SPERRY-SUN DRILLING SERVICES

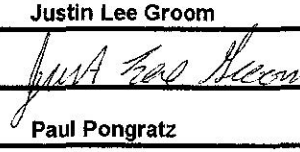
CERTIFIED SURVEY WORK SHEET

OPERATOR:	Whiting Oil & Gas
WELL:	Horsetail #30F-1941
FIELD:	Red Tail
RIG:	Xtreme rig #18
LEGALS:	Sec. 30 - T10N - R57W
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	7.57° True
VERTICAL SEC. DIR. :	355.37°

SSDS Job Number :	CA-MJ-901620580
Start Date of Job :	10/29/14
End Date of Job :	11/06/14
Directional Drillers:	Justin Lee Groom
	Paul Pongratz
Other SSDS DD's :	Dan Dietrich
SSDS MWD Engineers :	Jason Obrien
	Ben Burlund

	Main Hole ==========>		1st Side Track ========>		2nd Side Track ========>		3rd Side Track ========>		4th Side Track ========>	
Surface	0.00	Tie On		Tie On		Tie On		Tie On		Tie On
First Survey Depth	138.00	MWD								
Last Survey Depth	1549.00	MWD								
9-5/8" Surface Csg. Shoe	1595.00									
First Survey Depth	1616.00	MWD		MWD						
Last Survey Depth	6174.00	MWD		MWD						
KOP Depth/Sidetrack MD				KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
7" Intmdt. Csg. Shoe	6202.00									
First Survey Depth	6223.00	MWD		MWD		MWD				
Last Survey Depth	13894.00	MWD		MWD		MWD				
Bit Extrapolation to TD	13938.00	T.D.		T.D.		T.D.		T.D.		T.D.

The following Sperry-Sun Drilling Services personnel certify this information is accurate to the best of our knowledge:

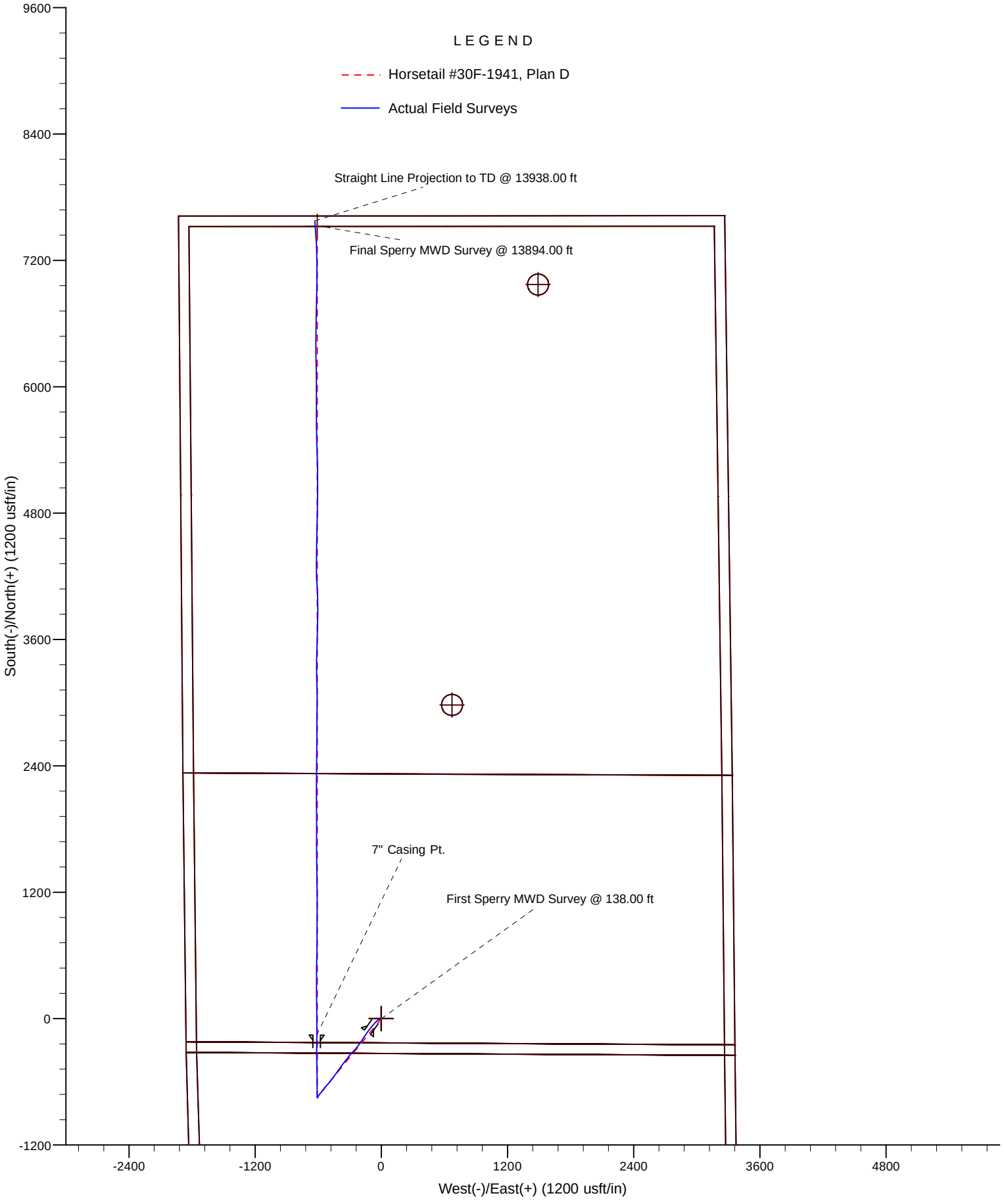
Print Name :	Justin Lee Groom	Print Name:	Ben Burklund	Print Name :
Sign Name :		Sign Name :		Sign Name :
Print Name :	Paul Pongratz	Print Name :	Jason Obrien	Print Name :
Sign Name :		Sign Name :		Sign Name :

