

8 NORTH LLC

Weld County

Sec 14-T9N-R61W

MATTINGLY 14N-20-7N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

28 February, 2018



Project: Weld County
Site: Sec 14-T9N-R61W
Well: MATTINGLY 14N-20-7N
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: 52549.8snT
Dip Angle: 67.20°
Date: 2/28/2018
Model: IGRF2015

WELL DETAILS: MATTINGLY 14N-20-7N

+N/-S	+E/-W	Northing	Easting	4972.00	Latitude	Longitude	Slot
0.00	0.00	1516803.26	3369880.03		40° 44' 39.735 N	104° 9' 54.371 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
3	1334.55	24.69	239.55	1296.89	-132.73	-225.79	2.00	239.55	-85.58	
4	5082.86	24.69	239.55	4702.31	-926.21	-1575.61	0.00	0.00	-597.15	
5	6317.41	0.00	0.00	5899.00	-1058.94	-1801.40	2.00	180.00	-682.73	
6	6347.41	0.00	0.00	5929.00	-1058.94	-1801.40	0.00	0.00	-682.73	
7	7247.50	90.00	359.47	6502.00	-485.94	-1806.70	10.00	359.47	-119.95	MATTINGLY 14N-7N - LP
8	17166.15	90.00	359.47	6502.00	9432.28	-1898.21	0.00	0.00	9621.39	MATTINGLY 14N-7N - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3554.00	3819.00	PARKMAN
