

8 NORTH LLC

Weld County

Sec 14-T9N-R61W

MATTINGLY 14N-20-8C

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

28 February, 2018



Project: Weld County
Site: Sec 14-T9N-R61W
Well: MATTINGLY 14N-20-8C
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: 7.84°

Magnetic Field
Strength: 52549.8nT
Dip Angle: 67.20°
Date: 2/28/2018
Model: IGRF2015

WELL DETAILS: MATTINGLY 14N-20-8C

+N/-S	+E/-W	Northing	Easting	4971.00	Latitude	Longitude	Slot
0.00	0.00	1516802.42	3369824.07		40° 44' 39.735 N	104° 9' 55.098 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	1260.48	19.21	231.04	1242.59	-100.30	-124.03	2.00	231.04	-80.96	
4	5393.42	19.21	231.04	5145.41	-955.40	-1181.37	0.00	0.00	-771.17	
5	6353.90	0.00	0.00	6088.00	-1055.70	-1305.40	2.00	180.00	-852.13	
6	6383.90	0.00	0.00	6118.00	-1055.70	-1305.40	0.00	0.00	-852.13	
7	7284.00	90.00	359.47	6691.00	-482.70	-1310.69	10.00	359.47	-284.58	MATTINGLY 14N-8C - LP
8	11084.00	90.00	359.47	6690.81	-482.70	-1310.69	0.00	0.00	-284.58	
9	11260.43	90.00	3.00	6690.80	3493.51	-1341.95	2.00	90.05	3652.94	
10	11610.43	90.00	3.00	6690.80	3843.03	-1323.63	0.00	0.00	3995.96	
11	11804.20	90.00	359.12	6690.80	4036.72	-1320.04	2.00	-90.00	4187.02	MATTINGLY 14N-8C - PBHL
12	17195.26	90.00	359.12	6691.00	9427.15	-1402.40	0.00	0.00	9530.89	MATTINGLY 14N-8C - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3554.00	3708.18	PARKMAN
6367.00	6641.49	NIOBRARA
6492.00	6791.39	NIO B TARGET
6635.00	7028.53	FORT HAYS
6691.00	7284.00	CODELL

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	Start Build 2.00
1260.48	19.21	231.04	1242.59	-100.30	-124.03	-80.96	159.51	Start 4132.94 hold at 1260.48 MD
5393.42	19.21	231.04	5145.41	-955.40	-1181.37	-771.17	1519.35	Start Drop -2.00
6353.90	0.00	0.00	6088.00	-1055.70	-1305.40	-852.13	1678.86	Start 30.00 hold at 6353.90 MD
6383.90	0.00	0.00	6118.00	-1055.70	-1305.40	-852.13	1678.86	Start DLS 10.00 TFO 359.47
7284.00	90.00	359.47	6691.00	-482.70	-1310.69	-284.58	2251.89	Start 3800.00 hold at 7284.00 MD
11084.00	90.00	359.47	6690.81	-482.70	-1310.69	-284.58	6051.89	Start DLS 2.00 TFO 90.05
11260.43	90.00	3.00	6690.80	3493.51	-1341.95	3652.94	6228.32	Start 350.00 hold at 11260.43 MD
11610.43	90.00	3.00	6690.80	3843.03	-1323.63	3995.96	6578.32	Start Turn -2.00
11804.20	90.00	359.12	6690.80	4036.72	-1320.04	4187.02	6772.09	Start 5391.06 hold at 11804.20 MD
17195.26	90.00	359.12	6691.00	9427.15	-1402.40	9530.89	12163.15	TD at 17195.26

