

# **8 NORTH LLC**

**Weld County**

**Sec 8-T10N-R59W**

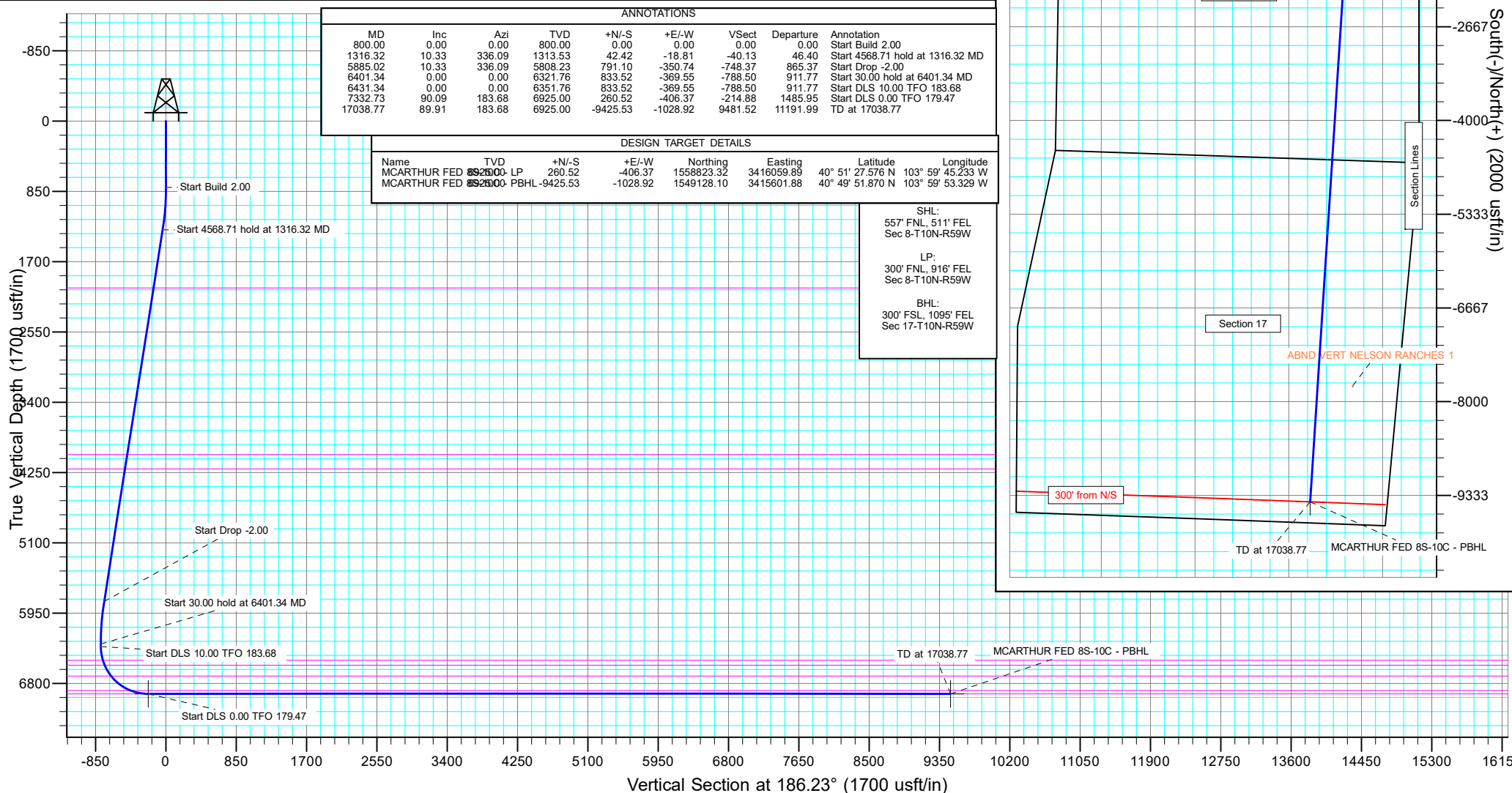
**MCARTHUR FED 8S-20-10C**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**13 April, 2018**



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well MCARTHUR FED 8S-20-10C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5157.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5157.00usft
<b>Site:</b>	Sec 8-T10N-R59W	<b>North Reference:</b>	True
<b>Well:</b>	MCARTHUR FED 8S-20-10C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	Weld County		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Sec 8-T10N-R59W			
Site Position:		Northing:	1,559,130.67 usft	Latitude:	40° 51' 30.460 N
From:	Lat/Long	Easting:	3,416,970.16 usft	Longitude:	103° 59' 33.320 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.97 °