6367.00	6845.98	NIORARA
6492.00	7140.27	NIO B TARGET

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	Start Build 2.00
1334.55	24.69	239.55	1296.89	-132.73	-225.79	-85.58	261.92	Start 3748.32 hold at 1334.55 MD
5082.86	24.69	239.55	4702.31	-926.21	-1575.61	-597.15	1827.68	Start Drop -2.00
6317.41	0.00	0.00	5899.00	-1058.94	-1801.40	-682.73	2089.59	Start 30.00 hold at 6317.41 MD
6347.41	0.00	0.00	5929.00	-1058.94	-1801.40	-682.73	2089.59	Start DLS 10.00 TFO 359.47
7247.50	90.00	359.47	6502.00	-485.94	-1806.70	-119.95	2662.61	Start 9918.65 hold at 7247.50 MD
17166.15	90.00	359.47	6502.00	9432.28	-1898.21	9621.39	12581.26	TD at 17166.15

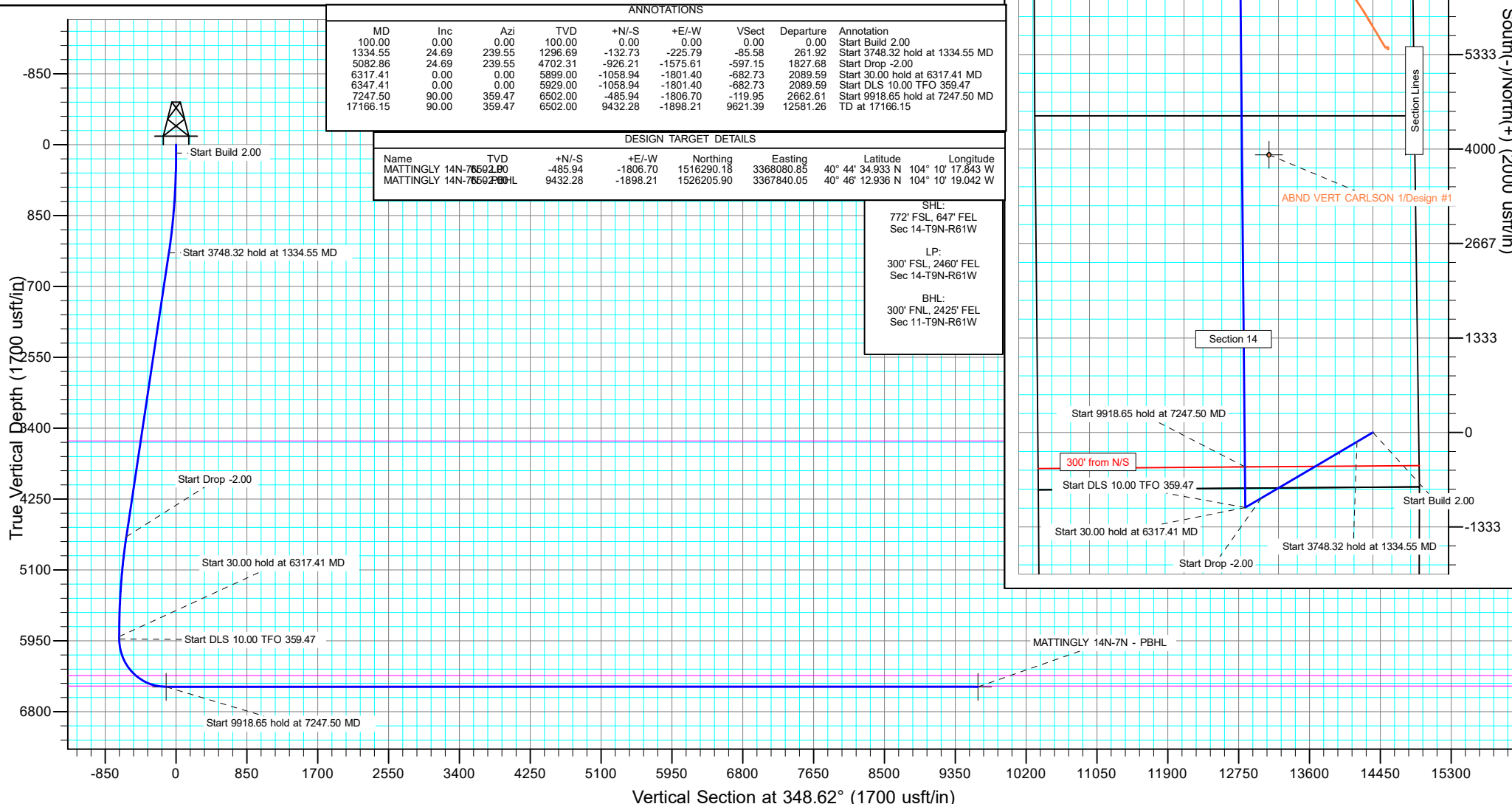
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	North	East	Lat	Long
MATTINGLY 14N-7N-76502.00	76502.00	-485.94	-1806.70	1516290.18	3368080.85	40° 44' 34.933 N	104° 10' 17.843 W
MATTINGLY 14N-7N-76502.00-BHL	9432.28	-1898.21	-1526205.90	3367840.05	40° 46' 12.936 N	104° 10' 19.042 W	

