

8 NORTH LLC

Weld County

Sec 30-T12N-R61W

DUNSTON WEST 31S-20-3N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

12 October, 2017



Project: Weld County
Site: Sec 30-T12N-R61W
Well: DUNSTON WEST 31S-20-3N
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: 52702.6snT
Dip Angle: 67.38°
Date: 10/3/2017
Model: IGRF2015

WELL DETAILS: DUNSTON WEST 31S-20-3N

+N/-S	+E/-W	Northing	Easting	5268.00	Latitude	Longitude	Slot
0.00	0.00	1600107.49	3344883.79		40° 58' 26.353 N	104° 15' 3.845 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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	909.99	8.20	270.78	908.59	0.40	-29.28	2.00	270.78	2.35	
4	6080.61	8.20	270.78	6026.35	10.41	-766.68	0.00	0.00	61.55	
5	6490.60	0.00	0.00	6434.94	10.81	-795.96	2.00	180.00	63.90	
6	6520.60	0.00	0.00	6464.94	10.81	-795.96	0.00	0.00	63.90	
7	7420.81	90.00	181.12	7038.00	-562.19	-807.21	10.00	181.12	635.43	DW 31S-3N - LP
8	17534.07	90.00	181.12	7038.00	-10673.50	-1005.63	0.00	-171.96	10720.77	DW 31S-3N - PBHL

FORMATION TOP DETAILS

TVDPth	MDPath	Formation
3180.00	3204.86	PARKMAN
3750.00	3780.75	SUSSEX
4155.00	4189.93	SHANNON
6945.00	7089.69	NIOBRARA
7028.00	7313.54	NIO B TARGET

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	BUILD 2°/100'
909.99	8.20	270.78	908.59	0.40	-29.28	2.35	29.29	HOLD 8.20° INC
6080.61	8.20	270.78	6026.35	10.41	-766.68	61.55	766.75	DROP 2°/100'
6490.60	0.00	0.00	6434.94	10.81	-795.96	63.90	796.03	HOLD VERTICAL
6520.60	0.00	0.00	6464.94	10.81	-795.96	63.90	796.03	KOP, BUILD 10°/100'
7420.81	90.00	181.12	7038.00	-562.19	-807.21	635.43	1369.14	LP @ 90° INC, 181.12° AZM HOLD
17534.07	90.00	181.12	7038.00	-10673.50	-1005.63	10720.77	11482.40	TD at 17534.07' MD