Well	MCARTHUR FED 8S-20-10C					
Well Position	+N/-S	-552.35 usft	Northing:	1,558,569.74 usft	Latitude:	40° 51' 25.002 N
	+E/-W	-509.00 usft	Easting:	3,416,470.62 usft	Longitude:	103° 59' 39.944 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,132.00 usft

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	4/12/2018	7.74	67.31	52,609.39715318

<b>Design</b>	PROPOSAL 1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	186.23

<b>Plan Survey Tool Program</b>	<b>Date</b>	4/13/2018		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	17,038.77	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,316.32	10.33	336.09	1,313.53	42.42	-18.81	2.00	2.00	0.00	336.09	
5,885.02	10.33	336.09	5,808.23	791.10	-350.74	0.00	0.00	0.00	0.00	
6,401.34	0.00	0.00	6,321.76	833.52	-369.55	2.00	-2.00	0.00	180.00	
6,431.34	0.00	0.00	6,351.76	833.52	-369.55	0.00	0.00	0.00	0.00	
7,332.73	90.09	183.68	6,925.00	260.52	-406.37	10.00	10.00	-19.56	183.68	MCARTHUR FED 8S-
17,038.77	89.91	183.68	6,925.00	-9,425.53	-1,028.92	0.00	0.00	0.00	179.47	MCARTHUR FED 8S-

# Planning Report

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<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5157.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5157.00usft
<b>Site:</b>	Sec 8-T10N-R59W	<b>North Reference:</b>	True
<b>Well:</b>	MCARTHUR FED 8S-20-10C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
900.00	2.00	336.09	899.98	1.60	-0.71	-1.51	2.00	2.00	0.00
1,000.00	4.00	336.09	999.84	6.38	-2.83	-6.03	2.00	2.00	0.00
1,100.00	6.00	336.09	1,099.45	14.35	-6.36	-13.57	2.00	2.00	0.00
1,200.00	8.00	336.09	1,198.70	25.49	-11.30	-24.11	2.00	2.00	0.00
1,300.00	10.00	336.09	1,297.47	39.79	-17.64	-37.64	2.00	2.00	0.00
1,316.32	10.33	336.09	1,313.53	42.42	-18.81	-40.13	2.00	2.00	0.00
Start 4568.71 hold at 1316.32 MD									
1,400.00	10.33	336.09	1,395.85	56.13	-24.89	-53.10	0.00	0.00	0.00
1,500.00	10.33	336.09	1,494.23	72.52	-32.15	-68.60	0.00	0.00	0.00
1,600.00	10.33	336.09	1,592.61	88.91	-39.42	-84.10	0.00	0.00	0.00
1,700.00	10.33	336.09	1,690.99	105.29	-46.68	-99.61	0.00	0.00	0.00
1,800.00	10.33	336.09	1,789.37	121.68	-53.95	-115.11	0.00	0.00	0.00
1,900.00	10.33	336.09	1,887.76	138.07	-61.21	-130.61	0.00	0.00	0.00
2,000.00	10.33	336.09	1,986.14	154.46	-68.48	-146.11	0.00	0.00	0.00
2,029.34	10.33	336.09	2,015.00	159.26	-70.61	-150.66	0.00	0.00	0.00
PARKMAN									
2,100.00	10.33	336.09	2,084.52	170.84	-75.74	-161.61	0.00	0.00	0.00
2,200.00	10.33	336.09	2,182.90	187.23	-83.01	-177.12	0.00	0.00	0.00
2,300.00	10.33	336.09	2,281.28	203.62	-90.28	-192.62	0.00	0.00	0.00
2,400.00	10.33	336.09	2,379.66	220.00	-97.54	-208.12	0.00	0.00	0.00
2,500.00	10.33	336.09	2,478.04	236.39	-104.81	-223.62	0.00	0.00	0.00
2,600.00	10.33	336.09	2,576.42	252.78	-112.07	-239.12	0.00	0.00	0.00
2,700.00	10.33	336.09	2,674.80	269.17	-119.34	-254.63	0.00	0.00	0.00
2,800.00	10.33	336.09	2,773.18	285.55	-126.60	-270.13	0.00	0.00	0.00
2,900.00	10.33	336.09	2,871.56	301.94	-133.87	-285.63	0.00	0.00	0.00
3,000.00	10.33	336.09	2,969.94	318.33	-141.13	-301.13	0.00	0.00	0.00
3,100.00	10.33	336.09	3,068.32	334.71	-148.40	-316.63	0.00	0.00	0.00
3,200.00	10.33	336.09	3,166.70	351.10	-155.66	-332.14	0.00	0.00	0.00
3,300.00	10.33	336.09	3,265.08	367.49	-162.93	-347.64	0.00	0.00	0.00
3,400.00	10.33	336.09	3,363.46	383.88	-170.20	-363.14	0.00	0.00	0.00
3,500.00	10.33	336.09	3,461.84	400.26	-177.46	-378.64	0.00	0.00	0.00
3,600.00	10.33	336.09	3,560.22	416.65	-184.73	-394.14	0.00	0.00	0.00
3,700.00	10.33	336.09	3,658.60	433.04	-191.99	-409.65	0.00	0.00	0.00
3,800.00	10.33	336.09	3,756.98	449.42	-199.26	-425.15	0.00	0.00	0.00
3,900.00	10.33	336.09	3,855.36	465.81	-206.52	-440.65	0.00	0.00	0.00
4,000.00	10.33	336.09	3,953.74	482.20	-213.79	-456.15	0.00	0.00	0.00
4,077.52	10.33	336.09	4,030.00	494.90	-219.42	-468.17	0.00	0.00	0.00
SUSSEX									
4,100.00	10.33	336.09	4,052.12	498.59	-221.05	-471.65	0.00	0.00	0.00
4,200.00	10.33	336.09	4,150.50	514.97	-228.32	-487.16	0.00	0.00	0.00
4,256.41	10.33	336.09	4,206.00	524.22	-232.42	-495.90	0.00	0.00	0.00
SHANNON									
4,300.00	10.33	336.09	4,248.88	531.36	-235.58	-502.66	0.00	0.00	0.00