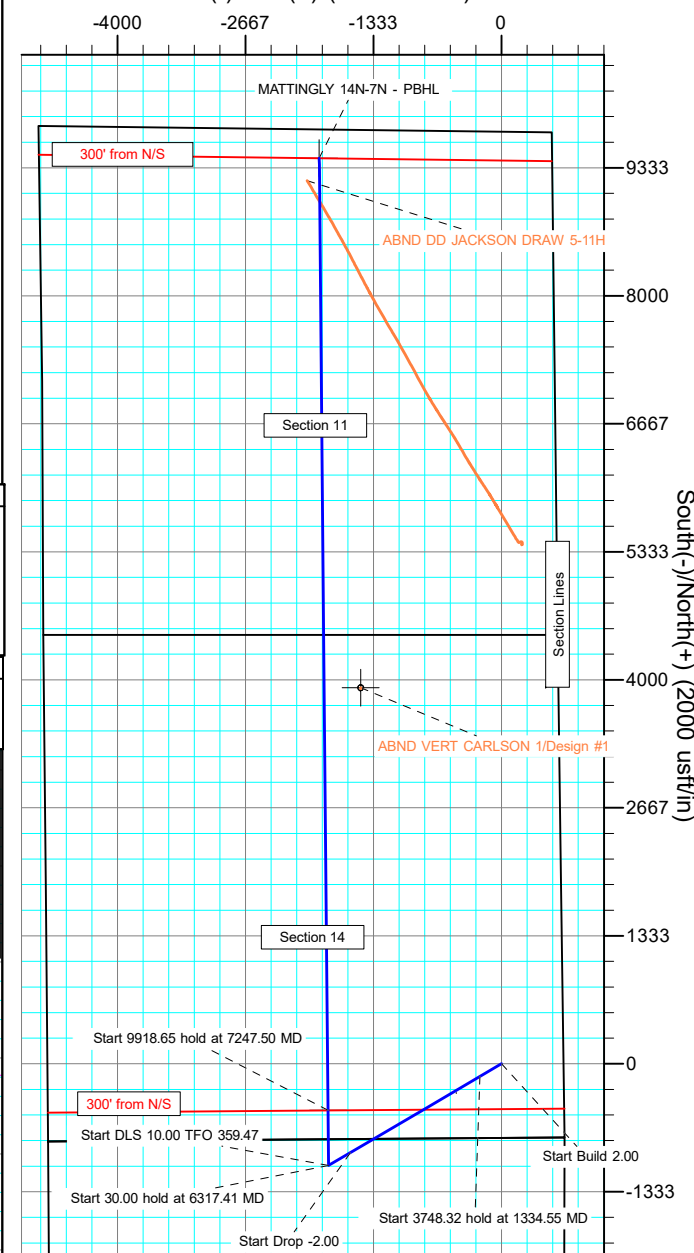
SHL:
772' FSL, 647' FEL
Sec 14-T9N-R61W

LP:
300' FSL, 2460' FEL
Sec 14-T9N-R61W

BHL:
300' FNL, 2425' FEL
Sec 11-T9N-R61W



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



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-7N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	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-20-7N					
Well Position	+N/-S	809.26 usft	Northing:	1,516,803.27 usft	Latitude:	40° 44' 39.735 N
	+E/-W	4,722.82 usft	Easting:	3,369,880.03 usft	Longitude:	104° 9' 54.371 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,972.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/28/2018	7.84	67.20	52,549.78617652

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	348.62

Plan Survey Tool Program	Date	2/28/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,166.01	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,334.55	24.69	239.55	1,296.69	-132.73	-225.79	2.00	2.00	0.00	239.55	
5,082.86	24.69	239.55	4,702.31	-926.21	-1,575.61	0.00	0.00	0.00	0.00	
6,317.41	0.00	0.00	5,899.00	-1,058.94	-1,801.40	2.00	-2.00	0.00	180.00	
6,347.41	0.00	0.00	5,929.00	-1,058.94	-1,801.40	0.00	0.00	0.00	0.00	
7,247.50	90.00	359.47	6,502.00	-485.94	-1,806.70	10.00	10.00	-0.06	359.47	MATTINGLY 14N-7N
17,166.15	90.00	359.47	6,502.00	9,432.29	-1,898.21	0.00	0.00	0.00	0.00	MATTINGLY 14N-7N

