

# **8 NORTH LLC**

**Weld County**

**Sec 30-T12N-R61W**

**DUNSTON EAST 31S-20-11C**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**12 October, 2017**



Project: Weld County  
Site: Sec 30-T12N-R61W  
Well: DUNSTON EAST 31S-20-11C  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL 1

PROJECT DETAILS: Weld County

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone

System Datum: Mean Sea Level



Azimuths to True North  
Magnetic North: 7.95°

Magnetic Field  
Strength: 52703.2snT  
Dip Angle: 67.38°  
Date: 10/3/2017  
Model: IGRF2015

WELL DETAILS: DUNSTON EAST 31S-20-11C

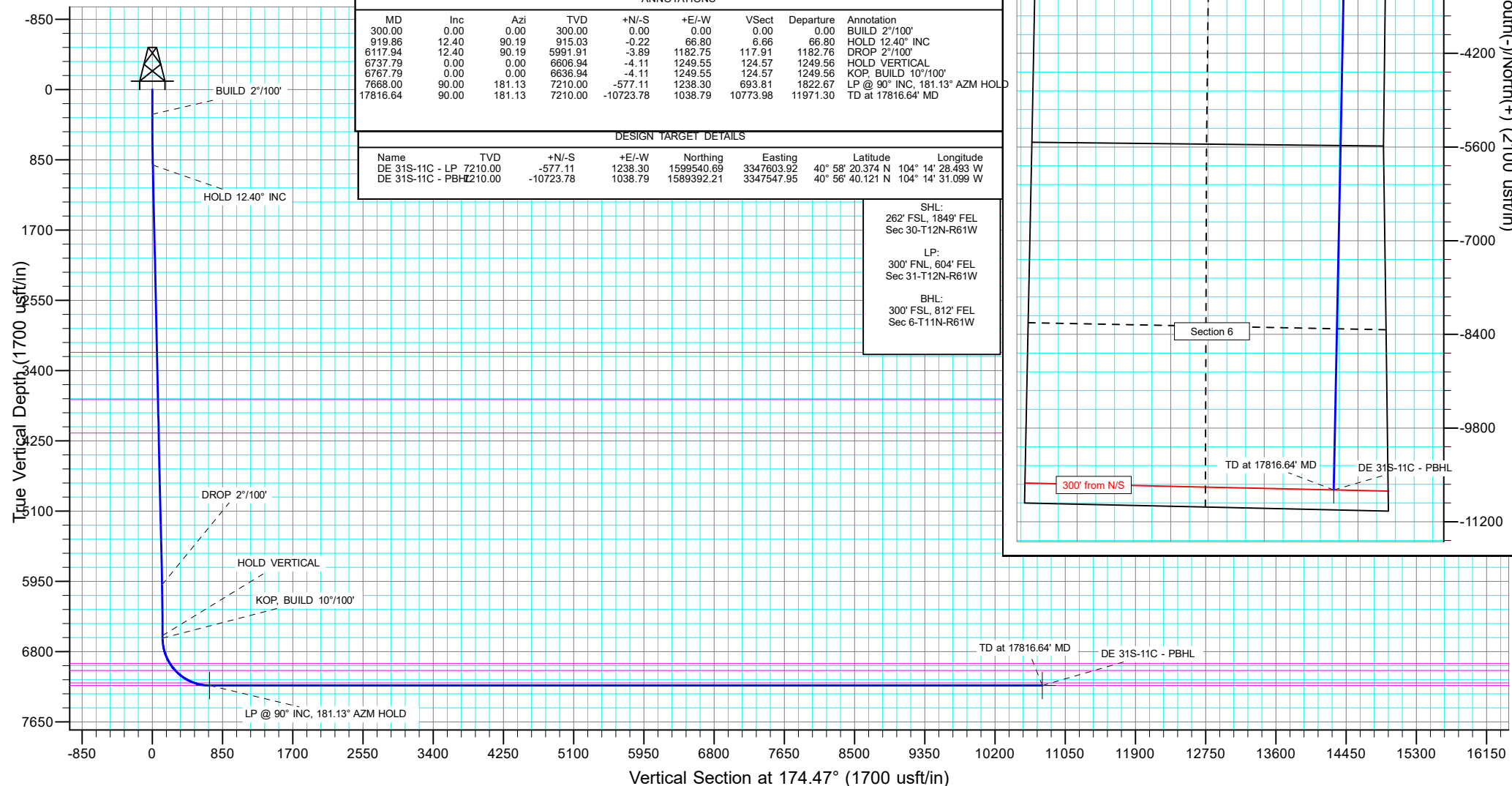
+N/-S	+E/-W	Northing	Easting	5260.00	Latitude	Longitude	Slot
0.00	0.00	1600100.23	3346357.59		40° 58' 26.076 N	104° 14' 44.635 W	

