

Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-22 Wagner 7-22HZ Pad
Well: WAGNER 28N-W10HZ
Wellbore: Original Wellbore
Design: Final Surveys



HALLIBURTON
Sperry Drilling

US ROCKIES WATTENBERG PLANNING

WELL DETAILS: WAGNER 28N-W10HZ

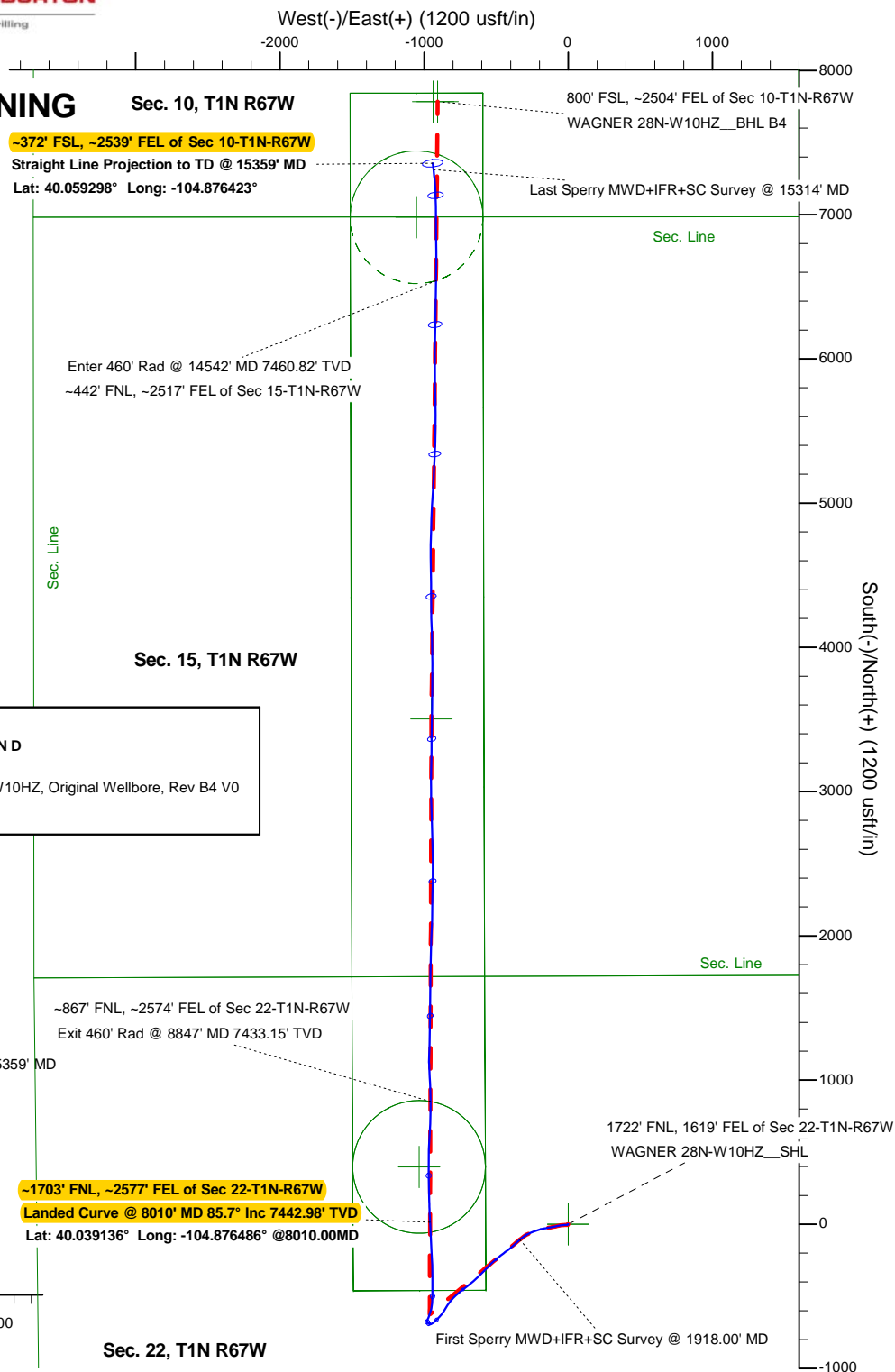
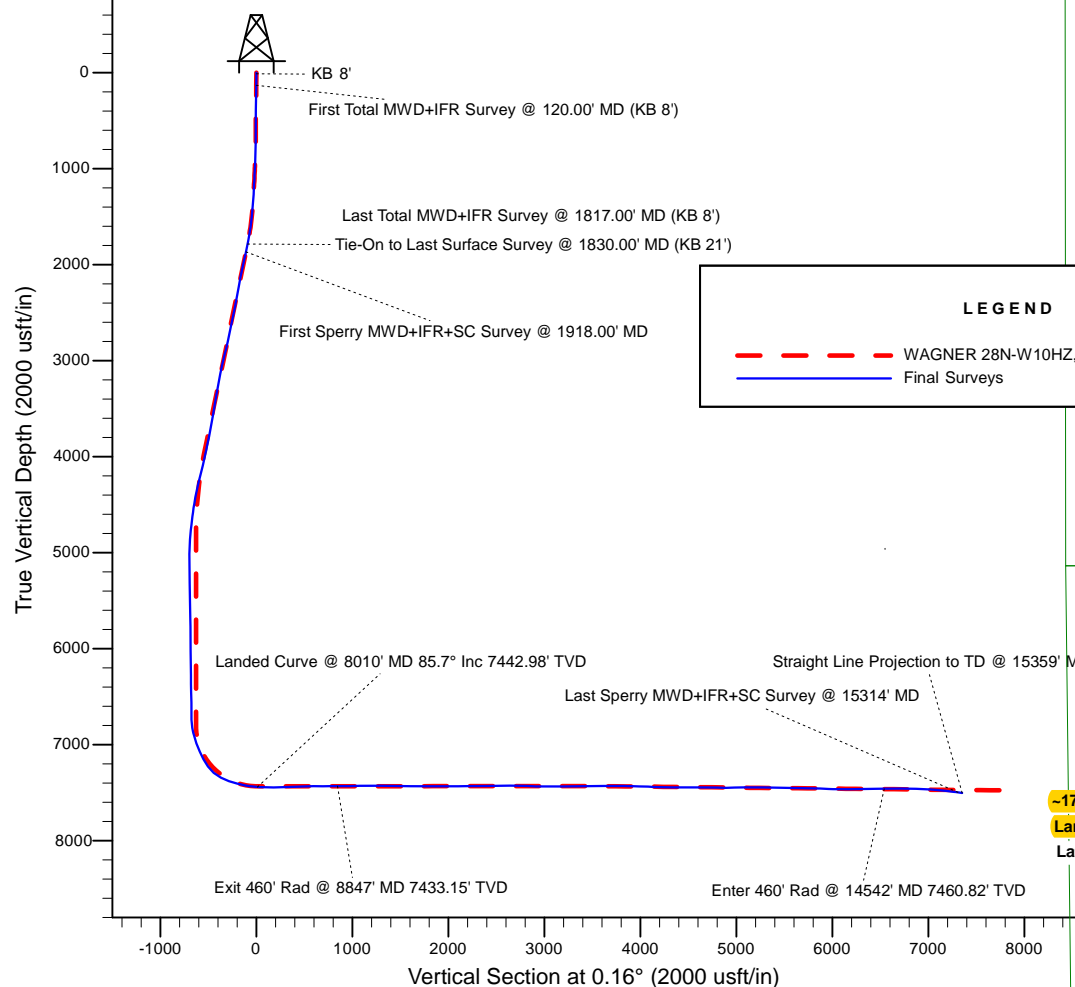
Ground Level: 4974.00
RKB 21' @ 4995.00usft (Precision 464)

