

HALLIBURTON

6900 ARCTIC BLVD • ANCHORAGE, AK 99518

TEL: 907-275-2624

Certified Survey Sheet

Customer: **D90 Energy**

Well: **Spicer 0680 1-5H17 – Original Wellbore**

API: 05-057-06629

Legal: Sec. 32-T07N-R80W

County: Jackson

State: Colorado

RKB (Ironhand 118): 23.5', 8,213' MSL

Tie-On Ground Level: 0' MD

First Sperry MWD Survey: 145' MD

Last Sperry MWD Survey: 17,696' MD

Projection to TD: 17,750' MD

I certify that the attached survey is true and correct to the best of my knowledge.



Benjamin Hand
Well Design Technical Professional
Certified and Signed:
07/15/2022

HALLIBURTON SPERRY DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	D90 Energy, LLC
WELL:	SU Spicer 0680 1-5H17
FIELD:	North Park
RIG:	Ironhand 118
LEGALS:	Sec 32 - T 07N - R 80W
COUNTY:	Jackson
STATE:	Colorado
CAL. METHOD:	Min Curvature
MAG. DECL. APPLIED:	8.3818
VERTICAL SEC. DIR. :	180.000

SDS Job Number :	CA-XX-0907884224
Start Date of Job :	6/21/2022
End Date of Job :	7/4/2022
Lead Directional Driller:	Alex Akpokiere
Other SDS DD's :	Manuel Morbioni
	George Poleman
SDS MWD Engineers :	Duke Mbroh
	Jyeer Soungula
	Brian Neu

	Main Hole =====>		1st Side Track =====>		2nd Side Track =====>		3rd Side Track =====>		4th Side Track =====>	
First Survey Depth	0.00	Tie On		Tie On		Tie On		Tie On		Tie On
	145.00	MWD								
KOP Depth/Sidetrack MD	7325.00	KOP		KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
Last Survey Depth Bit Extrapolation to TD				MWD		MWD		MWD		MWD
	17696.00	MWD		MWD		MWD		MWD		MWD
	17750.00	T.D.		T.D.		T.D.		T.D.		T.D.

The following Sperry Drilling Services personnel listed below, do certify the above survey information to be accurate :

Print Name :	Duke Mbroh	Print Name :	Brian Neu	Print Name :	
Sign Name :		Sign Name :		Sign Name :	
Print Name :	Alex Akpokiere	Print Name :	George Poleman	Print Name :	
Sign Name :		Sign Name :		Sign Name :	

Examples of Survey Types:

TieOn	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
MWD	Sperry Drilling Services (SDS) Measurement While Drilling (MWD) Survey's
ESS	Sperry Drilling Services (SDS) Electronic Survey System (ESS) Survey's
Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry Drilling Services (SDS)
SS	Single Shot (SS) Survey's ; Provided by Sperry Drilling Services (SDS) or third party vendor.

Job# 907884224
Ironhand 118 (23.5')

D90 Energy, LLC

Jackson County, CO Sec. 32-T07N-R80W (Spicer Annex Pad)

API# 0505706629

SU Spicer 0680 1-5H17

1034' FSL, 889' FEL

OWB_481714

Design: Final Surveys

Sperry Drilling Services

Combo Report

13 July, 2022

Well Coordinates: 40.529428
-106.403963

North American Datum 1983
Colorado Northern Zone
1,436,991.90 N
2,748,722.10 E

Ground Level: 8,213.00 usft

Geodetic Scale Factor Applied

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.15 Build: 91F

Report Version: Midcon Combo v1.15

Centered on Well SU Spicer 0680 1-5H17
RKB @ 8236.50usft (Ironhand 118 (23.5'))
N

