183.39	-2,952.92	2,042.08	422.64 S	25.08 E	14,540,572.40	1,676,031.92	3.13	-422.29	
2,190.00	15.21	181.44	-2,865.84	2,129.16	445.34 S	24.14 E	14,540,549.70	1,676,031.01	1.41	-445.00	
2,225.00	14.81	180.62	-2,832.03	2,162.97	454.40 S	23.97 E	14,540,540.63	1,676,030.85	1.29	-454.06	Exit HardLine Box 2225.00' MD 2162.97' TVD
2,280.00	14.19	179.25	-2,778.78	2,216.22	468.17 S	23.98 E	14,540,526.86	1,676,030.89	1.29	-467.83	
2,369.00	15.41	186.18	-2,692.73	2,302.27	490.84 S	22.85 E	14,540,504.19	1,676,029.79	2.41	-490.51	
2,459.00	15.25	180.13	-2,605.93	2,389.07	514.56 S	21.54 E	14,540,480.47	1,676,028.51	1.79	-514.25	
2,549.00	14.83	181.54	-2,519.01	2,475.99	537.91 S	21.20 E	14,540,457.12	1,676,028.20	0.62	-537.60	
2,639.00	17.95	182.98	-2,432.68	2,562.32	563.28 S	20.17 E	14,540,431.74	1,676,027.21	3.50	-562.98	
2,729.00	16.69	181.76	-2,346.76	2,648.24	590.05 S	19.05 E	14,540,404.97	1,676,026.13	1.46	-589.77	
2,818.00	15.07	180.20	-2,261.16	2,733.84	614.40 S	18.62 E	14,540,380.63	1,676,025.73	1.88	-614.11	
2,908.00	13.87	179.89	-2,174.02	2,820.98	636.89 S	18.60 E	14,540,358.14	1,676,025.74	1.34	-636.60	
2,998.00	14.38	180.67	-2,086.74	2,908.26	658.85 S	18.49 E	14,540,336.18	1,676,025.67	0.60	-658.56	
3,088.00	15.54	181.98	-1,999.79	2,995.21	682.07 S	17.94 E	14,540,312.95	1,676,025.15	1.34	-681.79	
3,177.00	14.40	181.33	-1,913.81	3,081.19	705.05 S	17.28 E	14,540,289.97	1,676,024.52	1.29	-704.78	
3,267.00	14.78	179.23	-1,826.71	3,168.29	727.72 S	17.17 E	14,540,267.30	1,676,024.44	0.72	-727.45	
3,357.00	13.13	178.37	-1,739.37	3,255.63	749.42 S	17.62 E	14,540,245.61	1,676,024.92	1.85	-749.14	
3,447.00	11.78	175.63	-1,651.49	3,343.51	768.80 S	18.61 E	14,540,226.23	1,676,025.94	1.64	-768.50	
3,536.00	13.28	171.27	-1,564.61	3,430.39	787.96 S	20.85 E	14,540,207.07	1,676,028.21	1.99	-787.64	
3,626.00	11.25	171.19	-1,476.67	3,518.33	806.86 S	23.76 E	14,540,188.18	1,676,031.15	2.26	-806.49	
3,716.00	9.06	172.90	-1,388.09	3,606.91	822.56 S	25.98 E	14,540,172.47	1,676,033.39	2.46	-822.17	
3,806.00	7.49	176.50	-1,299.02	3,695.98	835.45 S	27.22 E	14,540,159.59	1,676,034.64	1.84	-835.04	
3,896.00	5.60	153.29	-1,209.60	3,785.40	845.23 S	29.55 E	14,540,149.81	1,676,036.99	3.57	-844.79	
3,985.00	2.17	177.56	-1,120.81	3,874.19	850.80 S	31.58 E	14,540,144.25	1,676,039.02	4.19	-850.33	
4,075.00	0.28	20.34	-1,030.83	3,964.17	852.29 S	31.72 E	14,540,142.75	1,676,039.17	2.70	-851.83	
4,164.00	0.70	352.27	-941.84	4,053.16	851.55 S	31.73 E	14,540,143.49	1,676,039.18	0.53	-851.08	