Design: Final Surveys (WAGNER 28N-W10HZ/Original Wellbore)

Created By: Jerry Popp Date: 11:25, November 09 2017

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Annotation
13.00	0.00	0.00	13.00	0.00	0.00	KB 8'
133.00	0.26	149.72	133.00	-0.24	0.14	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1830.00	18.24	232.87	1786.44	-89.57	-314.44	Last Total MWD+IFR Survey @ 1817.00' MD (KB 8')
1830.00	18.24	232.87	1786.44	-89.57	-314.44	Tie-On to Last Surface Survey @ 1830.00' MD (KB 21')
1918.00	18.37	229.54	1869.99	-106.88	-335.97	First Sperry MWD+IFR+SC Survey @ 1918.00' MD
8010.00	85.70	356.98	7442.98	14.30	-958.88	Landed Curve @ 8010' MD 85.7° Inc 7442.98' TVD
8010.00	85.70	356.98	7442.98	14.30	-958.88	Lat: 40.039136° Long: -104.876486° @8010.00MD
8847.00	90.54	359.18	7433.15	850.51	-955.83	Exit 460' Rad @ 8847' MD 7433.15' TVD
14542.00	90.84	0.86	7460.82	6542.62	-915.86	Enter 460' Rad @ 14542' MD 7460.82' TVD
15314.00	80.87	352.41	7498.85	7312.01	-935.12	Last Sperry MWD+IFR+SC Survey @ 15314' MD
15359.00	80.87	352.41	7505.99	7356.05	-940.98	Straight Line Projection to TD @ 15359' MD
15359.00	80.87	352.41	7505.99	7356.05	-940.98	Lat: 40.059298° Long: -104.876423°



Job# 904405884

Precision 464

US ROCKIES WATTENBERG PLANNING

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

API# 05-123-43472

WAGNER 28N-W10HZ

Original Wellbore

Design: Final Surveys

Sperry Drilling Services

Combo Report

07 November, 2017

Well Coordinates: 40° 02' 20.75" N
104° 52' 23.02" W

North American Datum 1983
Zone 13N (108 W to 102 W)
14,540,995.64 N
1,675,946.06 E

Ground Level: 4,974.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well WAGNER 28N-W10HZ

RKB 21' @ 4995.00usft (Precision 464)