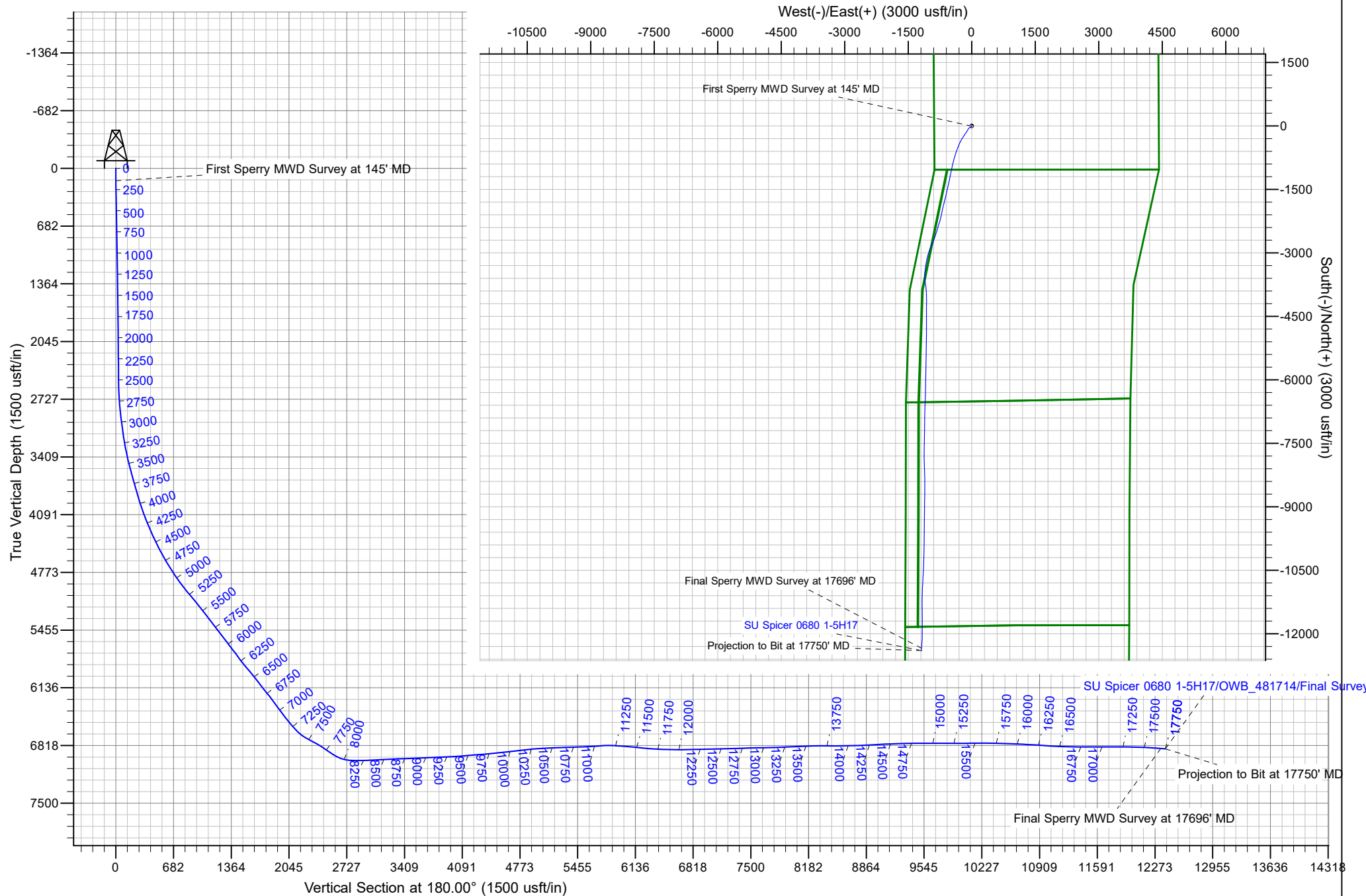
True
Midcon

HALLIBURTON

Project: Jackson County, CO
Site: Sec. 32-T07N-R80W (Spicer Annex Pad)
Well: SU Spicer 0680 1-5H17
Wellbore: OWB_481714
Design: Final Surveys

