

Project: WELD-NAD83-UTMFT13N  
Site: 1N-67W-22 Wagner 7-22HZ Pad  
Well: WAGNER 27N-10HZ  
Wellbore: Original Wellbore  
Design: Final Surveys



HALLIBURTON  
Sperry Drilling

## US ROCKIES WATTENBERG PLANNING

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

WAGNER 27N-10HZ\_\_BHL PLAT

LAT: 40.059788° LONG: -104.871561° @15361.00' MD  
Straight Line Projection to TD @ 15361.00' MD

WAGNER 27N-10HZ\_\_BHL B4

WELL DETAILS: WAGNER 27N-10HZ	Design: Final Surveys (WAGNER 27N-10HZ/Original Wellbore)
Ground Level: 4974.00 RKB 21' @ 4995.00usft (Precision 464)	Created By: Jerry Popp Date: 10:49, December 08 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	0.26	161.06	133.00	-0.26	0.09	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1858.00	17.18	158.34	1810.89	-324.30	135.01	Last Total MWD+IFR Survey @ 1845.00' MD (KB 8')
1858.00	17.18	158.34	1810.89	-324.30	135.01	Tie-On to Last Surface MWD+IFR Survey @ 1858.00' MD
1919.00	17.48	158.73	1869.12	-341.21	141.66	First Sperry MWD+IFR+SC Survey @ 1919.00' MD
2385.00	11.96	163.32	2318.88	-453.34	186.44	Exit HardLine Box 2385.00' MD 2318.88' TVD
7282.00	39.40	357.71	7140.84	-452.91	258.66	Enter HardLine Box 7282.00' MD 7140.84' TVD
7975.00	85.32	359.28	7436.92	153.24	260.88	Landed Curve @ 7975.00' MD 85.32° INC 7436.92' TVD
7975.00	85.32	359.28	7436.92	153.24	260.88	LAT: 40.039516° LONG: -104.871806° @7975.00' MD
8679.00	90.56	359.19	7436.20	856.77	270.31	Exit 460' Rad 8679.00' MD 7436.20' TVD
14370.00	90.24	358.52	7428.76	6544.68	320.55	Enter 460' Rad 14370.00' MD 7428.76' TVD
15315.00	91.62	0.05	7433.89	7489.36	329.20	Last Sperry MWD+IFR+SC Survey @ 15315.00' MD
15361.00	91.62	0.05	7432.59	7535.34	329.24	Straight Line Projection to TD @ 15361.00' MD
15361.00	91.62	0.05	7432.59	7535.34	329.24	LAT: 40.059788° LONG: -104.871561° @15361.00' MD

