



Marathon Oil Permian LLC

RKB (PD 582) 27 + GL @ 3025.00usft
2998.00

Project: Eddy County, New Mexico (NAD27)
Site: Blue Steel Pad (Grid)
Well: Blue Steel Fed Com WA #15H
Wellbore: Wellbore #1
Design: Final Survey
Rig: PD 582

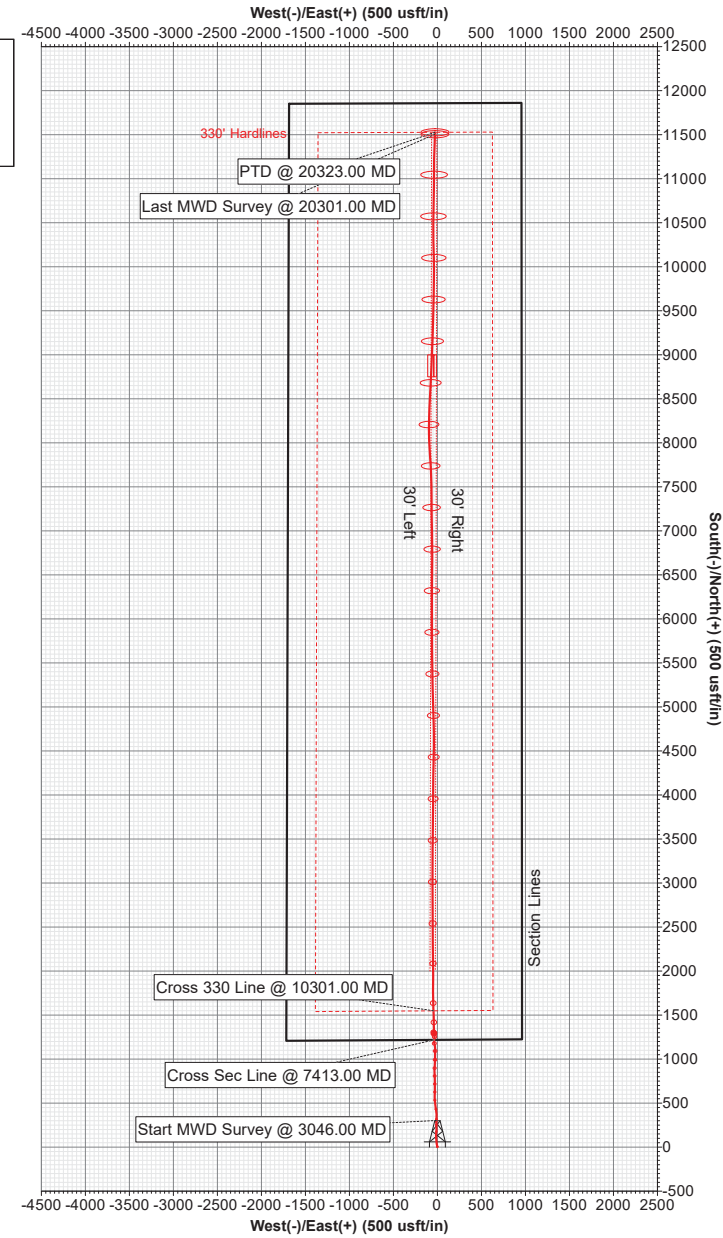
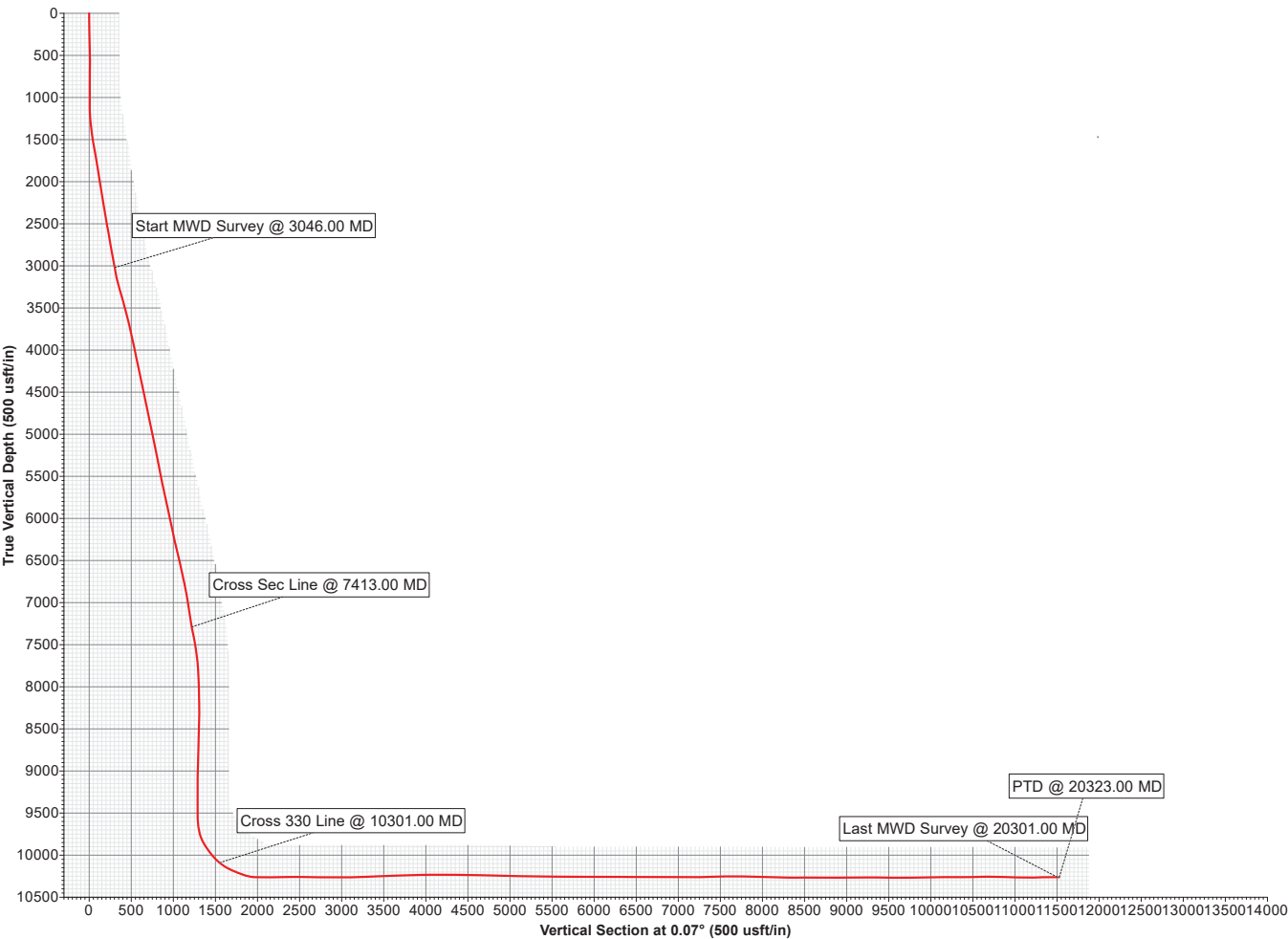
Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001