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

Measured		True	TVD below	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Comments
Depth (usft)	Inclination (°)	Azimuth (°)	System (usft)	Depth (usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	Rate (°/100usft)	Section (usft)	
4,254.00	1.18	359.27	-851.85	4,143.15	850.08 S	31.64 E	14,540,144.96	1,676,039.09	0.55	-849.61	
4,344.00	1.45	343.60	-761.87	4,233.13	848.06 S	31.31 E	14,540,146.98	1,676,038.75	0.50	-847.60	
4,434.00	1.47	324.15	-671.90	4,323.10	846.03 S	30.31 E	14,540,149.01	1,676,037.75	0.55	-845.58	
4,523.00	1.16	214.85	-582.91	4,412.09	845.85 S	29.13 E	14,540,149.19	1,676,036.57	2.42	-845.41	
4,613.00	1.12	192.92	-492.93	4,502.07	847.45 S	28.41 E	14,540,147.59	1,676,035.85	0.48	-847.03	
4,703.00	0.51	228.11	-402.94	4,592.06	848.58 S	27.91 E	14,540,146.46	1,676,035.36	0.85	-848.16	
4,793.00	0.66	265.44	-312.94	4,682.06	848.88 S	27.10 E	14,540,146.15	1,676,034.54	0.44	-848.48	
4,883.00	0.94	250.76	-222.95	4,772.05	849.17 S	25.89 E	14,540,145.87	1,676,033.33	0.38	-848.78	
4,972.00	0.69	133.76	-133.96	4,861.04	849.78 S	25.58 E	14,540,145.26	1,676,033.03	1.57	-849.39	
5,062.00	0.44	200.75	-43.96	4,951.04	850.48 S	25.85 E	14,540,144.56	1,676,033.30	0.73	-850.09	
5,152.00	0.78	209.12	46.03	5,041.03	851.34 S	25.43 E	14,540,143.70	1,676,032.88	0.39	-850.95	
5,242.00	0.96	204.39	136.02	5,131.02	852.56 S	24.82 E	14,540,142.48	1,676,032.27	0.22	-852.18	
5,331.00	1.29	90.41	225.01	5,220.01	853.24 S	25.52 E	14,540,141.79	1,676,032.97	2.13	-852.86	
5,421.00	0.78	71.38	315.00	5,310.00	853.06 S	27.11 E	14,540,141.98	1,676,034.56	0.68	-852.65	
5,511.00	0.63	43.65	404.99	5,399.99	852.50 S	28.03 E	14,540,142.54	1,676,035.48	0.41	-852.08	
5,601.00	0.71	21.40	494.99	5,489.99	851.63 S	28.58 E	14,540,143.41	1,676,036.03	0.30	-851.20	
5,690.00	0.80	339.60	583.98	5,578.98	850.53 S	28.56 E	14,540,144.51	1,676,036.01	0.61	-850.10	
5,780.00	0.96	333.72	673.97	5,668.97	849.26 S	28.01 E	14,540,145.77	1,676,035.45	0.20	-848.85	
5,870.00	1.17	117.32	763.96	5,758.96	849.01 S	28.49 E	14,540,146.03	1,676,035.94	2.25	-848.58	
5,960.00	0.98	125.77	853.95	5,848.95	849.88 S	29.93 E	14,540,145.16	1,676,037.38	0.27	-849.44	
6,091.00	0.65	114.60	984.93	5,979.93	850.85 S	31.52 E	14,540,144.20	1,676,038.97	0.28	-850.38	
6,181.00	0.61	98.89	1,074.93	6,069.93	851.13 S	32.45 E	14,540,143.91	1,676,039.90	0.20	-850.66	
6,271.00	0.18	15.47	1,164.93	6,159.93	851.07 S	32.97 E	14,540,143.98	1,676,040.41	0.68	-850.59	
6,360.00	0.53	322.56	1,253.92	6,248.92	850.61 S	32.75 E	14,540,144.44	1,676,040.20	0.50	-850.13	
6,450.00	0.88	324.58	1,343.92	6,338.92	849.71 S	32.10 E	14,540,145.33	1,676,039.55	0.39	-849.24	
6,540.00	0.74	342.15	1,433.91	6,428.91	848.60 S	31.52 E	14,540,146.44	1,676,038.97	0.31	-848.14	
6,630.00	2.02	7.92	1,523.88	6,518.88	846.47 S	31.56 E	14,540,148.57	1,676,039.00	1.55	-846.01	
6,719.00	13.72	3.89	1,611.89	6,606.89	834.35 S	32.50 E	14,540,160.70	1,676,039.92	13.15	-833.87	
6,809.00	18.72	358.15	1,698.29	6,693.29	809.25 S	32.75 E	14,540,185.80	1,676,040.14	5.83	-808.77	
6,899.00	23.41	352.84	1,782.26	6,777.26	777.05 S	30.06 E	14,540,217.99	1,676,037.40	5.62	-776.61	
6,988.00	26.34	354.25	1,862.99	6,857.99	739.86 S	25.87 E	14,540,255.18	1,676,033.16	3.36	-739.47	
7,078.00	29.35	357.56	1,942.57	6,937.57	697.94 S	22.93 E	14,540,297.09	1,676,030.16	3.76	-697.60	
7,168.00	37.25	357.69	2,017.73	7,012.73	648.61 S	20.89 E	14,540,346.42	1,676,028.05	8.78	-648.30	
7,258.00	49.78	357.81	2,082.87	7,077.87	586.81 S	18.47 E	14,540,408.21	1,676,025.55	13.92	-586.53	
7,347.00	50.70	4.03	2,139.82	7,134.82	518.47 S	19.60 E	14,540,476.56	1,676,026.57	5.47	-518.18	
7,430.00	51.24	2.97	2,192.09	7,187.09	454.11 S	23.53 E	14,540,540.92	1,676,030.41	1.19	-453.78	Enter HardLine Box 7430.00' MD 7187.09' TVD
7,437.00	51.29	2.88	2,196.47	7,191.47	448.66 S	23.81 E	14,540,546.37	1,676,030.68	1.19	-448.32	
7,527.00	57.04	2.36	2,249.14	7,244.14	375.80 S	27.13 E	14,540,619.24	1,676,033.90	6.41	-375.43	
7,617.00	63.78	0.43	2,293.55	7,288.55	297.61 S	28.99 E	14,540,697.43	1,676,035.65	7.72	-297.22	
7,706.00	71.06	1.91	2,327.71	7,322.71	215.51 S	30.69 E	14,540,779.53	1,676,037.24	8.32	-215.11	
7,796.00	77.98	3.21	2,351.71	7,346.71	128.92 S	34.58 E	14,540,866.13	1,676,041.00	7.81	-128.47	