### Sec. 10, T1N R67W

Last Sperry MWD+IFR+SC Survey @ 15315.00' MD

Enter 460' Rad 14370.00' MD 7428.76' TVD

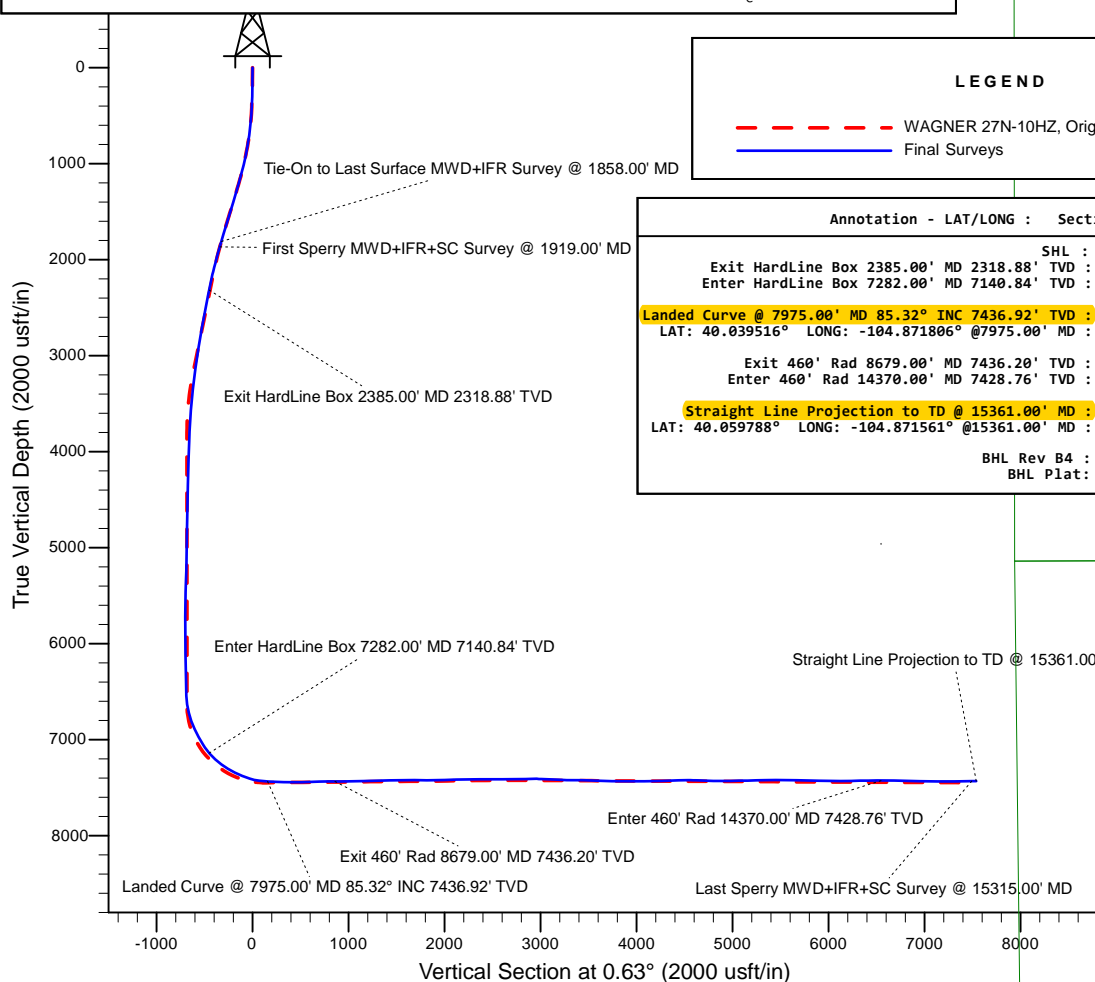
### Sec. 15, T1N R67W

### LEGEND

--- WAGNER 27N-10HZ, Original Wellbore, Rev B4 V0  
— Final Surveys

### Annotation - LAT/LONG : Section Line Footage Calls:

SHL : 1722' FNL, 1529' FEL of Sec 22-T1N-R67W	
Exit HardLine Box 2385.00' MD 2318.88' TVD : ~2176' FNL, ~1342' FEL of Sec 22-T1N-R67W	
Enter HardLine Box 7282.00' MD 7140.84' TVD : ~2176' FNL, ~1270' FEL of Sec 22-T1N-R67W	
Landed Curve @ 7975.00' MD 85.32° INC 7436.92' TVD : ~1569' FNL, ~1267' FEL of Sec 22-T1N-R67W	
LAT: 40.039516° LONG: -104.871806° @7975.00' MD :	
Exit 460' Rad 8679.00' MD 7436.20' TVD : ~866' FNL, ~1258' FEL of Sec 22-T1N-R67W	
Enter 460' Rad 14370.00' MD 7428.76' TVD : ~441' FNL, ~1190' FEL of Sec 15-T1N-R67W	
Straight Line Projection to TD @ 15361.00' MD : ~550' FSL, ~1178' FEL of Sec 10-T1N-R67W	
LAT: 40.059788° LONG: -104.871561° @15361.00' MD :	
BHL Rev B4 : ~550' FSL, ~1168' FEL of Sec 10-T1N-R67W	
BHL Plat: 800' FSL, 1132' FEL of Sec 10-T1N-R67W	



Landed Curve @ 7975.00' MD 85.32° INC 7436.92' TVD  
LAT: 40.039516° LONG: -104.871806° @7975.00' MD

### Sec. 22, T1N R67W

First Sperry MWD+IFR+SC Survey @ 1919.00' MD

Exit HardLine Box 2385.00' MD 2318.88' TVD

Sec. Line

WAGNER 27N-10HZ\_\_INT B4

Sec. Line

South(-)/North(+) (1200 usft/in)

Job# 904430238

Precision 464

# US ROCKIES WATTENBERG PLANNING

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

API# 05-123-43470

WAGNER 27N-10HZ

Original Wellbore

Design: Final Surveys

## Sperry Drilling Services

### Combo Report

08 December, 2017

Well Coordinates: 40° 02' 20.74" N  
104° 52' 21.86" W

North American Datum 1983  
Zone 13N (108 W to 102 W)  
14,540,995.04 N  
1,676,036.18 E

Ground Level: 4,974.00 usft

Local Coordinate Origin:

Centered on Well WAGNER 27N-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 27N-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	14,540,995.04	1,676,036.18	0.00	0.00	
13.00	0.00	0.00	-4,982.00	13.00	0.00 N	0.00 E	14,540,995.04	1,676,036.18	0.00	0.00	Tie-On @ Surface (KB 8')
133.00	0.26	161.06	-4,862.00	133.00	0.26 S	0.09 E	14,540,994.78	1,676,036.27	0.22	-0.26	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
165.00	0.48	208.14	-4,830.00	165.00	0.44 S	0.05 E	14,540,994.60	1,676,036.23	1.12	-0.44	
197.00	0.57	186.02	-4,798.00	197.00	0.72 S	0.03 W	14,540,994.32	1,676,036.15	0.69	-0.72	
228.00	1.14	169.94	-4,767.01	227.99	1.18 S	0.01 E	14,540,993.86	1,676,036.19	1.98	-1.18	
260.00	1.49	152.36	-4,735.01	259.99	1.86 S	0.26 E	14,540,993.18	1,676,036.44	1.66	-1.86	
292.00	1.85	151.31	-4,703.03	291.97	2.68 S	0.70 E	14,540,992.36	1,676,036.88	1.13	-2.67	
323.00	2.07	150.87	-4,672.05	322.95	3.61 S	1.21 E	14,540,991.43	1,676,037.40	0.71	-3.60	
355.00	2.50	155.79	-4,640.07	354.93	4.75 S	1.78 E	14,540,990.29	1,676,037.97	1.48	-4.73	
387.00	2.77	159.13	-4,608.11	386.89	6.11 S	2.34 E	14,540,988.93	1,676,038.53	0.97	-6.08	
419.00	3.25	155.35	-4,576.15	418.85	7.66 S	2.99 E	14,540,987.39	1,676,039.18	1.62	-7.62	
450.00	3.47	153.59	-4,545.20	449.80	9.30 S	3.78 E	14,540,985.75	1,676,039.97	0.78	-9.25	
482.00	4.00	154.29	-4,513.27	481.73	11.17 S	4.69 E	14,540,983.88	1,676,040.89	1.66	-11.12	
546.00	4.88	159.04	-4,449.46	545.54	15.72 S	6.63 E	14,540,979.33	1,676,042.84	1.49	-15.65	
577.00	5.71	156.40	-4,418.60	576.40	18.37 S	7.72 E	14,540,976.68	1,676,043.93	2.79	-18.28	
608.00	6.24	156.67	-4,387.76	607.24	21.33 S	9.01 E	14,540,973.73	1,676,045.22	1.71	-21.23	
640.00	6.94	156.58	-4,355.98	639.02	24.70 S	10.46 E	14,540,970.36	1,676,046.68	2.19	-24.58	
672.00	7.91	157.19	-4,324.24	670.76	28.50 S	12.09 E	14,540,966.56	1,676,048.31	3.04	-28.37	
703.00	9.01	159.74	-4,293.58	701.42	32.75 S	13.75 E	14,540,962.31	1,676,049.98	3.75	-32.59	
735.00	9.27	158.16	-4,261.99	733.01	37.49 S	15.58 E	14,540,957.57	1,676,051.82	1.13	-37.31	
767.00	9.80	158.95	-4,230.43	764.57	42.42 S	17.52 E	14,540,952.64	1,676,053.76	1.71	-42.23	
798.00	10.99	158.43	-4,199.94	795.06	47.63 S	19.55 E	14,540,947.44	1,676,055.80	3.85	-47.41	
830.00	11.03	160.01	-4,168.53	826.47	53.35 S	21.72 E	14,540,941.73	1,676,057.98	0.95	-53.10	
862.00	11.73	159.13	-4,137.16	857.84	59.26 S	23.92 E	14,540,935.81	1,676,060.19	2.25	-59.00	
893.00	12.70	156.40	-4,106.86	888.14	65.33 S	26.41 E	14,540,929.75	1,676,062.69	3.64	-65.04	
925.00	12.83	156.05	-4,075.65	919.35	71.80 S	29.26 E	14,540,923.28	1,676,065.55	0.47	-71.47	
957.00	13.45	154.29	-4,044.49	950.51	78.40 S	32.32 E	14,540,916.69	1,676,068.61	2.31	-78.04	
988.00	14.24	154.29	-4,014.39	980.61	85.08 S	35.54 E	14,540,910.01	1,676,071.84	2.55	-84.69	
1,020.00	14.99	154.47	-3,983.43	1,011.57	92.36 S	39.03 E	14,540,902.73	1,676,075.34	2.35	-91.93	
1,052.00	14.99	154.47	-3,952.51	1,042.49	99.83 S	42.59 E	14,540,895.27	1,676,078.92	0.00	-99.36	
1,083.00	15.12	155.17	-3,922.58	1,072.42	107.12 S	46.02 E	14,540,887.99	1,676,082.36	0.72	-106.61	
1,114.00	14.90	156.76	-3,892.64	1,102.36	114.45 S	49.29 E	14,540,880.66	1,676,085.64	1.51	-113.90	
1,146.00	15.95	159.22	-3,861.79	1,133.21	122.34 S	52.47 E	14,540,872.77	1,676,088.83	3.87	-121.76	
1,178.00	16.48	159.57	-3,831.06	1,163.94	130.71 S	55.62 E	14,540,864.41	1,676,091.99	1.68	-130.09	
1,210.00	17.36	160.71	-3,800.45	1,194.55	139.47 S	58.78 E	14,540,855.66	1,676,095.16	2.94	-138.81	
1,241.00	17.18	159.39	-3,770.84	1,224.16	148.12 S	61.92 E	14,540,847.01	1,676,098.31	1.39	-147.43	
1,273.00	16.96	158.25	-3,740.25	1,254.75	156.88 S	65.31 E	14,540,838.26	1,676,101.72	1.25	-156.15	
1,305.00	17.67	158.95	-3,709.70	1,285.30	165.74 S	68.79 E	14,540,829.40	1,676,105.20	2.31	-164.98	
1,336.00	17.71	158.69	-3,680.17	1,314.83	174.53 S	72.19 E	14,540,820.62	1,676,108.62	0.29	-173.72	
1,368.00	18.24	159.83	-3,649.73	1,345.27	183.76 S	75.69 E	14,540,811.39	1,676,112.13	1.99	-182.92	