Azimuths to Grid North
True North: -0.19°
Magnetic North: 6.76°

Magnetic Field
Strength: 47856.9nT
Dip Angle: 60.00°
Date: 12/31/2019
Model: HDGM_2019

WELL DETAILS 2998.00					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	465666.90	608009.00	32.27975144	-103.98384692



Marathon Oil Permian LLC

Eddy County, New Mexico (NAD27) Blue Steel Pad (Grid)

API#

Blue Steel Fed Com WA #15H

Wellbore #1

Design: Final Survey

Sperry Drilling Services

Combo Report

12 May, 2020

Well Coordinates: 32.27975143
-103.98384692

NAD 1927 (NADCON CONUS)
New Mexico East 3001
465,666.90 N
608,009.00 E

Ground Level: 2,998.00 usft

Local Coordinate Origin:

Centered on Well Blue Steel Fed Com WA #15H

Viewing Datum:

RKB (PD 582) 27 + GL @ 3025.00usft

TVDs to System:

N

North Reference:

Grid

Unit System:

Midcon (2 decimal)

Version: 5000.15 Build: 91E

Report Version: Midcon Combo v1.15

HALLIBURTON

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured		Grid	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Toolface	
Depth	Inclination	Azimuth	Depth	Northing	Easting	Northing	Easting	Rate	Section	Angle	Comments
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(usft)	(°)	
0.00	0.00	0.00	0.00	0.00 N	0.00 E	465,666.90	608,009.00	0.00	0.00	0.00	
30.00	0.90	43.11	30.00	0.17 N	0.16 E	465,667.07	608,009.16	3.00	0.17	43.11	
80.00	1.10	262.31	80.00	0.39 N	0.05 W	465,667.29	608,008.95	3.77	0.39	-158.36	
105.00	1.30	327.21	104.99	0.60 N	0.44 W	465,667.50	608,008.56	5.19	0.60	114.98	
135.00	1.40	324.51	134.98	1.19 N	0.83 W	465,668.09	608,008.17	0.39	1.18	-33.82	
163.00	0.70	336.01	162.98	1.62 N	1.10 W	465,668.52	608,007.90	2.60	1.62	168.94	
191.00	0.90	323.21	190.98	1.95 N	1.30 W	465,668.85	608,007.70	0.95	1.95	-48.30	
217.00	1.10	332.21	216.97	2.34 N	1.54 W	465,669.24	608,007.46	0.98	2.33	42.70	
260.00	1.20	337.11	259.96	3.12 N	1.91 W	465,670.02	608,007.09	0.33	3.11	46.99	
417.00	2.02	335.98	416.90	7.16 N	3.68 W	465,674.06	608,005.32	0.52	7.15	-2.78	
510.00	0.48	20.63	509.88	9.02 N	4.21 W	465,675.92	608,004.79	1.84	9.02	168.63	
604.00	0.88	117.31	603.87	9.06 N	3.43 W	465,675.96	608,005.57	1.12	9.05	123.67	
698.00	0.66	119.15	697.86	8.46 N	2.31 W	465,675.36	608,006.69	0.24	8.46	174.51	
790.00	0.44	134.27	789.86	7.96 N	1.60 W	465,674.86	608,007.40	0.28	7.96	153.99	
883.00	0.35	151.06	882.86	7.46 N	1.20 W	465,674.36	608,007.80	0.16	7.46	136.06	
973.00	0.26	172.06	972.85	7.02 N	1.04 W	465,673.92	608,007.96	0.16	7.02	139.02	
1,062.00	0.26	219.79	1,061.85	6.66 N	1.14 W	465,673.56	608,007.86	0.24	6.66	113.86	
1,152.00	1.45	339.93	1,151.85	7.58 N	1.66 W	465,674.48	608,007.34	1.77	7.57	128.23	
1,241.00	4.84	349.51	1,240.70	12.33 N	2.73 W	465,679.23	608,006.27	3.84	12.32	13.62	
1,331.00	6.42	349.51	1,330.26	21.01 N	4.34 W	465,687.91	608,004.66	1.76	21.00	0.00	
1,421.00	7.03	347.76	1,419.64	31.34 N	6.43 W	465,698.24	608,002.57	0.71	31.33	-19.44	
1,510.00	9.41	352.24	1,507.72	43.87 N	8.56 W	465,710.77	608,000.44	2.77	43.86	17.29	
1,600.00	10.68	355.40	1,596.34	59.47 N	10.23 W	465,726.37	607,998.77	1.54	59.46	25.02	
1,690.00	9.85	355.05	1,684.90	75.46 N	11.56 W	465,742.36	607,997.44	0.92	75.44	-175.87	
1,780.00	9.45	355.67	1,773.63	90.49 N	12.78 W	465,757.39	607,996.22	0.46	90.48	165.74	
1,870.00	9.14	356.02	1,862.44	104.99 N	13.83 W	465,771.89	607,995.17	0.35	104.98	169.84	
1,959.00	8.53	356.46	1,950.39	118.63 N	14.73 W	465,785.53	607,994.27	0.69	118.61	173.90	
2,048.00	9.10	358.83	2,038.34	132.26 N	15.28 W	465,799.16	607,993.72	0.76	132.24	33.68	
2,138.00	10.11	3.40	2,127.08	147.26 N	14.96 W	465,814.16	607,994.04	1.41	147.24	39.32	
2,228.00	9.36	5.60	2,215.78	162.43 N	13.78 W	465,829.33	607,995.22	0.93	162.41	154.70	
2,318.00	9.05	6.12	2,304.62	176.75 N	12.31 W	465,843.65	607,996.69	0.36	176.73	165.24	
2,407.00	9.41	4.72	2,392.47	190.96 N	10.96 W	465,857.86	607,998.04	0.48	190.95	-32.65	
2,497.00	9.93	0.06	2,481.19	206.05 N	10.35 W	465,872.95	607,998.65	1.04	206.04	-58.71	
2,586.00	11.12	355.49	2,568.69	222.28 N	11.02 W	465,889.18	607,997.98	1.63	222.27	-37.31	
2,676.00	9.58	357.69	2,657.23	238.42 N	12.00 W	465,905.32	607,997.00	1.77	238.40	166.69	
2,765.00	9.27	0.68	2,745.02	252.99 N	12.22 W	465,919.89	607,996.78	0.65	252.97	123.81	