D90 Energy, LLC

Ironhand 118



Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
0.00	0.00	0.00	0.00	0.00 N	0.00 E	1,436,991.90	2,748,722.10	0.00	0.00	0.00	First Sperry MWD Survey at 145' MD
145.00	0.46	171.22	145.00	0.58 S	0.09 E	1,436,991.32	2,748,722.18	0.32	0.58	171.22	
237.00	1.03	211.62	236.99	1.64 S	0.29 W	1,436,990.26	2,748,721.79	0.81	1.64	64.08	
329.00	1.76	225.13	328.96	3.35 S	1.72 W	1,436,988.57	2,748,720.34	0.86	3.35	31.11	
421.00	1.21	208.05	420.93	5.20 S	3.18 W	1,436,986.73	2,748,718.87	0.76	5.20	-149.50	
513.00	1.04	180.75	512.92	6.89 S	3.65 W	1,436,985.05	2,748,718.38	0.60	6.89	-120.93	
606.00	0.93	137.23	605.90	8.29 S	3.15 W	1,436,983.64	2,748,718.87	0.79	8.29	-119.72	
698.00	0.84	162.45	697.89	9.48 S	2.44 W	1,436,982.45	2,748,719.57	0.43	9.48	115.41	
790.00	1.15	164.27	789.88	11.01 S	1.98 W	1,436,980.91	2,748,720.00	0.34	11.01	6.73	
883.00	1.20	224.06	882.86	12.61 S	2.41 W	1,436,979.32	2,748,719.56	1.26	12.61	117.77	
977.00	2.32	230.29	976.82	14.53 S	4.56 W	1,436,977.41	2,748,717.40	1.21	14.53	12.82	
1,072.00	1.86	224.59	1,071.75	16.86 S	7.12 W	1,436,975.11	2,748,714.81	0.53	16.86	-158.51	
1,166.00	1.05	237.82	1,165.72	18.40 S	8.92 W	1,436,973.59	2,748,713.00	0.93	18.40	164.00	
1,261.00	0.69	233.82	1,260.71	19.21 S	10.12 W	1,436,972.80	2,748,711.79	0.38	19.21	-172.42	
1,355.00	1.50	227.69	1,354.69	20.37 S	11.48 W	1,436,971.65	2,748,710.41	0.87	20.37	-11.30	
1,449.00	1.33	230.23	1,448.66	21.89 S	13.23 W	1,436,970.14	2,748,708.65	0.19	21.89	161.01	
1,544.00	0.81	236.46	1,543.65	22.97 S	14.64 W	1,436,969.08	2,748,707.23	0.56	22.97	170.49	
1,638.00	0.70	205.57	1,637.64	23.86 S	15.44 W	1,436,968.20	2,748,706.42	0.44	23.86	-120.21	
1,733.00	1.20	268.17	1,732.63	24.41 S	16.68 W	1,436,967.66	2,748,705.17	1.13	24.41	97.89	
1,827.00	1.30	234.69	1,826.61	25.06 S	18.54 W	1,436,967.03	2,748,703.31	0.77	25.06	-99.16	
1,921.00	1.19	201.12	1,920.59	26.59 S	19.76 W	1,436,965.52	2,748,702.07	0.77	26.59	-115.11	
2,016.00	0.68	225.50	2,015.57	27.90 S	20.52 W	1,436,964.21	2,748,701.30	0.67	27.90	153.81	
2,110.00	1.03	284.71	2,109.56	28.08 S	21.73 W	1,436,964.05	2,748,700.08	0.96	28.08	99.79	
2,205.00	1.66	211.50	2,204.54	29.03 S	23.28 W	1,436,963.11	2,748,698.53	1.77	29.03	-109.10	
2,299.00	1.43	183.47	2,298.51	31.37 S	24.06 W	1,436,960.78	2,748,697.72	0.83	31.37	-120.62	
2,371.00	1.32	262.26	2,370.50	32.37 S	24.94 W	1,436,959.78	2,748,696.84	2.43	32.37	132.18	
2,422.00	2.48	291.96	2,421.47	32.04 S	26.54 W	1,436,960.13	2,748,695.23	2.91	32.04	55.82	
2,516.00	5.60	262.70	2,515.23	31.86 S	32.98 W	1,436,960.38	2,748,688.80	3.88	31.86	-48.64	
2,610.00	6.62	253.61	2,608.70	33.97 S	42.73 W	1,436,958.36	2,748,679.03	1.49	33.97	-48.07	
2,705.00	7.36	240.01	2,703.00	38.56 S	53.25 W	1,436,953.88	2,748,668.46	1.90	38.56	-72.76	
2,799.00	7.88	228.37	2,796.17	45.85 S	63.28 W	1,436,946.70	2,748,658.35	1.73	45.85	-77.21	
2,894.00	7.90	222.46	2,890.28	55.00 S	72.56 W	1,436,937.65	2,748,648.99	0.85	55.00	-91.52	
2,988.00	8.46	215.95	2,983.32	65.36 S	80.98 W	1,436,927.37	2,748,640.46	1.15	65.36	-62.09	
3,082.00	9.42	209.61	3,076.18	77.64 S	88.84 W	1,436,915.17	2,748,632.48	1.46	77.64	-48.90	
3,176.00	9.85	212.18	3,168.85	91.14 S	96.92 W	1,436,901.76	2,748,624.26	0.65	91.14	46.28	
3,270.00	11.29	209.15	3,261.26	105.98 S	105.69 W	1,436,887.01	2,748,615.34	1.64	105.98	-22.60	

