

8 NORTH LLC

Weld County

Sec 14-T9N-R61W

MATTINGLY 14N-20-9N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

28 February, 2018



Project: Weld County
Site: Sec 14-T9N-R61W
Well: MATTINGLY 14N-20-9N
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-20-9N

+N/-S	+E/-W	Northing	Easting	4972.00	Latitude	Longitude	Slot
0.00	0.00	1516803.32	3369908.02		40° 44' 39.732 N	104° 9' 54.007 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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1369.85	17.40	222.08	1356.54	-97.26	-87.82	2.00	222.08	-86.98	
4	5232.45	17.40	222.08	5042.46	-954.44	-861.78	0.00	0.00	-853.50	
5	6102.30	0.00	0.00	5899.00	-1051.70	-949.60	2.00	180.00	-940.48	
6	6132.30	0.00	0.00	5929.00	-1051.70	-949.60	0.00	0.00	-940.48	
7	7032.39	90.00	359.47	6502.00	-478.70	-954.89	10.00	359.47	-370.40	MATTINGLY 14N-9N - LP
8	16933.54	90.00	359.47	6502.00	9422.03	-1046.19	0.00	0.00	9479.94	MATTINGLY 14N-9N - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3554.00	3672.64	PARKMAN
6367.00	6630.87	NIORARA
6492.00	6925.16	NIO B TARGET

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	Start Build 2.00
1369.85	17.40	222.08	1356.54	-97.26	-87.82	-86.98	131.05	Start 3862.61 hold at 1369.85 MD
5232.45	17.40	222.08	5042.46	-954.44	-861.78	-853.50	1285.93	Start Drop -2.00
6102.30	0.00	0.00	5899.00	-1051.70	-949.60	-940.48	1416.97	Start 30.00 hold at 6102.30 MD
6132.30	0.00	0.00	5929.00	-1051.70	-949.60	-940.48	1416.97	Start DLS 10.00 TFO 359.47
7032.39	90.00	359.47	6502.00	-478.70	-954.89	-370.40	1989.99	Start 9901.16 hold at 7032.39 MD
16933.54	90.00	359.47	6502.00	9422.03	-1046.19	9479.94	11891.15	TD at 16933.54

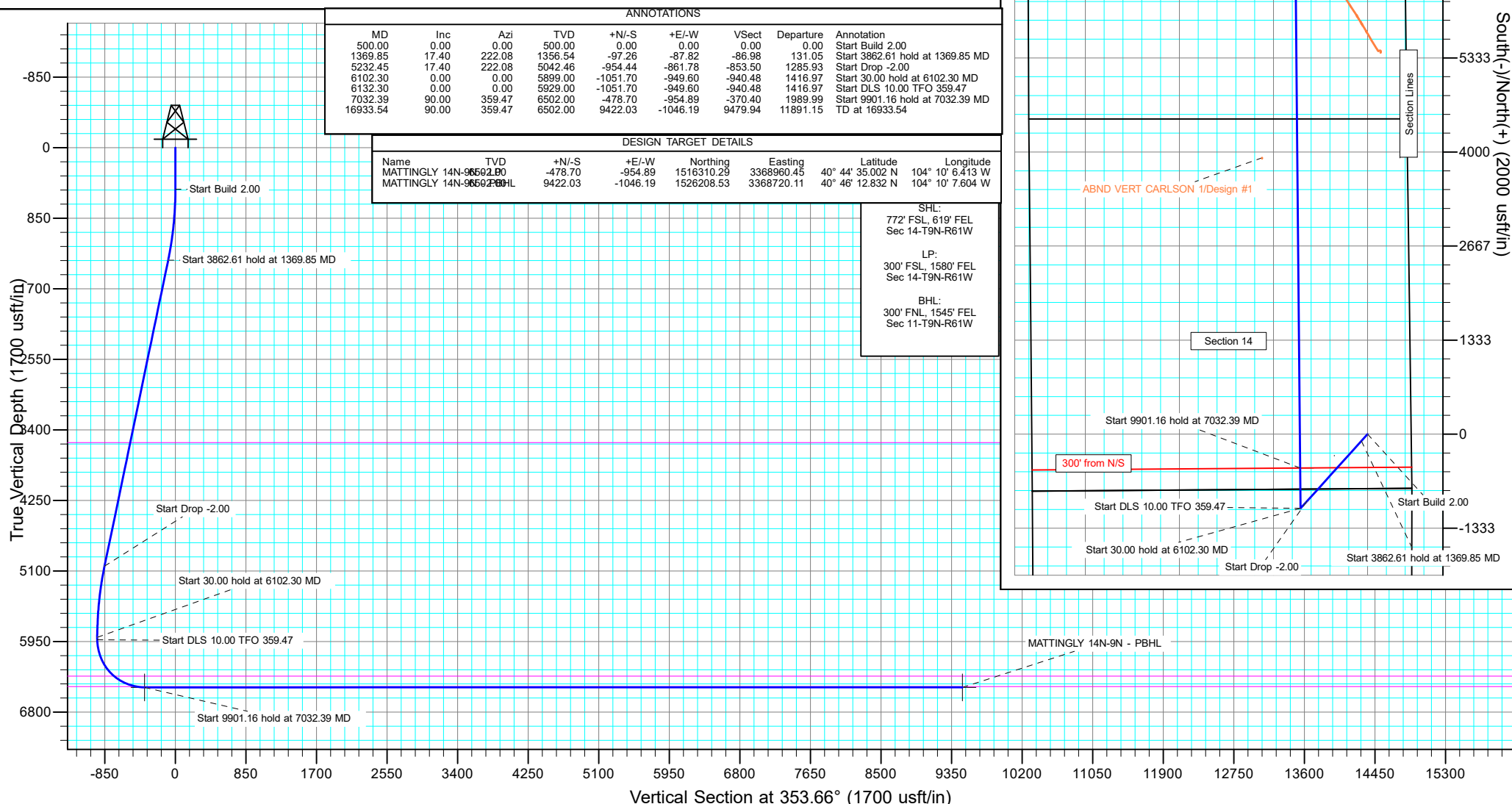
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MATTINGLY 14N-9N - LP	6569.20	-478.70	-954.89	1516310.29	3368960.45	40° 44' 35.002 N	104° 10' 6.413 W
MATTINGLY 14N-9N - PBHL	9422.03	-1046.19	-1526208.53	3368720.11	40° 46' 12.832 N	104° 10' 7.604 W	