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured		Grid	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Toolface	
Depth	Inclination	Azimuth	Depth	Northing	Easting	Northing	Easting	Rate	Section	Angle	Comments
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(usft)	(°)	
2,855.00	11.25	1.47	2,833.58	269.01 N	11.90 W	465,935.91	607,997.10	2.21	269.00	4.45	
2,945.00	10.33	0.68	2,921.99	285.86 N	11.58 W	465,952.76	607,997.42	1.04	285.84	-171.26	
2,961.00	10.15	1.12	2,937.73	288.70 N	11.54 W	465,955.60	607,997.46	1.23	288.69	156.73	
3,046.00	9.49	0.15	3,021.49	303.20 N	11.37 W	465,970.10	607,997.63	0.80	303.18	-166.41	Start MWD Survey @ 3046.00 MD
3,120.00	10.68	0.15	3,094.34	316.16 N	11.34 W	465,983.06	607,997.66	1.61	316.14	0.00	
3,209.00	14.64	5.16	3,181.17	335.61 N	10.31 W	466,002.51	607,998.69	4.61	335.60	17.96	
3,299.00	15.69	358.04	3,268.04	359.11 N	9.70 W	466,026.01	607,999.30	2.37	359.09	-64.06	
3,388.00	16.84	354.17	3,353.48	383.96 N	11.42 W	466,050.86	607,997.58	1.77	383.94	-45.17	
3,478.00	14.77	353.56	3,440.07	408.33 N	14.03 W	466,075.23	607,994.97	2.31	408.31	-175.70	
3,568.00	15.21	352.15	3,527.01	431.43 N	16.93 W	466,098.33	607,992.07	0.63	431.41	-40.34	
3,657.00	13.98	351.97	3,613.13	453.64 N	20.03 W	466,120.54	607,988.97	1.38	453.61	-177.98	
3,747.00	13.93	351.45	3,700.48	475.12 N	23.16 W	466,142.02	607,985.84	0.15	475.09	-111.99	
3,836.00	12.88	355.67	3,787.05	495.60 N	25.50 W	466,162.50	607,983.50	1.61	495.57	139.06	
3,927.00	12.18	354.70	3,875.89	515.27 N	27.15 W	466,182.17	607,981.85	0.80	515.24	-163.74	
4,017.00	11.96	354.35	3,963.90	534.01 N	28.95 W	466,200.91	607,980.05	0.26	533.97	-161.77	
4,106.00	11.91	354.44	4,050.97	552.32 N	30.74 W	466,219.22	607,978.26	0.06	552.29	159.63	
4,196.00	11.87	1.82	4,139.05	570.82 N	31.35 W	466,237.72	607,977.65	1.69	570.78	95.12	
4,285.00	12.09	2.61	4,226.11	589.28 N	30.64 W	466,256.18	607,978.36	0.31	589.24	37.09	
4,375.00	12.09	1.82	4,314.11	608.12 N	29.91 W	466,275.02	607,979.09	0.18	608.08	-90.39	
4,464.00	11.96	1.03	4,401.16	626.65 N	29.44 W	466,293.55	607,979.56	0.24	626.61	-128.69	
4,554.00	11.74	0.68	4,489.24	645.13 N	29.17 W	466,312.03	607,979.83	0.26	645.09	-162.08	
4,643.00	11.65	359.53	4,576.39	663.17 N	29.13 W	466,330.07	607,979.87	0.28	663.13	-111.67	
4,733.00	11.69	359.71	4,664.53	681.37 N	29.26 W	466,348.27	607,979.74	0.06	681.34	42.40	
4,823.00	11.56	359.36	4,752.69	699.51 N	29.40 W	466,366.41	607,979.60	0.16	699.47	-151.69	
4,913.00	11.87	0.32	4,840.81	717.78 N	29.45 W	466,384.68	607,979.55	0.41	717.75	32.63	
5,002.00	12.13	0.85	4,927.87	736.29 N	29.26 W	466,403.19	607,979.74	0.32	736.25	23.23	
5,092.00	12.00	359.80	5,015.88	755.10 N	29.15 W	466,422.00	607,979.85	0.28	755.06	-121.15	
5,182.00	11.38	358.21	5,104.01	773.33 N	29.46 W	466,440.23	607,979.54	0.78	773.29	-153.32	
5,271.00	11.52	357.69	5,191.24	790.98 N	30.10 W	466,457.88	607,978.90	0.20	790.95	-36.66	
5,361.00	11.34	355.49	5,279.46	808.78 N	31.15 W	466,475.68	607,977.85	0.52	808.75	-113.51	
5,450.00	11.34	356.37	5,366.72	826.24 N	32.40 W	466,493.14	607,976.60	0.19	826.20	90.43	
5,539.00	10.81	358.30	5,454.06	843.31 N	33.20 W	466,510.21	607,975.80	0.73	843.27	145.97	
5,629.00	11.12	359.97	5,542.42	860.43 N	33.45 W	466,527.33	607,975.55	0.49	860.39	46.52	
5,718.00	12.22	2.70	5,629.58	878.42 N	33.01 W	466,545.32	607,975.99	1.38	878.38	28.00	
5,808.00	12.66	3.84	5,717.46	897.78 N	31.90 W	466,564.68	607,977.10	0.56	897.74	29.72	
5,898.00	12.09	3.49	5,805.37	917.02 N	30.67 W	466,583.92	607,978.33	0.64	916.99	-172.67	
5,987.00	12.09	3.14	5,892.40	935.63 N	29.59 W	466,602.53	607,979.41	0.08	935.60	-90.17	