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<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,400.00	10.33	336.09	4,347.26	547.75	-242.85	-518.16	0.00	0.00	0.00	
4,500.00	10.33	336.09	4,445.64	564.13	-250.11	-533.66	0.00	0.00	0.00	
4,600.00	10.33	336.09	4,544.02	580.52	-257.38	-549.16	0.00	0.00	0.00	
4,700.00	10.33	336.09	4,642.40	596.91	-264.65	-564.67	0.00	0.00	0.00	
4,800.00	10.33	336.09	4,740.78	613.30	-271.91	-580.17	0.00	0.00	0.00	
4,900.00	10.33	336.09	4,839.16	629.68	-279.18	-595.67	0.00	0.00	0.00	
5,000.00	10.33	336.09	4,937.54	646.07	-286.44	-611.17	0.00	0.00	0.00	
5,100.00	10.33	336.09	5,035.92	662.46	-293.71	-626.67	0.00	0.00	0.00	
5,200.00	10.33	336.09	5,134.30	678.84	-300.97	-642.18	0.00	0.00	0.00	
5,300.00	10.33	336.09	5,232.68	695.23	-308.24	-657.68	0.00	0.00	0.00	
5,400.00	10.33	336.09	5,331.06	711.62	-315.50	-673.18	0.00	0.00	0.00	
5,500.00	10.33	336.09	5,429.44	728.01	-322.77	-688.68	0.00	0.00	0.00	
5,600.00	10.33	336.09	5,527.82	744.39	-330.03	-704.18	0.00	0.00	0.00	
5,700.00	10.33	336.09	5,626.21	760.78	-337.30	-719.69	0.00	0.00	0.00	
5,800.00	10.33	336.09	5,724.59	777.17	-344.57	-735.19	0.00	0.00	0.00	
5,885.02	10.33	336.09	5,808.23	791.10	-350.74	-748.37	0.00	0.00	0.00	
Start Drop -2.00										
5,900.00	10.03	336.09	5,822.97	793.52	-351.82	-750.66	2.00	-2.00	0.00	
6,000.00	8.03	336.09	5,921.73	807.86	-358.17	-764.22	2.00	-2.00	0.00	
6,100.00	6.03	336.09	6,020.97	819.04	-363.13	-774.80	2.00	-2.00	0.00	
6,200.00	4.03	336.09	6,120.58	827.05	-366.68	-782.38	2.00	-2.00	0.00	
6,300.00	2.03	336.09	6,220.44	831.88	-368.82	-786.95	2.00	-2.00	0.00	
6,401.34	0.00	0.00	6,321.76	833.52	-369.55	-788.50	2.00	-2.00	0.00	
Start 30.00 hold at 6401.34 MD										
6,431.34	0.00	0.00	6,351.76	833.52	-369.55	-788.50	0.00	0.00	0.00	
Start DLS 10.00 TFO 183.68										
6,450.00	1.86	183.68	6,370.41	833.22	-369.57	-788.19	10.00	10.00	0.00	
6,500.00	6.86	183.68	6,420.25	829.42	-369.81	-784.39	10.00	10.00	0.00	
6,550.00	11.86	183.68	6,469.57	821.31	-370.33	-776.27	10.00	10.00	0.00	
6,600.00	16.86	183.68	6,517.99	808.94	-371.13	-763.89	10.00	10.00	0.00	
6,601.05	16.96	183.68	6,519.00	808.63	-371.15	-763.58	10.00	10.00	0.00	
SHARON SPRINGS										
6,650.00	21.85	183.68	6,565.15	792.41	-372.19	-747.34	10.00	10.00	0.00	
6,665.00	23.35	183.68	6,579.00	786.65	-372.56	-741.58	10.00	10.00	0.00	
NIOBRARA										
6,700.00	26.85	183.68	6,610.69	771.84	-373.51	-726.75	10.00	10.00	0.00	
6,750.00	31.85	183.68	6,654.26	747.39	-375.08	-702.27	10.00	10.00	0.00	
6,800.00	36.85	183.68	6,695.53	719.24	-376.89	-674.10	10.00	10.00	0.00	
6,818.31	38.68	183.68	6,710.00	708.05	-377.61	-662.89	10.00	10.00	0.00	
NIO B TARGET										
6,850.00	41.85	183.68	6,734.18	687.62	-378.93	-642.44	10.00	10.00	0.00	
6,900.00	46.84	183.68	6,769.93	652.75	-381.17	-607.54	10.00	10.00	0.00	
6,950.00	51.84	183.68	6,802.49	614.91	-383.60	-569.65	10.00	10.00	0.00	
7,000.00	56.84	183.68	6,831.63	574.38	-386.20	-529.08	10.00	10.00	0.00	
7,050.00	61.84	183.68	6,857.13	531.48	-388.96	-486.13	10.00	10.00	0.00	
7,100.00	66.83	183.68	6,878.77	486.52	-391.85	-441.12	10.00	10.00	0.00	
7,116.37	68.47	183.68	6,885.00	471.41	-392.82	-426.00	10.00	10.00	0.00	
FORT HAYS										
7,150.00	71.83	183.68	6,896.42	439.85	-394.85	-394.40	10.00	10.00	0.00	
7,200.00	76.83	183.68	6,909.92	391.82	-397.93	-346.32	10.00	10.00	0.00	
7,250.00	81.83	183.68	6,919.18	342.80	-401.08	-297.25	10.00	10.00	0.00	
7,300.00	86.82	183.68	6,924.12	293.16	-404.27	-247.56	10.00	10.00	0.00	
7,332.73	90.09	183.68	6,925.00	260.52	-406.37	-214.88	10.00	10.00	0.00	