## Design Report for WAGNER 27N-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	18.54	159.83	-3,619.37	1,375.63	193.24 S	79.17 E	14,540,801.92	1,676,115.62	0.94	-192.36	
1,431.00	18.28	158.43	-3,589.95	1,405.05	202.39 S	82.65 E	14,540,792.77	1,676,119.12	1.65	-201.47	
1,463.00	18.28	157.11	-3,559.57	1,435.43	211.68 S	86.45 E	14,540,783.49	1,676,122.93	1.29	-210.71	
1,494.00	18.33	156.58	-3,530.14	1,464.86	220.63 S	90.28 E	14,540,774.54	1,676,126.78	0.56	-219.62	
1,526.00	18.24	156.84	-3,499.75	1,495.25	229.85 S	94.25 E	14,540,765.32	1,676,130.76	0.38	-228.80	
1,558.00	18.50	156.58	-3,469.38	1,525.62	239.11 S	98.24 E	14,540,756.07	1,676,134.76	0.85	-238.02	
1,590.00	18.72	156.32	-3,439.06	1,555.94	248.47 S	102.32 E	14,540,746.71	1,676,138.85	0.73	-247.33	
1,621.00	18.76	155.35	-3,409.70	1,585.30	257.56 S	106.39 E	14,540,737.63	1,676,142.94	1.01	-256.38	
1,652.00	18.85	155.52	-3,380.35	1,614.65	266.65 S	110.55 E	14,540,728.55	1,676,147.11	0.34	-265.42	
1,684.00	18.02	157.11	-3,350.00	1,645.00	275.91 S	114.61 E	14,540,719.29	1,676,151.19	3.03	-274.64	
1,716.00	17.80	156.93	-3,319.55	1,675.45	284.97 S	118.46 E	14,540,710.24	1,676,155.05	0.71	-283.65	
1,747.00	17.49	156.84	-3,290.01	1,704.99	293.62 S	122.15 E	14,540,701.60	1,676,158.75	1.00	-292.26	
1,779.00	17.45	156.67	-3,259.48	1,735.52	302.44 S	125.94 E	14,540,692.78	1,676,162.55	0.20	-301.04	
1,811.00	17.58	157.28	-3,228.97	1,766.03	311.31 S	129.70 E	14,540,683.92	1,676,166.33	0.70	-309.86	
1,858.00	17.18	158.34	-3,184.11	1,810.89	324.30 S	135.01 E	14,540,670.93	1,676,171.65	1.09	-322.80	Last Total MWD+IFR Survey @ 1845.00' MD (KB 8') - Tie-On to Last Surface MWD+IFR Survey @ 1858.00' MD
1,919.00	17.48	158.73	-3,125.88	1,869.12	341.21 S	141.66 E	14,540,654.03	1,676,178.32	0.53	-339.64	First Sperry MWD+IFR+SC Survey @ 1919.00' MD
2,008.00	17.13	157.02	-3,040.91	1,954.09	365.74 S	151.62 E	14,540,629.52	1,676,188.33	0.69	-364.05	
2,098.00	16.63	155.24	-2,954.79	2,040.21	389.64 S	162.19 E	14,540,605.64	1,676,198.93	0.80	-387.83	
2,188.00	14.73	156.40	-2,868.14	2,126.86	411.82 S	172.17 E	14,540,583.47	1,676,208.94	2.14	-409.90	
2,278.00	12.56	162.16	-2,780.68	2,214.32	431.62 S	179.75 E	14,540,563.68	1,676,216.54	2.84	-429.62	
2,368.00	12.06	163.40	-2,692.75	2,302.25	449.95 S	185.43 E	14,540,545.36	1,676,222.25	0.63	-447.88	
2,385.00	11.96	163.32	-2,676.12	2,318.88	453.34 S	186.44 E	14,540,541.97	1,676,223.27	0.61	-451.26	Exit HardLine Box 2385.00' MD 2318.88' TVD
2,457.00	11.52	162.99	-2,605.63	2,389.37	467.35 S	190.69 E	14,540,527.96	1,676,227.54	0.61	-465.23	
2,547.00	11.08	163.16	-2,517.37	2,477.63	484.23 S	195.82 E	14,540,511.09	1,676,232.69	0.49	-482.04	
2,637.00	10.87	164.09	-2,429.02	2,565.98	500.66 S	200.65 E	14,540,494.66	1,676,237.55	0.31	-498.43	
2,727.00	11.84	160.52	-2,340.78	2,654.22	517.53 S	206.06 E	14,540,477.80	1,676,242.98	1.33	-515.23	
2,817.00	11.00	158.14	-2,252.56	2,742.44	534.20 S	212.33 E	14,540,461.14	1,676,249.28	1.07	-531.84	
2,906.00	10.53	168.65	-2,165.12	2,829.88	550.06 S	217.10 E	14,540,445.29	1,676,254.06	2.26	-547.64	
2,996.00	9.45	173.65	-2,076.48	2,918.52	565.47 S	219.53 E	14,540,429.89	1,676,256.52	1.54	-563.02	
3,086.00	8.62	174.87	-1,987.60	3,007.40	579.53 S	220.95 E	14,540,415.83	1,676,257.96	0.95	-577.06	
3,176.00	7.71	175.88	-1,898.51	3,096.49	592.27 S	221.99 E	14,540,403.09	1,676,259.02	1.02	-589.79	
3,265.00	6.68	177.95	-1,810.22	3,184.78	603.40 S	222.60 E	14,540,391.96	1,676,259.65	1.19	-600.91	
3,355.00	6.97	166.50	-1,720.85	3,274.15	613.94 S	224.07 E	14,540,381.42	1,676,261.12	1.54	-611.44	
3,445.00	6.57	168.78	-1,631.48	3,363.52	624.30 S	226.34 E	14,540,371.07	1,676,263.42	0.54	-621.77	
3,535.00	5.97	172.26	-1,542.02	3,452.98	633.99 S	227.97 E	14,540,361.38	1,676,265.06	0.79	-631.44	
3,624.00	4.96	179.51	-1,453.42	3,541.58	642.42 S	228.63 E	14,540,352.95	1,676,265.73	1.37	-639.87	
3,714.00	3.08	214.96	-1,363.63	3,631.37	648.29 S	227.28 E	14,540,347.07	1,676,264.39	3.37	-645.75	
3,804.00	3.01	196.65	-1,273.76	3,721.24	652.54 S	225.22 E	14,540,342.82	1,676,262.33	1.08	-650.02	
3,894.00	3.60	154.81	-1,183.90	3,811.10	657.36 S	225.74 E	14,540,338.00	1,676,262.86	2.69	-654.84	
3,984.00	3.02	144.80	-1,094.05	3,900.95	661.85 S	228.31 E	14,540,333.51	1,676,265.44	0.91	-659.30	