DESIGN TARGET DETAILS

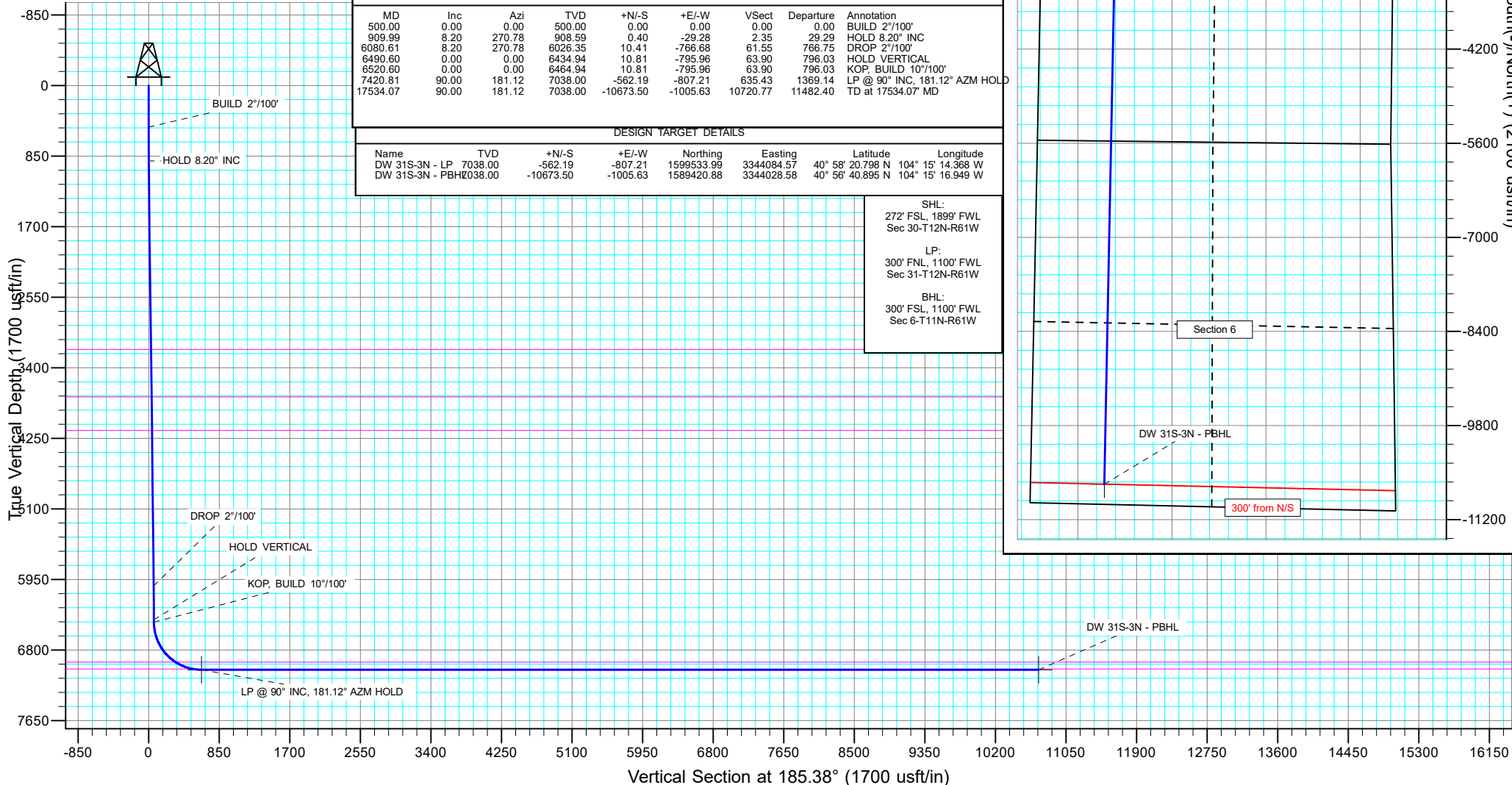
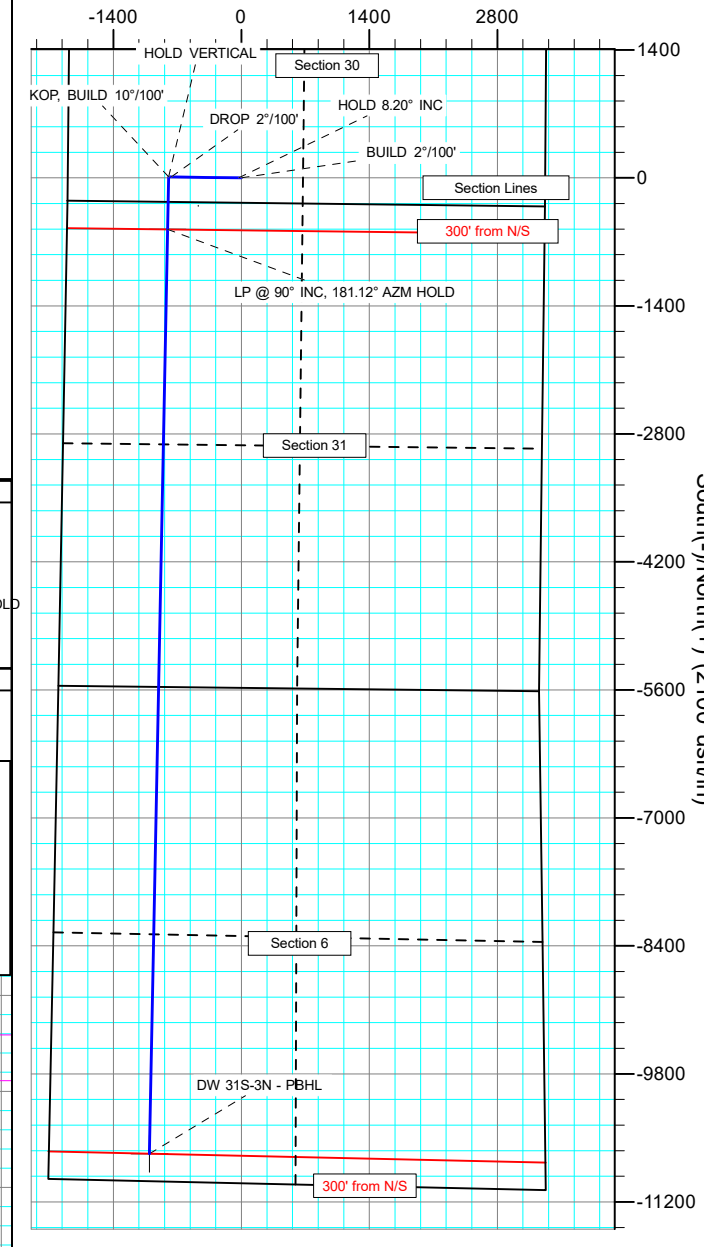
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
DW 31S-3N - LP	7038.00	-562.19	-807.21	1599533.99	3344084.57	40° 58' 20.798 N	104° 15' 14.368 W
DW 31S-3N - PBHL	7038.00	-10673.50	-1005.63	1589420.88	3344028.58	40° 56' 40.895 N	104° 15' 16.949 W