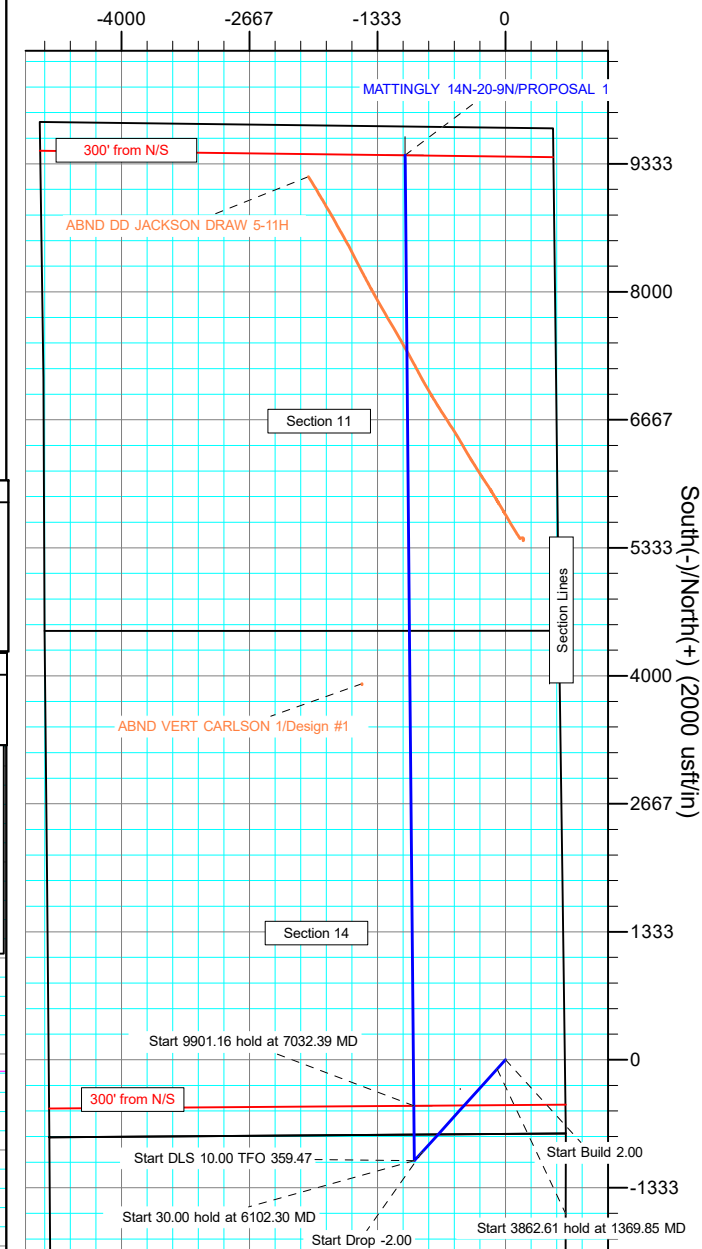
SHL:
772' FSL, 619' FEL
Sec 14-T9N-R61W

LP:
300' FSL, 1580' FEL
Sec 14-T9N-R61W

BHL:
300' FNL, 1545' FEL
Sec 11-T9N-R61W



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



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	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-20-9N					
Well Position	+N/-S	808.90 usft	Northing:	1,516,803.32 usft	Latitude:	40° 44' 39.732 N
	+E/-W	4,750.80 usft	Easting:	3,369,908.02 usft	Longitude:	104° 9' 54.007 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	52,549.79575282

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	353.66

Plan Survey Tool Program	Date	2/28/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,933.43	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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,369.85	17.40	222.08	1,356.54	-97.26	-87.82	2.00	2.00	0.00	222.08	
5,232.45	17.40	222.08	5,042.46	-954.44	-861.78	0.00	0.00	0.00	0.00	
6,102.30	0.00	0.00	5,899.00	-1,051.70	-949.60	2.00	-2.00	0.00	180.00	
6,132.30	0.00	0.00	5,929.00	-1,051.70	-949.60	0.00	0.00	0.00	0.00	
7,032.39	90.00	359.47	6,502.00	-478.70	-954.89	10.00	10.00	-0.06	359.47	MATTINGLY 14N-9N
16,933.54	90.00	359.47	6,502.00	9,422.03	-1,046.19	0.00	0.00	0.00	0.00	MATTINGLY 14N-9N