## Design Report for WAGNER 27N-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)	
4,073.00	1.96	145.80	-1,005.13	3,989.87	665.03 S	230.52 E	14,540,330.34	1,676,267.65	1.19	-662.45	
4,163.00	1.85	158.76	-915.18	4,079.82	667.66 S	231.91 E	14,540,327.72	1,676,269.04	0.49	-665.07	
4,252.00	1.37	171.71	-826.22	4,168.78	670.05 S	232.58 E	14,540,325.33	1,676,269.72	0.67	-667.45	
4,342.00	2.14	149.17	-736.26	4,258.74	672.56 S	233.60 E	14,540,322.82	1,676,270.74	1.13	-669.95	
4,432.00	2.09	149.55	-646.32	4,348.68	675.41 S	235.29 E	14,540,319.96	1,676,272.44	0.06	-672.78	
4,522.00	1.73	157.73	-556.37	4,438.63	678.08 S	236.64 E	14,540,317.29	1,676,273.79	0.50	-675.44	
4,611.00	1.05	175.08	-467.40	4,527.60	680.14 S	237.22 E	14,540,315.24	1,676,274.37	0.89	-677.49	
4,701.00	1.62	129.67	-377.42	4,617.58	681.77 S	238.27 E	14,540,313.61	1,676,275.42	1.29	-679.11	
4,791.00	1.31	134.84	-287.45	4,707.55	683.31 S	239.98 E	14,540,312.07	1,676,277.13	0.37	-680.63	
4,881.00	0.82	142.74	-197.46	4,797.54	684.55 S	241.10 E	14,540,310.84	1,676,278.25	0.57	-681.86	
4,971.00	0.69	174.54	-107.47	4,887.53	685.60 S	241.54 E	14,540,309.78	1,676,278.70	0.48	-682.90	
5,060.00	0.97	197.27	-18.48	4,976.52	686.85 S	241.36 E	14,540,308.53	1,676,278.53	0.48	-684.16	
5,150.00	1.17	216.29	71.51	5,066.51	688.32 S	240.59 E	14,540,307.06	1,676,277.76	0.45	-685.64	
5,240.00	1.48	218.80	161.48	5,156.48	689.97 S	239.32 E	14,540,305.41	1,676,276.49	0.35	-687.30	
5,330.00	1.84	166.06	251.45	5,246.45	692.28 S	238.94 E	14,540,303.11	1,676,276.11	1.68	-689.61	
5,419.00	2.13	169.44	340.39	5,335.39	695.29 S	239.59 E	14,540,300.09	1,676,276.76	0.35	-692.61	
5,509.00	2.34	154.54	430.33	5,425.33	698.59 S	240.69 E	14,540,296.79	1,676,277.87	0.68	-695.90	
5,599.00	2.59	121.10	520.25	5,515.25	701.30 S	243.22 E	14,540,294.09	1,676,280.40	1.60	-698.59	
5,689.00	1.72	103.77	610.18	5,605.18	702.67 S	246.27 E	14,540,292.72	1,676,283.46	1.20	-699.92	
5,778.00	0.88	78.33	699.16	5,694.16	702.85 S	248.24 E	14,540,292.54	1,676,285.42	1.12	-700.08	
5,868.00	0.82	63.82	789.15	5,784.15	702.43 S	249.49 E	14,540,292.97	1,676,286.68	0.25	-699.64	
5,958.00	0.85	71.83	879.14	5,874.14	701.94 S	250.70 E	14,540,293.46	1,676,287.89	0.13	-699.14	
5,986.00	0.92	70.86	907.14	5,902.14	701.80 S	251.11 E	14,540,293.60	1,676,288.30	0.26	-699.00	
6,091.00	1.00	64.34	1,012.12	6,007.12	701.13 S	252.74 E	14,540,294.28	1,676,289.92	0.13	-698.30	
6,181.00	0.84	43.57	1,102.11	6,097.11	700.31 S	253.90 E	14,540,295.10	1,676,291.08	0.41	-697.47	
6,271.00	0.82	36.26	1,192.10	6,187.10	699.31 S	254.73 E	14,540,296.09	1,676,291.91	0.12	-696.47	
6,360.00	1.17	19.73	1,281.09	6,276.09	697.94 S	255.42 E	14,540,297.46	1,676,292.60	0.50	-695.09	
6,450.00	1.58	15.36	1,371.06	6,366.06	695.88 S	256.06 E	14,540,299.53	1,676,293.23	0.47	-693.02	
6,540.00	1.34	33.93	1,461.03	6,456.03	693.81 S	256.97 E	14,540,301.60	1,676,294.14	0.59	-690.94	
6,629.00	1.12	43.41	1,550.01	6,545.01	692.32 S	258.15 E	14,540,303.09	1,676,295.32	0.34	-689.44	
6,719.00	8.83	7.57	1,639.62	6,634.62	684.82 S	259.67 E	14,540,310.59	1,676,296.83	8.83	-681.92	
6,809.00	14.56	358.81	1,727.72	6,722.72	666.64 S	260.34 E	14,540,328.77	1,676,297.48	6.65	-663.74	
6,899.00	19.61	1.18	1,813.72	6,808.72	640.22 S	260.42 E	14,540,355.20	1,676,297.52	5.66	-637.31	
6,988.00	24.82	358.36	1,896.09	6,891.09	606.59 S	260.19 E	14,540,388.82	1,676,297.24	5.97	-603.69	
7,078.00	28.98	359.33	1,976.33	6,971.33	565.89 S	259.40 E	14,540,429.52	1,676,296.39	4.65	-563.00	
7,168.00	32.82	2.08	2,053.55	7,048.55	519.69 S	260.03 E	14,540,475.72	1,676,296.95	4.55	-516.80	
7,257.00	37.58	356.83	2,126.27	7,121.27	468.45 S	259.40 E	14,540,526.96	1,676,296.25	6.33	-465.57	
7,282.00	39.40	357.71	2,145.84	7,140.84	452.91 S	258.66 E	14,540,542.50	1,676,295.49	7.59	-450.04	Enter HardLine Box 7282.00' MD 7140.84' TVD
7,347.00	44.15	359.71	2,194.30	7,189.30	409.63 S	257.72 E	14,540,585.77	1,676,294.49	7.59	-406.78	
7,437.00	52.96	0.42	2,253.81	7,248.81	342.24 S	257.83 E	14,540,653.17	1,676,294.50	9.81	-339.38	
7,527.00	59.11	0.02	2,304.07	7,299.07	267.63 S	258.10 E	14,540,727.78	1,676,294.67	6.84	-264.78	