N

True

Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 81D

Report Version: Midcon Combo v1.11

HALLIBURTON

Design Report for WAGNER 28N-W10HZ - 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	14,540,995.640	1,675,946.056	0.00	0.00	
13.00	0.00	0.00	-4,982.00	13.00	0.00 N	0.00 E	14,540,995.640	1,675,946.056	0.00	0.00	KB 8'
133.00	0.26	149.72	-4,862.00	133.00	0.24 S	0.14 E	14,540,995.405	1,675,946.193	0.22	-0.23	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
165.00	0.62	168.18	-4,830.00	165.00	0.47 S	0.21 E	14,540,995.173	1,675,946.266	1.19	-0.47	
197.00	0.75	220.74	-4,798.00	197.00	0.80 S	0.11 E	14,540,994.845	1,675,946.165	1.93	-0.80	
228.00	1.10	239.11	-4,767.01	227.99	1.10 S	0.28 W	14,540,994.538	1,675,945.778	1.47	-1.10	
260.00	1.45	240.34	-4,735.02	259.98	1.46 S	0.90 W	14,540,994.179	1,675,945.163	1.10	-1.46	
323.00	2.15	232.43	-4,672.05	322.95	2.57 S	2.52 W	14,540,993.061	1,675,943.535	1.18	-2.58	
355.00	2.55	249.22	-4,640.07	354.93	3.19 S	3.67 W	14,540,992.441	1,675,942.395	2.47	-3.20	
387.00	2.94	246.23	-4,608.11	386.89	3.78 S	5.08 W	14,540,991.856	1,675,940.979	1.30	-3.79	
419.00	2.99	253.52	-4,576.15	418.85	4.34 S	6.63 W	14,540,991.286	1,675,939.428	1.19	-4.36	
450.00	2.81	256.95	-4,545.19	449.81	4.75 S	8.15 W	14,540,990.883	1,675,937.913	0.81	-4.77	
482.00	3.16	263.37	-4,513.24	481.76	5.02 S	9.79 W	14,540,990.602	1,675,936.274	1.51	-5.05	
514.00	3.96	271.19	-4,481.30	513.70	5.10 S	11.77 W	14,540,990.520	1,675,934.293	2.92	-5.14	
577.00	4.83	270.75	-4,418.48	576.52	5.02 S	16.60 W	14,540,990.593	1,675,929.466	1.38	-5.07	
608.00	5.93	267.85	-4,387.62	607.38	5.07 S	19.50 W	14,540,990.546	1,675,926.560	3.65	-5.12	
640.00	6.20	271.54	-4,355.80	639.20	5.08 S	22.88 W	14,540,990.526	1,675,923.181	1.48	-5.15	
672.00	7.21	266.79	-4,324.02	670.98	5.15 S	26.61 W	14,540,990.454	1,675,919.449	3.60	-5.22	
703.00	7.78	269.69	-4,293.28	701.72	5.27 S	30.65 W	14,540,990.328	1,675,915.409	2.21	-5.35	
735.00	8.26	264.33	-4,261.60	733.40	5.51 S	35.11 W	14,540,990.083	1,675,910.955	2.78	-5.60	
767.00	8.88	262.84	-4,229.95	765.05	6.04 S	39.85 W	14,540,989.541	1,675,906.218	2.06	-6.15	
798.00	10.24	262.14	-4,199.38	795.62	6.72 S	44.95 W	14,540,988.859	1,675,901.115	4.40	-6.84	
830.00	10.63	260.73	-4,167.91	827.09	7.58 S	50.68 W	14,540,987.986	1,675,895.386	1.46	-7.72	
862.00	11.21	259.85	-4,136.49	858.51	8.61 S	56.66 W	14,540,986.954	1,675,889.413	1.89	-8.76	
893.00	12.13	259.32	-4,106.13	888.87	9.74 S	62.82 W	14,540,985.811	1,675,883.247	2.99	-9.92	
925.00	12.35	258.88	-4,074.86	920.14	11.02 S	69.48 W	14,540,984.518	1,675,876.588	0.75	-11.22	
957.00	12.04	258.18	-4,043.58	951.42	12.37 S	76.11 W	14,540,983.165	1,675,869.965	1.07	-12.58	
988.00	12.30	259.85	-4,013.28	981.72	13.61 S	82.52 W	14,540,981.912	1,675,863.552	1.41	-13.84	
1,020.00	13.45	259.15	-3,982.09	1,012.91	14.91 S	89.53 W	14,540,980.601	1,675,856.543	3.63	-15.16	
1,051.00	14.59	260.03	-3,952.01	1,042.99	16.27 S	96.92 W	14,540,979.235	1,675,849.158	3.74	-16.54	
1,083.00	14.28	257.92	-3,921.02	1,073.98	17.79 S	104.75 W	14,540,977.700	1,675,841.332	1.91	-18.08	
1,114.00	14.33	257.74	-3,890.98	1,104.02	19.41 S	112.24 W	14,540,976.075	1,675,833.847	0.22	-19.72	
1,146.00	14.94	259.06	-3,860.02	1,134.98	21.03 S	120.16 W	14,540,974.440	1,675,825.929	2.17	-21.36	
1,178.00	15.78	259.68	-3,829.16	1,165.84	22.59 S	128.49 W	14,540,972.866	1,675,817.601	2.67	-22.95	
1,210.00	16.79	260.91	-3,798.45	1,196.55	24.10 S	137.33 W	14,540,971.343	1,675,808.758	3.34	-24.48	
1,241.00	16.79	260.55	-3,768.77	1,226.23	25.54 S	146.17 W	14,540,969.888	1,675,799.922	0.34	-25.95	
1,273.00	16.39	259.94	-3,738.10	1,256.90	27.09 S	155.17 W	14,540,968.328	1,675,790.920	1.36	-27.52	
1,305.00	16.74	259.06	-3,707.43	1,287.57	28.75 S	164.14 W	14,540,966.652	1,675,781.952	1.35	-29.21	
1,336.00	16.79	257.48	-3,677.75	1,317.25	30.57 S	172.90 W	14,540,964.822	1,675,773.201	1.48	-31.05	
1,368.00	16.66	255.54	-3,647.10	1,347.90	32.72 S	181.85 W	14,540,962.662	1,675,764.250	1.79	-33.23	
1,400.00	17.58	256.51	-3,616.52	1,378.48	34.99 S	190.99 W	14,540,960.376	1,675,755.112	3.01	-35.53	