SHL:
272' FSL, 1899' FWL
Sec 30-T12N-R61W

LP:
300' FNL, 1100' FWL
Sec 31-T12N-R61W

BHL:
300' FSL, 1100' FWL
Sec 6-T11N-R61W

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



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUNSTON WEST 31S-20-3N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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 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 WEST 31S-20-3N					
Well Position	+N/-S	249.29 usft	Northing:	1,600,107.48 usft	Latitude:	40° 58' 26.353 N
	+E/-W	1,901.31 usft	Easting:	3,344,883.79 usft	Longitude:	104° 15' 3.845 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,268.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/3/2017	7.95	67.38	52,702.61063506

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	185.38

Plan Survey Tool Program	Date	10/12/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,533.48	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	
909.99	8.20	270.78	908.59	0.40	-29.28	2.00	2.00	0.00	270.78	
6,080.61	8.20	270.78	6,026.35	10.41	-766.68	0.00	0.00	0.00	0.00	
6,490.60	0.00	0.00	6,434.94	10.81	-795.96	2.00	-2.00	0.00	180.00	
6,520.60	0.00	0.00	6,464.94	10.81	-795.96	0.00	0.00	0.00	0.00	
7,420.81	90.00	181.12	7,038.00	-562.19	-807.21	10.00	10.00	-19.87	181.12	DW 31S-3N - LP
17,534.07	90.00	181.12	7,038.00	-10,673.50	-1,005.63	0.00	0.00	0.00	-171.96	DW 31S-3N - PBHL