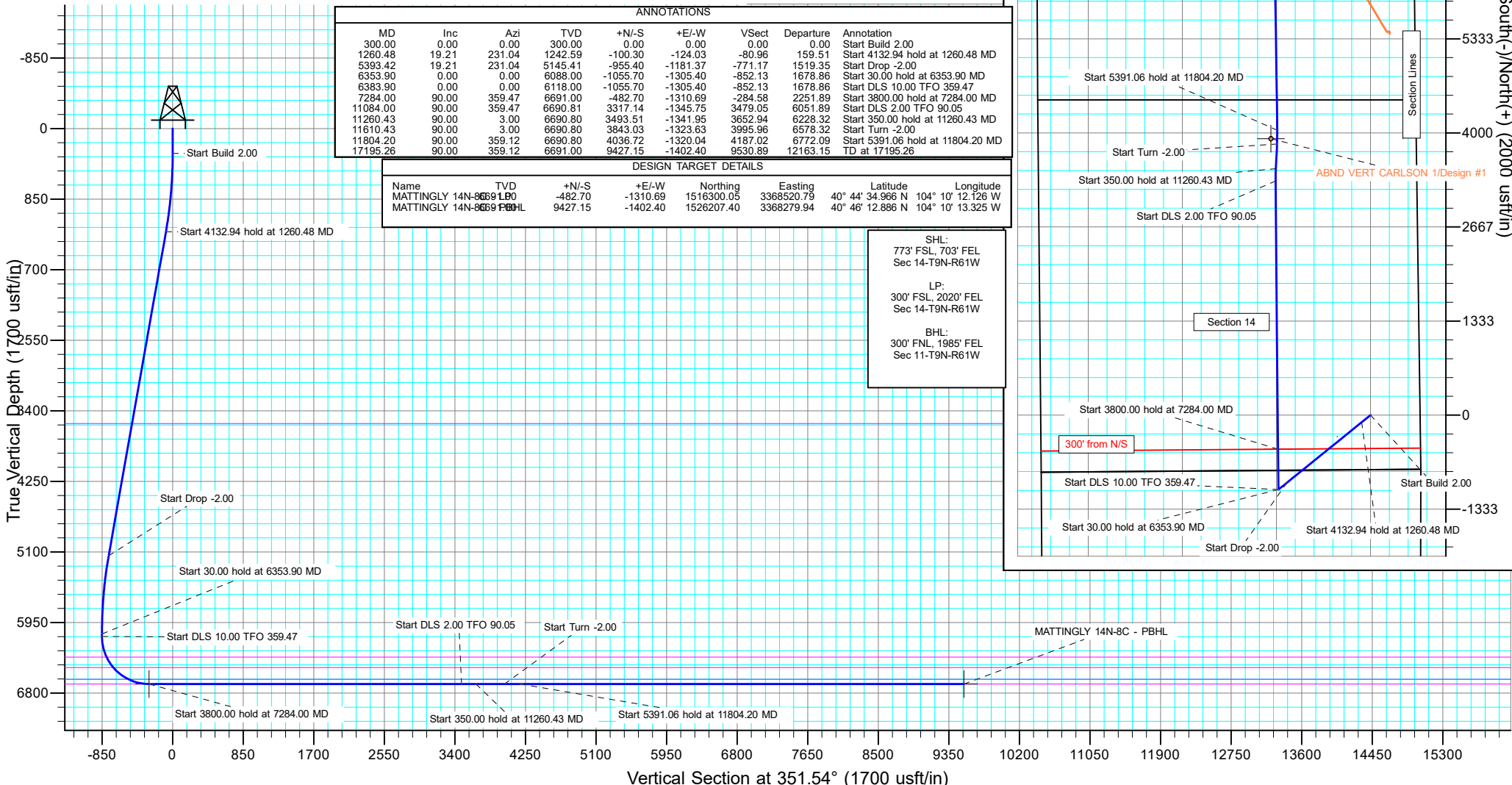
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MATTINGLY 14N-8C - LP	6691.00	-482.70	-1310.69	1516300.05	3368520.79	40° 44' 34.966 N	104° 10' 12.126 W
MATTINGLY 14N-8C - PBHL	9427.15	-1402.40	-1526.07	1526207.40	3368279.94	40° 46' 12.886 N	104° 10' 13.325 W