Design Report for WAGNER 28N-W10HZ - 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)			
1,431.00	17.45	254.84	-3,586.95	1,408.05	37.30 S	200.03 W	14,540,958.055	1,675,746.076	1.67	-37.86	
1,463.00	17.40	253.79	-3,556.42	1,438.58	39.89 S	209.26 W	14,540,955.452	1,675,736.855	0.99	-40.47	
1,494.00	17.71	251.06	-3,526.87	1,468.13	42.71 S	218.17 W	14,540,952.614	1,675,727.948	2.84	-43.32	
1,526.00	18.24	251.50	-3,496.43	1,498.57	45.88 S	227.52 W	14,540,949.432	1,675,718.599	1.71	-46.52	
1,590.00	18.54	247.55	-3,435.69	1,559.31	52.95 S	246.43 W	14,540,942.341	1,675,699.707	2.00	-53.64	
1,621.00	19.25	246.40	-3,406.36	1,588.64	56.88 S	255.66 W	14,540,938.400	1,675,690.474	2.59	-57.59	
1,652.00	19.25	245.35	-3,377.10	1,617.90	61.05 S	264.99 W	14,540,934.210	1,675,681.153	1.12	-61.79	
1,684.00	18.94	244.73	-3,346.86	1,648.14	65.47 S	274.48 W	14,540,929.779	1,675,671.668	1.16	-66.24	
1,715.00	18.85	243.68	-3,317.53	1,677.47	69.84 S	283.52 W	14,540,925.398	1,675,662.636	1.13	-70.63	
1,747.00	18.81	239.64	-3,287.24	1,707.76	74.74 S	292.60 W	14,540,920.486	1,675,653.558	4.08	-75.55	
1,811.00	18.46	233.48	-3,226.59	1,768.41	85.98 S	309.65 W	14,540,909.215	1,675,636.526	3.12	-86.85	
1,830.00	18.24	232.87	-3,208.56	1,786.44	89.57 S	314.44 W	14,540,905.623	1,675,631.743	1.54	-90.45	Last Total MWD+IFR Survey @ 1817.00' MD (KB 8') - Tie-On to Last Surface Survey @ 1830.00' MD (KB 21') First Sperry MWD+IFR+SC Survey @ 1918.00' MD
1,918.00	18.37	229.54	-3,125.01	1,869.99	106.88 S	335.97 W	14,540,888.281	1,675,610.237	1.20	-107.82	
2,097.00	16.84	225.92	-2,954.39	2,040.61	143.22 S	376.06 W	14,540,851.880	1,675,570.198	1.05	-144.27	
2,187.00	17.41	229.38	-2,868.38	2,126.62	161.06 S	395.65 W	14,540,834.016	1,675,550.638	1.30	-162.16	
2,277.00	17.10	233.92	-2,782.43	2,212.57	177.62 S	416.56 W	14,540,817.428	1,675,529.747	1.54	-178.78	
2,367.00	17.80	234.64	-2,696.57	2,298.43	193.37 S	438.48 W	14,540,801.643	1,675,507.856	0.81	-194.60	
2,456.00	17.01	231.53	-2,611.64	2,383.36	209.34 S	459.76 W	14,540,785.641	1,675,486.592	1.37	-210.63	
2,546.00	17.98	229.94	-2,525.80	2,469.20	226.47 S	480.70 W	14,540,768.481	1,675,465.678	1.20	-227.82	
2,636.00	17.80	229.45	-2,440.16	2,554.84	244.36 S	501.79 W	14,540,750.568	1,675,444.619	0.26	-245.76	
2,726.00	17.58	231.12	-2,354.41	2,640.59	261.83 S	522.82 W	14,540,733.063	1,675,423.610	0.61	-263.29	
2,905.00	16.92	222.61	-2,183.44	2,811.56	297.98 S	561.50 W	14,540,696.863	1,675,384.977	1.46	-299.54	
2,995.00	17.43	219.94	-2,097.45	2,897.55	317.95 S	579.02 W	14,540,676.864	1,675,367.485	1.04	-319.57	
3,085.00	18.90	225.09	-2,011.93	2,983.07	338.58 S	598.00 W	14,540,656.209	1,675,348.536	2.42	-340.25	
3,174.00	17.62	228.38	-1,927.41	3,067.59	357.70 S	618.28 W	14,540,637.056	1,675,328.283	1.85	-359.43	
3,264.00	15.93	224.99	-1,841.24	3,153.76	375.49 S	637.20 W	14,540,619.245	1,675,309.392	2.17	-377.27	
3,354.00	16.09	228.06	-1,754.73	3,240.27	392.56 S	655.21 W	14,540,602.149	1,675,291.407	0.96	-394.39	
3,534.00	15.10	234.42	-1,581.35	3,413.65	422.87 S	692.83 W	14,540,571.780	1,675,253.825	1.10	-424.81	
3,623.00	15.21	232.81	-1,495.44	3,499.56	436.68 S	711.56 W	14,540,557.951	1,675,235.115	0.49	-438.66	
3,713.00	15.76	229.98	-1,408.71	3,586.29	451.67 S	730.33 W	14,540,542.928	1,675,216.371	1.04	-453.71	
3,802.00	15.45	231.10	-1,322.99	3,672.01	466.89 S	748.81 W	14,540,527.685	1,675,197.911	0.49	-468.98	
3,892.00	16.65	228.62	-1,236.50	3,758.50	482.94 S	767.82 W	14,540,511.606	1,675,178.929	1.54	-485.08	
3,982.00	17.84	226.97	-1,150.55	3,844.45	500.87 S	787.57 W	14,540,493.646	1,675,159.201	1.43	-503.07	
4,072.00	15.91	222.42	-1,064.42	3,930.58	519.39 S	805.97 W	14,540,475.104	1,675,140.826	2.60	-521.64	
4,161.00	14.35	217.07	-978.50	4,016.50	537.20 S	820.85 W	14,540,457.275	1,675,125.973	2.35	-539.49	
4,251.00	16.77	212.15	-891.81	4,103.19	557.09 S	834.48 W	14,540,437.360	1,675,112.366	3.06	-559.42	
4,341.00	17.14	213.17	-805.72	4,189.28	579.19 S	848.65 W	14,540,415.246	1,675,098.233	0.53	-581.55	
4,431.00	15.18	211.49	-719.28	4,275.72	600.34 S	862.06 W	14,540,394.076	1,675,084.851	2.24	-602.74	
4,610.00	13.32	221.42	-545.77	4,449.23	635.79 S	887.95 W	14,540,358.584	1,675,059.012	1.71	-638.27	
4,790.00	10.37	225.53	-369.62	4,625.38	662.70 S	913.24 W	14,540,331.643	1,675,033.766	1.70	-665.24	