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured Depth (usft)	Inclination (°)	Grid 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)				
6,077.00	12.57	2.52	5,980.32	954.83 N	28.65 W	466,621.73	607,980.35	0.55	954.79	-15.72	
6,166.00	12.18	1.64	6,067.26	973.89 N	27.95 W	466,640.79	607,981.05	0.49	973.85	-154.62	
6,256.00	12.09	2.26	6,155.24	992.80 N	27.31 W	466,659.70	607,981.69	0.18	992.76	124.93	
6,346.00	11.30	2.70	6,243.38	1,011.02 N	26.52 W	466,677.92	607,982.48	0.88	1,010.99	173.77	
6,435.00	13.93	0.50	6,330.22	1,030.45 N	26.02 W	466,697.35	607,982.98	3.00	1,030.42	-11.43	
6,525.00	13.58	359.88	6,417.64	1,051.85 N	25.94 W	466,718.75	607,983.06	0.42	1,051.82	-157.46	
6,615.00	13.14	359.01	6,505.20	1,072.64 N	26.14 W	466,739.54	607,982.86	0.54	1,072.61	-155.87	
6,704.00	12.62	0.68	6,591.96	1,092.48 N	26.20 W	466,759.38	607,982.80	0.72	1,092.45	145.21	
6,793.00	12.22	1.47	6,678.88	1,111.62 N	25.85 W	466,778.52	607,983.15	0.49	1,111.59	157.37	
6,883.00	11.78	353.82	6,766.92	1,130.27 N	26.59 W	466,797.17	607,982.41	1.83	1,130.24	-109.18	
6,973.00	10.99	351.27	6,855.15	1,147.89 N	28.88 W	466,814.79	607,980.12	1.04	1,147.85	-148.74	
7,062.00	9.93	348.11	6,942.67	1,163.78 N	31.75 W	466,830.68	607,977.25	1.35	1,163.74	-153.12	
7,152.00	8.88	344.77	7,031.46	1,178.08 N	35.17 W	466,844.98	607,973.83	1.31	1,178.04	-154.17	
7,241.00	8.26	351.27	7,119.47	1,191.03 N	37.95 W	466,857.93	607,971.05	1.29	1,190.98	125.81	
7,331.00	9.23	6.74	7,208.43	1,204.59 N	38.08 W	466,871.49	607,970.92	2.82	1,204.54	75.36	
7,413.00	10.95	9.10	7,289.16	1,218.81 N	36.08 W	466,885.71	607,972.92	2.16	1,218.76	14.66	Cross Sec Line @ 7413.00 MD
7,421.00	11.12	9.29	7,297.01	1,220.32 N	35.83 W	466,887.22	607,973.17	2.16	1,220.28	12.34	
7,510.00	11.87	4.45	7,384.23	1,237.92 N	33.74 W	466,904.82	607,975.26	1.37	1,237.88	-54.52	
7,600.00	9.89	1.55	7,472.61	1,254.87 N	32.81 W	466,921.77	607,976.19	2.28	1,254.83	-165.97	
7,689.00	8.35	1.12	7,560.48	1,268.98 N	32.48 W	466,935.88	607,976.52	1.73	1,268.94	-177.68	
7,779.00	7.08	0.32	7,649.66	1,281.06 N	32.32 W	466,947.96	607,976.68	1.42	1,281.02	-175.56	
7,868.00	4.57	346.09	7,738.20	1,289.99 N	33.14 W	466,956.89	607,975.86	3.23	1,289.94	-157.04	
7,958.00	3.52	334.92	7,827.98	1,295.97 N	35.17 W	466,962.87	607,973.83	1.45	1,295.92	-148.60	
8,047.00	2.64	329.30	7,916.85	1,300.21 N	37.38 W	466,967.11	607,971.62	1.04	1,300.16	-163.85	
8,137.00	2.11	321.04	8,006.77	1,303.28 N	39.48 W	466,970.18	607,969.52	0.70	1,303.23	-151.23	
8,149.00	2.15	316.73	8,018.76	1,303.61 N	39.77 W	466,970.51	607,969.23	1.38	1,303.56	-78.14	
8,227.00	1.98	309.26	8,096.71	1,305.53 N	41.82 W	466,972.43	607,967.18	0.41	1,305.48	-125.97	
8,317.00	2.02	302.23	8,186.66	1,307.36 N	44.36 W	466,974.26	607,964.64	0.28	1,307.30	-84.26	
8,406.00	0.84	296.25	8,275.63	1,308.48 N	46.28 W	466,975.38	607,962.72	1.33	1,308.43	-175.77	
8,496.00	1.54	160.11	8,365.62	1,307.64 N	46.46 W	466,974.54	607,962.54	2.47	1,307.58	-151.31	
8,586.00	1.80	149.03	8,455.58	1,305.29 N	45.32 W	466,972.19	607,963.68	0.46	1,305.23	-56.78	
8,675.00	1.58	154.22	8,544.54	1,302.99 N	44.06 W	466,969.89	607,964.94	0.30	1,302.93	147.75	
8,765.00	1.71	150.79	8,634.50	1,300.70 N	42.87 W	466,967.60	607,966.13	0.18	1,300.64	-38.86	
8,855.00	2.11	137.43	8,724.45	1,298.30 N	41.09 W	466,965.20	607,967.91	0.66	1,298.25	-54.87	
8,944.00	1.63	213.11	8,813.42	1,296.04 N	40.68 W	466,962.94	607,968.32	2.61	1,295.99	137.21	
9,034.00	2.02	214.78	8,903.37	1,293.66 N	42.28 W	466,960.56	607,966.72	0.44	1,293.61	8.60	
9,123.00	1.98	204.49	8,992.32	1,290.98 N	43.81 W	466,957.88	607,965.19	0.41	1,290.92	-101.48	