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured		True	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Toolface	Comments
Depth	Inclination	Azimuth	Depth	Northing	Easting	Northing	Easting	Rate	Section	Angle	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(usft)	(°)	
3,365.00	14.06	210.72	3,353.93	124.03 S	116.11 W	1,436,869.07	2,748,604.73	2.94	124.03	7.86	
3,459.00	15.55	213.54	3,444.81	144.34 S	128.91 W	1,436,848.88	2,748,591.73	1.76	144.34	27.18	
3,553.00	17.91	213.48	3,534.83	166.90 S	143.85 W	1,436,826.48	2,748,576.56	2.51	166.90	-0.45	
3,648.00	17.55	214.05	3,625.31	190.96 S	159.92 W	1,436,802.59	2,748,560.24	0.42	190.96	154.53	
3,761.00	19.33	214.10	3,732.51	220.56 S	179.95 W	1,436,773.19	2,748,539.92	1.58	220.56	0.53	
3,855.00	18.59	213.95	3,821.41	245.87 S	197.04 W	1,436,748.06	2,748,522.57	0.79	245.87	-176.30	
3,949.00	20.00	211.59	3,910.13	272.00 S	213.83 W	1,436,722.11	2,748,505.52	1.71	272.00	-30.06	
4,043.00	22.23	210.93	3,997.81	300.95 S	231.39 W	1,436,693.34	2,748,487.66	2.39	300.95	-6.39	
4,138.00	22.52	208.69	4,085.66	332.32 S	249.36 W	1,436,662.15	2,748,469.37	0.95	332.32	-72.25	
4,232.00	24.67	209.97	4,171.80	365.11 S	267.81 W	1,436,629.55	2,748,450.59	2.35	365.11	13.99	
4,326.00	26.19	205.74	4,256.69	400.79 S	286.62 W	1,436,594.06	2,748,431.42	2.52	400.79	-52.00	
4,421.00	25.83	201.78	4,342.08	438.90 S	303.40 W	1,436,556.13	2,748,414.25	1.87	438.90	-103.49	
4,515.00	27.47	201.65	4,426.09	478.07 S	319.00 W	1,436,517.12	2,748,398.25	1.75	478.07	-2.09	
4,609.00	29.07	201.58	4,508.87	519.46 S	335.40 W	1,436,475.90	2,748,381.43	1.70	519.46	-1.22	
4,704.00	31.32	198.63	4,590.98	564.33 S	351.78 W	1,436,431.21	2,748,364.60	2.84	564.33	-34.68	
4,798.00	32.22	199.67	4,670.90	611.08 S	368.02 W	1,436,384.63	2,748,347.88	1.12	611.08	31.76	
4,892.00	34.43	199.80	4,749.44	659.68 S	385.46 W	1,436,336.20	2,748,329.95	2.35	659.68	1.91	
4,987.00	35.70	195.42	4,827.21	711.68 S	401.93 W	1,436,284.38	2,748,312.95	2.97	711.68	-65.02	
5,082.00	37.78	194.84	4,903.33	766.54 S	416.75 W	1,436,229.68	2,748,297.57	2.22	766.54	-9.70	
5,176.00	38.52	193.25	4,977.25	822.86 S	430.84 W	1,436,173.50	2,748,282.91	1.31	822.86	-53.63	
5,270.00	41.70	194.03	5,049.14	881.70 S	445.13 W	1,436,114.81	2,748,268.02	3.42	881.70	9.28	
5,365.00	40.98	193.37	5,120.46	942.67 S	459.99 W	1,436,054.00	2,748,252.54	0.89	942.67	-149.05	
5,459.00	37.67	192.26	5,193.17	1,000.74 S	473.22 W	1,435,996.07	2,748,238.71	3.60	1,000.74	-168.43	
5,554.00	39.32	193.32	5,267.52	1,058.40 S	486.32 W	1,435,938.55	2,748,225.03	1.87	1,058.40	22.21	
5,648.00	37.16	191.14	5,341.35	1,115.24 S	498.67 W	1,435,881.83	2,748,212.10	2.71	1,115.24	-148.86	
5,743.00	38.04	190.72	5,416.62	1,172.15 S	509.66 W	1,435,825.04	2,748,200.53	0.96	1,172.15	-16.40	
5,837.00	39.01	191.29	5,490.15	1,229.62 S	520.84 W	1,435,767.69	2,748,188.77	1.10	1,229.62	20.33	
5,932.00	37.09	191.29	5,564.96	1,287.04 S	532.30 W	1,435,710.39	2,748,176.72	2.02	1,287.04	180.00	
6,026.00	38.76	193.89	5,639.11	1,343.41 S	544.92 W	1,435,654.16	2,748,163.53	2.46	1,343.41	44.77	
6,121.00	37.61	191.24	5,713.79	1,400.72 S	557.71 W	1,435,596.99	2,748,150.16	2.11	1,400.72	-126.10	
6,216.00	37.01	192.86	5,789.35	1,457.03 S	569.72 W	1,435,540.80	2,748,137.57	1.21	1,457.03	122.07	
6,310.00	39.95	195.99	5,862.93	1,513.64 S	584.34 W	1,435,484.34	2,748,122.38	3.75	1,513.64	34.76	
6,404.00	41.78	191.42	5,934.03	1,573.36 S	598.86 W	1,435,424.77	2,748,107.26	3.73	1,573.36	-60.28	
6,499.00	38.27	190.91	6,006.77	1,633.29 S	610.69 W	1,435,364.97	2,748,094.81	3.71	1,633.29	-174.86	
6,593.00	38.44	192.58	6,080.49	1,690.40 S	622.57 W	1,435,307.99	2,748,082.35	1.12	1,690.40	81.34	
6,688.00	38.49	193.86	6,154.87	1,747.92 S	636.08 W	1,435,250.61	2,748,068.25	0.84	1,747.92	86.91	
6,782.00	41.30	195.42	6,226.98	1,806.24 S	651.34 W	1,435,192.45	2,748,052.40	3.17	1,806.24	20.20	