Design Report for WAGNER 2N-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)			
7,886.00	83.34	2.61	2,366.32	7,361.32	40.26 S	39.09 E	14,540,954.80	1,676,045.38	5.99	-39.76	
7,976.00	88.76	2.08	2,372.51	7,367.51	49.42 N	42.76 E	14,541,044.48	1,676,048.92	6.05	49.95	Landed Curve @ 7976.00' MD 88.76° INC 7367.51'
											TVD - LAT: 40.039231° LONG: -104.872692°
											@7976.00' MD
8,065.00	88.51	1.15	2,374.63	7,369.63	138.36 N	45.26 E	14,541,133.42	1,676,051.30	1.08	138.92	
8,155.00	88.04	0.43	2,377.34	7,372.34	228.31 N	46.50 E	14,541,223.37	1,676,052.41	0.96	228.87	
8,245.00	89.73	2.50	2,379.09	7,374.09	318.25 N	48.81 E	14,541,313.32	1,676,054.58	2.97	318.84	
8,335.00	89.39	1.97	2,379.78	7,374.78	408.18 N	52.32 E	14,541,403.25	1,676,057.97	0.70	408.81	
8,425.00	89.85	1.44	2,380.38	7,375.38	498.14 N	54.99 E	14,541,493.22	1,676,060.52	0.78	498.79	
8,515.00	89.81	0.45	2,380.65	7,375.65	588.13 N	56.48 E	14,541,583.20	1,676,061.87	1.10	588.79	
8,604.00	89.81	359.44	2,380.94	7,375.94	677.12 N	56.39 E	14,541,672.20	1,676,061.66	1.13	677.78	
8,694.00	90.02	359.15	2,381.08	7,376.08	767.12 N	55.28 E	14,541,762.19	1,676,060.42	0.40	767.75	
8,752.00	89.97	358.26	2,381.08	7,376.08	825.10 N	53.97 E	14,541,820.18	1,676,059.03	1.54	825.72	Exit 460' Rad 8752.00' MD 7376.08' TVD
8,784.00	89.94	357.77	2,381.11	7,376.11	857.08 N	52.87 E	14,541,852.15	1,676,057.88	1.54	857.68	
8,874.00	90.65	1.78	2,380.65	7,375.65	947.06 N	52.51 E	14,541,942.13	1,676,057.39	4.52	947.65	
8,963.00	91.11	2.34	2,379.28	7,374.28	1,035.99 N	55.71 E	14,542,031.07	1,676,060.47	0.81	1,036.61	
9,058.00	91.28	2.06	2,377.30	7,372.30	1,130.90 N	59.36 E	14,542,125.98	1,676,063.98	0.34	1,131.56	
9,152.00	91.83	0.46	2,374.75	7,369.75	1,224.84 N	61.42 E	14,542,219.93	1,676,065.91	1.80	1,225.52	
9,246.00	92.46	359.78	2,371.23	7,366.23	1,318.77 N	61.62 E	14,542,313.86	1,676,065.97	0.99	1,319.44	
9,341.00	89.98	0.98	2,369.21	7,364.21	1,413.74 N	62.25 E	14,542,408.83	1,676,066.47	2.90	1,414.41	
9,435.00	90.19	1.63	2,369.07	7,364.07	1,507.72 N	64.39 E	14,542,502.80	1,676,068.47	0.73	1,508.41	