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-7N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	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
Start Build 2.00									
200.00	2.00	239.55	199.98	-0.88	-1.50	-0.57	2.00	2.00	0.00
300.00	4.00	239.55	299.84	-3.54	-6.02	-2.28	2.00	2.00	0.00
400.00	6.00	239.55	399.45	-7.95	-13.53	-5.13	2.00	2.00	0.00
500.00	8.00	239.55	498.70	-14.13	-24.03	-9.11	2.00	2.00	0.00
600.00	10.00	239.55	597.47	-22.06	-37.52	-14.22	2.00	2.00	0.00
700.00	12.00	239.55	695.62	-31.73	-53.97	-20.45	2.00	2.00	0.00
800.00	14.00	239.55	793.06	-43.12	-73.36	-27.80	2.00	2.00	0.00
900.00	16.00	239.55	889.64	-56.24	-95.67	-36.26	2.00	2.00	0.00
1,000.00	18.00	239.55	985.27	-71.06	-120.88	-45.81	2.00	2.00	0.00
1,100.00	20.00	239.55	1,079.82	-87.55	-148.94	-56.45	2.00	2.00	0.00
1,200.00	22.00	239.55	1,173.17	-105.71	-179.83	-68.16	2.00	2.00	0.00
1,300.00	24.00	239.55	1,265.21	-125.51	-213.52	-80.92	2.00	2.00	0.00
1,334.55	24.69	239.55	1,296.69	-132.73	-225.79	-85.58	2.00	2.00	0.00
Start 3748.32 hold at 1334.55 MD									
1,400.00	24.69	239.55	1,356.16	-146.59	-249.36	-94.51	0.00	0.00	0.00
1,500.00	24.69	239.55	1,447.02	-167.76	-285.37	-108.16	0.00	0.00	0.00
1,600.00	24.69	239.55	1,537.87	-188.92	-321.39	-121.80	0.00	0.00	0.00
1,700.00	24.69	239.55	1,628.73	-210.09	-357.40	-135.45	0.00	0.00	0.00
1,800.00	24.69	239.55	1,719.59	-231.26	-393.41	-149.10	0.00	0.00	0.00
1,900.00	24.69	239.55	1,810.45	-252.43	-429.42	-162.75	0.00	0.00	0.00
2,000.00	24.69	239.55	1,901.30	-273.60	-465.43	-176.40	0.00	0.00	0.00
2,100.00	24.69	239.55	1,992.16	-294.77	-501.44	-190.05	0.00	0.00	0.00
2,200.00	24.69	239.55	2,083.02	-315.94	-537.45	-203.69	0.00	0.00	0.00
2,300.00	24.69	239.55	2,173.87	-337.11	-573.46	-217.34	0.00	0.00	0.00
2,400.00	24.69	239.55	2,264.73	-358.28	-609.48	-230.99	0.00	0.00	0.00
2,500.00	24.69	239.55	2,355.59	-379.44	-645.49	-244.64	0.00	0.00	0.00
2,600.00	24.69	239.55	2,446.45	-400.61	-681.50	-258.29	0.00	0.00	0.00
2,700.00	24.69	239.55	2,537.30	-421.78	-717.51	-271.94	0.00	0.00	0.00
2,800.00	24.69	239.55	2,628.16	-442.95	-753.52	-285.58	0.00	0.00	0.00
2,900.00	24.69	239.55	2,719.02	-464.12	-789.53	-299.23	0.00	0.00	0.00
3,000.00	24.69	239.55	2,809.88	-485.29	-825.54	-312.88	0.00	0.00	0.00
3,100.00	24.69	239.55	2,900.73	-506.46	-861.55	-326.53	0.00	0.00	0.00
3,200.00	24.69	239.55	2,991.59	-527.63	-897.57	-340.18	0.00	0.00	0.00
3,300.00	24.69	239.55	3,082.45	-548.80	-933.58	-353.82	0.00	0.00	0.00
3,400.00	24.69	239.55	3,173.31	-569.97	-969.59	-367.47	0.00	0.00	0.00
3,500.00	24.69	239.55	3,264.16	-591.13	-1,005.60	-381.12	0.00	0.00	0.00
3,600.00	24.69	239.55	3,355.02	-612.30	-1,041.61	-394.77	0.00	0.00	0.00
3,700.00	24.69	239.55	3,445.88	-633.47	-1,077.62	-408.42	0.00	0.00	0.00
3,800.00	24.69	239.55	3,536.74	-654.64	-1,113.63	-422.07	0.00	0.00	0.00
3,819.00	24.69	239.55	3,554.00	-658.66	-1,120.48	-424.66	0.00	0.00	0.00
PARKMAN									
3,900.00	24.69	239.55	3,627.59	-675.81	-1,149.64	-435.71	0.00	0.00	0.00
4,000.00	24.69	239.55	3,718.45	-696.98	-1,185.66	-449.36	0.00	0.00	0.00
4,100.00	24.69	239.55	3,809.31	-718.15	-1,221.67	-463.01	0.00	0.00	0.00
4,200.00	24.69	239.55	3,900.17	-739.32	-1,257.68	-476.66	0.00	0.00	0.00
4,300.00	24.69	239.55	3,991.02	-760.49	-1,293.69	-490.31	0.00	0.00	0.00
4,400.00	24.69	239.55	4,081.88	-781.65	-1,329.70	-503.95	0.00	0.00	0.00
4,500.00	24.69	239.55	4,172.74	-802.82	-1,365.71	-517.60	0.00	0.00	0.00
4,600.00	24.69	239.55	4,263.60	-823.99	-1,401.72	-531.25	0.00	0.00	0.00
4,700.00	24.69	239.55	4,354.45	-845.16	-1,437.73	-544.90	0.00	0.00	0.00