Design Report for WAGNER 28N-W10HZ - 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)			
4,880.00	9.60	228.01	-280.98	4,714.02	673.39 S	924.59 W	14,540,320.932	1,675,022.422	0.98	-675.97	
4,969.00	9.01	231.95	-193.15	4,801.85	682.65 S	935.60 W	14,540,311.656	1,675,011.431	0.98	-685.26	
5,059.00	7.50	243.64	-104.08	4,890.92	689.60 S	946.41 W	14,540,304.688	1,675,000.627	2.50	-692.24	
5,149.00	4.66	258.60	-14.59	4,980.41	692.94 S	955.26 W	14,540,301.344	1,674,991.783	3.59	-695.60	
5,239.00	2.18	286.26	75.25	5,070.25	693.18 S	960.49 W	14,540,301.093	1,674,986.555	3.23	-695.86	
5,328.00	1.27	288.65	164.21	5,159.21	692.39 S	963.05 W	14,540,301.879	1,674,983.995	1.03	-695.08	
5,418.00	1.05	292.69	254.19	5,249.19	691.75 S	964.75 W	14,540,302.514	1,674,982.288	0.26	-694.44	
5,508.00	1.23	293.97	344.17	5,339.17	691.04 S	966.40 W	14,540,303.222	1,674,980.643	0.20	-693.74	
5,598.00	1.27	288.33	434.15	5,429.15	690.34 S	968.23 W	14,540,303.925	1,674,978.813	0.14	-693.04	
5,687.00	1.34	358.56	523.13	5,518.13	688.98 S	969.19 W	14,540,305.274	1,674,977.849	1.69	-691.69	
5,777.00	1.63	5.45	613.10	5,608.10	686.66 S	969.10 W	14,540,307.601	1,674,977.940	0.38	-689.36	
5,867.00	1.27	348.12	703.07	5,698.07	684.41 S	969.18 W	14,540,309.851	1,674,977.853	0.63	-687.11	
5,939.00	0.97	323.92	775.06	5,770.06	683.13 S	969.70 W	14,540,311.124	1,674,977.328	0.77	-685.84	
5,999.00	1.16	291.05	835.05	5,830.05	682.51 S	970.57 W	14,540,311.751	1,674,976.462	1.05	-685.21	
6,179.00	1.78	298.18	1,014.99	6,009.99	680.53 S	974.73 W	14,540,313.720	1,674,972.294	0.36	-683.25	
6,268.00	1.36	304.63	1,103.96	6,098.96	679.28 S	976.82 W	14,540,314.970	1,674,970.205	0.51	-682.00	
6,358.00	0.73	108.89	1,193.95	6,188.95	678.86 S	977.16 W	14,540,315.391	1,674,969.868	2.30	-681.58	
6,448.00	0.15	297.46	1,283.95	6,278.95	678.99 S	976.72 W	14,540,315.260	1,674,970.306	0.98	-681.71	
6,538.00	0.97	320.88	1,373.94	6,368.94	678.34 S	977.30 W	14,540,315.904	1,674,969.720	0.93	-681.07	
6,627.00	1.27	326.39	1,462.93	6,457.93	676.94 S	978.33 W	14,540,317.309	1,674,968.697	0.36	-679.67	
6,717.00	1.60	327.49	1,552.90	6,547.90	675.05 S	979.55 W	14,540,319.197	1,674,967.467	0.37	-677.78	
6,807.00	1.25	318.67	1,642.87	6,637.87	673.25 S	980.88 W	14,540,320.992	1,674,966.140	0.46	-675.99	
6,869.00	0.62	321.83	1,704.86	6,699.86	672.48 S	981.53 W	14,540,321.763	1,674,965.485	1.02	-675.22	
6,897.00	0.59	314.21	1,732.86	6,727.86	672.26 S	981.73 W	14,540,321.982	1,674,965.288	0.31	-675.00	
6,986.00	9.47	28.57	1,821.45	6,816.45	665.49 S	978.55 W	14,540,328.751	1,674,968.459	10.48	-668.22	
7,076.00	17.49	21.02	1,908.90	6,903.90	646.34 S	970.14 W	14,540,347.922	1,674,976.837	9.10	-649.04	
7,166.00	19.54	18.06	1,994.24	6,989.24	619.40 S	960.62 W	14,540,374.873	1,674,986.317	2.51	-622.08	
7,256.00	24.17	15.09	2,077.75	7,072.75	587.28 S	951.15 W	14,540,407.004	1,674,995.740	5.29	-589.93	
7,345.00	28.59	4.47	2,157.51	7,152.51	548.42 S	944.74 W	14,540,445.877	1,675,002.094	7.25	-551.05	
7,435.00	36.15	1.84	2,233.47	7,228.47	500.34 S	942.21 W	14,540,493.953	1,675,004.560	8.54	-502.97	
7,525.00	48.81	359.03	2,299.72	7,294.72	439.70 S	941.93 W	14,540,554.596	1,675,004.754	14.22	-442.33	
7,615.00	62.34	1.00	2,350.49	7,345.49	365.64 S	941.81 W	14,540,628.656	1,675,004.771	15.14	-368.27	
7,705.00	70.69	357.20	2,386.33	7,381.33	283.20 S	943.19 W	14,540,711.094	1,675,003.272	10.05	-285.83	
7,794.00	76.63	356.45	2,411.36	7,406.36	197.97 S	947.93 W	14,540,796.322	1,674,998.414	6.72	-200.61	
7,884.00	77.92	357.50	2,431.18	7,426.18	110.30 S	952.56 W	14,540,883.980	1,674,993.658	1.83	-112.96	
7,974.00	84.52	356.84	2,444.91	7,439.91	21.52 S	956.95 W	14,540,972.760	1,674,989.138	7.37	-24.19	
8,010.00	85.70	356.98	2,447.98	7,442.98	14.30 N	958.88 W	14,541,008.574	1,674,987.154	3.29	11.62	Land Curve @ 8010' MD 85.7° Inc 7442.98' TVD - Lat: 40.039136° Long: -104.87648591° @8010' MD
8,064.00	87.46	357.19	2,451.21	7,446.21	68.13 N	961.62 W	14,541,062.402	1,674,984.336	3.29	65.45	
8,154.00	91.97	359.19	2,451.65	7,446.65	158.06 N	964.47 W	14,541,152.324	1,674,981.366	5.48	155.36	
8,243.00	91.77	358.68	2,448.75	7,443.75	247.00 N	966.12 W	14,541,241.258	1,674,979.586	0.62	244.30	