SECTION DETAILS

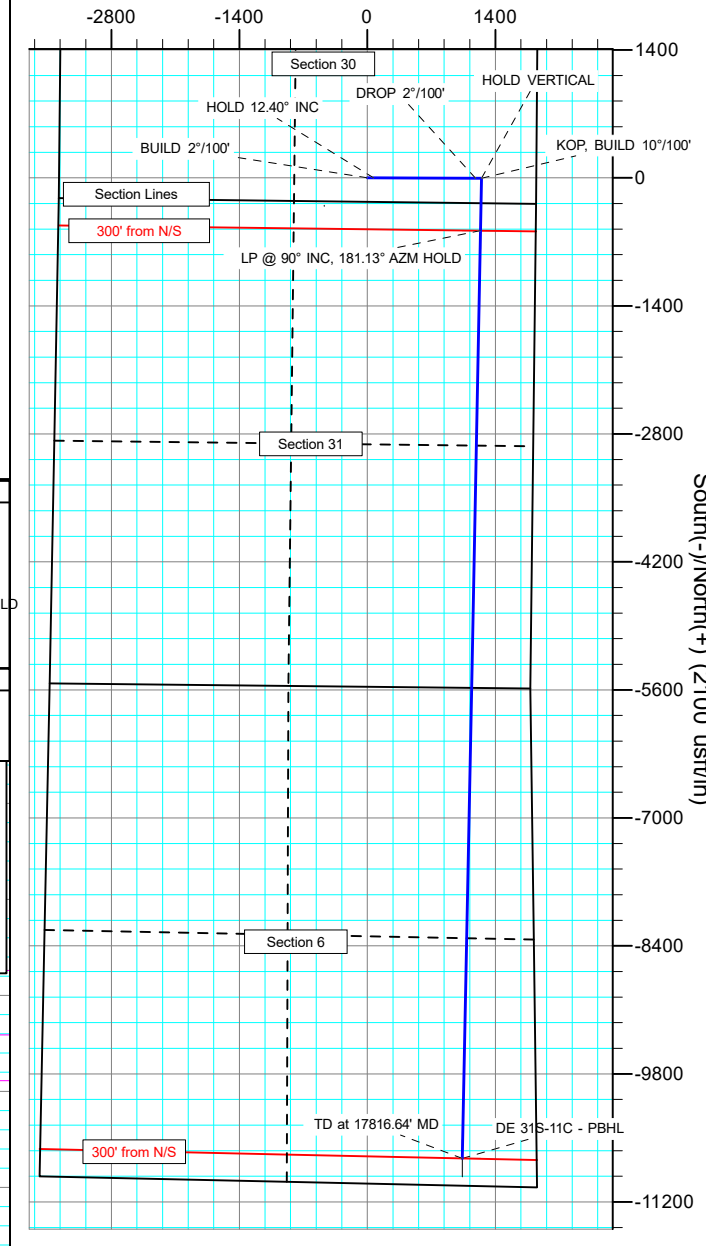
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	919.86	12.40	90.19	915.03	-0.22	66.80	2.00	90.19	6.66	
4	6117.94	12.40	90.19	5991.91	-3.89	1182.75	0.00	0.00	117.91	
5	6737.79	0.00	0.00	6606.94	-4.11	1249.55	2.00	180.00	124.57	
6	6767.79	0.00	0.00	6636.94	-4.11	1249.55	0.00	0.00	124.57	
7	7668.00	90.00	181.13	7210.00	-577.11	1238.30	10.00	181.13	693.81	DE 31S-11C - LP
8	17816.64	90.00	181.13	7210.00	-10723.78	1038.79	0.00	164.96	10773.98	DE 31S-11C - PBHL

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
3180.00	3238.90	PARKMAN
3750.00	3822.51	SUSSEX
4155.00	4237.18	SHANNON
6945.00	7093.04	NIOBRARA
7028.00	7198.19	NIO B TARGET
7180.00	7481.71	FORT HAYS
7210.00	7668.00	CODELL



West(-)/East(+) (2100 usft/in)



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well DUNSTON EAST 31S-20-11C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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 30-T12N-R61W			
Site Position:		Northing:	1,599,831.59 usft	Latitude:	40° 58' 23.891 N
From:	Lat/Long	Easting:	3,342,986.16 usft	Longitude:	104° 15' 28.631 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.80 °