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured		True	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Toolface	Comments
Depth	Inclination	Azimuth	Depth	Northing	Easting	Northing	Easting	Rate	Section	Angle	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(usft)	(°)	
6,876.00	36.69	195.02	6,300.02	1,863.29 S	666.87 W	1,435,135.56	2,748,036.29	4.91	1,863.29	-177.03	
6,971.00	35.67	193.94	6,376.70	1,917.59 S	680.90 W	1,435,081.41	2,748,021.71	1.27	1,917.59	-148.43	
7,065.00	39.14	192.66	6,451.36	1,973.15 S	694.01 W	1,435,025.99	2,748,008.03	3.78	1,973.15	-13.14	
7,159.00	41.09	190.85	6,523.25	2,032.44 S	706.33 W	1,434,966.83	2,747,995.11	2.42	2,032.44	-31.58	
7,254.00	40.81	193.00	6,595.00	2,093.36 S	719.19 W	1,434,906.05	2,747,981.63	1.51	2,093.36	102.05	
7,317.00	42.78	192.23	6,641.97	2,134.33 S	728.35 W	1,434,865.17	2,747,972.05	3.23	2,134.33	-14.89	
7,348.00	46.80	191.01	6,663.97	2,155.72 S	732.74 W	1,434,843.83	2,747,967.44	13.26	2,155.72	-12.50	
7,380.00	52.34	191.88	6,684.71	2,179.58 S	737.58 W	1,434,820.02	2,747,962.36	17.44	2,179.58	7.10	
7,411.00	57.13	194.59	6,702.61	2,204.20 S	743.39 W	1,434,795.46	2,747,956.30	17.02	2,204.20	25.59	
7,489.00	62.29	197.74	6,741.94	2,268.85 S	762.18 W	1,434,731.01	2,747,936.86	7.48	2,268.85	28.60	
7,537.00	62.49	197.40	6,764.19	2,309.39 S	775.02 W	1,434,690.60	2,747,923.60	0.75	2,309.39	-56.50	
7,632.00	61.33	197.71	6,808.92	2,389.30 S	800.30 W	1,434,610.96	2,747,897.51	1.25	2,389.30	166.81	
7,726.00	57.30	197.17	6,856.88	2,466.40 S	824.53 W	1,434,534.11	2,747,872.50	4.32	2,466.40	-173.56	
7,821.00	56.30	196.74	6,908.90	2,542.44 S	847.71 W	1,434,458.31	2,747,848.54	1.12	2,542.44	-160.33	
7,915.00	64.19	198.89	6,955.52	2,620.05 S	872.71 W	1,434,380.97	2,747,822.75	8.62	2,620.05	13.86	
8,010.00	79.54	201.88	6,985.00	2,704.37 S	904.16 W	1,434,296.97	2,747,790.45	16.43	2,704.37	10.99	
8,104.00	88.15	203.39	6,995.07	2,790.55 S	940.10 W	1,434,211.17	2,747,753.63	9.30	2,790.55	9.98	
8,199.00	91.02	203.50	6,995.76	2,877.69 S	977.89 W	1,434,124.42	2,747,714.95	3.02	2,877.69	2.20	
8,293.00	91.73	198.07	6,993.50	2,965.51 S	1,011.23 W	1,434,036.94	2,747,680.73	5.82	2,965.51	-82.49	
8,387.00	92.23	194.82	6,990.25	3,055.60 S	1,037.82 W	1,433,947.13	2,747,653.22	3.50	3,055.60	-81.19	
8,482.00	92.91	192.18	6,985.99	3,147.88 S	1,059.97 W	1,433,855.09	2,747,630.13	2.87	3,147.88	-75.49	
8,576.00	93.19	189.50	6,980.99	3,240.06 S	1,077.63 W	1,433,763.10	2,747,611.54	2.86	3,240.06	-83.96	
8,670.00	92.47	189.28	6,976.35	3,332.69 S	1,092.94 W	1,433,670.63	2,747,595.27	0.80	3,332.69	-163.02	
8,765.00	92.13	187.03	6,972.54	3,426.64 S	1,106.41 W	1,433,576.82	2,747,580.85	2.39	3,426.64	-98.55	
8,859.00	92.66	182.65	6,968.61	3,520.20 S	1,114.33 W	1,433,483.35	2,747,571.98	4.69	3,520.20	-83.01	
8,953.00	91.73	174.76	6,965.00	3,614.03 S	1,112.21 W	1,433,389.50	2,747,573.14	8.45	3,614.03	-96.57	
9,048.00	92.01	170.91	6,961.90	3,708.22 S	1,100.37 W	1,433,295.20	2,747,584.02	4.06	3,708.22	-85.78	
9,142.00	92.32	171.61	6,958.35	3,801.07 S	1,086.09 W	1,433,202.22	2,747,597.35	0.81	3,801.07	66.09	
9,236.00	92.75	174.79	6,954.19	3,894.30 S	1,074.98 W	1,433,108.88	2,747,607.52	3.41	3,894.30	82.22	
9,331.00	93.06	179.57	6,949.37	3,989.04 S	1,070.31 W	1,433,014.11	2,747,611.22	5.04	3,989.04	86.17	
9,425.00	94.76	180.83	6,942.96	4,082.81 S	1,070.64 W	1,432,920.34	2,747,609.93	2.25	4,082.81	36.44	
9,520.00	95.02	180.60	6,934.86	4,177.46 S	1,071.82 W	1,432,825.71	2,747,607.79	0.36	4,177.46	-41.38	
9,614.00	94.45	180.50	6,927.11	4,271.13 S	1,072.72 W	1,432,732.06	2,747,605.93	0.62	4,271.13	-170.08	
9,708.00	93.50	179.62	6,920.59	4,364.91 S	1,072.81 W	1,432,638.29	2,747,604.88	1.38	4,364.91	-137.23	
9,803.00	96.82	180.17	6,912.05	4,459.51 S	1,072.64 W	1,432,543.70	2,747,604.09	3.54	4,459.51	9.35	
9,897.00	96.73	180.14	6,900.96	4,552.85 S	1,072.89 W	1,432,450.37	2,747,602.89	0.10	4,552.85	-161.68	
9,991.00	96.28	180.04	6,890.31	4,646.24 S	1,073.04 W	1,432,356.98	2,747,601.79	0.49	4,646.24	-167.54	