Planning Report

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Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	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	24.69	239.55	4,445.31	-866.33	-1,473.75	-558.55	0.00	0.00	0.00
4,900.00	24.69	239.55	4,536.17	-887.50	-1,509.76	-572.20	0.00	0.00	0.00
5,000.00	24.69	239.55	4,627.02	-908.67	-1,545.77	-585.84	0.00	0.00	0.00
5,082.86	24.69	239.55	4,702.31	-926.21	-1,575.61	-597.15	0.00	0.00	0.00
Start Drop -2.00									
5,100.00	24.35	239.55	4,717.90	-929.81	-1,581.74	-599.48	2.00	-2.00	0.00
5,200.00	22.35	239.55	4,809.71	-949.90	-1,615.90	-612.42	2.00	-2.00	0.00
5,300.00	20.35	239.55	4,902.84	-968.34	-1,647.28	-624.32	2.00	-2.00	0.00
5,400.00	18.35	239.55	4,997.19	-985.13	-1,675.84	-635.14	2.00	-2.00	0.00
5,500.00	16.35	239.55	5,092.64	-1,000.24	-1,701.55	-644.88	2.00	-2.00	0.00
5,600.00	14.35	239.55	5,189.07	-1,013.66	-1,724.36	-653.53	2.00	-2.00	0.00
5,700.00	12.35	239.55	5,286.36	-1,025.35	-1,744.27	-661.07	2.00	-2.00	0.00
5,800.00	10.35	239.55	5,384.40	-1,035.33	-1,761.23	-667.50	2.00	-2.00	0.00
5,900.00	8.35	239.55	5,483.07	-1,043.56	-1,775.23	-672.81	2.00	-2.00	0.00
6,000.00	6.35	239.55	5,582.24	-1,050.04	-1,786.26	-676.99	2.00	-2.00	0.00
6,100.00	4.35	239.55	5,681.80	-1,054.76	-1,794.29	-680.03	2.00	-2.00	0.00
6,200.00	2.35	239.55	5,781.62	-1,057.72	-1,799.33	-681.94	2.00	-2.00	0.00
6,300.00	0.35	239.55	5,881.59	-1,058.91	-1,801.35	-682.71	2.00	-2.00	0.00
6,317.41	0.00	0.00	5,899.00	-1,058.94	-1,801.40	-682.73	2.00	-2.00	691.89
Start 30.00 hold at 6317.41 MD									
6,347.41	0.00	0.00	5,929.00	-1,058.94	-1,801.40	-682.73	0.00	0.00	0.00
Start DLS 10.00 TFO 359.47									
6,350.00	0.26	359.47	5,931.59	-1,058.93	-1,801.40	-682.72	10.00	10.00	0.00
6,400.00	5.26	359.47	5,981.52	-1,056.53	-1,801.42	-680.36	10.00	10.00	0.00
6,450.00	10.26	359.47	6,031.04	-1,049.78	-1,801.48	-673.73	10.00	10.00	0.00
6,500.00	15.26	359.47	6,079.79	-1,038.74	-1,801.59	-662.89	10.00	10.00	0.00
6,550.00	20.26	359.47	6,127.40	-1,023.50	-1,801.73	-647.92	10.00	10.00	0.00
6,600.00	25.26	359.47	6,173.49	-1,004.16	-1,801.91	-628.93	10.00	10.00	0.00
6,650.00	30.26	359.47	6,217.72	-980.89	-1,802.12	-606.07	10.00	10.00	0.00
6,700.00	35.26	359.47	6,259.76	-953.84	-1,802.37	-579.50	10.00	10.00	0.00
6,750.00	40.26	359.47	6,299.28	-923.24	-1,802.65	-549.45	10.00	10.00	0.00
6,800.00	45.26	359.47	6,335.98	-889.31	-1,802.97	-516.12	10.00	10.00	0.00
6,845.98	49.85	359.47	6,367.00	-855.39	-1,803.28	-482.80	10.00	10.00	0.00
NIOBRARA									
6,850.00	50.26	359.47	6,369.58	-852.31	-1,803.31	-479.78	10.00	10.00	0.00
6,900.00	55.26	359.47	6,399.83	-812.52	-1,803.68	-440.70	10.00	10.00	0.00
6,950.00	60.25	359.47	6,426.50	-770.24	-1,804.07	-399.18	10.00	10.00	0.00
7,000.00	65.25	359.47	6,449.38	-725.81	-1,804.48	-355.53	10.00	10.00	0.00
7,050.00	70.25	359.47	6,468.31	-679.55	-1,804.91	-310.10	10.00	10.00	0.00
7,100.00	75.25	359.47	6,483.13	-631.81	-1,805.35	-263.21	10.00	10.00	0.00
7,140.27	79.28	359.47	6,492.00	-592.54	-1,805.71	-224.65	10.00	10.00	0.00
NIO B TARGET									
7,150.00	80.25	359.47	6,493.73	-582.97	-1,805.80	-215.24	10.00	10.00	0.00