	TieOn	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
	MWD	Sperry Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's
Examples of	MS	Multi-Shot Survey's ; Provided by third party vendor.
Survey Types:	ESS	Sperry Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's
	Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry Sun Drilling Services (SSDS)
	SS	Single Shot (SS) Survey's ; Provided by Sperry Sun Drilling Services (SSDS) or third party vendor.

Project: Weld County, CO
Site: Sec. 30-T10N-R57W (Horsetail #30F Pad)
Well: Horsetail #30F-1941

Whiting Oil and Gas Corporation

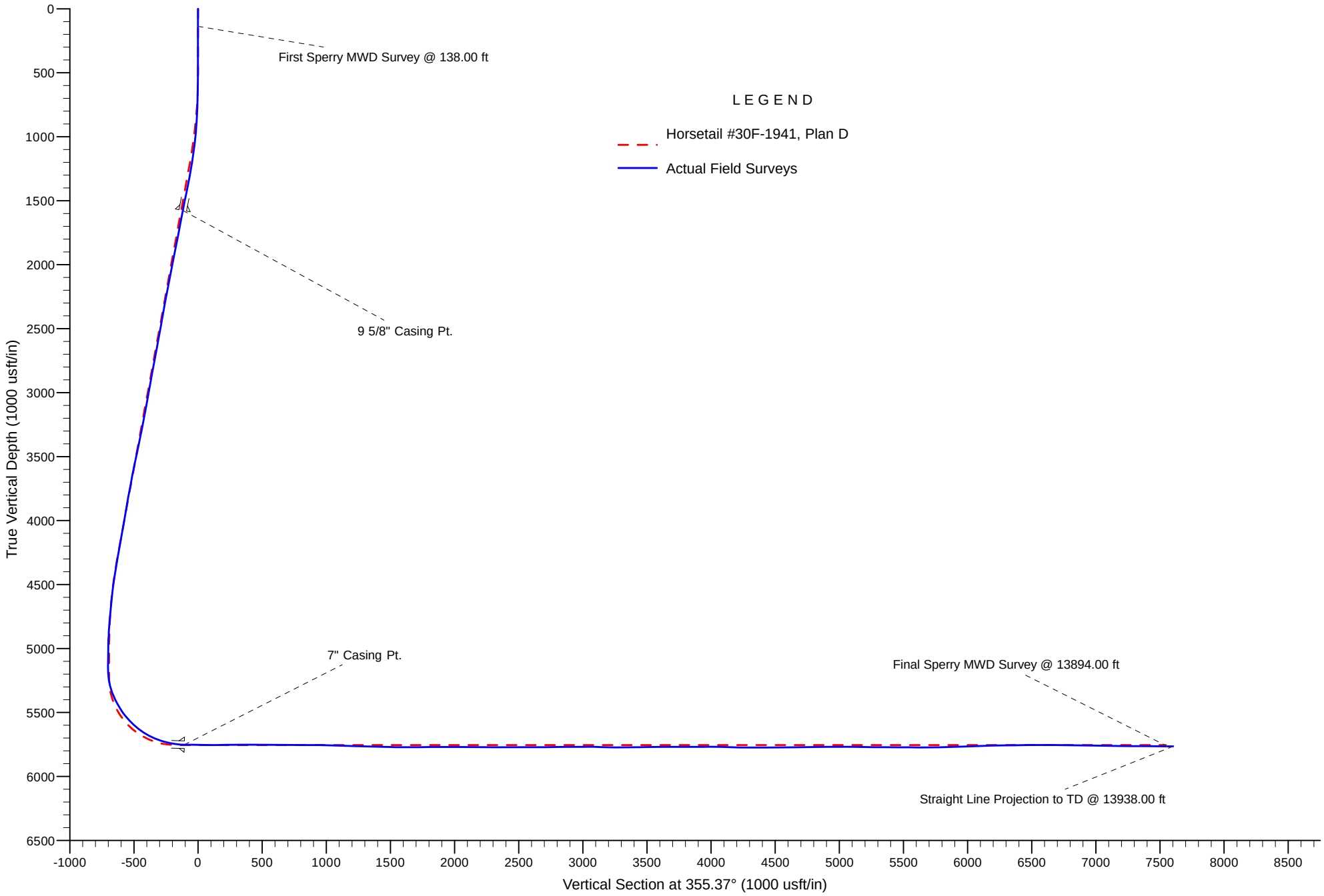
HALLIBURTON
Sperry Drilling



Project: Weld County, CO
Site: Sec. 30-T10N-R57W (Horsetail #30F Pad)
Well: Horsetail #30F-1941

Whiting Oil and Gas Corporation

HALLIBURTON
Sperry Drilling



Whiting Oil and Gas Corporation

Weld County, CO
Sec. 30-T10N-R57W (Horsetail #30F Pad)
Horsetail #30F-1941

Plan D

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

25 November, 2014

Well Coordinates: 1,542,707.47 N, 3,471,489.15 E (40° 48' 38.46" N, 103° 47' 48.05" W)
Ground Level: 4,780.00 usft

Local Coordinate Origin:	Centered on Well Horsetail #30F-1941
Viewing Datum:	KB 17 ft @ 4797.00usft (Xtreme 18)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied
Version: 5000.1 Build: 70