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured Depth (usft)	Inclination (°)	Grid 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)				
9,213.00	1.23	165.29	9,082.28	1,288.63 N	44.21 W	466,955.53	607,964.79	1.43	1,288.57	-142.87	
9,303.00	1.45	65.80	9,172.27	1,288.16 N	42.93 W	466,955.06	607,966.07	2.28	1,288.10	-135.76	
9,392.00	1.05	70.28	9,261.25	1,288.90 N	41.13 W	466,955.80	607,967.87	0.46	1,288.84	168.50	
9,482.00	1.36	129.70	9,351.23	1,288.49 N	39.53 W	466,955.39	607,969.47	1.36	1,288.44	107.00	
9,571.00	0.97	67.38	9,440.22	1,288.11 N	38.03 W	466,955.01	607,970.97	1.41	1,288.06	-136.63	
9,661.00	0.88	29.86	9,530.20	1,289.00 N	36.98 W	466,955.90	607,972.02	0.67	1,288.95	-116.91	
9,751.00	4.66	3.14	9,620.09	1,293.25 N	36.43 W	466,960.15	607,972.57	4.33	1,293.20	-32.54	
9,835.72	10.77	356.94	9,704.00	1,304.60 N	36.67 W	466,971.50	607,972.33	7.27	1,304.56	-10.84	
9,840.00	11.08	356.81	9,708.20	1,305.41 N	36.71 W	466,972.31	607,972.29	7.27	1,305.37	-4.61	
9,930.00	21.32	354.52	9,794.51	1,330.40 N	38.76 W	466,997.30	607,970.24	11.40	1,330.35	-4.68	
10,020.00	32.22	359.97	9,874.76	1,370.81 N	40.34 W	467,037.71	607,968.66	12.40	1,370.76	15.16	
10,105.60	35.10	359.13	9,946.00	1,418.24 N	40.73 W	467,085.14	607,968.27	3.41	1,418.19	-9.53	
10,110.00	35.25	359.09	9,949.60	1,420.78 N	40.77 W	467,087.68	607,968.23	3.45	1,420.73	-8.75	
10,153.01	38.49	358.82	9,984.00	1,446.58 N	41.24 W	467,113.48	607,967.76	7.54	1,446.52	-2.97	
10,200.00	42.02	358.57	10,019.86	1,476.93 N	41.93 W	467,143.83	607,967.07	7.52	1,476.88	-2.72	
10,274.00	47.43	356.98	10,072.42	1,528.94 N	43.99 W	467,195.84	607,965.01	7.47	1,528.88	-12.26	
10,301.00	50.18	357.33	10,090.20	1,549.23 N	45.00 W	467,216.13	607,964.00	10.21	1,549.17	5.52	Cross 330 Line @ 10301.00 MD
10,407.00	60.96	358.46	10,150.05	1,636.47 N	48.15 W	467,303.37	607,960.85	10.21	1,636.41	5.29	
10,501.00	68.06	0.00	10,190.48	1,721.25 N	49.26 W	467,388.15	607,959.74	7.70	1,721.19	11.42	
10,596.00	68.38	0.21	10,225.72	1,809.47 N	49.10 W	467,476.37	607,959.90	0.39	1,809.41	31.40	
10,690.00	78.33	0.47	10,252.62	1,899.42 N	48.56 W	467,566.32	607,960.44	10.59	1,899.36	1.47	
10,785.00	89.48	359.10	10,262.69	1,993.73 N	48.92 W	467,660.63	607,960.08	11.82	1,993.67	-7.05	
10,878.00	90.18	359.13	10,262.96	2,086.72 N	50.36 W	467,753.62	607,958.64	0.75	2,086.65	2.45	
10,952.00	90.46	359.28	10,262.55	2,160.71 N	51.39 W	467,827.61	607,957.61	0.43	2,160.64	28.18	
11,048.00	90.99	359.41	10,261.34	2,256.69 N	52.48 W	467,923.59	607,956.52	0.57	2,256.63	13.78	
11,142.00	91.07	0.00	10,259.65	2,350.68 N	52.97 W	468,017.58	607,956.03	0.63	2,350.61	82.27	
11,237.00	90.09	359.71	10,258.68	2,445.67 N	53.21 W	468,112.57	607,955.79	1.08	2,445.60	-163.51	
11,332.00	89.17	359.60	10,259.30	2,540.67 N	53.78 W	468,207.57	607,955.22	0.98	2,540.60	-173.18	
11,426.00	88.93	359.67	10,260.86	2,634.65 N	54.38 W	468,301.55	607,954.62	0.27	2,634.58	163.74	
11,521.00	88.99	359.86	10,262.58	2,729.63 N	54.77 W	468,396.53	607,954.23	0.21	2,729.56	72.47	
11,615.00	89.63	359.82	10,263.71	2,823.63 N	55.03 W	468,490.53	607,953.97	0.68	2,823.56	-3.58	
11,710.00	89.58	359.52	10,264.37	2,918.62 N	55.58 W	468,585.52	607,953.42	0.32	2,918.55	-99.46	
11,804.00	90.60	359.74	10,264.22	3,012.62 N	56.18 W	468,679.52	607,952.82	1.11	3,012.55	12.17	
11,899.00	91.34	0.06	10,262.61	3,107.60 N	56.35 W	468,774.50	607,952.65	0.85	3,107.53	23.38	
11,993.00	91.76	0.48	10,260.07	3,201.57 N	55.91 W	468,868.47	607,953.09	0.63	3,201.50	44.98	
12,088.00	91.77	0.19	10,257.14	3,296.52 N	55.35 W	468,963.42	607,953.65	0.31	3,296.45	-88.02	