7,200.00	85.25	359.47	6,500.03	-533.38	-1,806.26	-166.54	10.00	10.00	0.00
7,247.50	90.00	359.47	6,502.00	-485.94	-1,806.70	-119.95	10.00	10.00	0.00
Start 9918.65 hold at 7247.50 MD									
7,300.00	90.00	359.47	6,502.00	-433.44	-1,807.18	-68.38	0.00	0.00	0.00
7,400.00	90.00	359.47	6,501.99	-333.45	-1,808.11	29.83	0.00	0.00	0.00
7,500.00	90.00	359.47	6,501.99	-233.45	-1,809.03	128.04	0.00	0.00	0.00
7,600.00	90.00	359.47	6,501.99	-133.45	-1,809.96	226.26	0.00	0.00	0.00
7,700.00	90.00	359.47	6,501.98	-33.46	-1,810.88	324.47	0.00	0.00	0.00
7,800.00	90.00	359.47	6,501.98	66.54	-1,811.81	422.68	0.00	0.00	0.00
7,900.00	90.00	359.47	6,501.98	166.53	-1,812.73	520.89	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-7N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	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)	
8,000.00	90.00	359.47	6,501.97	266.53	-1,813.66	619.11	0.00	0.00	0.00	
8,100.00	90.00	359.47	6,501.97	366.52	-1,814.58	717.32	0.00	0.00	0.00	
8,200.00	90.00	359.47	6,501.96	466.52	-1,815.51	815.53	0.00	0.00	0.00	
8,300.00	90.00	359.47	6,501.96	566.52	-1,816.43	913.74	0.00	0.00	0.00	
8,400.00	90.00	359.47	6,501.96	666.51	-1,817.36	1,011.96	0.00	0.00	0.00	
8,500.00	90.00	359.47	6,501.95	766.51	-1,818.28	1,110.17	0.00	0.00	0.00	
8,600.00	90.00	359.47	6,501.95	866.50	-1,819.21	1,208.38	0.00	0.00	0.00	
8,700.00	90.00	359.47	6,501.95	966.50	-1,820.13	1,306.60	0.00	0.00	0.00	
8,800.00	90.00	359.47	6,501.94	1,066.49	-1,821.05	1,404.81	0.00	0.00	0.00	
8,900.00	90.00	359.47	6,501.94	1,166.49	-1,821.98	1,503.02	0.00	0.00	0.00	
9,000.00	90.00	359.47	6,501.93	1,266.49	-1,822.90	1,601.23	0.00	0.00	0.00	
9,100.00	90.00	359.47	6,501.93	1,366.48	-1,823.83	1,699.45	0.00	0.00	0.00	
9,200.00	90.00	359.47	6,501.93	1,466.48	-1,824.75	1,797.66	0.00	0.00	0.00	
9,300.00	90.00	359.47	6,501.92	1,566.47	-1,825.68	1,895.87	0.00	0.00	0.00	
9,400.00	90.00	359.47	6,501.92	1,666.47	-1,826.60	1,994.09	0.00	0.00	0.00	
9,500.00	90.00	359.47	6,501.92	1,766.46	-1,827.53	2,092.30	0.00	0.00	0.00	
9,600.00	90.00	359.47	6,501.91	1,866.46	-1,828.45	2,190.51	0.00	0.00	0.00	
9,700.00	90.00	359.47	6,501.91	1,966.46	-1,829.38	2,288.72	0.00	0.00	0.00	
9,800.00	90.00	359.47	6,501.90	2,066.45	-1,830.30	2,386.94	0.00	0.00	0.00	
9,900.00	90.00	359.47	6,501.90	2,166.45	-1,831.23	2,485.15	0.00	0.00	0.00	
10,000.00	90.00	359.47	6,501.90	2,266.44	-1,832.15	2,583.36	0.00	0.00	0.00	
10,100.00	90.00	359.47	6,501.89	2,366.44	-1,833.08	2,681.57	0.00	0.00	0.00	
10,200.00	90.00	359.47	6,501.89	2,466.43	-1,834.00	2,779.79	0.00	0.00	0.00	
10,300.00	90.00	359.47	6,501.89	2,566.43	-1,834.92	2,878.00	0.00	0.00	0.00	
10,400.00	90.00	359.47	6,501.88	2,666.43	-1,835.85	2,976.21	0.00	0.00	0.00	
10,500.00	90.00	359.47	6,501.88	2,766.42	-1,836.77	3,074.43	0.00	0.00	0.00	
10,600.00	90.00	359.47	6,501.87	2,866.42	-1,837.70	3,172.64	0.00	0.00	0.00	
10,700.00	90.00	359.47	6,501.87	2,966.41	-1,838.62	3,270.85	0.00	0.00	0.00	
10,800.00	90.00	359.47	6,501.87	3,066.41	-1,839.55	3,369.06	0.00	0.00	0.00	
10,900.00	90.00	359.47	6,501.86	3,166.40	-1,840.47	3,467.28	0.00	0.00	0.00	