HALLIBURTON

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
138.00	0.49	252.52	138.00	-0.18	-0.56	-0.13	0.36
First Sperry MWD Survey @ 138.00 ft							
231.00	0.78	256.37	230.99	-0.45	-1.56	-0.32	0.32
322.00	0.90	271.17	321.98	-0.58	-2.87	-0.34	0.27
415.00	1.34	265.47	414.96	-0.65	-4.69	-0.27	0.49
507.00	1.92	258.87	506.93	-1.03	-7.27	-0.44	0.66
599.00	3.18	249.41	598.83	-2.23	-11.17	-1.32	1.44
691.00	3.98	244.64	690.65	-4.49	-16.45	-3.15	0.93
782.00	5.23	241.11	781.36	-7.85	-22.93	-5.97	1.41
875.00	6.51	235.19	873.87	-12.90	-30.97	-10.36	1.52
966.00	8.49	228.91	964.09	-20.27	-40.27	-16.95	2.35
1,059.00	10.11	224.97	1,055.86	-30.55	-51.22	-26.32	1.87
1,151.00	12.89	223.17	1,146.01	-43.75	-63.95	-38.45	3.05
1,243.00	13.45	220.77	1,235.59	-59.34	-77.95	-52.86	0.85
1,335.00	13.95	217.97	1,324.97	-76.19	-91.76	-68.53	0.90
1,427.00	15.33	217.74	1,413.98	-94.55	-106.03	-85.68	1.50
1,518.00	15.13	215.85	1,501.79	-113.68	-120.35	-103.60	0.59
1,549.00	14.53	215.86	1,531.76	-120.12	-125.00	-109.64	1.94
1,616.00	14.11	216.31	1,596.67	-133.51	-134.76	-122.20	0.65
1,706.00	13.62	217.90	1,684.05	-150.71	-147.76	-138.30	0.69
1,798.00	14.39	214.26	1,773.32	-168.71	-160.85	-155.18	1.27
1,890.00	14.17	213.35	1,862.48	-187.56	-173.48	-172.95	0.34
1,981.00	14.10	213.31	1,950.72	-206.13	-185.69	-190.47	0.08
2,073.00	14.07	210.91	2,039.95	-225.09	-197.59	-208.41	0.64
2,165.00	14.21	215.65	2,129.17	-243.86	-209.91	-226.13	1.27
2,256.00	14.31	219.70	2,217.37	-261.59	-223.61	-242.69	1.10
2,348.00	13.68	218.79	2,306.64	-278.82	-237.69	-258.73	0.73
2,439.00	14.83	222.99	2,394.84	-295.72	-252.37	-274.40	1.70
2,531.00	15.10	222.98	2,483.72	-313.10	-268.57	-290.41	0.29
2,623.00	15.21	223.63	2,572.52	-330.61	-285.06	-306.53	0.22
2,715.00	14.23	218.07	2,661.50	-348.24	-300.36	-322.87	1.87
2,807.00	14.13	217.88	2,750.70	-366.01	-314.23	-339.46	0.12
2,899.00	13.95	217.90	2,839.95	-383.62	-327.94	-355.91	0.20
2,991.00	13.53	217.89	2,929.32	-400.87	-341.36	-372.02	0.46
3,082.00	14.32	218.04	3,017.64	-418.13	-354.83	-388.14	0.87
3,174.00	13.73	217.05	3,106.90	-435.81	-368.42	-404.66	0.69
3,266.00	13.40	219.28	3,196.33	-452.77	-381.75	-420.49	0.67
3,359.00	14.89	214.60	3,286.51	-470.95	-395.36	-437.52	2.02
3,450.00	14.96	214.91	3,374.44	-490.21	-408.72	-455.63	0.12
3,543.00	15.55	214.66	3,464.17	-510.30	-422.68	-474.54	0.64
3,635.00	15.62	216.32	3,552.78	-530.43	-437.03	-493.44	0.49
3,727.00	13.96	217.24	3,641.73	-549.24	-451.08	-511.06	1.82
3,819.00	13.97	215.13	3,731.01	-567.16	-464.19	-527.86	0.55
3,911.00	13.06	214.58	3,820.47	-584.80	-476.48	-544.45	1.00
4,003.00	13.87	221.52	3,909.94	-601.62	-489.69	-560.14	1.96
4,095.00	13.66	222.84	3,999.30	-617.84	-504.38	-575.13	0.41
4,186.00	14.39	221.73	4,087.59	-634.16	-519.22	-590.20	0.85
4,278.00	13.98	222.12	4,176.78	-650.93	-534.28	-605.70	0.46
4,370.00	14.08	214.09	4,266.05	-668.44	-548.01	-622.05	2.12