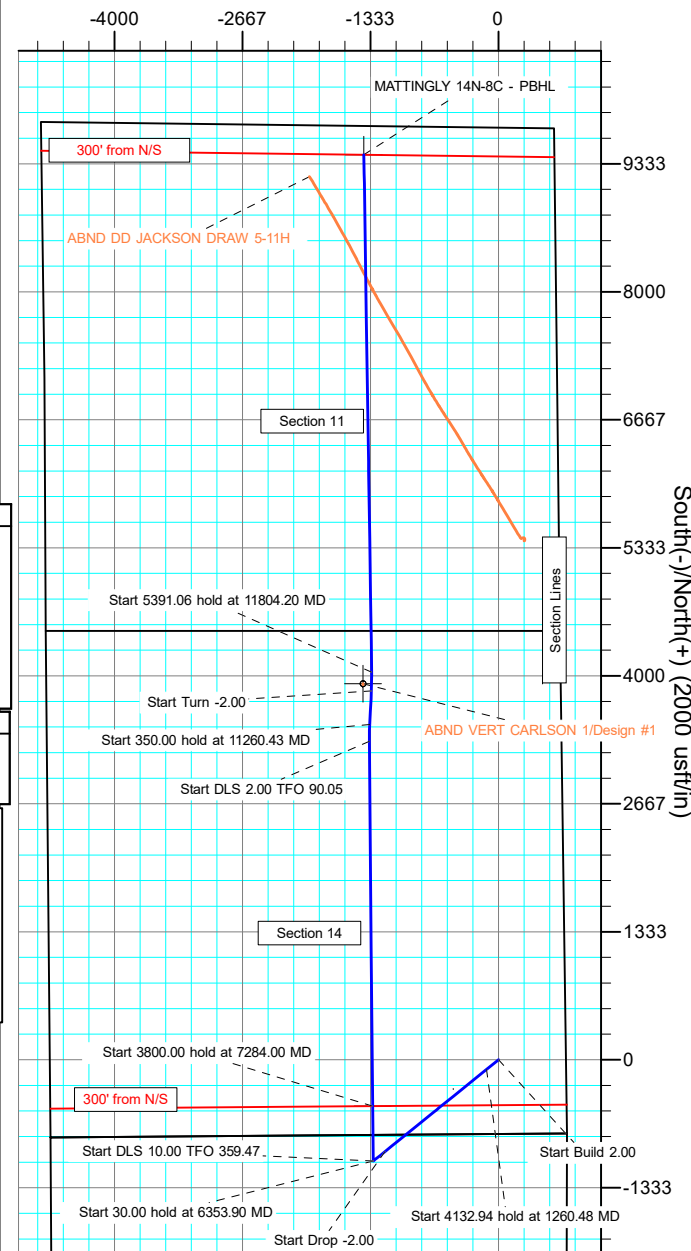
SHL:
773' FSL, 703' FEL
Sec 14-T9N-R61W

LP:
300' FSL, 2020' FEL
Sec 14-T9N-R61W

BHL:
300' FNL, 1985' FEL
Sec 11-T9N-R61W



West(-)/East(+) (2000 usft/in)



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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

Site		Sec 14-T9N-R61W			
Site Position:		Northing:	1,515,923.91 usft	Latitude:	40° 44' 31.744 N
From:	Lat/Long	Easting:	3,365,169.76 usft	Longitude:	104° 10' 55.729 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.85 °

Well	MATTINGLY 14N-20-8C					
Well Position	+N/-S	809.25 usft	Northing:	1,516,802.42 usft	Latitude:	40° 44' 39.735 N
	+E/-W	4,666.84 usft	Easting:	3,369,824.06 usft	Longitude:	104° 9' 55.098 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	4,971.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/28/2018	7.84	67.20	52,549.77410992

Design	PROPOSAL 1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	351.54	

Plan Survey Tool Program	Date	2/28/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,194.57	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG	
				OWSG MWD - Standard	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
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	
1,260.48	19.21	231.04	1,242.59	-100.30	-124.03	2.00	2.00	0.00	231.04	
5,393.42	19.21	231.04	5,145.41	-955.40	-1,181.37	0.00	0.00	0.00	0.00	
6,353.90	0.00	0.00	6,088.00	-1,055.70	-1,305.40	2.00	-2.00	0.00	180.00	
6,383.90	0.00	0.00	6,118.00	-1,055.70	-1,305.40	0.00	0.00	0.00	0.00	
7,284.00	90.00	359.47	6,691.00	-482.70	-1,310.69	10.00	10.00	-0.06	359.47	MATTINGLY 14N-8C
11,084.00	90.00	359.47	6,690.81	3,317.14	-1,345.75	0.00	0.00	0.00	0.00	
11,260.43	90.00	3.00	6,690.80	3,493.51	-1,341.95	2.00	0.00	2.00	90.05	
11,610.43	90.00	3.00	6,690.80	3,843.03	-1,323.63	0.00	0.00	0.00	0.00	
11,804.20	90.00	359.12	6,690.80	4,036.72	-1,320.04	2.00	0.00	-2.00	-90.00	MATTINGLY 14N-8C
17,195.26	90.00	359.12	6,691.00	9,427.15	-1,402.40	0.00	0.00	0.00	0.00	MATTINGLY 14N-8C