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	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
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
Start Build 2.00									
600.00	2.00	222.08	599.98	-1.30	-1.17	-1.16	2.00	2.00	0.00
700.00	4.00	222.08	699.84	-5.18	-4.68	-4.63	2.00	2.00	0.00
800.00	6.00	222.08	799.45	-11.65	-10.52	-10.42	2.00	2.00	0.00
900.00	8.00	222.08	898.70	-20.69	-18.68	-18.50	2.00	2.00	0.00
1,000.00	10.00	222.08	997.47	-32.30	-29.17	-28.89	2.00	2.00	0.00
1,100.00	12.00	222.08	1,095.62	-46.46	-41.95	-41.55	2.00	2.00	0.00
1,200.00	14.00	222.08	1,193.06	-63.16	-57.03	-56.48	2.00	2.00	0.00
1,300.00	16.00	222.08	1,289.64	-82.37	-74.37	-73.66	2.00	2.00	0.00
1,369.85	17.40	222.08	1,356.54	-97.26	-87.82	-86.98	2.00	2.00	0.00
Start 3862.61 hold at 1369.85 MD									
1,400.00	17.40	222.08	1,385.32	-103.96	-93.86	-92.96	0.00	0.00	0.00
1,500.00	17.40	222.08	1,480.74	-126.15	-113.90	-112.81	0.00	0.00	0.00
1,600.00	17.40	222.08	1,576.17	-148.34	-133.94	-132.65	0.00	0.00	0.00
1,700.00	17.40	222.08	1,671.59	-170.53	-153.98	-152.50	0.00	0.00	0.00
1,800.00	17.40	222.08	1,767.02	-192.72	-174.01	-172.34	0.00	0.00	0.00
1,900.00	17.40	222.08	1,862.44	-214.91	-194.05	-192.19	0.00	0.00	0.00
2,000.00	17.40	222.08	1,957.87	-237.11	-214.09	-212.03	0.00	0.00	0.00
2,100.00	17.40	222.08	2,053.30	-259.30	-234.12	-231.88	0.00	0.00	0.00
2,200.00	17.40	222.08	2,148.72	-281.49	-254.16	-251.72	0.00	0.00	0.00
2,300.00	17.40	222.08	2,244.15	-303.68	-274.20	-271.56	0.00	0.00	0.00
2,400.00	17.40	222.08	2,339.57	-325.87	-294.24	-291.41	0.00	0.00	0.00
2,500.00	17.40	222.08	2,435.00	-348.06	-314.27	-311.25	0.00	0.00	0.00
2,600.00	17.40	222.08	2,530.42	-370.25	-334.31	-331.10	0.00	0.00	0.00
2,700.00	17.40	222.08	2,625.85	-392.45	-354.35	-350.94	0.00	0.00	0.00
2,800.00	17.40	222.08	2,721.28	-414.64	-374.38	-370.79	0.00	0.00	0.00
2,900.00	17.40	222.08	2,816.70	-436.83	-394.42	-390.63	0.00	0.00	0.00
3,000.00	17.40	222.08	2,912.13	-459.02	-414.46	-410.48	0.00	0.00	0.00
3,100.00	17.40	222.08	3,007.55	-481.21	-434.50	-430.32	0.00	0.00	0.00
3,200.00	17.40	222.08	3,102.98	-503.40	-454.53	-450.17	0.00	0.00	0.00
3,300.00	17.40	222.08	3,198.40	-525.59	-474.57	-470.01	0.00	0.00	0.00
3,400.00	17.40	222.08	3,293.83	-547.79	-494.61	-489.86	0.00	0.00	0.00
3,500.00	17.40	222.08	3,389.25	-569.98	-514.64	-509.70	0.00	0.00	0.00
3,600.00	17.40	222.08	3,484.68	-592.17	-534.68	-529.55	0.00	0.00	0.00
3,672.64	17.40	222.08	3,554.00	-608.29	-549.24	-543.96	0.00	0.00	0.00
PARKMAN									
3,700.00	17.40	222.08	3,580.11	-614.36	-554.72	-549.39	0.00	0.00	0.00
3,800.00	17.40	222.08	3,675.53	-636.55	-574.76	-569.24	0.00	0.00	0.00
3,900.00	17.40	222.08	3,770.96	-658.74	-594.79	-589.08	0.00	0.00	0.00
4,000.00	17.40	222.08	3,866.38	-680.94	-614.83	-608.92	0.00	0.00	0.00