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,463.00	12.97	217.03	4,356.47	-686.14	-560.63	-638.67	1.40
4,554.00	11.22	218.68	4,445.44	-701.21	-572.32	-652.74	1.96
4,645.00	9.74	222.87	4,534.92	-713.76	-583.09	-664.39	1.83
4,736.00	7.98	215.95	4,624.84	-724.52	-592.03	-674.39	2.26
4,829.00	6.09	210.34	4,717.13	-734.00	-598.32	-683.33	2.16
4,920.00	5.26	203.00	4,807.69	-742.01	-602.38	-690.99	1.21
5,012.00	3.31	209.48	4,899.43	-748.20	-605.34	-696.92	2.18
5,104.00	1.69	241.40	4,991.34	-751.17	-607.84	-699.67	2.26
5,195.00	0.36	155.25	5,082.33	-752.07	-608.90	-700.49	1.87
5,287.00	0.54	138.45	5,174.32	-752.65	-608.49	-701.10	0.24
5,334.00	5.83	359.35	5,221.25	-750.43	-608.37	-698.90	13.29
5,380.00	12.45	356.68	5,266.64	-743.14	-608.68	-691.60	14.42
5,426.00	16.43	355.03	5,311.18	-731.70	-609.53	-680.13	8.70
5,472.00	21.29	355.24	5,354.69	-716.89	-610.79	-665.27	10.57
5,514.00	25.19	359.79	5,393.28	-700.34	-611.46	-648.72	10.22
5,556.00	28.80	1.63	5,430.70	-681.29	-611.20	-629.75	8.82
5,601.00	31.96	2.36	5,469.52	-658.55	-610.40	-607.15	7.07
5,643.00	35.24	0.71	5,504.49	-635.32	-609.79	-584.04	8.11
5,688.00	40.67	357.05	5,539.97	-607.67	-610.39	-556.44	13.06
5,733.00	44.81	357.51	5,573.01	-577.17	-611.83	-525.92	9.23
5,778.00	48.25	359.65	5,603.97	-544.53	-612.62	-493.32	8.39
5,820.00	52.71	0.00	5,630.69	-512.14	-612.72	-461.03	10.64
5,864.00	56.79	0.16	5,656.08	-476.21	-612.67	-425.23	9.28
5,909.00	61.49	359.91	5,679.15	-437.59	-612.65	-386.74	10.46
5,952.00	66.15	358.91	5,698.12	-399.02	-613.05	-348.25	11.04
5,996.00	70.46	358.49	5,714.38	-358.16	-613.98	-307.45	9.84
6,041.00	74.05	0.01	5,728.09	-315.31	-614.54	-264.70	8.60
6,086.00	77.69	0.49	5,739.08	-271.68	-614.34	-221.22	8.15
6,131.00	82.21	0.64	5,746.93	-227.38	-613.91	-177.11	10.05
6,174.00	86.51	0.43	5,751.15	-184.60	-613.51	-134.50	10.01
6,223.00	89.82	0.64	5,752.72	-135.64	-613.05	-85.73	6.77
6,268.00	89.77	0.17	5,752.88	-90.64	-612.73	-40.90	1.05
6,355.00	88.55	359.49	5,754.16	-3.65	-612.99	45.82	1.61
6,441.00	89.82	358.67	5,755.38	82.33	-614.37	131.63	1.76
6,530.00	91.36	359.27	5,754.46	171.30	-615.97	220.45	1.86
6,620.00	90.89	359.59	5,752.70	261.28	-616.87	310.20	0.63
6,709.00	90.25	0.79	5,751.81	350.28	-616.57	398.88	1.53
6,793.00	88.95	0.86	5,752.40	434.26	-615.36	482.50	1.55
6,881.00	89.48	0.91	5,753.60	522.24	-614.00	570.08	0.60
6,970.00	89.66	1.44	5,754.27	611.22	-612.18	658.62	0.63
7,060.00	89.81	0.13	5,754.69	701.21	-610.94	748.22	1.47
7,146.00	89.23	359.57	5,755.41	787.21	-611.17	833.95	0.94
7,236.00	90.71	0.33	5,755.46	877.20	-611.25	923.66	1.85
7,324.00	88.48	1.01	5,756.08	965.19	-610.22	1,011.28	2.65
7,411.00	87.32	0.25	5,759.27	1,052.12	-609.26	1,097.85	1.59
7,498.00	88.52	359.24	5,762.42	1,139.06	-609.65	1,184.54	1.80
7,588.00	88.52	358.57	5,764.75	1,229.02	-611.37	1,274.34	0.74
7,677.00	88.61	359.65	5,766.98	1,317.98	-612.75	1,363.12	1.22
7,764.00	88.24	359.68	5,769.37	1,404.94	-613.26	1,449.84	0.43
7,853.00	89.60	359.80	5,771.05	1,493.92	-613.66	1,538.57	1.53
7,943.00	89.56	358.95	5,771.71	1,583.91	-614.65	1,628.34	0.95