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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
Start Build 2.00									
400.00	2.00	231.04	399.98	-1.10	-1.36	-0.89	2.00	2.00	0.00
500.00	4.00	231.04	499.84	-4.39	-5.43	-3.54	2.00	2.00	0.00
600.00	6.00	231.04	599.45	-9.87	-12.20	-7.97	2.00	2.00	0.00
700.00	8.00	231.04	698.70	-17.53	-21.68	-14.15	2.00	2.00	0.00
800.00	10.00	231.04	797.47	-27.37	-33.84	-22.09	2.00	2.00	0.00
900.00	12.00	231.04	895.62	-39.37	-48.68	-31.77	2.00	2.00	0.00
1,000.00	14.00	231.04	993.06	-53.51	-66.17	-43.19	2.00	2.00	0.00
1,100.00	16.00	231.04	1,089.64	-69.78	-86.29	-56.33	2.00	2.00	0.00
1,200.00	18.00	231.04	1,185.27	-88.17	-109.02	-71.17	2.00	2.00	0.00
1,260.48	19.21	231.04	1,242.59	-100.30	-124.03	-80.96	2.00	2.00	0.00
Start 4132.94 hold at 1260.48 MD									
1,300.00	19.21	231.04	1,279.91	-108.48	-134.14	-87.56	0.00	0.00	0.00
1,400.00	19.21	231.04	1,374.34	-129.17	-159.72	-104.26	0.00	0.00	0.00
1,500.00	19.21	231.04	1,468.77	-149.86	-185.30	-120.96	0.00	0.00	0.00
1,600.00	19.21	231.04	1,563.20	-170.55	-210.89	-137.66	0.00	0.00	0.00
1,700.00	19.21	231.04	1,657.63	-191.24	-236.47	-154.36	0.00	0.00	0.00
1,800.00	19.21	231.04	1,752.07	-211.93	-262.05	-171.06	0.00	0.00	0.00
1,900.00	19.21	231.04	1,846.50	-232.62	-287.64	-187.76	0.00	0.00	0.00
2,000.00	19.21	231.04	1,940.93	-253.31	-313.22	-204.46	0.00	0.00	0.00
2,100.00	19.21	231.04	2,035.36	-274.00	-338.80	-221.16	0.00	0.00	0.00
2,200.00	19.21	231.04	2,129.80	-294.69	-364.39	-237.86	0.00	0.00	0.00
2,300.00	19.21	231.04	2,224.23	-315.38	-389.97	-254.56	0.00	0.00	0.00
2,400.00	19.21	231.04	2,318.66	-336.07	-415.55	-271.26	0.00	0.00	0.00
2,500.00	19.21	231.04	2,413.09	-356.76	-441.14	-287.96	0.00	0.00	0.00
2,600.00	19.21	231.04	2,507.52	-377.45	-466.72	-304.66	0.00	0.00	0.00
2,700.00	19.21	231.04	2,601.96	-398.14	-492.30	-321.36	0.00	0.00	0.00
2,800.00	19.21	231.04	2,696.39	-418.82	-517.89	-338.06	0.00	0.00	0.00
2,900.00	19.21	231.04	2,790.82	-439.51	-543.47	-354.76	0.00	0.00	0.00
3,000.00	19.21	231.04	2,885.25	-460.20	-569.05	-371.46	0.00	0.00	0.00
3,100.00	19.21	231.04	2,979.68	-480.89	-594.64	-388.16	0.00	0.00	0.00
3,200.00	19.21	231.04	3,074.12	-501.58	-620.22	-404.86	0.00	0.00	0.00
3,300.00	19.21	231.04	3,168.55	-522.27	-645.80	-421.56	0.00	0.00	0.00
3,400.00	19.21	231.04	3,262.98	-542.96	-671.39	-438.26	0.00	0.00	0.00
3,500.00	19.21	231.04	3,357.41	-563.65	-696.97	-454.96	0.00	0.00	0.00
3,600.00	19.21	231.04	3,451.84	-584.34	-722.55	-471.66	0.00	0.00	0.00
3,700.00	19.21	231.04	3,546.28	-605.03	-748.14	-488.36	0.00	0.00	0.00
3,708.18	19.21	231.04	3,554.00	-606.72	-750.23	-489.73	0.00	0.00	0.00
PARKMAN									
3,800.00	19.21	231.04	3,640.71	-625.72	-773.72	-505.06	0.00	0.00	0.00
3,900.00	19.21	231.04	3,735.14	-646.41	-799.31	-521.76	0.00	0.00	0.00
4,000.00	19.21	231.04	3,829.57	-667.10	-824.89	-538.46	0.00	0.00	0.00
4,100.00	19.21	231.04	3,924.01	-687.79	-850.47	-555.17	0.00	0.00	0.00
4,200.00	19.21	231.04	4,018.44	-708.48	-876.06	-571.87	0.00	0.00	0.00
4,300.00	19.21	231.04	4,112.87	-729.17	-901.64	-588.57	0.00	0.00	0.00
4,400.00	19.21	231.04	4,207.30	-749.86	-927.22	-605.27	0.00	0.00	0.00
4,500.00	19.21	231.04	4,301.73	-770.55	-952.81	-621.97	0.00	0.00	0.00
4,600.00	19.21	231.04	4,396.17	-791.24	-978.39	-638.67	0.00	0.00	0.00
4,700.00	19.21	231.04	4,490.60	-811.93	-1,003.97	-655.37	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
4,800.00	19.21	231.04	4,585.03	-832.62	-1,029.56	-672.07	0.00	0.00	0.00
4,900.00	19.21	231.04	4,679.46	-853.31	-1,055.14	-688.77	0.00	0.00	0.00
5,000.00	19.21	231.04	4,773.89	-874.00	-1,080.72	-705.47	0.00	0.00	0.00
5,100.00	19.21	231.04	4,868.33	-894.69	-1,106.31	-722.17	0.00	0.00	0.00