4,100.00	17.40	222.08	3,961.81	-703.13	-634.87	-628.77	0.00	0.00	0.00
4,200.00	17.40	222.08	4,057.23	-725.32	-654.90	-648.61	0.00	0.00	0.00
4,300.00	17.40	222.08	4,152.66	-747.51	-674.94	-668.46	0.00	0.00	0.00
4,400.00	17.40	222.08	4,248.09	-769.70	-694.98	-688.30	0.00	0.00	0.00
4,500.00	17.40	222.08	4,343.51	-791.89	-715.02	-708.15	0.00	0.00	0.00
4,600.00	17.40	222.08	4,438.94	-814.08	-735.05	-727.99	0.00	0.00	0.00
4,700.00	17.40	222.08	4,534.36	-836.28	-755.09	-747.84	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	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	17.40	222.08	4,629.79	-858.47	-775.13	-767.68	0.00	0.00	0.00
4,900.00	17.40	222.08	4,725.21	-880.66	-795.16	-787.53	0.00	0.00	0.00
5,000.00	17.40	222.08	4,820.64	-902.85	-815.20	-807.37	0.00	0.00	0.00
5,100.00	17.40	222.08	4,916.06	-925.04	-835.24	-827.22	0.00	0.00	0.00
5,200.00	17.40	222.08	5,011.49	-947.23	-855.28	-847.06	0.00	0.00	0.00
5,232.45	17.40	222.08	5,042.46	-954.44	-861.78	-853.50	0.00	0.00	0.00
Start Drop -2.00									
5,300.00	16.05	222.08	5,107.15	-968.86	-874.80	-866.40	2.00	-2.00	0.00
5,400.00	14.05	222.08	5,203.71	-988.13	-892.20	-883.63	2.00	-2.00	0.00
5,500.00	12.05	222.08	5,301.13	-1,004.88	-907.33	-898.61	2.00	-2.00	0.00
5,600.00	10.05	222.08	5,399.27	-1,019.10	-920.16	-911.33	2.00	-2.00	0.00
5,700.00	8.05	222.08	5,498.02	-1,030.77	-930.70	-921.76	2.00	-2.00	0.00
5,800.00	6.05	222.08	5,597.26	-1,039.87	-938.92	-929.90	2.00	-2.00	0.00
5,900.00	4.05	222.08	5,696.87	-1,046.40	-944.82	-935.74	2.00	-2.00	0.00
6,000.00	2.05	222.08	5,796.72	-1,050.34	-948.38	-939.27	2.00	-2.00	0.00
6,102.30	0.00	0.00	5,899.00	-1,051.70	-949.60	-940.48	2.00	-2.00	0.00
Start 30.00 hold at 6102.30 MD									
6,132.30	0.00	0.00	5,929.00	-1,051.70	-949.60	-940.48	0.00	0.00	0.00
Start DLS 10.00 TFO 359.47									
6,150.00	1.77	359.47	5,946.70	-1,051.43	-949.60	-940.21	10.00	10.00	0.00
6,200.00	6.77	359.47	5,996.54	-1,047.71	-949.64	-936.51	10.00	10.00	0.00
6,250.00	11.77	359.47	6,045.88	-1,039.65	-949.71	-928.50	10.00	10.00	0.00
6,300.00	16.77	359.47	6,094.32	-1,027.33	-949.82	-916.24	10.00	10.00	0.00
6,350.00	21.77	359.47	6,141.50	-1,010.84	-949.98	-899.83	10.00	10.00	0.00
6,400.00	26.77	359.47	6,187.07	-990.30	-950.17	-879.39	10.00	10.00	0.00
6,450.00	31.77	359.47	6,230.67	-965.86	-950.39	-855.08	10.00	10.00	0.00
6,500.00	36.77	359.47	6,271.98	-937.72	-950.65	-827.08	10.00	10.00	0.00
6,550.00	41.77	359.47	6,310.68	-906.08	-950.94	-795.60	10.00	10.00	0.00
6,600.00	46.77	359.47	6,346.47	-871.20	-951.27	-760.89	10.00	10.00	0.00
6,630.87	49.85	359.47	6,367.00	-848.15	-951.48	-737.96	10.00	10.00	0.00
NIOBRARA									
6,650.00	51.77	359.47	6,379.09	-833.32	-951.62	-723.21	10.00	10.00	0.00
6,700.00	56.77	359.47	6,408.28	-792.75	-951.99	-682.85	10.00	10.00	0.00