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,032.00	91.05	0.38	5,771.23	1,672.91	-615.17	1,717.09	2.32
8,122.00	90.15	0.39	5,770.29	1,762.90	-614.56	1,806.74	1.00
8,209.00	89.48	359.57	5,770.57	1,849.90	-614.59	1,893.45	1.22
8,299.00	90.59	0.03	5,770.52	1,939.89	-614.91	1,983.18	1.34
8,386.00	89.41	358.99	5,770.52	2,026.89	-615.65	2,069.95	1.81
8,476.00	89.72	359.66	5,771.20	2,116.88	-616.71	2,159.74	0.82
8,568.00	89.51	0.03	5,771.82	2,208.88	-616.96	2,251.45	0.46
8,660.00	90.28	0.49	5,771.99	2,300.87	-616.54	2,343.12	0.97
8,752.00	90.09	0.54	5,771.69	2,392.87	-615.71	2,434.75	0.21
8,844.00	90.17	0.54	5,771.48	2,484.87	-614.85	2,526.37	0.09
8,936.00	90.03	0.96	5,771.32	2,576.86	-613.64	2,617.97	0.48
9,028.00	89.90	0.81	5,771.38	2,668.85	-612.22	2,709.54	0.22
9,120.00	91.08	0.13	5,770.59	2,760.84	-611.47	2,801.17	1.48
9,211.00	89.69	358.88	5,769.98	2,851.83	-612.25	2,891.93	2.05
9,304.00	91.51	1.68	5,769.00	2,944.81	-611.80	2,984.57	3.59
9,395.00	88.71	359.59	5,768.83	3,035.79	-610.79	3,075.17	3.84
9,488.00	88.46	359.31	5,771.12	3,128.76	-611.68	3,167.91	0.40
9,580.00	89.20	358.68	5,773.00	3,220.72	-613.30	3,259.71	1.06
9,672.00	91.14	359.45	5,772.73	3,312.70	-614.80	3,351.51	2.27
9,764.00	90.72	0.63	5,771.24	3,404.69	-614.73	3,443.19	1.36
9,856.00	90.33	1.70	5,770.39	3,496.67	-612.86	3,534.71	1.24
9,948.00	90.22	0.81	5,769.95	3,588.64	-610.85	3,626.23	0.97
10,039.00	90.19	3.23	5,769.63	3,679.58	-607.64	3,716.61	2.66
10,130.00	89.75	1.11	5,769.67	3,770.51	-604.20	3,806.96	2.38
10,176.00	90.75	0.86	5,769.47	3,816.50	-603.40	3,852.74	2.24
10,222.00	90.22	359.12	5,769.08	3,862.50	-603.41	3,898.59	3.95
10,268.00	89.97	358.32	5,769.01	3,908.48	-604.44	3,944.51	1.82
10,314.00	90.39	359.11	5,768.86	3,954.47	-605.47	3,990.43	1.95
10,405.00	88.49	357.29	5,769.75	4,045.41	-608.33	4,081.31	2.89
10,496.00	88.15	356.71	5,772.42	4,136.25	-613.09	4,172.23	0.74
10,588.00	89.32	358.75	5,774.45	4,228.15	-616.73	4,264.12	2.56
10,634.00	90.77	1.02	5,774.42	4,274.14	-616.82	4,309.98	5.86
10,680.00	89.58	0.44	5,774.28	4,320.14	-616.24	4,355.78	2.88
10,772.00	90.06	1.05	5,774.56	4,412.13	-615.04	4,447.37	0.84
10,863.00	90.59	0.28	5,774.05	4,503.12	-613.99	4,537.98	1.03
10,955.00	90.89	0.52	5,772.86	4,595.11	-613.34	4,629.62	0.42
11,047.00	90.80	0.41	5,771.50	4,687.10	-612.60	4,721.24	0.15
11,139.00	91.88	2.81	5,769.35	4,779.03	-610.01	4,812.67	2.86
11,231.00	89.11	0.85	5,768.56	4,870.97	-607.08	4,904.07	3.69
11,323.00	90.21	0.94	5,769.10	4,962.95	-605.64	4,995.64	1.20
11,415.00	89.37	359.32	5,769.44	5,054.95	-605.43	5,087.32	1.98
11,506.00	89.32	359.73	5,770.48	5,145.94	-606.19	5,178.07	0.45
11,598.00	89.91	359.40	5,771.10	5,237.93	-606.88	5,269.82	0.73
11,690.00	89.14	357.98	5,771.86	5,329.90	-608.99	5,361.66	1.76
11,782.00	89.94	359.03	5,772.60	5,421.87	-611.39	5,453.52	1.43
11,874.00	89.63	357.61	5,772.95	5,513.82	-614.08	5,545.39	1.58
11,967.00	89.72	359.03	5,773.47	5,606.78	-616.81	5,638.27	1.53
12,013.00	89.94	359.00	5,773.61	5,652.77	-617.60	5,684.17	0.48
12,059.00	91.48	1.39	5,773.04	5,698.76	-617.45	5,730.00	6.18
12,106.00	90.92	0.08	5,772.05	5,745.75	-616.84	5,776.78	3.03