Well	DUNSTON EAST 31S-20-11C					
Well Position	+N/-S	221.39 usft	Northing:	1,600,100.23 usft	Latitude:	40° 58' 26.076 N
	+E/-W	3,374.86 usft	Easting:	3,346,357.59 usft	Longitude:	104° 14' 44.635 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,260.00 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	10/3/2017	7.94	67.38	52,703.17016893

<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	174.47

<b>Plan Survey Tool Program</b>	<b>Date</b>	10/12/2017		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	17,816.64	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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
919.86	12.40	90.19	915.03	-0.22	66.80	2.00	2.00	0.00	90.19	
6,117.94	12.40	90.19	5,991.91	-3.89	1,182.75	0.00	0.00	0.00	0.00	
6,737.79	0.00	0.00	6,606.94	-4.11	1,249.55	2.00	-2.00	0.00	180.00	
6,767.79	0.00	0.00	6,636.94	-4.11	1,249.55	0.00	0.00	0.00	0.00	
7,668.00	90.00	181.13	7,210.00	-577.11	1,238.30	10.00	10.00	-19.87	181.13	DE 31S-11C - LP
17,816.64	90.00	181.13	7,210.00	-10,723.78	1,038.79	0.00	0.00	0.00	164.96	DE 31S-11C - PBHL

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well DUNSTON EAST 31S-20-11C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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
<b>BUILD 2°/100'</b>									
400.00	2.00	90.19	399.98	-0.01	1.75	0.17	2.00	2.00	0.00
500.00	4.00	90.19	499.84	-0.02	6.98	0.70	2.00	2.00	0.00
600.00	6.00	90.19	599.45	-0.05	15.69	1.56	2.00	2.00	0.00
700.00	8.00	90.19	698.70	-0.09	27.88	2.78	2.00	2.00	0.00
800.00	10.00	90.19	797.47	-0.14	43.52	4.34	2.00	2.00	0.00
900.00	12.00	90.19	895.62	-0.21	62.60	6.24	2.00	2.00	0.00
919.86	12.40	90.19	915.03	-0.22	66.80	6.66	2.00	2.00	0.00
<b>HOLD 12.40° INC</b>									
1,000.00	12.40	90.19	993.31	-0.28	84.00	8.37	0.00	0.00	0.00
1,100.00	12.40	90.19	1,090.97	-0.35	105.47	10.51	0.00	0.00	0.00
1,200.00	12.40	90.19	1,188.64	-0.42	126.94	12.65	0.00	0.00	0.00
1,300.00	12.40	90.19	1,286.31	-0.49	148.41	14.79	0.00	0.00	0.00
1,400.00	12.40	90.19	1,383.98	-0.56	169.88	16.94	0.00	0.00	0.00
1,500.00	12.40	90.19	1,481.65	-0.63	191.35	19.08	0.00	0.00	0.00
1,600.00	12.40	90.19	1,579.32	-0.70	212.82	21.22	0.00	0.00	0.00
1,700.00	12.40	90.19	1,676.98	-0.77	234.28	23.36	0.00	0.00	0.00
1,800.00	12.40	90.19	1,774.65	-0.84	255.75	25.50	0.00	0.00	0.00
1,900.00	12.40	90.19	1,872.32	-0.91	277.22	27.64	0.00	0.00	0.00
2,000.00	12.40	90.19	1,969.99	-0.98	298.69	29.78	0.00	0.00	0.00
2,100.00	12.40	90.19	2,067.66	-1.05	320.16	31.92	0.00	0.00	0.00
2,200.00	12.40	90.19	2,165.33	-1.12	341.63	34.06	0.00	0.00	0.00
2,300.00	12.40	90.19	2,262.99	-1.19	363.10	36.20	0.00	0.00	0.00
2,400.00	12.40	90.19	2,360.66	-1.26	384.56	38.34	0.00	0.00	0.00
2,500.00	12.40	90.19	2,458.33	-1.34	406.03	40.48	0.00	0.00	0.00
2,600.00	12.40	90.19	2,556.00	-1.41	427.50	42.62	0.00	0.00	0.00
2,700.00	12.40	90.19	2,653.67	-1.48	448.97	44.76	0.00	0.00	0.00
2,800.00	12.40	90.19	2,751.34	-1.55	470.44	46.90	0.00	0.00	0.00
2,900.00	12.40	90.19	2,849.00	-1.62	491.91	49.04	0.00	0.00	0.00
3,000.00	12.40	90.19	2,946.67	-1.69	513.38	51.18	0.00	0.00	0.00
3,100.00	12.40	90.19	3,044.34	-1.76	534.84	53.32	0.00	0.00	0.00
3,200.00	12.40	90.19	3,142.01	-1.83	556.31	55.46	0.00	0.00	0.00
3,238.90	12.40	90.19	3,180.00	-1.86	564.66	56.29	0.00	0.00	0.00
<b>PARKMAN</b>									
3,300.00	12.40	90.19	3,239.68	-1.90	577.78	57.60	0.00	0.00	0.00
3,400.00	12.40	90.19	3,337.35	-1.97	599.25	59.74	0.00	0.00	0.00
3,500.00	12.40	90.19	3,435.01	-2.04	620.72	61.88	0.00	0.00	0.00
3,600.00	12.40	90.19	3,532.68	-2.11	642.19	64.02	0.00	0.00	0.00
3,700.00	12.40	90.19	3,630.35	-2.18	663.66	66.16	0.00	0.00	0.00
3,800.00	12.40	90.19	3,728.02	-2.25	685.12	68.30	0.00	0.00	0.00
3,822.51	12.40	90.19	3,750.00	-2.27	689.96	68.78	0.00	0.00	0.00
<b>SUSSEX</b>									
3,900.00	12.40	90.19	3,825.69	-2.32	706.59	70.44	0.00	0.00	0.00
4,000.00	12.40	90.19	3,923.35	-2.39	728.06	72.58	0.00	0.00	0.00
4,100.00	12.40	90.19	4,021.02	-2.47	749.53	74.72	0.00	0.00	0.00
4,200.00	12.40	90.19	4,118.69	-2.54	771.00	76.86	0.00	0.00	0.00
4,237.18	12.40	90.19	4,155.00	-2.56	778.98	77.66	0.00	0.00	0.00
<b>SHANNON</b>									
4,300.00	12.40	90.19	4,216.36	-2.61	792.47	79.00	0.00	0.00	0.00