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured		Grid	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)	(°)	
12,182.00	93.02	0.82	10,253.21	3,390.43 N	54.52 W	469,057.33	607,954.48	1.49	3,390.36	26.72	
12,277.00	92.48	0.61	10,248.66	3,485.32 N	53.34 W	469,152.22	607,955.66	0.61	3,485.25	-158.77	
12,371.00	91.68	0.59	10,245.25	3,579.25 N	52.36 W	469,246.15	607,956.64	0.85	3,579.18	-178.57	
12,465.00	91.03	0.40	10,243.02	3,673.22 N	51.54 W	469,340.12	607,957.46	0.72	3,673.15	-163.71	
12,559.00	92.32	0.83	10,240.27	3,767.17 N	50.54 W	469,434.07	607,958.46	1.45	3,767.11	18.42	
12,654.00	92.06	0.52	10,236.64	3,862.09 N	49.42 W	469,528.99	607,959.58	0.43	3,862.03	-130.00	
12,749.00	91.00	0.35	10,234.11	3,957.06 N	48.70 W	469,623.96	607,960.30	1.13	3,956.99	-170.89	
12,843.00	90.23	0.21	10,233.10	4,051.05 N	48.24 W	469,717.95	607,960.76	0.83	4,050.99	-169.69	
12,938.00	89.92	0.54	10,232.97	4,146.05 N	47.62 W	469,812.95	607,961.38	0.48	4,145.99	133.21	
13,034.00	90.08	1.14	10,232.97	4,242.04 N	46.21 W	469,908.94	607,962.79	0.65	4,241.98	75.07	
13,128.00	89.20	1.22	10,233.57	4,336.01 N	44.27 W	470,002.91	607,964.73	0.94	4,335.96	174.81	
13,223.00	88.81	1.29	10,235.22	4,430.98 N	42.19 W	470,097.88	607,966.81	0.42	4,430.92	169.83	
13,316.00	89.61	0.84	10,236.50	4,523.95 N	40.46 W	470,190.85	607,968.54	0.99	4,523.90	-29.36	
13,411.00	88.61	0.20	10,237.97	4,618.93 N	39.60 W	470,285.83	607,969.40	1.25	4,618.88	-147.39	
13,506.00	89.30	359.01	10,239.71	4,713.91 N	40.26 W	470,380.81	607,968.74	1.45	4,713.86	-59.90	
13,600.00	88.99	358.52	10,241.11	4,807.88 N	42.28 W	470,474.78	607,966.72	0.62	4,807.82	-122.33	
13,695.00	87.88	357.84	10,243.70	4,902.79 N	45.30 W	470,569.69	607,963.70	1.37	4,902.74	-148.53	
13,789.00	87.84	357.99	10,247.21	4,996.67 N	48.72 W	470,663.57	607,960.28	0.17	4,996.60	104.94	
13,884.00	89.67	358.70	10,249.28	5,091.60 N	51.46 W	470,758.50	607,957.54	2.07	5,091.53	21.21	
13,978.00	89.07	358.69	10,250.31	5,185.57 N	53.60 W	470,852.47	607,955.40	0.64	5,185.50	-179.05	
14,072.00	89.29	359.31	10,251.66	5,279.54 N	55.24 W	470,946.44	607,953.76	0.70	5,279.47	70.47	
14,168.00	89.30	358.98	10,252.84	5,375.53 N	56.67 W	471,042.43	607,952.33	0.34	5,375.45	-88.27	
14,262.00	88.69	358.48	10,254.49	5,469.49 N	58.76 W	471,136.39	607,950.24	0.84	5,469.41	-140.67	
14,357.00	89.78	359.61	10,255.75	5,564.46 N	60.34 W	471,231.36	607,948.66	1.65	5,564.39	46.04	
14,452.00	89.71	359.35	10,256.18	5,659.46 N	61.20 W	471,326.36	607,947.80	0.28	5,659.38	-105.07	
14,546.00	90.09	359.74	10,256.34	5,753.46 N	61.95 W	471,420.36	607,947.05	0.58	5,753.38	45.74	
14,641.00	89.59	359.89	10,256.61	5,848.45 N	62.25 W	471,515.35	607,946.75	0.55	5,848.37	163.30	
14,735.00	89.75	359.84	10,257.15	5,942.45 N	62.48 W	471,609.35	607,946.52	0.18	5,942.37	-17.35	
14,829.00	89.12	359.81	10,258.07	6,036.45 N	62.76 W	471,703.35	607,946.24	0.67	6,036.37	-177.27	
14,924.00	90.01	359.68	10,258.80	6,131.44 N	63.19 W	471,798.34	607,945.81	0.95	6,131.36	-8.31	
15,018.00	90.48	0.14	10,258.39	6,225.44 N	63.33 W	471,892.34	607,945.67	0.70	6,225.36	44.38	
15,113.00	89.60	0.83	10,258.33	6,320.44 N	62.53 W	471,987.34	607,946.47	1.18	6,320.35	141.90	
15,207.00	89.05	0.60	10,259.43	6,414.42 N	61.36 W	472,081.32	607,947.64	0.63	6,414.34	-157.31	
15,302.00	89.63	0.54	10,260.53	6,509.41 N	60.41 W	472,176.31	607,948.59	0.61	6,509.33	-5.91	
15,396.00	90.19	0.68	10,260.68	6,603.40 N	59.41 W	472,270.30	607,949.59	0.61	6,603.33	14.04	
15,491.00	90.41	359.65	10,260.18	6,698.40 N	59.14 W	472,365.30	607,949.86	1.11	6,698.32	-77.94	
15,585.00	90.76	359.50	10,259.22	6,792.39 N	59.83 W	472,459.29	607,949.17	0.41	6,792.32	-23.20	