9,529.00	90.57	1.76	2,368.44	7,363.44	1,601.67 N	67.17 E	14,542,596.77	1,676,071.12	0.43	1,602.39	
9,624.00	90.90	1.23	2,367.22	7,362.22	1,696.63 N	69.65 E	14,542,691.73	1,676,073.46	0.66	1,697.37	
9,718.00	91.40	1.06	2,365.34	7,360.34	1,790.59 N	71.53 E	14,542,785.69	1,676,075.21	0.56	1,791.35	
9,812.00	88.55	359.87	2,365.38	7,360.38	1,884.58 N	72.29 E	14,542,879.68	1,676,075.83	3.29	1,885.34	
9,906.00	88.76	359.95	2,367.58	7,362.58	1,978.55 N	72.14 E	14,542,973.65	1,676,075.55	0.24	1,979.30	
10,001.00	88.47	358.93	2,369.88	7,364.88	2,073.52 N	71.22 E	14,543,068.62	1,676,074.49	1.12	2,074.25	
10,095.00	88.47	358.33	2,372.39	7,367.39	2,167.46 N	68.97 E	14,543,162.55	1,676,072.11	0.64	2,168.16	
10,189.00	88.85	1.84	2,374.59	7,369.59	2,261.42 N	69.11 E	14,543,256.51	1,676,072.11	3.75	2,262.11	
10,284.00	90.48	2.41	2,375.14	7,370.14	2,356.35 N	72.63 E	14,543,351.45	1,676,075.50	1.82	2,357.08	
10,378.00	91.28	1.87	2,373.70	7,368.70	2,450.27 N	76.14 E	14,543,445.37	1,676,078.88	1.03	2,451.03	
10,468.00	91.49	1.39	2,371.53	7,366.53	2,540.21 N	78.70 E	14,543,535.32	1,676,081.31	0.58	2,541.00	
10,558.00	91.95	0.98	2,368.82	7,363.82	2,630.15 N	80.56 E	14,543,625.26	1,676,083.04	0.68	2,630.95	
10,647.00	91.91	0.74	2,365.83	7,360.83	2,719.09 N	81.90 E	14,543,714.20	1,676,084.25	0.27	2,719.90	
10,737.00	91.36	0.34	2,363.26	7,358.26	2,809.05 N	82.74 E	14,543,804.16	1,676,084.97	0.76	2,809.86	
10,827.00	89.89	0.45	2,362.28	7,357.28	2,899.04 N	83.36 E	14,543,894.15	1,676,085.46	1.64	2,899.85	
10,916.00	90.19	359.81	2,362.22	7,357.22	2,988.04 N	83.57 E	14,543,983.15	1,676,085.53	0.79	2,988.85	
11,006.00	88.97	359.26	2,362.88	7,357.88	3,078.03 N	82.84 E	14,544,073.14	1,676,084.67	1.49	3,078.83	
11,096.00	88.72	358.77	2,364.69	7,359.69	3,168.00 N	81.29 E	14,544,163.11	1,676,083.00	0.61	3,168.77	
11,186.00	89.77	359.82	2,365.88	7,360.88	3,257.98 N	80.18 E	14,544,253.09	1,676,081.76	1.65	3,258.73	
11,276.00	91.62	0.45	2,364.78	7,359.78	3,347.97 N	80.39 E	14,544,343.08	1,676,081.85	2.17	3,348.71	
11,365.00	91.74	0.49	2,362.17	7,357.17	3,436.93 N	81.12 E	14,544,432.04	1,676,082.45	0.14	3,437.67	