# Planning Report

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<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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)
4,400.00	12.40	90.19	4,314.03	-2.68	813.94	81.14	0.00	0.00	0.00
4,500.00	12.40	90.19	4,411.70	-2.75	835.40	83.28	0.00	0.00	0.00
4,600.00	12.40	90.19	4,509.36	-2.82	856.87	85.42	0.00	0.00	0.00
4,700.00	12.40	90.19	4,607.03	-2.89	878.34	87.56	0.00	0.00	0.00
4,800.00	12.40	90.19	4,704.70	-2.96	899.81	89.70	0.00	0.00	0.00
4,900.00	12.40	90.19	4,802.37	-3.03	921.28	91.84	0.00	0.00	0.00
5,000.00	12.40	90.19	4,900.04	-3.10	942.75	93.98	0.00	0.00	0.00
5,100.00	12.40	90.19	4,997.71	-3.17	964.22	96.12	0.00	0.00	0.00
5,200.00	12.40	90.19	5,095.37	-3.24	985.68	98.26	0.00	0.00	0.00
5,300.00	12.40	90.19	5,193.04	-3.31	1,007.15	100.40	0.00	0.00	0.00
5,400.00	12.40	90.19	5,290.71	-3.38	1,028.62	102.54	0.00	0.00	0.00
5,500.00	12.40	90.19	5,388.38	-3.45	1,050.09	104.68	0.00	0.00	0.00
5,600.00	12.40	90.19	5,486.05	-3.52	1,071.56	106.82	0.00	0.00	0.00
5,700.00	12.40	90.19	5,583.72	-3.60	1,093.03	108.96	0.00	0.00	0.00
5,800.00	12.40	90.19	5,681.38	-3.67	1,114.50	111.10	0.00	0.00	0.00
5,900.00	12.40	90.19	5,779.05	-3.74	1,135.96	113.24	0.00	0.00	0.00
6,000.00	12.40	90.19	5,876.72	-3.81	1,157.43	115.38	0.00	0.00	0.00
6,100.00	12.40	90.19	5,974.39	-3.88	1,178.90	117.52	0.00	0.00	0.00
6,117.94	12.40	90.19	5,991.91	-3.89	1,182.75	117.91	0.00	0.00	0.00
<b>DROP 2°/100'</b>									
6,200.00	10.76	90.19	6,072.30	-3.94	1,199.22	119.55	2.00	-2.00	0.00
6,300.00	8.76	90.19	6,170.85	-4.00	1,216.16	121.24	2.00	-2.00	0.00
6,400.00	6.76	90.19	6,269.93	-4.04	1,229.66	122.58	2.00	-2.00	0.00
6,500.00	4.76	90.19	6,369.42	-4.08	1,239.69	123.58	2.00	-2.00	0.00
6,600.00	2.76	90.19	6,469.20	-4.10	1,246.24	124.24	2.00	-2.00	0.00
6,700.00	0.76	90.19	6,569.15	-4.11	1,249.30	124.54	2.00	-2.00	0.00
6,737.79	0.00	0.00	6,606.94	-4.11	1,249.55	124.57	2.00	-2.00	-238.63
<b>HOLD VERTICAL</b>									
6,767.79	0.00	0.00	6,636.94	-4.11	1,249.55	124.57	0.00	0.00	0.00
<b>KOP, BUILD 10°/100'</b>									
6,800.00	3.22	181.13	6,669.13	-5.01	1,249.53	125.47	10.00	10.00	0.00
6,850.00	8.22	181.13	6,718.86	-9.99	1,249.43	130.41	10.00	10.00	0.00
6,900.00	13.22	181.13	6,767.98	-19.29	1,249.25	139.65	10.00	10.00	0.00
6,950.00	18.22	181.13	6,816.09	-32.83	1,248.99	153.10	10.00	10.00	0.00
7,000.00	23.22	181.13	6,862.84	-50.51	1,248.64	170.66	10.00	10.00	0.00
7,050.00	28.22	181.13	6,907.88	-72.19	1,248.21	192.20	10.00	10.00	0.00
7,093.04	32.52	181.13	6,945.00	-93.94	1,247.79	213.81	10.00	10.00	0.00
<b>NIOBRARA</b>									
7,100.00	33.21	181.13	6,950.85	-97.72	1,247.71	217.56	10.00	10.00	0.00
7,150.00	38.21	181.13	6,991.43	-126.89	1,247.14	246.54	10.00	10.00	0.00
7,198.19	43.03	181.13	7,028.00	-158.25	1,246.52	277.70	10.00	10.00	0.00
<b>NIO B TARGET</b>									
7,200.00	43.21	181.13	7,029.32	-159.49	1,246.50	278.92	10.00	10.00	0.00
7,250.00	48.21	181.13	7,064.22	-195.26	1,245.80	314.46	10.00	10.00	0.00