6,750.00	61.77	359.47	6,433.82	-749.79	-952.39	-640.10	10.00	10.00	0.00
6,800.00	66.77	359.47	6,455.53	-704.76	-952.80	-595.31	10.00	10.00	0.00
6,850.00	71.76	359.47	6,473.22	-658.02	-953.23	-548.80	10.00	10.00	0.00
6,900.00	76.76	359.47	6,486.78	-609.91	-953.68	-500.94	10.00	10.00	0.00
6,925.16	79.28	359.47	6,492.00	-585.30	-953.91	-476.46	10.00	10.00	0.00
NIO B TARGET									
6,950.00	81.76	359.47	6,496.09	-560.80	-954.13	-452.08	10.00	10.00	0.00
7,000.00	86.76	359.47	6,501.09	-511.07	-954.59	-402.60	10.00	10.00	0.00
7,032.39	90.00	359.47	6,502.00	-478.70	-954.89	-370.40	10.00	10.00	0.00
Start 9901.16 hold at 7032.39 MD									
7,100.00	90.00	359.47	6,502.00	-411.09	-955.51	-303.13	0.00	0.00	0.00
7,200.00	90.00	359.47	6,501.99	-311.10	-956.44	-203.65	0.00	0.00	0.00
7,300.00	90.00	359.47	6,501.99	-211.10	-957.36	-104.16	0.00	0.00	0.00
7,400.00	90.00	359.47	6,501.99	-111.11	-958.28	-4.67	0.00	0.00	0.00
7,500.00	90.00	359.47	6,501.98	-11.11	-959.21	94.81	0.00	0.00	0.00
7,600.00	90.00	359.47	6,501.98	88.89	-960.13	194.30	0.00	0.00	0.00
7,700.00	90.00	359.47	6,501.98	188.88	-961.05	293.79	0.00	0.00	0.00
7,800.00	90.00	359.47	6,501.97	288.88	-961.98	393.28	0.00	0.00	0.00
7,900.00	90.00	359.47	6,501.97	388.87	-962.90	492.76	0.00	0.00	0.00
8,000.00	90.00	359.47	6,501.97	488.87	-963.82	592.25	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	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)	
8,100.00	90.00	359.47	6,501.96	588.87	-964.75	691.74	0.00	0.00	0.00	
8,200.00	90.00	359.47	6,501.96	688.86	-965.67	791.22	0.00	0.00	0.00	
8,300.00	90.00	359.47	6,501.96	788.86	-966.59	890.71	0.00	0.00	0.00	
8,400.00	90.00	359.47	6,501.95	888.85	-967.52	990.20	0.00	0.00	0.00	
8,500.00	90.00	359.47	6,501.95	988.85	-968.44	1,089.68	0.00	0.00	0.00	
8,600.00	90.00	359.47	6,501.95	1,088.84	-969.36	1,189.17	0.00	0.00	0.00	
8,700.00	90.00	359.47	6,501.94	1,188.84	-970.28	1,288.66	0.00	0.00	0.00	
8,800.00	90.00	359.47	6,501.94	1,288.84	-971.21	1,388.14	0.00	0.00	0.00	
8,900.00	90.00	359.47	6,501.93	1,388.83	-972.13	1,487.63	0.00	0.00	0.00	
9,000.00	90.00	359.47	6,501.93	1,488.83	-973.05	1,587.12	0.00	0.00	0.00	
9,100.00	90.00	359.47	6,501.93	1,588.82	-973.98	1,686.60	0.00	0.00	0.00	
9,200.00	90.00	359.47	6,501.92	1,688.82	-974.90	1,786.09	0.00	0.00	0.00	
9,300.00	90.00	359.47	6,501.92	1,788.81	-975.82	1,885.58	0.00	0.00	0.00	
9,400.00	90.00	359.47	6,501.92	1,888.81	-976.75	1,985.06	0.00	0.00	0.00	
9,500.00	90.00	359.47	6,501.91	1,988.81	-977.67	2,084.55	0.00	0.00	0.00	
9,600.00	90.00	359.47	6,501.91	2,088.80	-978.59	2,184.04	0.00	0.00	0.00	
9,700.00	90.00	359.47	6,501.91	2,188.80	-979.52	2,283.53	0.00	0.00	0.00	
9,800.00	90.00	359.47	6,501.90	2,288.79	-980.44	2,383.01	0.00	0.00	0.00	