Design Report for WAGNER 2N-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)			
11,455.00	91.83	358.65	2,359.37	7,354.37	3,526.88 N	80.45 E	14,544,521.98	1,676,081.65	2.05	3,527.61	
11,545.00	91.45	357.92	2,356.79	7,351.79	3,616.80 N	77.76 E	14,544,611.90	1,676,078.82	0.91	3,617.49	
11,634.00	90.19	358.44	2,355.52	7,350.52	3,705.74 N	74.93 E	14,544,700.84	1,676,075.87	1.53	3,706.39	
11,724.00	88.93	359.89	2,356.21	7,351.21	3,795.73 N	73.62 E	14,544,790.82	1,676,074.43	2.13	3,796.35	
11,814.00	90.23	3.38	2,356.87	7,351.87	3,885.67 N	76.19 E	14,544,880.77	1,676,076.87	4.14	3,886.32	
11,904.00	89.90	2.00	2,356.77	7,351.77	3,975.57 N	80.41 E	14,544,970.68	1,676,080.97	1.58	3,976.27	
11,994.00	89.52	1.30	2,357.23	7,352.23	4,065.53 N	83.00 E	14,545,060.64	1,676,083.43	0.88	4,066.25	
12,083.00	88.81	358.67	2,358.52	7,353.52	4,154.51 N	82.98 E	14,545,149.62	1,676,083.28	3.06	4,155.23	
12,173.00	90.31	1.23	2,359.21	7,354.21	4,244.50 N	82.90 E	14,545,239.61	1,676,083.07	3.30	4,245.21	
12,263.00	89.60	359.83	2,359.28	7,354.28	4,334.49 N	83.73 E	14,545,329.61	1,676,083.78	1.74	4,335.20	
12,353.00	90.78	3.44	2,358.99	7,353.99	4,424.44 N	86.30 E	14,545,419.56	1,676,086.22	4.22	4,425.17	
12,442.00	90.15	2.92	2,358.26	7,353.26	4,513.30 N	91.24 E	14,545,508.42	1,676,091.03	0.92	4,514.09	
12,532.00	90.27	2.43	2,357.93	7,352.93	4,603.20 N	95.44 E	14,545,598.33	1,676,095.10	0.56	4,604.04	
12,622.00	90.65	2.84	2,357.21	7,352.21	4,693.10 N	99.57 E	14,545,688.24	1,676,099.11	0.62	4,693.98	
12,712.00	90.65	2.38	2,356.19	7,351.19	4,783.00 N	103.67 E	14,545,778.14	1,676,103.08	0.51	4,783.93	
12,802.00	90.52	2.05	2,355.27	7,350.27	4,872.93 N	107.15 E	14,545,868.07	1,676,106.43	0.39	4,873.89	
12,892.00	90.36	2.04	2,354.58	7,349.58	4,962.87 N	110.36 E	14,545,958.02	1,676,109.51	0.18	4,963.86	
12,981.00	90.19	1.90	2,354.15	7,349.15	5,051.82 N	113.42 E	14,546,046.97	1,676,112.44	0.25	5,052.84	
13,071.00	90.44	1.58	2,353.66	7,348.66	5,141.77 N	116.15 E	14,546,136.93	1,676,115.05	0.45	5,142.83	
13,161.00	90.57	1.50	2,352.87	7,347.87	5,231.74 N	118.57 E	14,546,226.90	1,676,117.34	0.17	5,232.81	