7,300.00	53.21	181.13	7,095.87	-233.94	1,245.04	352.89	10.00	10.00	0.00
7,350.00	58.21	181.13	7,124.03	-275.23	1,244.23	393.91	10.00	10.00	0.00
7,400.00	63.21	181.13	7,148.49	-318.81	1,243.37	437.21	10.00	10.00	0.00
7,450.00	68.21	181.13	7,169.05	-364.36	1,242.47	482.46	10.00	10.00	0.00
7,481.71	71.38	181.13	7,180.00	-394.11	1,241.89	512.01	10.00	10.00	0.00
<b>FORT HAYS</b>									
7,500.00	73.21	181.13	7,185.56	-411.53	1,241.55	529.32	10.00	10.00	0.00
7,550.00	78.21	181.13	7,197.90	-459.96	1,240.60	577.43	10.00	10.00	0.00
7,600.00	83.21	181.13	7,205.98	-509.28	1,239.63	626.42	10.00	10.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well DUNSTON EAST 31S-20-11C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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)	
7,650.00	88.20	181.13	7,209.72	-559.11	1,238.65	675.93	10.00	10.00	0.00	
7,668.00	90.00	181.13	7,210.00	-577.11	1,238.30	693.81	10.00	10.00	0.00	
LP @ 90° INC, 181.13° AZM HOLD - CODELL										
7,700.00	90.00	181.13	7,210.00	-609.10	1,237.67	725.59	0.00	0.00	0.00	
7,800.00	90.00	181.13	7,209.99	-709.08	1,235.70	824.92	0.00	0.00	0.00	
7,900.00	90.00	181.13	7,209.98	-809.06	1,233.74	924.24	0.00	0.00	0.00	
8,000.00	90.00	181.13	7,209.97	-909.04	1,231.78	1,023.57	0.00	0.00	0.00	
8,100.00	90.00	181.13	7,209.96	-1,009.02	1,229.81	1,122.89	0.00	0.00	0.00	
8,200.00	90.00	181.13	7,209.96	-1,109.00	1,227.85	1,222.22	0.00	0.00	0.00	
8,300.00	90.00	181.13	7,209.95	-1,208.98	1,225.89	1,321.55	0.00	0.00	0.00	
8,400.00	90.00	181.13	7,209.94	-1,308.96	1,223.92	1,420.87	0.00	0.00	0.00	
8,500.00	90.00	181.13	7,209.93	-1,408.94	1,221.96	1,520.20	0.00	0.00	0.00	
8,600.00	90.00	181.13	7,209.93	-1,508.92	1,219.99	1,619.52	0.00	0.00	0.00	
8,700.00	90.00	181.13	7,209.92	-1,608.91	1,218.03	1,718.85	0.00	0.00	0.00	
8,800.00	90.00	181.13	7,209.91	-1,708.89	1,216.07	1,818.17	0.00	0.00	0.00	
8,900.00	90.00	181.13	7,209.91	-1,808.87	1,214.10	1,917.50	0.00	0.00	0.00	
9,000.00	90.00	181.13	7,209.90	-1,908.85	1,212.14	2,016.82	0.00	0.00	0.00	
9,100.00	90.00	181.13	7,209.89	-2,008.83	1,210.17	2,116.15	0.00	0.00	0.00	
9,200.00	90.00	181.13	7,209.89	-2,108.81	1,208.21	2,215.48	0.00	0.00	0.00	
9,300.00	90.00	181.13	7,209.88	-2,208.79	1,206.25	2,314.80	0.00	0.00	0.00	
9,400.00	90.00	181.13	7,209.88	-2,308.77	1,204.28	2,414.13	0.00	0.00	0.00	
9,500.00	90.00	181.13	7,209.87	-2,408.75	1,202.32	2,513.45	0.00	0.00	0.00	
9,600.00	90.00	181.13	7,209.87	-2,508.73	1,200.35	2,612.78	0.00	0.00	0.00	
9,700.00	90.00	181.13	7,209.86	-2,608.71	1,198.39	2,712.10	0.00	0.00	0.00	
9,800.00	90.00	181.13	7,209.86	-2,708.69	1,196.42	2,811.43	0.00	0.00	0.00	
9,900.00	90.00	181.13	7,209.85	-2,808.67	1,194.46	2,910.75	0.00	0.00	0.00	
10,000.00	90.00	181.13	7,209.85	-2,908.65	1,192.49	3,010.08	0.00	0.00	0.00	
10,100.00	90.00	181.13	7,209.84	-3,008.64	1,190.53	3,109.40	0.00	0.00	0.00	
10,200.00	90.00	181.13	7,209.84	-3,108.62	1,188.56	3,208.73	0.00	0.00	0.00	
10,300.00	90.00	181.13	7,209.83	-3,208.60	1,186.60	3,308.06	0.00	0.00	0.00	