11,000.00	90.00	359.47	6,501.86	3,266.40	-1,841.40	3,565.49	0.00	0.00	0.00	
11,100.00	90.00	359.47	6,501.86	3,366.40	-1,842.32	3,663.70	0.00	0.00	0.00	
11,200.00	90.00	359.47	6,501.85	3,466.39	-1,843.25	3,761.91	0.00	0.00	0.00	
11,300.00	90.00	359.47	6,501.85	3,566.39	-1,844.17	3,860.13	0.00	0.00	0.00	
11,400.00	90.00	359.47	6,501.84	3,666.38	-1,845.10	3,958.34	0.00	0.00	0.00	
11,500.00	90.00	359.47	6,501.84	3,766.38	-1,846.02	4,056.55	0.00	0.00	0.00	
11,600.00	90.00	359.47	6,501.84	3,866.37	-1,846.95	4,154.77	0.00	0.00	0.00	
11,700.00	90.00	359.47	6,501.83	3,966.37	-1,847.87	4,252.98	0.00	0.00	0.00	
11,800.00	90.00	359.47	6,501.83	4,066.37	-1,848.79	4,351.19	0.00	0.00	0.00	
11,900.00	90.00	359.47	6,501.83	4,166.36	-1,849.72	4,449.40	0.00	0.00	0.00	
12,000.00	90.00	359.47	6,501.82	4,266.36	-1,850.64	4,547.62	0.00	0.00	0.00	
12,100.00	90.00	359.47	6,501.82	4,366.35	-1,851.57	4,645.83	0.00	0.00	0.00	
12,200.00	90.00	359.47	6,501.81	4,466.35	-1,852.49	4,744.04	0.00	0.00	0.00	
12,300.00	90.00	359.47	6,501.81	4,566.34	-1,853.42	4,842.26	0.00	0.00	0.00	
12,400.00	90.00	359.47	6,501.81	4,666.34	-1,854.34	4,940.47	0.00	0.00	0.00	
12,500.00	90.00	359.47	6,501.80	4,766.34	-1,855.27	5,038.68	0.00	0.00	0.00	
12,600.00	90.00	359.47	6,501.80	4,866.33	-1,856.19	5,136.89	0.00	0.00	0.00	
12,700.00	90.00	359.47	6,501.80	4,966.33	-1,857.12	5,235.11	0.00	0.00	0.00	
12,800.00	90.00	359.47	6,501.79	5,066.32	-1,858.04	5,333.32	0.00	0.00	0.00	
12,900.00	90.00	359.47	6,501.79	5,166.32	-1,858.97	5,431.53	0.00	0.00	0.00	
13,000.00	90.00	359.47	6,501.78	5,266.31	-1,859.89	5,529.74	0.00	0.00	0.00	
13,100.00	90.00	359.47	6,501.78	5,366.31	-1,860.82	5,627.96	0.00	0.00	0.00	
13,200.00	90.00	359.47	6,501.78	5,466.31	-1,861.74	5,726.17	0.00	0.00	0.00	
13,300.00	90.00	359.47	6,501.77	5,566.30	-1,862.67	5,824.38	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-7N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	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)
13,400.00	90.00	359.47	6,501.77	5,666.30	-1,863.59	5,922.60	0.00	0.00	0.00
13,500.00	90.00	359.47	6,501.77	5,766.29	-1,864.51	6,020.81	0.00	0.00	0.00
13,600.00	90.00	359.47	6,501.76	5,866.29	-1,865.44	6,119.02	0.00	0.00	0.00
13,700.00	90.00	359.47	6,501.76	5,966.28	-1,866.36	6,217.23	0.00	0.00	0.00
13,800.00	90.00	359.47	6,501.75	6,066.28	-1,867.29	6,315.45	0.00	0.00	0.00
13,900.00	90.00	359.47	6,501.75	6,166.28	-1,868.21	6,413.66	0.00	0.00	0.00
14,000.00	90.00	359.47	6,501.75	6,266.27	-1,869.14	6,511.87	0.00	0.00	0.00
14,100.00	90.00	359.47	6,501.74	6,366.27	-1,870.06	6,610.08	0.00	0.00	0.00
14,200.00	90.00	359.47	6,501.74	6,466.26	-1,870.99	6,708.30	0.00	0.00	0.00
14,300.00	90.00	359.47	6,501.74	6,566.26	-1,871.91	6,806.51	0.00	0.00	0.00
14,400.00	90.00	359.47	6,501.73	6,666.25	-1,872.84	6,904.72	0.00	0.00	0.00
14,500.00	90.00	359.47	6,501.73	6,766.25	-1,873.76	7,002.94	0.00	0.00	0.00
14,600.00	90.00	359.47	6,501.72	6,866.25	-1,874.69	7,101.15	0.00	0.00	0.00
14,700.00	90.00	359.47	6,501.72	6,966.24	-1,875.61	7,199.36	0.00	0.00	0.00
14,800.00	90.00	359.47	6,501.72	7,066.24	-1,876.54	7,297.57	0.00	0.00	0.00