13,251.00	89.56	1.12	2,352.76	7,347.76	5,321.71 N	120.63 E	14,546,316.88	1,676,119.26	1.20	5,322.81	
13,341.00	89.60	1.26	2,353.42	7,348.42	5,411.69 N	122.50 E	14,546,406.86	1,676,121.01	0.16	5,412.80	
13,430.00	89.18	0.48	2,354.37	7,349.37	5,500.67 N	123.85 E	14,546,495.84	1,676,122.23	1.00	5,501.80	
13,520.00	89.64	0.18	2,355.30	7,350.30	5,590.67 N	124.37 E	14,546,585.84	1,676,122.62	0.61	5,591.79	
13,610.00	89.77	359.04	2,355.76	7,350.76	5,680.66 N	123.76 E	14,546,675.83	1,676,121.88	1.27	5,681.77	
13,700.00	89.85	358.68	2,356.06	7,351.06	5,770.64 N	121.97 E	14,546,765.81	1,676,119.96	0.41	5,771.72	
13,789.00	89.85	358.41	2,356.29	7,351.29	5,859.61 N	119.71 E	14,546,854.78	1,676,117.57	0.30	5,860.66	
13,879.00	90.19	358.18	2,356.26	7,351.26	5,949.57 N	117.03 E	14,546,944.73	1,676,114.77	0.46	5,950.58	
13,969.00	90.23	357.36	2,355.93	7,350.93	6,039.51 N	113.53 E	14,547,034.66	1,676,111.14	0.91	6,040.45	
14,059.00	90.19	358.96	2,355.60	7,350.60	6,129.46 N	110.64 E	14,547,124.60	1,676,108.12	1.78	6,130.36	
14,148.00	88.68	1.87	2,356.48	7,351.48	6,218.44 N	111.28 E	14,547,213.59	1,676,108.63	3.68	6,219.34	
14,238.00	88.22	0.87	2,358.91	7,353.91	6,308.38 N	113.43 E	14,547,303.53	1,676,110.66	1.22	6,309.30	
14,328.00	88.38	0.54	2,361.58	7,356.58	6,398.33 N	114.54 E	14,547,393.48	1,676,111.64	0.41	6,399.26	
14,418.00	87.75	359.67	2,364.62	7,359.62	6,488.28 N	114.70 E	14,547,483.43	1,676,111.67	1.19	6,489.21	
14,465.00	88.01	359.28	2,366.36	7,361.36	6,535.24 N	114.27 E	14,547,530.40	1,676,111.18	0.99	6,536.16	Enter 460' Rad 14465.00' MD 7361.36' TVD
14,508.00	88.25	358.93	2,367.76	7,362.76	6,578.21 N	113.60 E	14,547,573.37	1,676,110.45	0.99	6,579.12	
14,598.00	87.33	1.70	2,371.23	7,366.23	6,668.14 N	114.10 E	14,547,663.29	1,676,110.81	3.24	6,669.04	
14,687.00	86.62	0.88	2,375.93	7,370.93	6,756.99 N	116.10 E	14,547,752.15	1,676,112.68	1.22	6,757.91	
14,777.00	87.79	2.34	2,380.32	7,375.32	6,846.84 N	118.62 E	14,547,842.00	1,676,115.08	2.08	6,847.79	
14,867.00	87.50	2.62	2,384.02	7,379.02	6,936.68 N	122.52 E	14,547,931.85	1,676,118.85	0.45	6,937.67	
14,957.00	90.27	3.85	2,385.77	7,380.77	7,026.51 N	127.59 E	14,548,021.68	1,676,123.79	3.37	7,027.56	