10,400.00	90.00	181.13	7,209.83	-3,308.58	1,184.64	3,407.38	0.00	0.00	0.00	
10,500.00	90.00	181.13	7,209.83	-3,408.56	1,182.67	3,506.71	0.00	0.00	0.00	
10,600.00	90.00	181.13	7,209.82	-3,508.54	1,180.71	3,606.03	0.00	0.00	0.00	
10,700.00	90.00	181.13	7,209.82	-3,608.52	1,178.74	3,705.36	0.00	0.00	0.00	
10,800.00	90.00	181.13	7,209.81	-3,708.50	1,176.78	3,804.68	0.00	0.00	0.00	
10,900.00	90.00	181.13	7,209.81	-3,808.48	1,174.81	3,904.01	0.00	0.00	0.00	
11,000.00	90.00	181.13	7,209.81	-3,908.46	1,172.85	4,003.33	0.00	0.00	0.00	
11,100.00	90.00	181.13	7,209.81	-4,008.44	1,170.88	4,102.66	0.00	0.00	0.00	
11,200.00	90.00	181.13	7,209.80	-4,108.42	1,168.92	4,201.98	0.00	0.00	0.00	
11,300.00	90.00	181.13	7,209.80	-4,208.40	1,166.95	4,301.31	0.00	0.00	0.00	
11,400.00	90.00	181.13	7,209.80	-4,308.38	1,164.98	4,400.64	0.00	0.00	0.00	
11,500.00	90.00	181.13	7,209.80	-4,408.36	1,163.02	4,499.96	0.00	0.00	0.00	
11,600.00	90.00	181.13	7,209.79	-4,508.35	1,161.05	4,599.29	0.00	0.00	0.00	
11,700.00	90.00	181.13	7,209.79	-4,608.33	1,159.09	4,698.61	0.00	0.00	0.00	
11,800.00	90.00	181.13	7,209.79	-4,708.31	1,157.12	4,797.94	0.00	0.00	0.00	
11,900.00	90.00	181.13	7,209.79	-4,808.29	1,155.16	4,897.26	0.00	0.00	0.00	
12,000.00	90.00	181.13	7,209.79	-4,908.27	1,153.19	4,996.59	0.00	0.00	0.00	
12,100.00	90.00	181.13	7,209.79	-5,008.25	1,151.23	5,095.91	0.00	0.00	0.00	
12,200.00	90.00	181.13	7,209.79	-5,108.23	1,149.26	5,195.24	0.00	0.00	0.00	
12,300.00	90.00	181.13	7,209.78	-5,208.21	1,147.30	5,294.56	0.00	0.00	0.00	
12,400.00	90.00	181.13	7,209.78	-5,308.19	1,145.33	5,393.89	0.00	0.00	0.00	
12,500.00	90.00	181.13	7,209.78	-5,408.17	1,143.36	5,493.21	0.00	0.00	0.00	
12,600.00	90.00	181.13	7,209.78	-5,508.15	1,141.40	5,592.54	0.00	0.00	0.00	
12,700.00	90.00	181.13	7,209.78	-5,608.13	1,139.43	5,691.87	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well DUNSTON EAST 31S-20-11C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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)
12,800.00	90.00	181.13	7,209.78	-5,708.11	1,137.47	5,791.19	0.00	0.00	0.00
12,900.00	90.00	181.13	7,209.78	-5,808.09	1,135.50	5,890.52	0.00	0.00	0.00
13,000.00	90.00	181.13	7,209.78	-5,908.08	1,133.53	5,989.84	0.00	0.00	0.00
13,100.00	90.00	181.13	7,209.78	-6,008.06	1,131.57	6,089.17	0.00	0.00	0.00
13,200.00	90.00	181.13	7,209.78	-6,108.04	1,129.60	6,188.49	0.00	0.00	0.00
13,300.00	90.00	181.13	7,209.79	-6,208.02	1,127.64	6,287.82	0.00	0.00	0.00
13,400.00	90.00	181.13	7,209.79	-6,308.00	1,125.67	6,387.14	0.00	0.00	0.00
13,500.00	90.00	181.13	7,209.79	-6,407.98	1,123.70	6,486.47	0.00	0.00	0.00
13,600.00	90.00	181.13	7,209.79	-6,507.96	1,121.74	6,585.79	0.00	0.00	0.00
13,700.00	90.00	181.13	7,209.79	-6,607.94	1,119.77	6,685.12	0.00	0.00	0.00
13,800.00	90.00	181.13	7,209.79	-6,707.92	1,117.81	6,784.44	0.00	0.00	0.00
13,900.00	90.00	181.13	7,209.79	-6,807.90	1,115.84	6,883.77	0.00	0.00	0.00
14,000.00	90.00	181.13	7,209.80	-6,907.88	1,113.87	6,983.09	0.00	0.00	0.00