14,900.00	90.00	359.47	6,501.71	7,166.23	-1,877.46	7,395.79	0.00	0.00	0.00
15,000.00	90.00	359.47	6,501.71	7,266.23	-1,878.38	7,494.00	0.00	0.00	0.00
15,100.00	90.00	359.47	6,501.71	7,366.22	-1,879.31	7,592.21	0.00	0.00	0.00
15,200.00	90.00	359.47	6,501.70	7,466.22	-1,880.23	7,690.42	0.00	0.00	0.00
15,300.00	90.00	359.47	6,501.70	7,566.22	-1,881.16	7,788.64	0.00	0.00	0.00
15,400.00	90.00	359.47	6,501.69	7,666.21	-1,882.08	7,886.85	0.00	0.00	0.00
15,500.00	90.00	359.47	6,501.69	7,766.21	-1,883.01	7,985.06	0.00	0.00	0.00
15,600.00	90.00	359.47	6,501.69	7,866.20	-1,883.93	8,083.28	0.00	0.00	0.00
15,700.00	90.00	359.47	6,501.68	7,966.20	-1,884.86	8,181.49	0.00	0.00	0.00
15,800.00	90.00	359.47	6,501.68	8,066.20	-1,885.78	8,279.70	0.00	0.00	0.00
15,900.00	90.00	359.47	6,501.68	8,166.19	-1,886.71	8,377.91	0.00	0.00	0.00
16,000.00	90.00	359.47	6,501.67	8,266.19	-1,887.63	8,476.13	0.00	0.00	0.00
16,100.00	90.00	359.47	6,501.67	8,366.18	-1,888.56	8,574.34	0.00	0.00	0.00
16,200.00	90.00	359.47	6,501.66	8,466.18	-1,889.48	8,672.55	0.00	0.00	0.00
16,300.00	90.00	359.47	6,501.66	8,566.17	-1,890.41	8,770.77	0.00	0.00	0.00
16,400.00	90.00	359.47	6,501.66	8,666.17	-1,891.33	8,868.98	0.00	0.00	0.00
16,500.00	90.00	359.47	6,501.65	8,766.17	-1,892.26	8,967.19	0.00	0.00	0.00
16,600.00	90.00	359.47	6,501.65	8,866.16	-1,893.18	9,065.40	0.00	0.00	0.00
16,700.00	90.00	359.47	6,501.65	8,966.16	-1,894.10	9,163.62	0.00	0.00	0.00
16,800.00	90.00	359.47	6,501.64	9,066.15	-1,895.03	9,261.83	0.00	0.00	0.00
16,900.00	90.00	359.47	6,501.64	9,166.15	-1,895.95	9,360.04	0.00	0.00	0.00
17,000.00	90.00	359.47	6,501.63	9,266.14	-1,896.88	9,458.25	0.00	0.00	0.00
17,100.00	90.00	359.47	6,501.63	9,366.14	-1,897.80	9,556.47	0.00	0.00	0.00
17,166.15	90.00	359.47	6,502.00	9,432.29	-1,898.21	9,621.39	0.00	0.00	0.00
TD at 17166.15									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
MATTINGLY 14N-7N - P	0.00	0.00	6,502.00	9,432.29	-1,898.21	1,526,205.91	3,367,840.05	40° 46' 12.936 N	104° 10' 19.042 W
- plan hits target center									
- Point									
MATTINGLY 14N-7N - L	0.00	0.00	6,502.00	-485.94	-1,806.70	1,516,290.18	3,368,080.85	40° 44' 34.933 N	104° 10' 17.843 W
- plan hits target center									
- Point									

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-7N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 4997.00usft
Project:	Weld County	MD Reference:	KB 25' @ 4997.00usft
Site:	Sec 14-T9N-R61W	North Reference:	True
Well:	MATTINGLY 14N-20-7N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,819.00	3,554.00	PARKMAN			
6,845.98	6,367.00	NIOBRARA			
7,140.27	6,492.00	NIO B TARGET			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
100.00	100.00	0.00	0.00	Start Build 2.00	
1,334.55	1,296.69	-132.73	-225.79	Start 3748.32 hold at 1334.55 MD	
5,082.86	4,702.31	-926.21	-1,575.61	Start Drop -2.00	
6,317.41	5,899.00	-1,058.94	-1,801.40	Start 30.00 hold at 6317.41 MD	
6,347.41	5,929.00	-1,058.94	-1,801.40	Start DLS 10.00 TFO 359.47	
7,247.50	6,502.00	-485.94	-1,806.70	Start 9918.65 hold at 7247.50 MD	
17,166.15	6,502.00	9,432.29	-1,898.21	TD at 17166.15	