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
10,086.00	96.44	180.07	6,879.78	4,740.66 S	1,073.13 W	1,432,262.57	2,747,600.74	0.17	4,740.66	10.55	
10,180.00	96.57	179.68	6,869.13	4,834.05 S	1,072.93 W	1,432,169.19	2,747,599.99	0.43	4,834.05	-71.43	
10,274.00	94.80	179.15	6,859.82	4,927.58 S	1,071.97 W	1,432,075.66	2,747,599.99	1.96	4,927.58	-163.38	
10,368.00	92.97	181.03	6,853.45	5,021.36 S	1,072.12 W	1,431,981.89	2,747,598.88	2.79	5,021.36	134.23	
10,463.00	92.75	181.32	6,848.71	5,116.22 S	1,074.06 W	1,431,887.06	2,747,595.97	0.38	5,116.22	127.21	
10,557.00	92.26	181.04	6,844.61	5,210.11 S	1,076.00 W	1,431,793.19	2,747,593.08	0.60	5,210.11	-150.27	
10,651.00	91.49	181.14	6,841.53	5,304.04 S	1,077.79 W	1,431,699.29	2,747,590.34	0.83	5,304.04	172.60	
10,745.00	92.20	180.45	6,838.50	5,397.98 S	1,079.09 W	1,431,605.37	2,747,588.08	1.05	5,397.98	-44.16	
10,839.00	91.18	180.15	6,835.73	5,491.94 S	1,079.58 W	1,431,511.42	2,747,586.63	1.13	5,491.94	-163.61	
10,934.00	93.74	181.14	6,831.65	5,586.84 S	1,080.65 W	1,431,416.54	2,747,584.59	2.89	5,586.84	21.11	
11,028.00	94.42	180.88	6,824.97	5,680.58 S	1,082.30 W	1,431,322.82	2,747,581.98	0.77	5,680.58	-20.87	
11,122.00	92.29	181.64	6,819.47	5,774.39 S	1,084.37 W	1,431,229.04	2,747,578.96	2.41	5,774.39	160.37	
11,216.00	87.74	181.25	6,819.44	5,868.34 S	1,086.74 W	1,431,135.13	2,747,575.64	4.86	5,868.34	-175.10	
11,311.00	85.96	181.11	6,824.66	5,963.17 S	1,088.69 W	1,431,040.32	2,747,572.72	1.88	5,963.17	-175.51	
11,405.00	84.93	181.62	6,832.13	6,056.85 S	1,090.92 W	1,430,946.68	2,747,569.53	1.22	6,056.85	153.75	
11,500.00	84.36	181.95	6,840.99	6,151.38 S	1,093.87 W	1,430,852.18	2,747,565.62	0.69	6,151.38	150.06	
11,594.00	84.83	181.08	6,849.85	6,244.93 S	1,096.34 W	1,430,758.66	2,747,562.19	1.05	6,244.93	-61.56	
11,689.00	86.51	181.36	6,857.02	6,339.64 S	1,098.36 W	1,430,663.99	2,747,559.21	1.79	6,339.64	9.45	
11,783.00	86.72	181.51	6,862.57	6,433.44 S	1,100.71 W	1,430,570.21	2,747,555.90	0.27	6,433.44	35.49	
11,877.00	88.73	181.54	6,866.30	6,527.33 S	1,103.21 W	1,430,476.36	2,747,552.45	2.14	6,527.33	0.86	
11,972.00	90.00	182.09	6,867.35	6,622.28 S	1,106.22 W	1,430,381.45	2,747,548.47	1.46	6,622.28	23.42	
12,066.00	89.17	182.35	6,868.03	6,716.20 S	1,109.86 W	1,430,287.57	2,747,543.87	0.93	6,716.20	162.61	
12,161.00	90.53	181.15	6,868.28	6,811.15 S	1,112.76 W	1,430,192.66	2,747,540.00	1.91	6,811.15	-41.43	
12,255.00	92.17	180.62	6,866.07	6,905.11 S	1,114.21 W	1,430,098.72	2,747,537.60	1.83	6,905.11	-17.90	
12,350.00	92.81	180.93	6,861.94	7,000.01 S	1,115.49 W	1,430,003.84	2,747,535.34	0.75	7,000.01	25.82	
12,444.00	92.29	180.41	6,857.76	7,093.91 S	1,116.59 W	1,429,909.96	2,747,533.29	0.78	7,093.91	-135.02	
12,539.00	91.36	180.74	6,854.73	7,188.86 S	1,117.54 W	1,429,815.03	2,747,531.37	1.04	7,188.86	160.47	
12,633.00	90.31	180.99	6,853.36	7,282.84 S	1,118.96 W	1,429,721.08	2,747,528.99	1.15	7,282.84	166.61	
12,728.00	92.04	180.69	6,851.42	7,377.80 S	1,120.36 W	1,429,626.13	2,747,526.63	1.85	7,377.80	-9.83	
12,822.00	91.70	181.04	6,848.35	7,471.74 S	1,121.77 W	1,429,532.22	2,747,524.26	0.52	7,471.74	134.18	
12,917.00	90.56	180.95	6,846.47	7,566.71 S	1,123.42 W	1,429,437.27	2,747,521.64	1.20	7,566.71	-175.49	
13,012.00	91.95	181.29	6,844.39	7,661.66 S	1,125.28 W	1,429,342.35	2,747,518.81	1.51	7,661.66	13.74	
13,106.00	91.24	180.13	6,841.78	7,755.62 S	1,126.44 W	1,429,248.41	2,747,516.69	1.45	7,755.62	-121.46	
13,201.00	90.43	179.39	6,840.39	7,850.61 S	1,126.05 W	1,429,153.43	2,747,516.12	1.15	7,850.61	-137.58	
13,296.00	93.59	178.39	6,837.06	7,945.52 S	1,124.21 W	1,429,058.51	2,747,516.99	3.49	7,945.52	-17.54	
13,390.00	93.34	178.16	6,831.38	8,039.30 S	1,121.38 W	1,428,964.70	2,747,518.86	0.36	8,039.30	-137.43	