14,100.00	90.00	181.13	7,209.80	-7,007.86	1,111.91	7,082.42	0.00	0.00	0.00
14,200.00	90.00	181.13	7,209.80	-7,107.84	1,109.94	7,181.74	0.00	0.00	0.00
14,300.00	90.00	181.13	7,209.80	-7,207.82	1,107.97	7,281.07	0.00	0.00	0.00
14,400.00	90.00	181.13	7,209.81	-7,307.80	1,106.01	7,380.40	0.00	0.00	0.00
14,500.00	90.00	181.13	7,209.81	-7,407.79	1,104.04	7,479.72	0.00	0.00	0.00
14,600.00	90.00	181.13	7,209.81	-7,507.77	1,102.07	7,579.05	0.00	0.00	0.00
14,700.00	90.00	181.13	7,209.82	-7,607.75	1,100.11	7,678.37	0.00	0.00	0.00
14,800.00	90.00	181.13	7,209.82	-7,707.73	1,098.14	7,777.70	0.00	0.00	0.00
14,900.00	90.00	181.13	7,209.82	-7,807.71	1,096.17	7,877.02	0.00	0.00	0.00
15,000.00	90.00	181.13	7,209.83	-7,907.69	1,094.21	7,976.35	0.00	0.00	0.00
15,100.00	90.00	181.13	7,209.83	-8,007.67	1,092.24	8,075.67	0.00	0.00	0.00
15,200.00	90.00	181.13	7,209.83	-8,107.65	1,090.27	8,175.00	0.00	0.00	0.00
15,300.00	90.00	181.13	7,209.84	-8,207.63	1,088.31	8,274.32	0.00	0.00	0.00
15,400.00	90.00	181.13	7,209.84	-8,307.61	1,086.34	8,373.65	0.00	0.00	0.00
15,500.00	90.00	181.13	7,209.85	-8,407.59	1,084.37	8,472.97	0.00	0.00	0.00
15,600.00	90.00	181.13	7,209.85	-8,507.57	1,082.40	8,572.30	0.00	0.00	0.00
15,700.00	90.00	181.13	7,209.86	-8,607.55	1,080.44	8,671.62	0.00	0.00	0.00
15,800.00	90.00	181.13	7,209.86	-8,707.53	1,078.47	8,770.95	0.00	0.00	0.00
15,900.00	90.00	181.13	7,209.87	-8,807.51	1,076.50	8,870.27	0.00	0.00	0.00
16,000.00	90.00	181.13	7,209.87	-8,907.50	1,074.53	8,969.60	0.00	0.00	0.00
16,100.00	90.00	181.13	7,209.88	-9,007.48	1,072.57	9,068.92	0.00	0.00	0.00
16,200.00	90.00	181.13	7,209.88	-9,107.46	1,070.60	9,168.25	0.00	0.00	0.00
16,300.00	90.00	181.13	7,209.89	-9,207.44	1,068.63	9,267.57	0.00	0.00	0.00
16,400.00	90.00	181.13	7,209.90	-9,307.42	1,066.67	9,366.90	0.00	0.00	0.00
16,500.00	90.00	181.13	7,209.90	-9,407.40	1,064.70	9,466.22	0.00	0.00	0.00
16,600.00	90.00	181.13	7,209.91	-9,507.38	1,062.73	9,565.55	0.00	0.00	0.00
16,700.00	90.00	181.13	7,209.92	-9,607.36	1,060.76	9,664.87	0.00	0.00	0.00
16,800.00	90.00	181.13	7,209.92	-9,707.34	1,058.79	9,764.20	0.00	0.00	0.00
16,900.00	90.00	181.13	7,209.93	-9,807.32	1,056.83	9,863.52	0.00	0.00	0.00
17,000.00	90.00	181.13	7,209.94	-9,907.30	1,054.86	9,962.85	0.00	0.00	0.00
17,100.00	90.00	181.13	7,209.94	-10,007.28	1,052.89	10,062.18	0.00	0.00	0.00
17,200.00	90.00	181.13	7,209.95	-10,107.26	1,050.92	10,161.50	0.00	0.00	0.00
17,300.00	90.00	181.13	7,209.96	-10,207.24	1,048.96	10,260.83	0.00	0.00	0.00
17,400.00	90.00	181.13	7,209.97	-10,307.22	1,046.99	10,360.15	0.00	0.00	0.00
17,500.00	90.00	181.13	7,209.97	-10,407.20	1,045.02	10,459.48	0.00	0.00	0.00
17,600.00	90.00	181.13	7,209.98	-10,507.19	1,043.05	10,558.80	0.00	0.00	0.00
17,700.00	90.00	181.13	7,209.99	-10,607.17	1,041.08	10,658.13	0.00	0.00	0.00
17,800.00	90.00	181.13	7,210.00	-10,707.15	1,039.12	10,757.45	0.00	0.00	0.00
17,816.64	90.00	181.13	7,210.00	-10,723.78	1,038.79	10,773.98	0.00	0.00	0.00
TD at 17816.64' MD									