## Design Report for WAGNER 27N-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)			
7,616.00	63.84	0.15	2,346.56	7,341.56	189.46 S	258.22 E	14,540,805.95	1,676,294.67	5.32	-186.61	
7,706.00	66.66	0.62	2,384.24	7,379.24	107.73 S	258.78 E	14,540,887.68	1,676,295.11	3.17	-104.88	
7,796.00	72.76	0.41	2,415.43	7,410.43	23.36 S	259.53 E	14,540,972.05	1,676,295.75	6.78	-20.51	
7,886.00	83.93	1.03	2,433.58	7,428.58	64.64 N	260.65 E	14,541,060.05	1,676,296.74	12.43	67.50	
7,975.00	85.32	359.28	2,441.92	7,436.92	153.24 N	260.88 E	14,541,148.65	1,676,296.85	2.50	156.10	Landed Curve @ 7975.00' MD 85.32° INC 7436.92' TVD - LAT: 40.039516° LONG: -104.871806° @7975.00' MD
8,065.00	88.97	0.82	2,446.40	7,441.40	243.11 N	260.96 E	14,541,238.52	1,676,296.80	4.40	245.96	
8,155.00	87.92	0.47	2,448.85	7,443.85	333.07 N	261.98 E	14,541,328.48	1,676,297.68	1.23	335.93	
8,245.00	89.35	1.53	2,450.99	7,445.99	423.03 N	263.55 E	14,541,418.44	1,676,299.12	1.98	425.90	
8,335.00	91.95	1.86	2,449.97	7,444.97	512.97 N	266.21 E	14,541,508.39	1,676,301.66	2.91	515.87	
8,425.00	92.12	1.31	2,446.77	7,441.77	602.88 N	268.70 E	14,541,598.30	1,676,304.02	0.64	605.80	
8,514.00	92.37	0.76	2,443.29	7,438.29	691.80 N	270.30 E	14,541,687.22	1,676,305.50	0.68	694.73	
8,604.00	89.90	359.96	2,441.50	7,436.50	781.77 N	270.87 E	14,541,777.20	1,676,305.93	2.88	784.70	
8,679.00	90.56	359.19	2,441.20	7,436.20	856.77 N	270.31 E	14,541,852.19	1,676,305.27	1.36	859.69	Exit 460' Rad 8679.00' MD 7436.20' TVD
8,694.00	90.69	359.03	2,441.04	7,436.04	871.76 N	270.08 E	14,541,867.19	1,676,305.01	1.36	874.68	
8,788.00	89.98	357.63	2,440.49	7,435.49	965.72 N	267.34 E	14,541,961.14	1,676,302.14	1.67	968.60	
8,883.00	90.65	358.82	2,439.97	7,434.97	1,060.67 N	264.39 E	14,542,056.09	1,676,299.06	1.44	1,063.51	
8,977.00	91.24	0.65	2,438.42	7,433.42	1,154.65 N	263.96 E	14,542,150.07	1,676,298.49	2.05	1,157.48	
9,071.00	91.49	2.41	2,436.18	7,431.18	1,248.59 N	266.47 E	14,542,244.01	1,676,300.87	1.89	1,251.44	
9,166.00	91.91	2.11	2,433.36	7,428.36	1,343.47 N	270.21 E	14,542,338.90	1,676,304.47	0.54	1,346.36	
9,260.00	92.04	1.50	2,430.12	7,425.12	1,437.37 N	273.17 E	14,542,432.80	1,676,307.30	0.66	1,440.29	
9,354.00	91.32	2.91	2,427.36	7,422.36	1,531.26 N	276.79 E	14,542,526.69	1,676,310.78	1.68	1,534.21	
9,448.00	89.52	1.29	2,426.68	7,421.68	1,625.18 N	280.23 E	14,542,620.62	1,676,314.09	2.58	1,628.17	
9,543.00	89.18	0.42	2,427.75	7,422.75	1,720.17 N	281.65 E	14,542,715.61	1,676,315.37	0.98	1,723.16	
9,637.00	89.18	359.51	2,429.10	7,424.10	1,814.15 N	281.59 E	14,542,809.60	1,676,315.18	0.97	1,817.14	
9,731.00	91.28	2.63	2,428.72	7,423.72	1,908.12 N	283.35 E	14,542,903.56	1,676,316.80	4.00	1,911.12	
9,825.00	91.11	1.68	2,426.76	7,421.76	2,002.03 N	286.88 E	14,542,997.48	1,676,320.20	1.03	2,005.07	
9,920.00	91.20	1.46	2,424.85	7,419.85	2,096.98 N	289.48 E	14,543,092.43	1,676,322.67	0.25	2,100.03	
10,014.00	91.11	0.88	2,422.95	7,417.95	2,190.94 N	291.40 E	14,543,186.39	1,676,324.45	0.62	2,194.01	
10,108.00	91.32	0.35	2,420.96	7,415.96	2,284.91 N	292.41 E	14,543,280.37	1,676,325.33	0.61	2,287.99	
10,198.00	91.07	359.69	2,419.08	7,414.08	2,374.89 N	292.44 E	14,543,370.35	1,676,325.23	0.78	2,377.96	
10,288.00	89.27	358.32	2,418.81	7,413.81	2,464.87 N	290.88 E	14,543,460.33	1,676,323.54	2.51	2,467.92	
10,378.00	90.57	1.69	2,418.94	7,413.94	2,554.86 N	290.89 E	14,543,550.31	1,676,323.42	4.01	2,557.90	
10,468.00	89.73	1.15	2,418.70	7,413.70	2,644.83 N	293.12 E	14,543,640.28	1,676,325.52	1.11	2,647.89	
10,557.00	90.82	1.01	2,418.28	7,413.28	2,733.81 N	294.79 E	14,543,729.27	1,676,327.07	1.23	2,736.89	
10,647.00	90.73	0.61	2,417.06	7,412.06	2,823.79 N	296.07 E	14,543,819.25	1,676,328.21	0.46	2,826.88	
10,737.00	91.45	1.08	2,415.35	7,410.35	2,913.77 N	297.39 E	14,543,909.23	1,676,329.41	0.96	2,916.86	
10,827.00	87.50	0.58	2,416.17	7,411.17	3,003.73 N	298.70 E	14,543,999.20	1,676,330.59	4.42	3,006.84	
10,916.00	86.79	359.93	2,420.60	7,415.60	3,092.62 N	299.09 E	14,544,088.09	1,676,330.85	1.08	3,095.72	
11,006.00	88.22	358.89	2,424.52	7,419.52	3,182.53 N	298.17 E	14,544,177.99	1,676,329.80	1.96	3,185.61	
11,096.00	88.01	358.66	2,427.48	7,422.48	3,272.46 N	296.24 E	14,544,267.92	1,676,327.75	0.35	3,275.52	