5,200.00	19.21	231.04	4,962.76	-915.38	-1,131.89	-738.87	0.00	0.00	0.00
5,300.00	19.21	231.04	5,057.19	-936.07	-1,157.47	-755.57	0.00	0.00	0.00
5,393.42	19.21	231.04	5,145.41	-955.40	-1,181.37	-771.17	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	19.08	231.04	5,151.63	-956.75	-1,183.05	-772.26	2.00	-2.00	0.00
5,500.00	17.08	231.04	5,246.68	-976.27	-1,207.18	-788.01	2.00	-2.00	0.00
5,600.00	15.08	231.04	5,342.77	-993.68	-1,228.71	-802.07	2.00	-2.00	0.00
5,700.00	13.08	231.04	5,439.76	-1,008.98	-1,247.62	-814.41	2.00	-2.00	0.00
5,800.00	11.08	231.04	5,537.54	-1,022.13	-1,263.89	-825.03	2.00	-2.00	0.00
5,900.00	9.08	231.04	5,635.99	-1,033.14	-1,277.50	-833.92	2.00	-2.00	0.00
6,000.00	7.08	231.04	5,735.00	-1,041.97	-1,288.42	-841.05	2.00	-2.00	0.00
6,100.00	5.08	231.04	5,834.43	-1,048.63	-1,296.66	-846.42	2.00	-2.00	0.00
6,200.00	3.08	231.04	5,934.17	-1,053.10	-1,302.19	-850.03	2.00	-2.00	0.00
6,300.00	1.08	231.04	6,034.10	-1,055.38	-1,305.01	-851.87	2.00	-2.00	0.00
6,353.90	0.00	0.00	6,088.00	-1,055.70	-1,305.40	-852.13	2.00	-2.00	0.00
Start 30.00 hold at 6353.90 MD									
6,383.90	0.00	0.00	6,118.00	-1,055.70	-1,305.40	-852.13	0.00	0.00	0.00
Start DLS 10.00 TFO 359.47									
6,400.00	1.61	359.47	6,134.09	-1,055.47	-1,305.40	-851.91	10.00	10.00	0.00
6,450.00	6.61	359.47	6,183.95	-1,051.89	-1,305.44	-848.36	10.00	10.00	0.00
6,500.00	11.61	359.47	6,233.30	-1,043.98	-1,305.51	-840.52	10.00	10.00	0.00
6,550.00	16.61	359.47	6,281.78	-1,031.80	-1,305.62	-828.45	10.00	10.00	0.00
6,600.00	21.61	359.47	6,329.01	-1,015.43	-1,305.77	-812.25	10.00	10.00	0.00
6,641.49	25.76	359.47	6,367.00	-998.77	-1,305.93	-795.74	10.00	10.00	0.00
NIOBRARA									
6,650.00	26.61	359.47	6,374.63	-995.02	-1,305.96	-792.03	10.00	10.00	0.00
6,700.00	31.61	359.47	6,418.31	-970.71	-1,306.18	-767.94	10.00	10.00	0.00
6,750.00	36.61	359.47	6,459.69	-942.68	-1,306.44	-740.18	10.00	10.00	0.00
6,791.39	40.75	359.47	6,492.00	-916.82	-1,306.68	-714.57	10.00	10.00	0.00
NIO B TARGET									
6,800.00	41.61	359.47	6,498.48	-911.15	-1,306.73	-708.96	10.00	10.00	0.00
6,850.00	46.61	359.47	6,534.37	-876.36	-1,307.05	-674.50	10.00	10.00	0.00
6,900.00	51.61	359.47	6,567.09	-838.58	-1,307.40	-637.08	10.00	10.00	0.00
6,950.00	56.61	359.47	6,596.40	-798.09	-1,307.78	-596.98	10.00	10.00	0.00
7,000.00	61.61	359.47	6,622.06	-755.20	-1,308.17	-554.49	10.00	10.00	0.00
7,028.53	64.46	359.47	6,635.00	-729.78	-1,308.41	-529.31	10.00	10.00	0.00
FORT HAYS									
7,050.00	66.60	359.47	6,643.89	-710.24	-1,308.59	-509.96	10.00	10.00	0.00
7,100.00	71.60	359.47	6,661.72	-663.54	-1,309.02	-463.71	10.00	10.00	0.00
7,150.00	76.60	359.47	6,675.41	-615.47	-1,309.46	-416.10	10.00	10.00	0.00
7,200.00	81.60	359.47	6,684.86	-566.39	-1,309.92	-367.48	10.00	10.00	0.00
7,250.00	86.60	359.47	6,689.99	-516.67	-1,310.37	-318.24	10.00	10.00	0.00
7,284.00	90.00	359.47	6,691.00	-482.70	-1,310.69	-284.58	10.00	10.00	0.00
Start 3800.00 hold at 7284.00 MD - CODELL									
7,300.00	90.00	359.47	6,691.00	-466.70	-1,310.84	-268.74	0.00	0.00	0.00
7,400.00	90.00	359.47	6,690.99	-366.70	-1,311.76	-169.69	0.00	0.00	0.00
7,500.00	90.00	359.47	6,690.99	-266.70	-1,312.68	-70.65	0.00	0.00	0.00
7,600.00	90.00	359.47	6,690.98	-166.71	-1,313.60	28.39	0.00	0.00	0.00
7,700.00	90.00	359.47	6,690.98	-66.71	-1,314.53	127.44	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)	
7,800.00	90.00	359.47	6,690.97	33.28	-1,315.45	226.48	0.00	0.00	0.00	
7,900.00	90.00	359.47	6,690.97	133.28	-1,316.37	325.52	0.00	0.00	0.00	
8,000.00	90.00	359.47	6,690.96	233.27	-1,317.29	424.56	0.00	0.00	0.00	
8,100.00	90.00	359.47	6,690.96	333.27	-1,318.22	523.61	0.00	0.00	0.00	