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
12,151.00	90.40	359.63	5,771.54	5,790.74	-616.96	5,821.64	1.53
12,243.00	92.59	0.52	5,769.14	5,882.71	-616.84	5,913.30	2.57
12,334.00	92.10	359.86	5,765.41	5,973.63	-616.53	6,003.90	0.90
12,427.00	91.88	359.30	5,762.18	6,066.57	-617.22	6,096.59	0.65
12,519.00	91.33	358.55	5,759.61	6,158.52	-618.94	6,188.38	1.01
12,610.00	90.86	359.29	5,757.87	6,249.48	-620.66	6,279.19	0.96
12,702.00	90.70	359.95	5,756.62	6,341.47	-621.27	6,370.92	0.74
12,794.00	90.77	359.21	5,755.44	6,433.46	-621.94	6,462.67	0.81
12,886.00	90.16	1.34	5,754.69	6,525.45	-621.50	6,554.32	2.41
12,977.00	89.65	0.90	5,754.84	6,616.43	-619.72	6,644.86	0.74
13,069.00	89.17	0.96	5,755.79	6,708.42	-618.23	6,736.43	0.53
13,160.00	89.26	0.83	5,757.03	6,799.40	-616.81	6,827.00	0.17
13,252.00	89.11	1.55	5,758.34	6,891.37	-614.90	6,918.51	0.80
13,344.00	89.51	1.40	5,759.45	6,983.33	-612.53	7,009.98	0.46
13,436.00	89.25	359.50	5,760.45	7,075.32	-611.81	7,101.61	2.08
13,527.00	88.67	359.22	5,762.10	7,166.30	-612.82	7,192.38	0.71
13,619.00	89.57	358.27	5,763.51	7,258.26	-614.84	7,284.20	1.42
13,711.00	89.87	358.02	5,763.96	7,350.21	-617.81	7,376.10	0.42
13,804.00	89.35	355.71	5,764.59	7,443.06	-622.90	7,469.06	2.55
13,894.00	89.51	356.05	5,765.49	7,532.83	-629.37	7,559.05	0.42
Final Sperry MWD Survey @ 13894.00 ft							
13,938.00	89.51	356.05	5,765.86	7,576.72	-632.40	7,603.04	0.00
Straight Line Projection to TD @ 13938.00 ft							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
138.00	138.00	-0.18	-0.56	First Sperry MWD Survey @ 138.00 ft
13,894.00	5,765.49	7,532.83	-629.37	Final Sperry MWD Survey @ 13894.00 ft
13,938.00	5,765.86	7,576.72	-632.40	Straight Line Projection to TD @ 13938.00 ft

Vertical Section Information

	Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
Target		Horsetail #30F-1941_Rev D0_BHL Tgt	355.37	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
138.00	1,549.00	Surface_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
1,616.00	6,174.00	Vertical & Build_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
6,223.00	13,894.00	Lateral_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
13,938.00	13,938.00	Projection to Bit_BLIND	BLIND

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,595.00		9 5/8"	9-5/8	13-1/2
6,202.00		7"	7	8-3/4