## Design Report for WAGNER 27N-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)			
11,186.00	89.56	358.03	2,429.39	7,424.39	3,362.40 N	293.64 E	14,544,357.85	1,676,325.02	1.86	3,365.42	
11,275.00	88.76	357.67	2,430.70	7,425.70	3,451.32 N	290.31 E	14,544,446.78	1,676,321.56	0.99	3,454.31	
11,365.00	88.76	358.59	2,432.64	7,427.64	3,541.25 N	287.37 E	14,544,536.70	1,676,318.49	1.02	3,544.20	
11,455.00	88.63	0.04	2,434.69	7,429.69	3,631.22 N	286.29 E	14,544,626.67	1,676,317.29	1.62	3,634.15	
11,545.00	87.24	359.55	2,437.94	7,432.94	3,721.16 N	285.97 E	14,544,716.61	1,676,316.84	1.64	3,724.08	
11,634.00	89.26	1.33	2,440.65	7,435.65	3,810.11 N	286.66 E	14,544,805.55	1,676,317.39	3.02	3,813.03	
11,724.00	91.11	0.83	2,440.36	7,435.36	3,900.09 N	288.35 E	14,544,895.54	1,676,318.96	2.13	3,903.02	
11,814.00	90.44	0.05	2,439.15	7,434.15	3,990.08 N	289.04 E	14,544,985.52	1,676,319.52	1.14	3,993.01	
11,904.00	89.39	359.43	2,439.28	7,434.28	4,080.07 N	288.63 E	14,545,075.52	1,676,318.99	1.35	4,083.00	
11,994.00	91.41	1.36	2,438.65	7,433.65	4,170.06 N	289.26 E	14,545,165.51	1,676,319.48	3.10	4,172.99	
12,083.00	91.62	0.56	2,436.30	7,431.30	4,259.02 N	290.75 E	14,545,254.47	1,676,320.84	0.93	4,261.95	
12,173.00	92.25	359.98	2,433.26	7,428.26	4,348.96 N	291.17 E	14,545,344.41	1,676,321.14	0.95	4,351.90	
12,263.00	91.16	1.98	2,430.58	7,425.58	4,438.90 N	292.71 E	14,545,434.36	1,676,322.55	2.53	4,441.85	
12,353.00	90.90	1.49	2,428.96	7,423.96	4,528.85 N	295.43 E	14,545,524.30	1,676,325.14	0.62	4,531.82	
12,442.00	87.97	1.88	2,429.84	7,424.84	4,617.79 N	298.05 E	14,545,613.26	1,676,327.63	3.32	4,620.79	
12,622.00	88.72	1.11	2,435.04	7,430.04	4,797.66 N	302.74 E	14,545,793.12	1,676,332.07	0.60	4,800.69	
12,712.00	90.23	0.79	2,435.86	7,430.86	4,887.64 N	304.24 E	14,545,883.11	1,676,333.43	1.72	4,890.69	
12,802.00	90.40	0.09	2,435.37	7,430.37	4,977.63 N	304.93 E	14,545,973.10	1,676,334.00	0.80	4,980.68	
12,891.00	90.48	359.62	2,434.69	7,429.69	5,066.63 N	304.70 E	14,546,062.10	1,676,333.64	0.54	5,069.67	
12,981.00	91.53	1.71	2,433.11	7,428.11	5,156.60 N	305.75 E	14,546,152.07	1,676,334.56	2.60	5,159.65	
13,071.00	92.08	1.22	2,430.27	7,425.27	5,246.53 N	308.05 E	14,546,242.00	1,676,336.73	0.82	5,249.60	
13,161.00	91.20	2.13	2,427.70	7,422.70	5,336.45 N	310.68 E	14,546,331.93	1,676,339.23	1.41	5,339.54	
13,251.00	90.02	2.33	2,426.74	7,421.74	5,426.38 N	314.18 E	14,546,421.86	1,676,342.60	1.33	5,429.50	
13,340.00	88.89	2.41	2,427.59	7,422.59	5,515.29 N	317.86 E	14,546,510.78	1,676,346.16	1.27	5,518.46	
13,430.00	88.80	1.50	2,429.40	7,424.40	5,605.22 N	320.93 E	14,546,600.72	1,676,349.10	1.02	5,608.41	
13,520.00	89.56	2.14	2,430.69	7,425.69	5,695.17 N	323.78 E	14,546,690.66	1,676,351.83	1.10	5,698.38	
13,610.00	89.94	1.30	2,431.08	7,426.08	5,785.12 N	326.49 E	14,546,780.63	1,676,354.40	1.02	5,788.36	
13,699.00	88.09	1.41	2,432.61	7,427.61	5,874.08 N	328.59 E	14,546,869.59	1,676,356.38	2.08	5,877.34	
13,789.00	88.26	1.12	2,435.48	7,430.48	5,964.01 N	330.58 E	14,546,959.52	1,676,358.24	0.37	5,967.29	
13,879.00	88.63	0.95	2,437.92	7,432.92	6,053.97 N	332.20 E	14,547,049.48	1,676,359.73	0.45	6,057.25	
13,969.00	90.90	359.56	2,438.29	7,433.29	6,143.96 N	332.60 E	14,547,139.47	1,676,360.00	2.96	6,147.24	
14,059.00	91.62	359.22	2,436.31	7,431.31	6,233.93 N	331.64 E	14,547,229.44	1,676,358.92	0.88	6,237.20	
14,148.00	91.36	357.37	2,433.99	7,428.99	6,322.86 N	329.00 E	14,547,318.36	1,676,356.14	2.10	6,326.09	
14,238.00	89.52	358.33	2,433.30	7,428.30	6,412.79 N	325.62 E	14,547,408.28	1,676,352.64	2.31	6,415.98	
14,328.00	89.85	357.21	2,433.80	7,428.80	6,502.71 N	322.12 E	14,547,498.21	1,676,349.01	1.30	6,505.86	
14,370.00	90.24	358.52	2,433.76	7,428.76	6,544.68 N	320.55 E	14,547,540.18	1,676,347.38	3.26	6,547.81	Enter 460' Rad 14370.00' MD 7428.76' TVD
14,418.00	90.69	0.02	2,433.37	7,428.37	6,592.68 N	319.94 E	14,547,588.17	1,676,346.70	3.26	6,595.80	
14,508.00	89.98	359.78	2,432.85	7,427.85	6,682.67 N	319.79 E	14,547,678.17	1,676,346.42	0.83	6,685.79	
14,687.00	88.09	2.14	2,435.86	7,430.86	6,861.60 N	322.78 E	14,547,857.10	1,676,349.16	1.69	6,864.74	
14,777.00	87.25	1.30	2,439.52	7,434.52	6,951.49 N	325.48 E	14,547,946.99	1,676,351.73	1.32	6,954.65	
14,867.00	89.81	1.79	2,441.83	7,436.83	7,041.42 N	327.91 E	14,548,036.92	1,676,354.03	2.90	7,044.60	