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
13,485.00	92.01	177.70	6,826.95	8,134.13 S	1,117.96 W	1,428,869.84	2,747,521.32	1.48	8,134.13	-160.93	
13,580.00	92.01	177.85	6,823.61	8,229.00 S	1,114.27 W	1,428,774.94	2,747,524.04	0.16	8,229.00	90.00	
13,675.00	90.16	178.81	6,821.82	8,323.94 S	1,111.50 W	1,428,679.98	2,747,525.84	2.19	8,323.94	152.57	
13,769.00	89.01	179.53	6,822.50	8,417.93 S	1,110.14 W	1,428,585.99	2,747,526.24	1.44	8,417.93	147.95	
13,864.00	90.28	180.68	6,823.08	8,512.92 S	1,110.31 W	1,428,491.01	2,747,525.10	1.80	8,512.92	42.17	
13,958.00	90.80	180.47	6,822.20	8,606.91 S	1,111.26 W	1,428,397.03	2,747,523.20	0.60	8,606.91	-21.99	
14,053.00	92.11	181.07	6,819.79	8,701.87 S	1,112.53 W	1,428,302.10	2,747,520.96	1.52	8,701.87	24.59	
14,147.00	91.86	181.37	6,816.53	8,795.79 S	1,114.53 W	1,428,208.20	2,747,518.00	0.42	8,795.79	129.82	
14,242.00	92.97	180.75	6,812.53	8,890.69 S	1,116.29 W	1,428,113.33	2,747,515.27	1.34	8,890.69	-29.15	
14,336.00	93.06	180.80	6,807.58	8,984.55 S	1,117.56 W	1,428,019.49	2,747,513.05	0.11	8,984.55	29.02	
14,431.00	92.78	180.75	6,802.74	9,079.42 S	1,118.84 W	1,427,924.64	2,747,510.80	0.30	9,079.42	-169.89	
14,525.00	91.95	180.14	6,798.87	9,173.33 S	1,119.57 W	1,427,830.74	2,747,509.11	1.10	9,173.33	-143.70	
14,619.00	91.58	180.61	6,795.97	9,267.29 S	1,120.19 W	1,427,736.80	2,747,507.54	0.64	9,267.29	128.22	
14,714.00	91.14	180.70	6,793.72	9,362.25 S	1,121.27 W	1,427,641.86	2,747,505.49	0.47	9,362.25	168.44	
14,808.00	90.65	180.89	6,792.25	9,456.23 S	1,122.58 W	1,427,547.90	2,747,503.22	0.56	9,456.23	158.81	
14,903.00	90.16	180.74	6,791.58	9,551.22 S	1,123.93 W	1,427,452.93	2,747,500.90	0.54	9,551.22	-162.98	
14,997.00	89.97	179.70	6,791.47	9,645.22 S	1,124.29 W	1,427,358.95	2,747,499.59	1.12	9,645.22	-100.35	
15,091.00	89.91	180.76	6,791.57	9,739.22 S	1,124.67 W	1,427,264.96	2,747,498.25	1.13	9,739.22	93.24	
15,186.00	89.23	180.07	6,792.28	9,834.21 S	1,125.35 W	1,427,169.98	2,747,496.59	1.02	9,834.21	-134.58	
15,280.00	89.20	180.43	6,793.57	9,928.20 S	1,125.76 W	1,427,076.00	2,747,495.23	0.38	9,928.20	94.77	
15,372.00	91.61	182.21	6,792.92	10,020.16 S	1,127.88 W	1,426,984.07	2,747,492.17	3.26	10,020.16	36.45	
15,463.00	91.21	182.42	6,790.68	10,111.06 S	1,131.56 W	1,426,893.22	2,747,487.57	0.50	10,111.06	152.31	
15,555.00	90.12	181.95	6,789.61	10,202.99 S	1,135.07 W	1,426,801.33	2,747,483.12	1.29	10,202.99	-156.67	
15,648.00	89.29	182.38	6,790.09	10,295.92 S	1,138.58 W	1,426,708.45	2,747,478.66	1.01	10,295.92	152.61	
15,740.00	88.55	181.93	6,791.82	10,387.84 S	1,142.04 W	1,426,616.57	2,747,474.27	0.94	10,387.84	-148.70	
15,832.00	87.65	182.14	6,794.87	10,479.73 S	1,145.30 W	1,426,524.72	2,747,470.07	1.00	10,479.73	166.88	
15,924.00	87.93	182.31	6,798.42	10,571.59 S	1,148.87 W	1,426,432.90	2,747,465.56	0.36	10,571.59	31.25	
16,017.00	87.68	182.45	6,801.98	10,664.44 S	1,152.73 W	1,426,340.10	2,747,460.76	0.31	10,664.44	150.77	
16,109.00	86.66	182.64	6,806.53	10,756.24 S	1,156.81 W	1,426,248.35	2,747,455.74	1.13	10,756.24	169.47	
16,200.00	86.94	182.14	6,811.61	10,847.01 S	1,160.60 W	1,426,157.62	2,747,451.03	0.63	10,847.01	-60.73	
16,293.00	86.59	182.52	6,816.85	10,939.79 S	1,164.37 W	1,426,064.89	2,747,446.31	0.56	10,939.79	132.70	
16,385.00	86.88	182.55	6,822.09	11,031.55 S	1,168.44 W	1,425,973.18	2,747,441.31	0.32	11,031.55	5.90	
16,476.00	85.77	182.28	6,827.93	11,122.28 S	1,172.26 W	1,425,882.50	2,747,436.56	1.26	11,122.28	-166.36	
16,568.00	88.36	180.74	6,832.64	11,214.12 S	1,174.68 W	1,425,790.69	2,747,433.20	3.27	11,214.12	-30.75	
16,660.00	88.58	180.03	6,835.09	11,306.08 S	1,175.30 W	1,425,698.74	2,747,431.65	0.81	11,306.08	-72.79	
16,754.00	90.34	179.78	6,835.98	11,400.07 S	1,175.14 W	1,425,604.75	2,747,430.84	1.89	11,400.07	-8.09	
16,849.00	89.44	179.06	6,836.16	11,495.07 S	1,174.18 W	1,425,509.76	2,747,430.84	1.21	11,495.07	-141.34	