Design Report for Blue Steel Fed Com WA #15H - Final Survey

Measured		Grid	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	Toolface	Comments
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	Rate (°/100usft)	Section (usft)	Angle (°)	
15,680.00	89.50	359.29	10,259.00	6,887.39 N	60.84 W	472,554.29	607,948.16	1.34	6,887.31	-170.54	
15,774.00	89.32	359.79	10,259.97	6,981.38 N	61.59 W	472,648.28	607,947.41	0.57	6,981.30	109.80	
15,869.00	89.33	358.71	10,261.09	7,076.36 N	62.83 W	472,743.26	607,946.17	1.14	7,076.28	-89.48	
15,963.00	89.44	358.66	10,262.10	7,170.33 N	64.99 W	472,837.23	607,944.01	0.13	7,170.25	-24.44	
16,058.00	91.75	0.11	10,261.11	7,265.31 N	66.01 W	472,932.21	607,942.99	2.87	7,265.23	32.11	
16,153.00	91.66	359.62	10,258.29	7,360.27 N	66.24 W	473,027.17	607,942.76	0.52	7,360.18	-100.40	
16,247.00	91.65	359.11	10,255.57	7,454.22 N	67.28 W	473,121.12	607,941.72	0.54	7,454.14	-91.12	
16,341.00	91.63	358.97	10,252.88	7,548.17 N	68.85 W	473,215.07	607,940.15	0.15	7,548.08	-98.13	
16,436.00	89.64	357.77	10,251.83	7,643.12 N	71.55 W	473,310.02	607,937.45	2.45	7,643.03	-148.90	
16,531.00	88.73	356.67	10,253.18	7,738.00 N	76.16 W	473,404.90	607,932.84	1.50	7,737.90	-129.61	
16,625.00	88.86	355.60	10,255.16	7,831.76 N	82.49 W	473,498.66	607,926.51	1.15	7,831.66	-83.08	
16,720.00	89.44	356.42	10,256.57	7,926.52 N	89.10 W	473,593.42	607,919.90	1.06	7,926.40	54.73	
16,814.00	88.30	357.86	10,258.42	8,020.38 N	93.79 W	473,687.28	607,915.21	1.95	8,020.26	128.39	
16,908.00	87.88	359.72	10,261.55	8,114.30 N	95.78 W	473,781.20	607,913.22	2.03	8,114.18	102.76	
17,002.00	88.45	0.39	10,264.56	8,208.25 N	95.69 W	473,875.15	607,913.31	0.94	8,208.13	49.61	
17,096.00	88.61	1.71	10,266.98	8,302.20 N	93.97 W	473,969.10	607,915.03	1.41	8,302.08	83.10	
17,192.00	91.04	2.42	10,267.27	8,398.13 N	90.51 W	474,065.03	607,918.49	2.64	8,398.02	16.29	
17,287.00	90.37	2.86	10,266.10	8,493.03 N	86.13 W	474,159.93	607,922.87	0.84	8,492.91	146.71	
17,381.00	89.61	2.69	10,266.12	8,586.91 N	81.58 W	474,253.81	607,927.42	0.83	8,586.81	-167.39	
17,476.00	89.29	3.21	10,267.03	8,681.78 N	76.69 W	474,348.68	607,932.31	0.64	8,681.68	121.61	
17,571.00	89.95	2.40	10,267.66	8,776.67 N	72.04 W	474,443.57	607,936.96	1.10	8,776.57	-50.83	
17,665.00	89.97	2.56	10,267.72	8,870.58 N	67.97 W	474,537.48	607,941.03	0.17	8,870.49	82.88	
17,760.00	90.87	3.02	10,267.03	8,965.46 N	63.35 W	474,632.36	607,945.65	1.06	8,965.38	27.07	
17,855.00	90.46	1.80	10,265.92	9,060.37 N	59.36 W	474,727.27	607,949.64	1.35	9,060.29	-108.57	
17,949.00	90.24	1.74	10,265.35	9,154.32 N	56.45 W	474,821.22	607,952.55	0.24	9,154.25	-164.74	
18,044.00	90.04	2.02	10,265.12	9,249.27 N	53.34 W	474,916.17	607,955.66	0.36	9,249.20	125.54	
18,139.00	89.60	1.62	10,265.42	9,344.22 N	50.32 W	475,011.12	607,958.68	0.63	9,344.15	-137.73	
18,234.00	89.10	1.28	10,266.49	9,439.19 N	47.92 W	475,106.09	607,961.08	0.64	9,439.12	-145.79	
18,329.00	89.00	1.17	10,268.07	9,534.15 N	45.88 W	475,201.05	607,963.12	0.16	9,534.09	-132.28	
18,423.00	90.80	1.32	10,268.23	9,628.12 N	43.84 W	475,295.02	607,965.16	1.92	9,628.06	4.76	
18,517.00	90.44	1.44	10,267.22	9,722.09 N	41.58 W	475,388.99	607,967.42	0.40	9,722.03	161.57	
18,612.00	89.77	0.62	10,267.04	9,817.07 N	39.87 W	475,483.97	607,969.13	1.11	9,817.02	-129.25	
18,706.00	90.59	359.95	10,266.75	9,911.07 N	39.40 W	475,577.97	607,969.60	1.13	9,911.02	-39.25	
18,802.00	92.32	0.06	10,264.31	10,007.04 N	39.40 W	475,673.94	607,969.60	1.81	10,006.98	3.64	
18,896.00	90.98	358.55	10,261.60	10,100.99 N	40.54 W	475,767.89	607,968.46	2.15	10,100.93	-131.57	
18,991.00	89.96	358.15	10,260.82	10,195.94 N	43.27 W	475,862.84	607,965.73	1.15	10,195.88	-158.59	
19,085.00	89.91	359.08	10,260.93	10,289.91 N	45.54 W	475,956.81	607,963.46	0.99	10,289.85	93.08	