8,200.00	90.00	359.47	6,690.95	433.27	-1,319.14	622.65	0.00	0.00	0.00	
8,300.00	90.00	359.47	6,690.95	533.26	-1,320.06	721.69	0.00	0.00	0.00	
8,400.00	90.00	359.47	6,690.94	633.26	-1,320.99	820.74	0.00	0.00	0.00	
8,500.00	90.00	359.47	6,690.94	733.25	-1,321.91	919.78	0.00	0.00	0.00	
8,600.00	90.00	359.47	6,690.93	833.25	-1,322.83	1,018.82	0.00	0.00	0.00	
8,700.00	90.00	359.47	6,690.93	933.24	-1,323.75	1,117.87	0.00	0.00	0.00	
8,800.00	90.00	359.47	6,690.92	1,033.24	-1,324.68	1,216.91	0.00	0.00	0.00	
8,900.00	90.00	359.47	6,690.92	1,133.24	-1,325.60	1,315.95	0.00	0.00	0.00	
9,000.00	90.00	359.47	6,690.91	1,233.23	-1,326.52	1,415.00	0.00	0.00	0.00	
9,100.00	90.00	359.47	6,690.91	1,333.23	-1,327.44	1,514.04	0.00	0.00	0.00	
9,200.00	90.00	359.47	6,690.90	1,433.22	-1,328.37	1,613.08	0.00	0.00	0.00	
9,300.00	90.00	359.47	6,690.90	1,533.22	-1,329.29	1,712.13	0.00	0.00	0.00	
9,400.00	90.00	359.47	6,690.89	1,633.21	-1,330.21	1,811.17	0.00	0.00	0.00	
9,500.00	90.00	359.47	6,690.89	1,733.21	-1,331.14	1,910.21	0.00	0.00	0.00	
9,600.00	90.00	359.47	6,690.88	1,833.21	-1,332.06	2,009.25	0.00	0.00	0.00	
9,700.00	90.00	359.47	6,690.88	1,933.20	-1,332.98	2,108.30	0.00	0.00	0.00	
9,800.00	90.00	359.47	6,690.87	2,033.20	-1,333.90	2,207.34	0.00	0.00	0.00	
9,900.00	90.00	359.47	6,690.87	2,133.19	-1,334.83	2,306.38	0.00	0.00	0.00	
10,000.00	90.00	359.47	6,690.86	2,233.19	-1,335.75	2,405.43	0.00	0.00	0.00	
10,100.00	90.00	359.47	6,690.86	2,333.19	-1,336.67	2,504.47	0.00	0.00	0.00	
10,200.00	90.00	359.47	6,690.85	2,433.18	-1,337.60	2,603.51	0.00	0.00	0.00	
10,300.00	90.00	359.47	6,690.85	2,533.18	-1,338.52	2,702.56	0.00	0.00	0.00	
10,400.00	90.00	359.47	6,690.84	2,633.17	-1,339.44	2,801.60	0.00	0.00	0.00	
10,500.00	90.00	359.47	6,690.84	2,733.17	-1,340.36	2,900.64	0.00	0.00	0.00	
10,600.00	90.00	359.47	6,690.83	2,833.16	-1,341.29	2,999.69	0.00	0.00	0.00	
10,700.00	90.00	359.47	6,690.83	2,933.16	-1,342.21	3,098.73	0.00	0.00	0.00	
10,800.00	90.00	359.47	6,690.82	3,033.16	-1,343.13	3,197.77	0.00	0.00	0.00	
10,900.00	90.00	359.47	6,690.82	3,133.15	-1,344.05	3,296.81	0.00	0.00	0.00	
11,000.00	90.00	359.47	6,690.81	3,233.15	-1,344.98	3,395.86	0.00	0.00	0.00	
11,084.00	90.00	359.47	6,690.81	3,317.14	-1,345.75	3,479.05	0.00	0.00	0.00	
Start DLS 2.00 TFO 90.05										
11,100.00	90.00	359.79	6,690.81	3,333.14	-1,345.86	3,494.89	2.00	0.00	2.00	
11,200.00	90.00	1.79	6,690.80	3,433.13	-1,344.47	3,593.59	2.00	0.00	2.00	
11,260.43	90.00	3.00	6,690.80	3,493.51	-1,341.95	3,652.94	2.00	0.00	2.00	
Start 350.00 hold at 11260.43 MD										
11,300.00	90.00	3.00	6,690.80	3,533.02	-1,339.88	3,691.72	0.00	0.00	0.00	
11,400.00	90.00	3.00	6,690.80	3,632.88	-1,334.64	3,789.72	0.00	0.00	0.00	
11,500.00	90.00	3.00	6,690.80	3,732.75	-1,329.41	3,887.73	0.00	0.00	0.00	
11,600.00	90.00	3.00	6,690.80	3,832.61	-1,324.18	3,985.73	0.00	0.00	0.00	
11,610.43	90.00	3.00	6,690.80	3,843.03	-1,323.63	3,995.96	0.00	0.00	0.00	
Start Turn -2.00										
11,700.00	90.00	1.21	6,690.80	3,932.53	-1,320.34	4,084.00	2.00	0.00	-2.00	
11,804.20	90.00	359.12	6,690.80	4,036.72	-1,320.04	4,187.02	2.00	0.00	-2.00	
Start 5391.06 hold at 11804.20 MD										
11,900.00	90.00	359.12	6,690.80	4,132.51	-1,321.50	4,281.98	0.00	0.00	0.00	
12,000.00	90.00	359.12	6,690.80	4,232.50	-1,323.03	4,381.11	0.00	0.00	0.00	
12,100.00	90.00	359.12	6,690.80	4,332.49	-1,324.56	4,480.23	0.00	0.00	0.00	
12,200.00	90.00	359.12	6,690.80	4,432.48	-1,326.09	4,579.36	0.00	0.00	0.00	
12,300.00	90.00	359.12	6,690.80	4,532.47	-1,327.61	4,678.48	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
12,400.00	90.00	359.12	6,690.80	4,632.45	-1,329.14	4,777.60	0.00	0.00	0.00