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Measured Depth (usft)	Inclination (°)	True Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
16,943.00	90.77	179.44	6,835.99	11,589.06 S	1,172.95 W	1,425,415.77	2,747,431.11	1.47	11,589.06	15.95	
17,038.00	90.71	178.62	6,834.76	11,684.03 S	1,171.34 W	1,425,320.78	2,747,431.75	0.87	11,684.03	-94.18	
17,132.00	90.28	178.53	6,833.95	11,778.00 S	1,169.01 W	1,425,226.80	2,747,433.13	0.47	11,778.00	-168.18	
17,226.00	89.75	179.46	6,833.93	11,871.99 S	1,167.36 W	1,425,132.80	2,747,433.82	1.14	11,871.99	119.68	
17,320.00	88.92	180.85	6,835.02	11,965.98 S	1,167.61 W	1,425,038.82	2,747,432.61	1.72	11,965.98	120.85	
17,415.00	88.02	182.89	6,837.55	12,060.89 S	1,170.71 W	1,424,943.95	2,747,428.54	2.35	12,060.89	113.84	
17,509.00	86.98	182.71	6,841.65	12,154.68 S	1,175.30 W	1,424,850.21	2,747,423.00	1.12	12,154.68	-170.19	
17,604.00	86.22	183.25	6,847.29	12,249.39 S	1,180.23 W	1,424,755.57	2,747,417.10	0.98	12,249.39	144.67	
17,696.00	85.45	183.21	6,853.97	12,341.00 S	1,185.40 W	1,424,664.01	2,747,411.00	0.84	12,341.00	-177.04	Final Sperry MWD Survey at 17696' MD
17,750.00	85.45	183.21	6,858.25	12,394.74 S	1,188.41 W	1,424,610.30	2,747,407.44	0.00	12,394.74	0.00	Projection to Bit at 17750' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
145.00	145.00	-0.58	0.09	First Sperry MWD Survey at 145' MD
17,696.00	6,853.97	-12,341.00	-1,185.40	Final Sperry MWD Survey at 17696' MD
17,750.00	6,858.25	-12,394.74	-1,188.41	Projection to Bit at 17750' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
145.00	17,696.00	Sperry MWD Surveys	3_MWD+HRGM
17,750.00	17,750.00	PTB - No Survey	3_Blind

Design Report for SU Spicer 0680 1-5H17 - Final Surveys

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
100.00	100.00	13 3/8"	13-3/8	17-1/2

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:	1.85 °/100usft	Maximum Dogleg over Survey:	17.44 °/100usft at 7,380.00 usft
Net Tortosity applicable to Plans:	0.08 °/100usft	Directional Difficulty Index:	7.023

Audit Info

North Reference Sheet for Sec. 32-T07N-R80W (Spicer Annex Pad) - SU Spicer 0680 1-5H17 - OWB_481714

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

Vertical Depths are relative to RKB @ 8236.50usft (Ironhand 118 (23.5')). Northing and Easting are relative to SU Spicer 0680 1-5H17

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996865

Grid Coordinates of Well: 1,436,991.90 usft N, 2,748,722.10 usft E

Geographical Coordinates of Well: 40.529428, -106.403963

Grid Convergence at Surface is: -0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,750.00usft

the Bottom Hole Displacement is 12,451.58usft in the Direction of 185.48° (True).

Magnetic Convergence at surface is: -8.97° (27 May 2022, , BGGM2022)