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well DUNSTON EAST 31S-20-11C
<b>Company:</b>	8 NORTH LLC	<b>TVD Reference:</b>	KB 25' @ 5285.00usft
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB 25' @ 5285.00usft
<b>Site:</b>	Sec 30-T12N-R61W	<b>North Reference:</b>	True
<b>Well:</b>	DUNSTON EAST 31S-20-11C	<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)		
DE 31S-11C - PBHL	0.00	0.00	7,210.00	-10,723.78	1,038.79	1,589,392.21	3,347,547.95	40° 56' 40.121 N	104° 14' 31.099 W
- plan hits target center									
- Point									
DE 31S-11C - LP	0.00	0.00	7,210.00	-577.11	1,238.30	1,599,540.69	3,347,603.93	40° 58' 20.374 N	104° 14' 28.493 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
3,238.90	3,180.00	PARKMAN				
3,822.51	3,750.00	SUSSEX				
4,237.18	4,155.00	SHANNON				
7,093.04	6,945.00	NIOBRARA				
7,198.19	7,028.00	NIO B TARGET				
7,481.71	7,180.00	FORT HAYS				
7,668.00	7,210.00	CODELL				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	BUILD 2°/100'
919.86	915.03	-0.22	66.80	HOLD 12.40° INC
6,117.94	5,991.91	-3.89	1,182.75	DROP 2°/100'
6,737.79	6,606.94	-4.11	1,249.55	HOLD VERTICAL
6,767.79	6,636.94	-4.11	1,249.55	KOP, BUILD 10°/100'
7,668.00	7,210.00	-577.11	1,238.30	LP @ 90° INC, 181.13° AZM HOLD
17,816.64	7,210.00	-10,723.78	1,038.79	TD at 17816.64' MD