12,500.00	90.00	359.12	6,690.80	4,732.44	-1,330.67	4,876.73	0.00	0.00	0.00
12,600.00	90.00	359.12	6,690.80	4,832.43	-1,332.20	4,975.85	0.00	0.00	0.00
12,700.00	90.00	359.12	6,690.80	4,932.42	-1,333.72	5,074.98	0.00	0.00	0.00
12,800.00	90.00	359.12	6,690.80	5,032.41	-1,335.25	5,174.10	0.00	0.00	0.00
12,900.00	90.00	359.12	6,690.80	5,132.40	-1,336.78	5,273.23	0.00	0.00	0.00
13,000.00	90.00	359.12	6,690.80	5,232.38	-1,338.31	5,372.35	0.00	0.00	0.00
13,100.00	90.00	359.12	6,690.80	5,332.37	-1,339.83	5,471.48	0.00	0.00	0.00
13,200.00	90.00	359.12	6,690.80	5,432.36	-1,341.36	5,570.60	0.00	0.00	0.00
13,300.00	90.00	359.12	6,690.80	5,532.35	-1,342.89	5,669.73	0.00	0.00	0.00
13,400.00	90.00	359.12	6,690.80	5,632.34	-1,344.42	5,768.85	0.00	0.00	0.00
13,500.00	90.00	359.12	6,690.80	5,732.33	-1,345.95	5,867.98	0.00	0.00	0.00
13,600.00	90.00	359.12	6,690.80	5,832.31	-1,347.47	5,967.10	0.00	0.00	0.00
13,700.00	90.00	359.12	6,690.80	5,932.30	-1,349.00	6,066.23	0.00	0.00	0.00
13,800.00	90.00	359.12	6,690.80	6,032.29	-1,350.53	6,165.35	0.00	0.00	0.00
13,900.00	90.00	359.12	6,690.80	6,132.28	-1,352.06	6,264.48	0.00	0.00	0.00
14,000.00	90.00	359.12	6,690.80	6,232.27	-1,353.58	6,363.60	0.00	0.00	0.00
14,100.00	90.00	359.12	6,690.80	6,332.26	-1,355.11	6,462.73	0.00	0.00	0.00
14,200.00	90.00	359.12	6,690.80	6,432.24	-1,356.64	6,561.85	0.00	0.00	0.00
14,300.00	90.00	359.12	6,690.80	6,532.23	-1,358.17	6,660.98	0.00	0.00	0.00
14,400.00	90.00	359.12	6,690.80	6,632.22	-1,359.69	6,760.10	0.00	0.00	0.00
14,500.00	90.00	359.12	6,690.80	6,732.21	-1,361.22	6,859.23	0.00	0.00	0.00
14,600.00	90.00	359.12	6,690.80	6,832.20	-1,362.75	6,958.35	0.00	0.00	0.00
14,700.00	90.00	359.12	6,690.80	6,932.19	-1,364.28	7,057.47	0.00	0.00	0.00
14,800.00	90.00	359.12	6,690.80	7,032.17	-1,365.80	7,156.60	0.00	0.00	0.00
14,900.00	90.00	359.12	6,690.80	7,132.16	-1,367.33	7,255.72	0.00	0.00	0.00
15,000.00	90.00	359.12	6,690.80	7,232.15	-1,368.86	7,354.85	0.00	0.00	0.00
15,100.00	90.00	359.12	6,690.80	7,332.14	-1,370.39	7,453.97	0.00	0.00	0.00
15,200.00	90.00	359.12	6,690.80	7,432.13	-1,371.92	7,553.10	0.00	0.00	0.00
15,300.00	90.00	359.12	6,690.80	7,532.12	-1,373.44	7,652.22	0.00	0.00	0.00
15,400.00	90.00	359.12	6,690.80	7,632.10	-1,374.97	7,751.35	0.00	0.00	0.00
15,500.00	90.00	359.12	6,690.80	7,732.09	-1,376.50	7,850.47	0.00	0.00	0.00
15,600.00	90.00	359.12	6,690.80	7,832.08	-1,378.03	7,949.60	0.00	0.00	0.00
15,700.00	90.00	359.12	6,690.80	7,932.07	-1,379.55	8,048.72	0.00	0.00	0.00
15,800.00	90.00	359.12	6,690.80	8,032.06	-1,381.08	8,147.85	0.00	0.00	0.00
15,900.00	90.00	359.12	6,690.80	8,132.05	-1,382.61	8,246.97	0.00	0.00	0.00
16,000.00	90.00	359.12	6,690.80	8,232.03	-1,384.14	8,346.10	0.00	0.00	0.00
16,100.00	90.00	359.12	6,690.80	8,332.02	-1,385.66	8,445.22	0.00	0.00	0.00
16,200.00	90.00	359.12	6,690.80	8,432.01	-1,387.19	8,544.35	0.00	0.00	0.00
16,300.00	90.00	359.12	6,690.80	8,532.00	-1,388.72	8,643.47	0.00	0.00	0.00
16,400.00	90.00	359.12	6,690.80	8,631.99	-1,390.25	8,742.60	0.00	0.00	0.00
16,500.00	90.00	359.12	6,690.80	8,731.98	-1,391.78	8,841.72	0.00	0.00	0.00
16,600.00	90.00	359.12	6,690.80	8,831.96	-1,393.30	8,940.85	0.00	0.00	0.00
16,700.00	90.00	359.12	6,690.80	8,931.95	-1,394.83	9,039.97	0.00	0.00	0.00
16,800.00	90.00	359.12	6,690.80	9,031.94	-1,396.36	9,139.10	0.00	0.00	0.00
16,900.00	90.00	359.12	6,690.80	9,131.93	-1,397.89	9,238.22	0.00	0.00	0.00
17,000.00	90.00	359.12	6,690.80	9,231.92	-1,399.41	9,337.34	0.00	0.00	0.00
17,100.00	90.00	359.12	6,690.80	9,331.91	-1,400.94	9,436.47	0.00	0.00	0.00
17,195.26	90.00	359.12	6,691.00	9,427.15	-1,402.40	9,530.89	0.00	0.00	0.00
TD at 17195.26									