9,900.00	90.00	359.47	6,501.90	2,388.79	-981.36	2,482.50	0.00	0.00	0.00	
10,000.00	90.00	359.47	6,501.90	2,488.78	-982.29	2,581.99	0.00	0.00	0.00	
10,100.00	90.00	359.47	6,501.89	2,588.78	-983.21	2,681.47	0.00	0.00	0.00	
10,200.00	90.00	359.47	6,501.89	2,688.78	-984.13	2,780.96	0.00	0.00	0.00	
10,300.00	90.00	359.47	6,501.89	2,788.77	-985.05	2,880.45	0.00	0.00	0.00	
10,400.00	90.00	359.47	6,501.88	2,888.77	-985.98	2,979.93	0.00	0.00	0.00	
10,500.00	90.00	359.47	6,501.88	2,988.76	-986.90	3,079.42	0.00	0.00	0.00	
10,600.00	90.00	359.47	6,501.87	3,088.76	-987.82	3,178.91	0.00	0.00	0.00	
10,700.00	90.00	359.47	6,501.87	3,188.75	-988.75	3,278.39	0.00	0.00	0.00	
10,800.00	90.00	359.47	6,501.87	3,288.75	-989.67	3,377.88	0.00	0.00	0.00	
10,900.00	90.00	359.47	6,501.86	3,388.75	-990.59	3,477.37	0.00	0.00	0.00	
11,000.00	90.00	359.47	6,501.86	3,488.74	-991.52	3,576.85	0.00	0.00	0.00	
11,100.00	90.00	359.47	6,501.86	3,588.74	-992.44	3,676.34	0.00	0.00	0.00	
11,200.00	90.00	359.47	6,501.85	3,688.73	-993.36	3,775.83	0.00	0.00	0.00	
11,300.00	90.00	359.47	6,501.85	3,788.73	-994.29	3,875.31	0.00	0.00	0.00	
11,400.00	90.00	359.47	6,501.85	3,888.72	-995.21	3,974.80	0.00	0.00	0.00	
11,500.00	90.00	359.47	6,501.84	3,988.72	-996.13	4,074.29	0.00	0.00	0.00	
11,600.00	90.00	359.47	6,501.84	4,088.72	-997.06	4,173.77	0.00	0.00	0.00	
11,700.00	90.00	359.47	6,501.84	4,188.71	-997.98	4,273.26	0.00	0.00	0.00	
11,800.00	90.00	359.47	6,501.83	4,288.71	-998.90	4,372.75	0.00	0.00	0.00	
11,900.00	90.00	359.47	6,501.83	4,388.70	-999.83	4,472.24	0.00	0.00	0.00	
12,000.00	90.00	359.47	6,501.83	4,488.70	-1,000.75	4,571.72	0.00	0.00	0.00	
12,100.00	90.00	359.47	6,501.82	4,588.69	-1,001.67	4,671.21	0.00	0.00	0.00	
12,200.00	90.00	359.47	6,501.82	4,688.69	-1,002.59	4,770.70	0.00	0.00	0.00	
12,300.00	90.00	359.47	6,501.81	4,788.69	-1,003.52	4,870.18	0.00	0.00	0.00	
12,400.00	90.00	359.47	6,501.81	4,888.68	-1,004.44	4,969.67	0.00	0.00	0.00	
12,500.00	90.00	359.47	6,501.81	4,988.68	-1,005.36	5,069.16	0.00	0.00	0.00	
12,600.00	90.00	359.47	6,501.80	5,088.67	-1,006.29	5,168.64	0.00	0.00	0.00	
12,700.00	90.00	359.47	6,501.80	5,188.67	-1,007.21	5,268.13	0.00	0.00	0.00	
12,800.00	90.00	359.47	6,501.80	5,288.66	-1,008.13	5,367.62	0.00	0.00	0.00	
12,900.00	90.00	359.47	6,501.79	5,388.66	-1,009.06	5,467.10	0.00	0.00	0.00	
13,000.00	90.00	359.47	6,501.79	5,488.66	-1,009.98	5,566.59	0.00	0.00	0.00	
13,100.00	90.00	359.47	6,501.79	5,588.65	-1,010.90	5,666.08	0.00	0.00	0.00	
13,200.00	90.00	359.47	6,501.78	5,688.65	-1,011.83	5,765.56	0.00	0.00	0.00	
13,300.00	90.00	359.47	6,501.78	5,788.64	-1,012.75	5,865.05	0.00	0.00	0.00	
13,400.00	90.00	359.47	6,501.78	5,888.64	-1,013.67	5,964.54	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	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)	