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<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5157.00usft
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<b>Well:</b>	MCARTHUR FED 8S-20-10C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start DLS 0.00 TFO 179.47 - CODELL									
7,400.00	90.09	183.68	6,924.89	193.39	-410.68	-147.68	0.00	0.00	0.00
7,500.00	90.09	183.68	6,924.73	93.59	-417.10	-47.78	0.00	0.00	0.00
7,600.00	90.09	183.68	6,924.57	-6.20	-423.51	52.12	0.00	0.00	0.00
7,700.00	90.09	183.68	6,924.42	-106.00	-429.92	152.02	0.00	0.00	0.00
7,800.00	90.09	183.68	6,924.27	-205.79	-436.33	251.92	0.00	0.00	0.00
7,900.00	90.08	183.68	6,924.12	-305.58	-442.75	351.82	0.00	0.00	0.00
8,000.00	90.08	183.68	6,923.98	-405.38	-449.16	451.72	0.00	0.00	0.00
8,100.00	90.08	183.68	6,923.84	-505.17	-455.57	551.62	0.00	0.00	0.00
8,200.00	90.08	183.68	6,923.70	-604.97	-461.98	651.53	0.00	0.00	0.00
8,300.00	90.08	183.68	6,923.57	-704.76	-468.40	751.43	0.00	0.00	0.00
8,400.00	90.07	183.68	6,923.44	-804.55	-474.81	851.33	0.00	0.00	0.00
8,500.00	90.07	183.68	6,923.31	-904.35	-481.22	951.23	0.00	0.00	0.00
8,600.00	90.07	183.68	6,923.19	-1,004.14	-487.64	1,051.13	0.00	0.00	0.00
8,700.00	90.07	183.68	6,923.07	-1,103.94	-494.05	1,151.03	0.00	0.00	0.00
8,800.00	90.07	183.68	6,922.95	-1,203.73	-500.46	1,250.93	0.00	0.00	0.00
8,900.00	90.06	183.68	6,922.84	-1,303.52	-506.87	1,350.83	0.00	0.00	0.00
9,000.00	90.06	183.68	6,922.73	-1,403.32	-513.29	1,450.73	0.00	0.00	0.00
9,100.00	90.06	183.68	6,922.62	-1,503.11	-519.70	1,550.63	0.00	0.00	0.00
9,200.00	90.06	183.68	6,922.52	-1,602.91	-526.11	1,650.53	0.00	0.00	0.00
9,300.00	90.06	183.68	6,922.42	-1,702.70	-532.53	1,750.43	0.00	0.00	0.00
9,400.00	90.05	183.68	6,922.32	-1,802.50	-538.94	1,850.33	0.00	0.00	0.00
9,500.00	90.05	183.68	6,922.23	-1,902.29	-545.35	1,950.23	0.00	0.00	0.00
9,600.00	90.05	183.68	6,922.14	-2,002.08	-551.77	2,050.14	0.00	0.00	0.00
9,700.00	90.05	183.68	6,922.06	-2,101.88	-558.18	2,150.04	0.00	0.00	0.00
9,800.00	90.05	183.68	6,921.97	-2,201.67	-564.59	2,249.94	0.00	0.00	0.00
9,900.00	90.04	183.68	6,921.89	-2,301.47	-571.01	2,349.84	0.00	0.00	0.00
10,000.00	90.04	183.68	6,921.82	-2,401.26	-577.42	2,449.74	0.00	0.00	0.00
10,100.00	90.04	183.68	6,921.75	-2,501.05	-583.83	2,549.64	0.00	0.00	0.00
10,200.00	90.04	183.68	6,921.68	-2,600.85	-590.25	2,649.54	0.00	0.00	0.00
10,300.00	90.04	183.68	6,921.61	-2,700.64	-596.66	2,749.44	0.00	0.00	0.00
10,400.00	90.03	183.68	6,921.55	-2,800.44	-603.07	2,849.34	0.00	0.00	0.00
10,500.00	90.03	183.68	6,921.49	-2,900.23	-609.49	2,949.24	0.00	0.00	0.00