## Design Report for WAGNER 27N-10HZ - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	TVD below System (usft)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Easting (usft)	Map Coordinates Northing (usft)	Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Comments
14,956.00	90.06	0.76	2,441.93	7,436.93	7,130.39 N	329.89 E	14,548,125.90	1,676,355.88	1.19	7,133.59	
15,046.00	89.81	359.42	2,442.03	7,437.03	7,220.39 N	330.03 E	14,548,215.90	1,676,355.89	1.51	7,223.58	
15,136.00	90.40	359.68	2,441.87	7,436.87	7,310.39 N	329.32 E	14,548,305.89	1,676,355.06	0.72	7,313.57	
15,226.00	90.90	0.06	2,440.85	7,435.85	7,400.38 N	329.12 E	14,548,395.88	1,676,354.73	0.70	7,403.55	
15,315.00	91.62	0.05	2,438.89	7,433.89	7,489.36 N	329.20 E	14,548,484.86	1,676,354.68	0.81	7,492.53	
15,361.00	91.62	0.05	2,437.59	7,432.59	7,535.34 N	329.24 E	14,548,530.84	1,676,354.66	0.00	7,538.51	Last Sperry MWD+IFR+SC Survey @ 15315.00' MD Straight Line Projection to TD @ 15361.00' MD - LAT: 40.059788° LONG: -104.871561° @15361.00' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
13.00	13.00	0.00	0.00	Tie-On @ Surface (KB 8')
133.00	133.00	-0.26	0.09	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1,858.00	1,810.89	-324.30	135.01	Last Total MWD+IFR Survey @ 1845.00' MD (KB 8')
1,858.00	1,810.89	-324.30	135.01	Tie-On to Last Surface MWD+IFR Survey @ 1858.00' MD
1,919.00	1,869.12	-341.21	141.66	First Sperry MWD+IFR+SC Survey @ 1919.00' MD
2,385.00	2,318.88	-453.34	186.44	Exit HardLine Box 2385.00' MD 2318.88' TVD
7,282.00	7,140.84	-452.91	258.66	Enter HardLine Box 7282.00' MD 7140.84' TVD
7,975.00	7,436.92	153.24	260.88	Landed Curve @ 7975.00' MD 85.32° INC 7436.92' TVD
7,975.00	7,436.92	153.24	260.88	LAT: 40.039516° LONG: -104.871806° @7975.00' MD
8,679.00	7,436.20	856.77	270.31	Exit 460' Rad 8679.00' MD 7436.20' TVD
14,370.00	7,428.76	6,544.68	320.55	Enter 460' Rad 14370.00' MD 7428.76' TVD
15,315.00	7,433.89	7,489.36	329.20	Last Sperry MWD+IFR+SC Survey @ 15315.00' MD
15,361.00	7,432.59	7,535.34	329.24	Straight Line Projection to TD @ 15361.00' MD
15,361.00	7,432.59	7,535.34	329.24	LAT: 40.059788° LONG: -104.871561° @15361.00' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	0.63	Slot	0.00	0.00	0.00



## Design Report for WAGNER 27N-10HZ - Final Surveys

### Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
13.00	1,858.00	Total MWD+IFR Surface Surveys	APC_ISCWSA REV 2 MWD+IFR1
1,858.00	15,315.00	Sperry MWD+IFR+SC Surveys	APC_ISCWSA REV 2 MWD+IFR1+SC
15,361.00	15,361.00	PTB	APC_BLIND

### Design Targets

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

### Directional Difficulty Index

Average Dogleg over Survey:	1.77 °/100usft	Maximum Dogleg over Survey:	12.43 °/100usft at 7,886.00 usft
Net Tortousity applicable to Plans:	0.89 °/100usft	Directional Difficulty Index:	6.704

### Audit Info

**North Reference Sheet for 1N-67W-22 Wagner 7-22HZ Pad (PD 464) - WAGNER 27N-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 27N-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: 14,540,995.04 usft N, 1,676,036.18 usft E

Geographical Coordinates of Well: 40° 02' 20.74" N, 104° 52' 21.86" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,361.00usft  
the Bottom Hole Displacement is 7,542.53usft in the Direction of 2.50° ( True).

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