Design Report for WAGNER 2N-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)			
15,046.00	90.27	3.08	2,385.35	7,380.35	7,115.35 N	132.97 E	14,548,110.53	1,676,129.05	0.87	7,116.46	
15,136.00	90.82	2.54	2,384.49	7,379.49	7,205.23 N	137.38 E	14,548,200.42	1,676,133.33	0.86	7,206.39	
15,226.00	91.11	1.83	2,382.98	7,377.98	7,295.15 N	140.82 E	14,548,290.35	1,676,136.63	0.85	7,296.35	
15,316.00	91.45	1.71	2,380.97	7,375.97	7,385.09 N	143.59 E	14,548,380.28	1,676,139.28	0.40	7,386.31	
15,405.00	92.00	0.96	2,378.29	7,373.29	7,474.02 N	145.67 E	14,548,469.22	1,676,141.23	1.04	7,475.26	
15,495.00	92.21	0.77	2,374.98	7,369.98	7,563.95 N	147.03 E	14,548,559.15	1,676,142.46	0.31	7,565.20	
15,544.00	92.16	0.77	2,373.11	7,368.11	7,612.91 N	147.68 E	14,548,608.11	1,676,143.05	0.10	7,614.17	Last Sperry MWD+IFR+SC Survey @ 15544.00' MD
15,590.00	92.16	0.77	2,371.38	7,366.38	7,658.88 N	148.30 E	14,548,654.08	1,676,143.60	0.00	7,660.13	LAT: 40.060128° LONG: -104.872315° @15590.00' MD - Straight Line Projection to TD @ 15590.00' 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 (KB 8')
133.00	133.00	-0.52	-0.29	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1,834.00	1,787.26	-346.92	19.78	Last Total MWD+IFR Survey @ 1821.00' MD (KB 8')
1,834.00	1,787.26	-346.92	19.78	Tie-On to Last Surface MWD+IFR Survey @ 1834.00' MD
2,010.00	1,955.08	-399.64	24.54	First Sperry MWD+IFR+SC Survey @ 2010.00' MD
2,225.00	2,162.97	-454.40	23.97	Exit HardLine Box 2225.00' MD 2162.97' TVD
7,430.00	7,187.09	-454.11	23.53	Enter HardLine Box 7430.00' MD 7187.09' TVD
7,976.00	7,367.51	49.42	42.76	Landed Curve @ 7976.00' MD 88.76° INC 7367.51' TVD
7,976.00	7,367.51	49.42	42.76	LAT: 40.039231° LONG: -104.872692° @7976.00' MD
8,752.00	7,376.08	825.10	53.97	Exit 460' Rad 8752.00' MD 7376.08' TVD
14,465.00	7,361.36	6,535.24	114.27	Enter 460' Rad 14465.00' MD 7361.36' TVD
15,544.00	7,368.11	7,612.91	147.68	Last Sperry MWD+IFR+SC Survey @ 15544.00' MD
15,590.00	7,366.38	7,658.88	148.30	LAT: 40.060128° LONG: -104.872315° @15590.00' MD
15,590.00	7,366.38	7,658.88	148.30	Straight Line Projection to TD @ 15590.00' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.72	Slot	0.00	0.00	0.00

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

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
13.00	1,834.00	Total MWD+IFR Surface Surveys	APC_ISCWSA REV 2 MWD+IFR1
1,834.00	15,544.00	Sperry MWD+IFR+SC Surveys	APC_ISCWSA REV 2 MWD+IFR1+SC
15,590.00	15,590.00	PTB	APC_BLIND

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,863.00	1,814.67	~ 9 5/8"	9-5/8	13-1/2

Design Targets

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

Directional Difficulty Index

Average Dogleg over Survey:	1.82 °/100usft	Maximum Dogleg over Survey:	13.92 °/100usft at 7,258.00 usft
Net Tortousity applicable to Plans:	0.90 °/100usft	Directional Difficulty Index:	6.750

Audit Info

North Reference Sheet for 1N-67W-22 Wagner 7-22HZ Pad (PD 464) - WAGNER 2N-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 2N-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: 14,540,995.00 usft N, 1,676,006.23 usft E

Geographical Coordinates of Well: 40° 02' 20.74" N, 104° 52' 22.24" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,590.00usft the Bottom Hole Displacement is 7,660.31usft in the Direction of 1.11° (True).

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