Design Report for WAGNER 28N-W10HZ - 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)			
8,333.00	91.15	358.19	2,446.46	7,441.46	336.93 N	968.58 W	14,541,331.191	1,674,977.001	0.88	334.23	
8,513.00	91.07	2.69	2,442.97	7,437.97	516.85 N	967.19 W	14,541,511.107	1,674,978.126	2.50	514.14	
8,603.00	91.42	3.02	2,441.01	7,436.01	606.71 N	962.71 W	14,541,600.981	1,674,982.480	0.53	604.02	
8,692.00	90.41	3.28	2,439.59	7,434.59	695.57 N	957.82 W	14,541,689.840	1,674,987.243	1.17	692.89	
8,782.00	90.60	359.91	2,438.80	7,433.80	785.51 N	955.32 W	14,541,779.792	1,674,989.620	3.75	782.84	
8,847.00	90.54	359.18	2,438.15	7,433.15	850.51 N	955.83 W	14,541,844.786	1,674,989.013	1.12	847.84	Exit 460' Rad @ 8847' MD 7433.15' TVD
8,971.00	90.43	357.80	2,437.10	7,432.10	974.46 N	959.09 W	14,541,968.731	1,674,985.574	1.12	971.78	
9,065.00	90.54	356.72	2,436.30	7,431.30	1,068.35 N	963.59 W	14,542,062.612	1,674,980.947	1.15	1,065.65	
9,159.00	91.18	0.72	2,434.89	7,429.89	1,162.29 N	965.69 W	14,542,156.555	1,674,978.713	4.31	1,159.59	
9,254.00	89.29	2.12	2,434.50	7,429.50	1,257.26 N	963.33 W	14,542,251.522	1,674,980.932	2.48	1,254.56	
9,348.00	89.44	1.62	2,435.54	7,430.54	1,351.20 N	960.27 W	14,542,345.470	1,674,983.865	0.56	1,348.51	
9,442.00	89.55	0.81	2,436.37	7,431.37	1,445.17 N	958.27 W	14,542,439.447	1,674,985.725	0.87	1,442.49	
9,537.00	89.29	359.98	2,437.33	7,432.33	1,540.17 N	957.62 W	14,542,534.440	1,674,986.244	0.92	1,537.49	
9,631.00	89.46	359.39	2,438.36	7,433.36	1,634.16 N	958.13 W	14,542,628.432	1,674,985.593	0.65	1,631.48	
9,725.00	88.96	0.55	2,439.66	7,434.66	1,728.15 N	958.18 W	14,542,722.421	1,674,985.410	1.34	1,725.47	
9,819.00	89.79	2.25	2,440.68	7,435.68	1,822.11 N	955.89 W	14,542,816.386	1,674,987.573	2.01	1,819.43	
9,914.00	90.03	2.34	2,440.83	7,435.83	1,917.03 N	952.08 W	14,542,911.315	1,674,991.242	0.27	1,914.37	
10,008.00	90.43	2.35	2,440.45	7,435.45	2,010.95 N	948.24 W	14,543,005.241	1,674,994.954	0.43	2,008.30	
10,102.00	90.58	1.51	2,439.62	7,434.62	2,104.90 N	945.07 W	14,543,099.187	1,674,997.986	0.91	2,102.25	
10,197.00	90.34	0.17	2,438.86	7,433.86	2,199.88 N	943.68 W	14,543,194.174	1,674,999.243	1.43	2,197.24	
10,286.00	90.91	1.12	2,437.89	7,432.89	2,288.87 N	942.68 W	14,543,283.163	1,675,000.118	1.24	2,286.23	
10,376.00	90.67	0.30	2,436.65	7,431.65	2,378.85 N	941.56 W	14,543,373.148	1,675,001.105	0.95	2,376.21	
10,466.00	90.65	1.54	2,435.61	7,430.61	2,468.83 N	940.12 W	14,543,463.130	1,675,002.421	1.38	2,466.20	
10,556.00	91.66	359.12	2,433.80	7,428.80	2,558.81 N	939.60 W	14,543,553.103	1,675,002.812	2.91	2,556.17	
10,645.00	89.42	357.65	2,432.96	7,427.96	2,647.76 N	942.11 W	14,543,642.052	1,675,000.177	3.01	2,645.12	
10,735.00	87.77	359.10	2,435.17	7,430.17	2,737.69 N	944.66 W	14,543,731.980	1,674,997.497	2.44	2,735.04	
10,915.00	88.25	357.43	2,441.42	7,436.42	2,917.49 N	950.10 W	14,543,911.774	1,674,991.794	0.96	2,914.83	
11,004.00	89.88	359.88	2,442.87	7,437.87	3,006.45 N	952.19 W	14,544,000.725	1,674,989.579	3.31	3,003.77	
11,094.00	89.59	359.74	2,443.29	7,438.29	3,096.44 N	952.49 W	14,544,090.723	1,674,989.152	0.36	3,093.77	
11,184.00	92.23	2.40	2,441.86	7,436.86	3,186.40 N	950.81 W	14,544,180.682	1,674,990.703	4.16	3,183.73	
11,274.00	90.56	0.58	2,439.67	7,434.67	3,276.34 N	948.47 W	14,544,270.621	1,674,992.914	2.74	3,273.67	
11,363.00	90.14	0.27	2,439.12	7,434.12	3,365.33 N	947.81 W	14,544,359.618	1,674,993.447	0.59	3,362.67	
11,453.00	90.47	1.04	2,438.64	7,433.64	3,455.32 N	946.78 W	14,544,449.611	1,674,994.348	0.93	3,452.67	
11,543.00	90.60	0.69	2,437.80	7,432.80	3,545.31 N	945.43 W	14,544,539.598	1,674,995.578	0.41	3,542.66	
11,722.00	89.99	0.88	2,436.88	7,431.88	3,724.29 N	942.97 W	14,544,718.582	1,674,997.775	0.36	3,721.64	
11,812.00	90.25	0.30	2,436.69	7,431.69	3,814.28 N	942.05 W	14,544,808.577	1,674,998.574	0.71	3,811.64	
11,902.00	87.92	359.26	2,438.13	7,433.13	3,904.26 N	942.39 W	14,544,898.557	1,674,998.100	2.83	3,901.62	
11,992.00	87.57	358.59	2,441.67	7,436.67	3,994.18 N	944.08 W	14,544,988.469	1,674,996.285	0.84	3,991.53	
12,082.00	88.36	358.58	2,444.87	7,439.87	4,084.09 N	946.30 W	14,545,078.380	1,674,993.936	0.88	4,081.43	
12,172.00	87.33	357.88	2,448.25	7,443.25	4,173.99 N	949.08 W	14,545,168.268	1,674,991.030	1.38	4,171.32	
12,261.00	89.62	359.53	2,450.62	7,445.62	4,262.92 N	951.09 W	14,545,257.202	1,674,988.893	3.17	4,260.25	