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Measured Depth (usft)	Inclination (°)	Grid 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)				
19,180.00	89.61	359.85	10,261.33	10,384.91 N	46.43 W	476,051.81	607,962.57	0.87	10,384.84	111.29	
19,274.00	91.03	0.54	10,260.80	10,478.90 N	46.11 W	476,145.80	607,962.89	1.68	10,478.84	25.91	
19,368.00	91.78	0.55	10,258.50	10,572.87 N	45.22 W	476,239.77	607,963.78	0.80	10,572.81	0.76	
19,463.00	90.48	0.75	10,256.62	10,667.84 N	44.14 W	476,334.74	607,964.86	1.38	10,667.78	171.25	
19,557.00	89.24	1.19	10,256.85	10,761.83 N	42.55 W	476,428.73	607,966.45	1.40	10,761.77	160.46	
19,651.00	88.29	1.10	10,258.88	10,855.79 N	40.67 W	476,522.69	607,968.33	1.02	10,855.73	-174.59	
19,746.00	87.52	0.89	10,262.35	10,950.71 N	39.02 W	476,617.61	607,969.98	0.84	10,950.65	-164.76	
19,841.00	89.17	0.64	10,265.10	11,045.66 N	37.75 W	476,712.56	607,971.25	1.76	11,045.60	-8.62	
19,933.00	89.61	359.34	10,266.08	11,137.65 N	37.77 W	476,804.55	607,971.23	1.49	11,137.59	-71.31	
20,025.00	91.63	1.18	10,265.08	11,229.63 N	37.35 W	476,896.53	607,971.65	2.97	11,229.58	42.32	
20,116.00	91.19	2.61	10,262.84	11,320.55 N	34.34 W	476,987.45	607,974.66	1.64	11,320.50	107.09	
20,209.00	90.05	1.56	10,261.84	11,413.48 N	30.96 W	477,080.38	607,978.04	1.67	11,413.44	-137.35	
20,301.00	89.87	1.83	10,261.90	11,505.44 N	28.24 W	477,172.34	607,980.76	0.35	11,505.40	123.69	Last MWD Survey @ 20301.00 MD
20,323.00	89.87	1.83	10,261.95	11,527.43 N	27.54 W	477,194.33	607,981.46	0.00	11,527.39	0.00	PTD @ 20323.00 MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,046.00	3,021.49	303.20	-11.37	Start MWD Survey @ 3046.00 MD
7,413.00	7,289.16	1,218.81	-36.08	Cross Sec Line @ 7413.00 MD
10,301.00	10,090.20	1,549.23	-45.00	Cross 330 Line @ 10301.00 MD
20,301.00	10,261.90	11,505.44	-28.24	Last MWD Survey @ 20301.00 MD
20,323.00	10,261.95	11,527.43	-27.54	PTD @ 20323.00 MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.07	Slot	0.00	0.00	0.00

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Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
30.00	260.00	Gyro	3_Unknown Gyro
417.00	2,961.00	MWD	3_MWD+HRGM
3,046.00	9,835.72	Intermediate	3_MWD+HRGM+AX
9,840.00	10,952.00	Curve	3_MWD+HRGM+AX
11,048.00	20,301.00	Lateral	3_MWD+HRGM+AX
20,323.00	20,323.00	Projection to Bit	3_Blind

Design Targets

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

Directional Difficulty Index

Average Dogleg over Survey:	1.41 °/100usft	Maximum Dogleg over Survey:	12.40 °/100usft at 10,020.00 usft
Net Tortousity applicable to Plans:	0.76 °/100usft	Directional Difficulty Index:	6.818

Audit Info

North Reference Sheet for Blue Steel Pad (Grid) - Blue Steel Fed Com WA #15H - Wellbore #1

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

Vertical Depths are relative to RKB (PD 582) 27 + GL @ 3025.00usft. Northing and Easting are relative to Blue Steel Fed Com WA #15H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 3001 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -104.33333333°, Longitude Origin:0.00000000°, Latitude Origin:0.00000000°

False Easting: 500,000.00usft, False Northing: 0.00usft, Scale Reduction: 0.99992245

Grid Coordinates of Well: 465,666.90 usft N, 608,009.00 usft E

Geographical Coordinates of Well: 32.27975143, -103.98384692

Grid Convergence at Surface is: 0.19°

Based upon Minimum Curvature type calculations, at a Measured Depth of 20,323.00usft
the Bottom Hole Displacement is 11,527.46usft in the Direction of 359.86° (Grid).

Magnetic Convergence at surface is: -6.76° (31 December 2019, , HDGM_2019)