10,600.00	90.03	183.68	6,921.43	-3,000.02	-615.90	3,049.14	0.00	0.00	0.00
10,700.00	90.03	183.68	6,921.38	-3,099.82	-622.31	3,149.04	0.00	0.00	0.00
10,800.00	90.03	183.68	6,921.33	-3,199.61	-628.73	3,248.94	0.00	0.00	0.00
10,900.00	90.02	183.68	6,921.29	-3,299.41	-635.14	3,348.85	0.00	0.00	0.00
11,000.00	90.02	183.68	6,921.25	-3,399.20	-641.55	3,448.75	0.00	0.00	0.00
11,100.00	90.02	183.68	6,921.21	-3,498.99	-647.97	3,548.65	0.00	0.00	0.00
11,200.00	90.02	183.68	6,921.17	-3,598.79	-654.38	3,648.55	0.00	0.00	0.00
11,300.00	90.02	183.68	6,921.14	-3,698.58	-660.80	3,748.45	0.00	0.00	0.00
11,400.00	90.02	183.68	6,921.11	-3,798.38	-667.21	3,848.35	0.00	0.00	0.00
11,500.00	90.01	183.68	6,921.09	-3,898.17	-673.62	3,948.25	0.00	0.00	0.00
11,600.00	90.01	183.68	6,921.07	-3,997.97	-680.04	4,048.15	0.00	0.00	0.00
11,700.00	90.01	183.68	6,921.05	-4,097.76	-686.45	4,148.05	0.00	0.00	0.00
11,800.00	90.01	183.68	6,921.03	-4,197.55	-692.86	4,247.95	0.00	0.00	0.00
11,900.00	90.01	183.68	6,921.02	-4,297.35	-699.28	4,347.85	0.00	0.00	0.00
12,000.00	90.00	183.68	6,921.01	-4,397.14	-705.69	4,447.75	0.00	0.00	0.00
12,100.00	90.00	183.68	6,921.01	-4,496.94	-712.11	4,547.65	0.00	0.00	0.00
12,200.00	90.00	183.68	6,921.01	-4,596.73	-718.52	4,647.56	0.00	0.00	0.00
12,300.00	90.00	183.68	6,921.01	-4,696.52	-724.93	4,747.46	0.00	0.00	0.00
12,400.00	90.00	183.68	6,921.02	-4,796.32	-731.35	4,847.36	0.00	0.00	0.00
12,500.00	89.99	183.68	6,921.02	-4,896.11	-737.76	4,947.26	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well MCARTHUR FED 8S-20-10C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5157.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5157.00usft
<b>Site:</b>	Sec 8-T10N-R59W	<b>North Reference:</b>	True
<b>Well:</b>	MCARTHUR FED 8S-20-10C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,600.00	89.99	183.68	6,921.04	-4,995.91	-744.18	5,047.16	0.00	0.00	0.00
12,700.00	89.99	183.68	6,921.05	-5,095.70	-750.59	5,147.06	0.00	0.00	0.00
12,800.00	89.99	183.68	6,921.07	-5,195.49	-757.01	5,246.96	0.00	0.00	0.00
12,900.00	89.99	183.68	6,921.09	-5,295.29	-763.42	5,346.86	0.00	0.00	0.00
13,000.00	89.98	183.68	6,921.12	-5,395.08	-769.83	5,446.76	0.00	0.00	0.00
13,100.00	89.98	183.68	6,921.15	-5,494.88	-776.25	5,546.66	0.00	0.00	0.00
13,200.00	89.98	183.68	6,921.18	-5,594.67	-782.66	5,646.56	0.00	0.00	0.00
13,300.00	89.98	183.68	6,921.22	-5,694.46	-789.08	5,746.46	0.00	0.00	0.00
13,400.00	89.98	183.68	6,921.26	-5,794.26	-795.49	5,846.37	0.00	0.00	0.00
13,500.00	89.97	183.68	6,921.30	-5,894.05	-801.91	5,946.27	0.00	0.00	0.00
13,600.00	89.97	183.68	6,921.35	-5,993.85	-808.32	6,046.17	0.00	0.00	0.00