Design Report for WAGNER 28N-W10HZ - 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)			
12,351.00	89.79	0.23	2,451.08	7,446.08	4,352.92 N	951.28 W	14,545,347.200	1,674,988.577	0.80	4,350.25	
12,441.00	90.21	359.31	2,451.08	7,446.08	4,442.92 N	951.64 W	14,545,437.197	1,674,988.087	1.12	4,440.24	
12,621.00	88.63	358.98	2,452.91	7,447.91	4,622.88 N	954.32 W	14,545,617.158	1,674,985.145	0.90	4,620.20	
12,710.00	89.37	1.75	2,454.46	7,449.46	4,711.86 N	953.76 W	14,545,706.134	1,674,985.585	3.22	4,709.18	
12,800.00	90.16	1.43	2,454.83	7,449.83	4,801.82 N	951.26 W	14,545,796.101	1,674,987.954	0.95	4,799.15	
12,890.00	89.37	1.06	2,455.20	7,450.20	4,891.80 N	949.30 W	14,545,886.081	1,674,989.781	0.97	4,889.13	
12,980.00	91.00	3.76	2,454.91	7,449.91	4,981.71 N	945.52 W	14,545,975.995	1,674,993.437	3.50	4,979.05	
13,069.00	91.73	3.23	2,452.79	7,447.79	5,070.52 N	940.09 W	14,546,064.811	1,674,998.735	1.01	5,067.87	
13,159.00	89.40	3.24	2,451.90	7,446.90	5,160.36 N	935.02 W	14,546,154.664	1,675,003.685	2.59	5,157.73	
13,249.00	89.55	3.00	2,452.72	7,447.72	5,250.22 N	930.12 W	14,546,244.534	1,675,008.455	0.31	5,247.61	
13,339.00	89.35	2.16	2,453.59	7,448.59	5,340.13 N	926.07 W	14,546,334.443	1,675,012.378	0.96	5,337.52	
13,429.00	89.22	1.22	2,454.71	7,449.71	5,430.08 N	923.41 W	14,546,424.400	1,675,014.904	1.05	5,427.48	
13,518.00	89.11	0.70	2,456.01	7,451.01	5,519.06 N	921.92 W	14,546,513.379	1,675,016.268	0.60	5,516.46	
13,608.00	88.91	0.28	2,457.56	7,452.56	5,609.04 N	921.15 W	14,546,603.363	1,675,016.909	0.52	5,606.45	
13,698.00	89.04	359.35	2,459.17	7,454.17	5,699.03 N	921.44 W	14,546,693.347	1,675,016.490	1.04	5,696.43	
13,788.00	88.30	359.17	2,461.26	7,456.26	5,788.99 N	922.61 W	14,546,783.313	1,675,015.200	0.85	5,786.39	
13,877.00	87.37	358.67	2,464.62	7,459.62	5,877.91 N	924.28 W	14,546,872.230	1,675,013.397	1.19	5,875.31	
13,967.00	88.03	359.33	2,468.24	7,463.24	5,967.83 N	925.85 W	14,546,962.140	1,675,011.700	1.04	5,965.22	
14,057.00	89.51	0.52	2,470.17	7,465.17	6,057.80 N	925.97 W	14,547,052.115	1,675,011.454	2.11	6,055.19	
14,147.00	91.11	0.74	2,469.68	7,464.68	6,147.79 N	924.98 W	14,547,142.107	1,675,012.315	1.79	6,145.18	
14,237.00	91.20	0.21	2,467.87	7,462.87	6,237.77 N	924.23 W	14,547,232.086	1,675,012.933	0.60	6,235.16	
14,326.00	89.37	2.18	2,467.42	7,462.42	6,326.74 N	922.38 W	14,547,321.060	1,675,014.662	3.02	6,324.14	
14,416.00	90.30	1.84	2,467.68	7,462.68	6,416.68 N	919.22 W	14,547,411.007	1,675,017.691	1.10	6,414.09	
14,506.00	91.24	1.50	2,466.47	7,461.47	6,506.64 N	916.60 W	14,547,500.964	1,675,020.185	1.11	6,504.05	
14,542.00	90.84	0.86	2,465.82	7,460.82	6,542.62 N	915.86 W	14,547,536.951	1,675,020.875	2.09	6,540.04	Enter 460' Rad @ 14542' MD 7460.82' TVD
14,596.00	90.25	359.90	2,465.30	7,460.30	6,596.62 N	915.50 W	14,547,590.947	1,675,021.156	2.09	6,594.04	
14,685.00	91.64	0.00	2,463.84	7,458.84	6,685.60 N	915.58 W	14,547,679.932	1,675,020.951	1.57	6,683.02	
14,775.00	89.35	359.35	2,463.06	7,458.06	6,775.59 N	916.09 W	14,547,769.920	1,675,020.313	2.64	6,773.01	
14,865.00	86.45	359.10	2,466.36	7,461.36	6,865.51 N	917.30 W	14,547,859.840	1,675,018.968	3.23	6,862.93	
14,955.00	87.02	359.79	2,471.48	7,466.48	6,955.36 N	918.17 W	14,547,949.687	1,675,017.970	0.99	6,952.77	
15,045.00	86.96	359.44	2,476.21	7,471.21	7,045.24 N	918.78 W	14,548,039.560	1,675,017.238	0.39	7,042.64	
15,134.00	85.26	358.04	2,482.25	7,477.25	7,134.00 N	920.73 W	14,548,128.325	1,675,015.160	2.47	7,131.41	
15,224.00	83.15	355.52	2,491.33	7,486.33	7,223.39 N	925.75 W	14,548,217.704	1,675,010.008	3.64	7,220.78	
15,314.00	80.87	352.41	2,503.85	7,498.85	7,312.01 N	935.12 W	14,548,306.307	1,675,000.519	4.26	7,309.37	Last Sperry MWD+IFR+SC Survey @ 15314' MD
15,359.00	80.87	352.41	2,510.99	7,505.99	7,356.05 N	940.98 W	14,548,350.339	1,674,994.588	0.00	7,353.39	Straight Line Projection to TD @ 15359' MD - Lat: 40.05929789° Long: -104.87642294° @15359' MD