13,500.00	90.00	359.47	6,501.77	5,988.64	-1,014.60	6,064.02	0.00	0.00	0.00	
13,600.00	90.00	359.47	6,501.77	6,088.63	-1,015.52	6,163.51	0.00	0.00	0.00	
13,700.00	90.00	359.47	6,501.77	6,188.63	-1,016.44	6,263.00	0.00	0.00	0.00	
13,800.00	90.00	359.47	6,501.76	6,288.62	-1,017.37	6,362.49	0.00	0.00	0.00	
13,900.00	90.00	359.47	6,501.76	6,388.62	-1,018.29	6,461.97	0.00	0.00	0.00	
14,000.00	90.00	359.47	6,501.76	6,488.61	-1,019.21	6,561.46	0.00	0.00	0.00	
14,100.00	90.00	359.47	6,501.75	6,588.61	-1,020.13	6,660.95	0.00	0.00	0.00	
14,200.00	90.00	359.47	6,501.75	6,688.61	-1,021.06	6,760.43	0.00	0.00	0.00	
14,300.00	90.00	359.47	6,501.74	6,788.60	-1,021.98	6,859.92	0.00	0.00	0.00	
14,400.00	90.00	359.47	6,501.74	6,888.60	-1,022.90	6,959.41	0.00	0.00	0.00	
14,500.00	90.00	359.47	6,501.74	6,988.59	-1,023.83	7,058.89	0.00	0.00	0.00	
14,600.00	90.00	359.47	6,501.73	7,088.59	-1,024.75	7,158.38	0.00	0.00	0.00	
14,700.00	90.00	359.47	6,501.73	7,188.58	-1,025.67	7,257.87	0.00	0.00	0.00	
14,800.00	90.00	359.47	6,501.73	7,288.58	-1,026.60	7,357.35	0.00	0.00	0.00	
14,900.00	90.00	359.47	6,501.72	7,388.58	-1,027.52	7,456.84	0.00	0.00	0.00	
15,000.00	90.00	359.47	6,501.72	7,488.57	-1,028.44	7,556.33	0.00	0.00	0.00	
15,100.00	90.00	359.47	6,501.72	7,588.57	-1,029.37	7,655.81	0.00	0.00	0.00	
15,200.00	90.00	359.47	6,501.71	7,688.56	-1,030.29	7,755.30	0.00	0.00	0.00	
15,300.00	90.00	359.47	6,501.71	7,788.56	-1,031.21	7,854.79	0.00	0.00	0.00	
15,400.00	90.00	359.47	6,501.71	7,888.55	-1,032.14	7,954.27	0.00	0.00	0.00	
15,500.00	90.00	359.47	6,501.70	7,988.55	-1,033.06	8,053.76	0.00	0.00	0.00	
15,600.00	90.00	359.47	6,501.70	8,088.55	-1,033.98	8,153.25	0.00	0.00	0.00	
15,700.00	90.00	359.47	6,501.70	8,188.54	-1,034.91	8,252.74	0.00	0.00	0.00	
15,800.00	90.00	359.47	6,501.69	8,288.54	-1,035.83	8,352.22	0.00	0.00	0.00	
15,900.00	90.00	359.47	6,501.69	8,388.53	-1,036.75	8,451.71	0.00	0.00	0.00	
16,000.00	90.00	359.47	6,501.68	8,488.53	-1,037.67	8,551.20	0.00	0.00	0.00	
16,100.00	90.00	359.47	6,501.68	8,588.52	-1,038.60	8,650.68	0.00	0.00	0.00	
16,200.00	90.00	359.47	6,501.68	8,688.52	-1,039.52	8,750.17	0.00	0.00	0.00	
16,300.00	90.00	359.47	6,501.67	8,788.52	-1,040.44	8,849.66	0.00	0.00	0.00	
16,400.00	90.00	359.47	6,501.67	8,888.51	-1,041.37	8,949.14	0.00	0.00	0.00	
16,500.00	90.00	359.47	6,501.67	8,988.51	-1,042.29	9,048.63	0.00	0.00	0.00	
16,600.00	90.00	359.47	6,501.66	9,088.50	-1,043.21	9,148.12	0.00	0.00	0.00	
16,700.00	90.00	359.47	6,501.66	9,188.50	-1,044.14	9,247.60	0.00	0.00	0.00	
16,800.00	90.00	359.47	6,501.66	9,288.49	-1,045.06	9,347.09	0.00	0.00	0.00	
16,900.00	90.00	359.47	6,501.65	9,388.49	-1,045.98	9,446.58	0.00	0.00	0.00	
16,933.54	90.00	359.47	6,502.00	9,422.03	-1,046.19	9,479.94	0.00	0.00	0.00	
TD at 16933.54										