13,700.00	89.97	183.68	6,921.40	-6,093.64	-814.73	6,146.07	0.00	0.00	0.00
13,800.00	89.97	183.68	6,921.45	-6,193.44	-821.15	6,245.97	0.00	0.00	0.00
13,900.00	89.97	183.68	6,921.51	-6,293.23	-827.56	6,345.87	0.00	0.00	0.00
14,000.00	89.96	183.68	6,921.57	-6,393.02	-833.98	6,445.77	0.00	0.00	0.00
14,100.00	89.96	183.68	6,921.63	-6,492.82	-840.39	6,545.67	0.00	0.00	0.00
14,200.00	89.96	183.68	6,921.70	-6,592.61	-846.81	6,645.57	0.00	0.00	0.00
14,300.00	89.96	183.68	6,921.77	-6,692.41	-853.22	6,745.47	0.00	0.00	0.00
14,400.00	89.96	183.68	6,921.84	-6,792.20	-859.64	6,845.37	0.00	0.00	0.00
14,500.00	89.96	183.68	6,921.92	-6,891.99	-866.05	6,945.27	0.00	0.00	0.00
14,600.00	89.95	183.68	6,922.00	-6,991.79	-872.47	7,045.18	0.00	0.00	0.00
14,700.00	89.95	183.68	6,922.08	-7,091.58	-878.88	7,145.08	0.00	0.00	0.00
14,800.00	89.95	183.68	6,922.17	-7,191.38	-885.30	7,244.98	0.00	0.00	0.00
14,900.00	89.95	183.68	6,922.26	-7,291.17	-891.71	7,344.88	0.00	0.00	0.00
15,000.00	89.95	183.68	6,922.35	-7,390.96	-898.13	7,444.78	0.00	0.00	0.00
15,100.00	89.94	183.68	6,922.45	-7,490.76	-904.54	7,544.68	0.00	0.00	0.00
15,200.00	89.94	183.68	6,922.55	-7,590.55	-910.96	7,644.58	0.00	0.00	0.00
15,300.00	89.94	183.68	6,922.65	-7,690.35	-917.37	7,744.48	0.00	0.00	0.00
15,400.00	89.94	183.68	6,922.76	-7,790.14	-923.79	7,844.38	0.00	0.00	0.00
15,500.00	89.94	183.68	6,922.87	-7,889.93	-930.20	7,944.28	0.00	0.00	0.00
15,600.00	89.93	183.68	6,922.98	-7,989.73	-936.62	8,044.18	0.00	0.00	0.00
15,700.00	89.93	183.68	6,923.10	-8,089.52	-943.03	8,144.08	0.00	0.00	0.00
15,800.00	89.93	183.68	6,923.22	-8,189.32	-949.45	8,243.98	0.00	0.00	0.00
15,900.00	89.93	183.68	6,923.35	-8,289.11	-955.86	8,343.89	0.00	0.00	0.00
16,000.00	89.93	183.68	6,923.47	-8,388.90	-962.28	8,443.79	0.00	0.00	0.00
16,100.00	89.92	183.68	6,923.61	-8,488.70	-968.69	8,543.69	0.00	0.00	0.00
16,200.00	89.92	183.68	6,923.74	-8,588.49	-975.11	8,643.59	0.00	0.00	0.00
16,300.00	89.92	183.68	6,923.88	-8,688.28	-981.52	8,743.49	0.00	0.00	0.00
16,400.00	89.92	183.68	6,924.02	-8,788.08	-987.94	8,843.39	0.00	0.00	0.00
16,500.00	89.92	183.68	6,924.16	-8,887.87	-994.35	8,943.29	0.00	0.00	0.00
16,600.00	89.91	183.68	6,924.31	-8,987.67	-1,000.77	9,043.19	0.00	0.00	0.00
16,700.00	89.91	183.68	6,924.46	-9,087.46	-1,007.18	9,143.09	0.00	0.00	0.00
16,800.00	89.91	183.68	6,924.62	-9,187.25	-1,013.60	9,242.99	0.00	0.00	0.00
16,900.00	89.91	183.68	6,924.78	-9,287.05	-1,020.01	9,342.89	0.00	0.00	0.00
17,000.00	89.91	183.68	6,924.94	-9,386.84	-1,026.43	9,442.79	0.00	0.00	0.00
17,038.77	89.91	183.68	6,925.00	-9,425.53	-1,028.92	9,481.52	0.00	0.00	0.00
TD at 17038.77									