Design Report for WAGNER 28N-W10HZ - Final Surveys

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	KB 8'
133.00	133.00	-0.24	0.14	First Total MWD+IFR Survey @ 120.00' MD (KB 8')
1,830.00	1,786.44	-89.57	-314.44	Last Total MWD+IFR Survey @ 1817.00' MD (KB 8')
1,830.00	1,786.44	-89.57	-314.44	Tie-On to Last Surface Survey @ 1830.00' MD (KB 21')
1,918.00	1,869.99	-106.88	-335.97	First Sperry MWD+IFR+SC Survey @ 1918.00' MD
8,010.00	7,442.98	14.30	-958.88	Land Curve @ 8010' MD 85.7° Inc 7442.98' TVD - Lat: 40.039136° Long: -104.87648591° @8010' MD
8,847.00	7,433.15	850.51	-955.83	Exit 460' Rad @ 8847' MD 7433.15' TVD
14,542.00	7,460.82	6,542.62	-915.86	Enter 460' Rad @ 14542' MD 7460.82' TVD
15,314.00	7,498.85	7,312.01	-935.12	Last Sperry MWD+IFR+SC Survey @ 15314' MD
15,359.00	7,505.99	7,356.05	-940.98	Straight Line Projection to TD @ 15359' MD - Lat: 40.05929789° Long: -104.87642294° @15359' 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)	0.16	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
13.00	1,830.00	Total MWD+IFR Surface Surveys	APC_ISCWSA REV 2 MWD+IFR1
1,830.00	15,314.00	Sperry MWD+IFR+SC Surveys	APC_ISCWSA REV 2 MWD+IFR1+SC
15,359.00	15,359.00	PTB	APC_BLIND

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,850.00	1,805.44	~ 9 5/8"	9-5/8	13-1/2

Design Report for WAGNER 28N-W10HZ - Final Surveys

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:	1.99 °/100usft	Maximum Dogleg over Survey:	15.14 °/100usft at 7,615.00 usft
Net Tortousity applicable to Plans:	1.05 °/100usft	Directional Difficulty Index:	6.764

Audit Info

North Reference Sheet for 1N-67W-22 Wagner 7-22HZ Pad (PD 464) - WAGNER 28N-W10HZ - 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 28N-W10HZ

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: 1,640,416.667usft, False Northing: 0.000usft, Scale Reduction: 0.99960144

Grid Coordinates of Well: 14,540,995.640 usft N, 1,675,946.056 usft E

Geographical Coordinates of Well: 40° 02' 20.75" N, 104° 52' 23.02" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,359.00usft the Bottom Hole Displacement is 7,415.99usft in the Direction of 352.71° (True).

Magnetic Convergence at surface is: -8.31° (26 October 2017, , BGGM2017)