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-9N - P	0.00	0.00	6,502.00	9,422.03	-1,046.19	1,526,208.54	3,368,720.10	40° 46' 12.832 N	104° 10' 7.604 W	
- plan hits target center										
- Point										
MATTINGLY 14N-9N - L	0.00	0.00	6,502.00	-478.70	-954.89	1,516,310.30	3,368,960.44	40° 44' 35.002 N	104° 10' 6.413 W	
- plan hits target center										
- Point										

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well MATTINGLY 14N-20-9N
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-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,672.64	3,554.00	PARKMAN			
6,630.87	6,367.00	NIOBRARA			
6,925.16	6,492.00	NIO B TARGET			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
500.00	500.00	0.00	0.00	Start Build 2.00	
1,369.85	1,356.54	-97.26	-87.82	Start 3862.61 hold at 1369.85 MD	
5,232.45	5,042.46	-954.44	-861.78	Start Drop -2.00	
6,102.30	5,899.00	-1,051.70	-949.60	Start 30.00 hold at 6102.30 MD	
6,132.30	5,929.00	-1,051.70	-949.60	Start DLS 10.00 TFO 359.47	
7,032.39	6,502.00	-478.70	-954.89	Start 9901.16 hold at 7032.39 MD	
16,933.54	6,502.00	9,422.03	-1,046.19	TD at 16933.54	