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well MCARTHUR FED 8S-20-10C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5157.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5157.00usft
<b>Site:</b>	Sec 8-T10N-R59W	<b>North Reference:</b>	True
<b>Well:</b>	MCARTHUR FED 8S-20-10C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
MCARTHUR FED 8S-1C - plan hits target center - Point	0.00	0.00	6,925.00	-9,425.53	-1,028.92	1,549,128.10	3,415,601.87	40° 49' 51.870 N	103° 59' 53.329 W
MCARTHUR FED 8S-1C - plan hits target center - Point	0.00	0.00	6,925.00	260.52	-406.37	1,558,823.32	3,416,059.88	40° 51' 27.576 N	103° 59' 45.233 W

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
2,029.34	2,015.00	PARKMAN				
4,077.52	4,030.00	SUSSEX				
4,256.41	4,206.00	SHANNON				
6,601.05	6,519.00	SHARON SPRINGS				
6,665.00	6,579.00	NIOBRARA				
6,818.31	6,710.00	NIO B TARGET				
7,116.37	6,885.00	FORT HAYS				
7,332.73	6,925.00	CODELL				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	Comment
800.00	800.00	0.00	0.00	Start Build 2.00
1,316.32	1,313.53	42.42	-18.81	Start 4568.71 hold at 1316.32 MD
5,885.02	5,808.23	791.10	-350.74	Start Drop -2.00
6,401.34	6,321.76	833.52	-369.55	Start 30.00 hold at 6401.34 MD
6,431.34	6,351.76	833.52	-369.55	Start DLS 10.00 TFO 183.68
7,332.73	6,925.00	260.52	-406.37	Start DLS 0.00 TFO 179.47
17,038.77	6,925.00	-9,425.53	-1,028.92	TD at 17038.77