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-8C
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4996.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4996.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-8C	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Design 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
MATTINGLY 14N-8C - P - plan hits target center - Point	0.00	0.00	6,691.00	9,427.15	-1,402.40	1,526,207.40	3,368,279.93	40° 46' 12.886 N	104° 10' 13.325 W
MATTINGLY 14N-8C - L - plan hits target center - Point	0.00	0.00	6,691.00	-482.70	-1,310.69	1,516,300.06	3,368,520.79	40° 44' 34.966 N	104° 10' 12.126 W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,708.18	3,554.00	PARKMAN				
6,641.49	6,367.00	NIOBRARA				
6,791.39	6,492.00	NIO B TARGET				
7,028.53	6,635.00	FORT HAYS				
7,284.00	6,691.00	CODELL				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Start Build 2.00
1,260.48	1,242.59	-100.30	-124.03	Start 4132.94 hold at 1260.48 MD
5,393.42	5,145.41	-955.40	-1,181.37	Start Drop -2.00
6,353.90	6,088.00	-1,055.70	-1,305.40	Start 30.00 hold at 6353.90 MD
6,383.90	6,118.00	-1,055.70	-1,305.40	Start DLS 10.00 TFO 359.47
7,284.00	6,691.00	-482.70	-1,310.69	Start 3800.00 hold at 7284.00 MD
11,084.00	6,690.81	3,317.14	-1,345.75	Start DLS 2.00 TFO 90.05
11,260.43	6,690.80	3,493.51	-1,341.95	Start 350.00 hold at 11260.43 MD
11,610.43	6,690.80	3,843.03	-1,323.63	Start Turn -2.00
11,804.20	6,690.80	4,036.72	-1,320.04	Start 5391.06 hold at 11804.20 MD
17,195.26	6,691.00	9,427.15	-1,402.40	TD at 17195.26