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Horsetail #30F_SL	0.00	0.00	0.00	0.03	0.00	1,542,707.50	3,471,489.15	40° 48' 38.460 N	103° 47' 48.050 W
- actual wellpath misses target center by 0.03usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	2,310.76	3,337.76	1,545,081.95	3,474,781.92	
Point 2				0.00	2,319.65	673.60	1,545,039.67	3,472,118.07	
Point 3				0.00	2,332.83	-1,886.76	1,545,003.67	3,469,557.92	
Point 4				0.00	-320.64	-1,856.24	1,542,351.26	3,469,639.40	
Point 5				0.00	-2,961.00	-1,783.35	1,539,712.78	3,469,762.99	
Point 6				0.00	-2,993.48	730.50	1,539,728.59	3,472,277.01	
Point 7				0.00	-3,008.56	3,390.81	1,539,764.61	3,474,937.13	
Point 8				0.00	-348.90	3,364.14	1,542,423.28	3,474,859.38	
Point 9				0.00	2,310.76	3,337.76	1,545,081.95	3,474,781.92	
Point 10				0.00	4,959.13	3,301.97	1,547,729.16	3,474,695.27	
Point 11				0.00	7,625.00	3,266.19	1,550,393.86	3,474,608.29	
Point 12				0.00	7,622.97	609.53	1,550,340.80	3,471,952.15	
Point 13				0.00	7,621.94	-1,929.53	1,550,291.01	3,469,413.56	
Point 14				0.00	4,974.29	-1,907.32	1,547,644.26	3,469,486.62	
Point 15				0.00	2,332.83	-1,886.76	1,545,003.67	3,469,557.92	
Horsetail #30F_Mid-Se	0.00	0.00	0.00	0.03	0.00	1,542,707.50	3,471,489.15	40° 48' 38.460 N	103° 47' 48.050 W
- actual wellpath misses target center by 0.03usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	-220.64	-1,856.24	1,542,451.24	3,469,637.48	
Point 2				0.00	-248.90	3,364.14	1,542,523.26	3,474,857.46	
Mertens 19 100' radius	0.00	0.00	0.00	6,971.23	1,490.69	1,549,706.08	3,472,845.67	40° 49' 47.341 N	103° 47' 28.658 W
- actual wellpath misses target center by 6131.47usft at 13316.68usft MD (5759.19 TVD, 6956.02 N, -613.21 E)									
- Circle (radius 100.00)									
Horsetail #30F_Mid-Se	0.00	0.00	0.00	0.03	0.00	1,542,707.50	3,471,489.15	40° 48' 38.460 N	103° 47' 48.050 W
- actual wellpath misses target center by 0.03usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	-320.64	-1,856.24	1,542,351.26	3,469,639.40	
Point 2				0.00	-348.90	3,364.14	1,542,423.28	3,474,859.38	
Horsetail #30F_SB	0.00	0.00	0.00	0.03	0.00	1,542,707.50	3,471,489.15	40° 48' 38.460 N	103° 47' 48.050 W
- actual wellpath misses target center by 0.03usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	2,332.83	-1,786.76	1,545,005.59	3,469,657.90	
Point 2				0.00	-320.64	-1,756.24	1,542,353.18	3,469,739.38	
Point 3				0.00	-2,861.00	-1,683.35	1,539,814.68	3,469,861.05	
Point 4				0.00	-2,893.48	730.50	1,539,828.57	3,472,275.09	
Point 5				0.00	-2,908.56	3,290.81	1,539,862.67	3,474,835.23	
Point 6				0.00	-348.90	3,264.14	1,542,421.36	3,474,759.40	
Point 7				0.00	2,310.76	3,237.76	1,545,080.03	3,474,681.94	
Point 8				0.00	4,959.13	3,201.97	1,547,727.24	3,474,595.29	
Point 9				0.00	7,525.00	3,166.19	1,550,291.96	3,474,510.23	
Point 10				0.00	7,522.97	609.53	1,550,240.82	3,471,954.07	
Point 11				0.00	7,521.94	-1,829.53	1,550,192.94	3,469,515.47	
Point 12				0.00	4,974.29	-1,807.32	1,547,646.18	3,469,586.61	
Point 13				0.00	2,332.83	-1,786.76	1,545,005.59	3,469,657.90	
Horsetail 19N-1924M	0.00	0.00	-6.70	2,979.43	672.75	1,545,699.29	3,472,104.55	40° 49' 7.899 N	103° 47' 39.300 W
- actual wellpath misses target center by 3054.45usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 100.00)									
Horsetail #30F-1941_F	0.00	0.00	5,755.00	7,522.84	-608.98	1,550,217.26	3,470,735.79	40° 49' 52.792 N	103° 47' 55.972 W
- actual wellpath misses target center by 22.23usft at 13882.47usft MD (5765.39 TVD, 7521.33 N, -628.57 E)									
- Point									

Design Report for Horsetail #30F-1941 - Actual Field Surveys

Directional Difficulty Index

Average Dogleg over Survey:	1.87 °/100usft	Maximum Dogleg over Survey:	14.42 °/100usft at 5,380.00 usft
Net Tortousity applicable to Plans:	1.01 °/100usft	Directional Difficulty Index:	6.766

Audit Info

North Reference Sheet for Sec. 30-T10N-R57W (Horsetail #30F Pad) - Horsetail #30F-1941 - Plan D

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

Vertical Depths are relative to KB 17 ft @ 4797.00usft (Xtreme 18). Northing and Easting are relative to Horsetail #30F-1941

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° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 1.00000455

Grid Coordinates of Well: 1,542,707.47 usft N, 3,471,489.15 usft E

Geographical Coordinates of Well: 40° 48' 38.46" N, 103° 47' 48.05" W

Grid Convergence at Surface is: 1.10°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,938.00usft

the Bottom Hole Displacement is 7,603.07usft in the Direction of 355.23° (True).

Magnetic Convergence at surface is: -6.90° (27 October 2014, , BGGM2014)