Planning Report

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Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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
BUILD 2°/100'									
600.00	2.00	270.78	599.98	0.02	-1.74	0.14	2.00	2.00	0.00
700.00	4.00	270.78	699.84	0.09	-6.98	0.56	2.00	2.00	0.00
800.00	6.00	270.78	799.45	0.21	-15.69	1.26	2.00	2.00	0.00
909.99	8.20	270.78	908.59	0.40	-29.28	2.35	2.00	2.00	0.00
HOLD 8.20° INC									
1,000.00	8.20	270.78	997.68	0.57	-42.12	3.38	0.00	0.00	0.00
1,100.00	8.20	270.78	1,096.66	0.77	-56.38	4.53	0.00	0.00	0.00
1,200.00	8.20	270.78	1,195.64	0.96	-70.64	5.67	0.00	0.00	0.00
1,300.00	8.20	270.78	1,294.61	1.15	-84.90	6.82	0.00	0.00	0.00
1,400.00	8.20	270.78	1,393.59	1.35	-99.17	7.96	0.00	0.00	0.00
1,500.00	8.20	270.78	1,492.57	1.54	-113.43	9.11	0.00	0.00	0.00
1,600.00	8.20	270.78	1,591.55	1.73	-127.69	10.25	0.00	0.00	0.00
1,700.00	8.20	270.78	1,690.53	1.93	-141.95	11.40	0.00	0.00	0.00
1,800.00	8.20	270.78	1,789.50	2.12	-156.21	12.54	0.00	0.00	0.00
1,900.00	8.20	270.78	1,888.48	2.32	-170.47	13.69	0.00	0.00	0.00
2,000.00	8.20	270.78	1,987.46	2.51	-184.73	14.83	0.00	0.00	0.00
2,100.00	8.20	270.78	2,086.44	2.70	-198.99	15.98	0.00	0.00	0.00
2,200.00	8.20	270.78	2,185.41	2.90	-213.26	17.12	0.00	0.00	0.00
2,300.00	8.20	270.78	2,284.39	3.09	-227.52	18.27	0.00	0.00	0.00
2,400.00	8.20	270.78	2,383.37	3.28	-241.78	19.41	0.00	0.00	0.00
2,500.00	8.20	270.78	2,482.35	3.48	-256.04	20.56	0.00	0.00	0.00
2,600.00	8.20	270.78	2,581.32	3.67	-270.30	21.70	0.00	0.00	0.00
2,700.00	8.20	270.78	2,680.30	3.86	-284.56	22.84	0.00	0.00	0.00
2,800.00	8.20	270.78	2,779.28	4.06	-298.82	23.99	0.00	0.00	0.00
2,900.00	8.20	270.78	2,878.26	4.25	-313.08	25.13	0.00	0.00	0.00
3,000.00	8.20	270.78	2,977.24	4.45	-327.34	26.28	0.00	0.00	0.00
3,100.00	8.20	270.78	3,076.21	4.64	-341.61	27.42	0.00	0.00	0.00
3,200.00	8.20	270.78	3,175.19	4.83	-355.87	28.57	0.00	0.00	0.00
3,204.86	8.20	270.78	3,180.00	4.84	-356.56	28.62	0.00	0.00	0.00
PARKMAN									
3,300.00	8.20	270.78	3,274.17	5.03	-370.13	29.71	0.00	0.00	0.00
3,400.00	8.20	270.78	3,373.15	5.22	-384.39	30.86	0.00	0.00	0.00
3,500.00	8.20	270.78	3,472.12	5.41	-398.65	32.00	0.00	0.00	0.00
3,600.00	8.20	270.78	3,571.10	5.61	-412.91	33.15	0.00	0.00	0.00
3,700.00	8.20	270.78	3,670.08	5.80	-427.17	34.29	0.00	0.00	0.00
3,780.75	8.20	270.78	3,750.00	5.96	-438.69	35.22	0.00	0.00	0.00
SUSSEX									
3,800.00	8.20	270.78	3,769.06	6.00	-441.43	35.44	0.00	0.00	0.00
3,900.00	8.20	270.78	3,868.03	6.19	-455.70	36.58	0.00	0.00	0.00
4,000.00	8.20	270.78	3,967.01	6.38	-469.96	37.73	0.00	0.00	0.00
4,100.00	8.20	270.78	4,065.99	6.58	-484.22	38.87	0.00	0.00	0.00
4,189.93	8.20	270.78	4,155.00	6.75	-497.04	39.90	0.00	0.00	0.00
SHANNON									
4,200.00	8.20	270.78	4,164.97	6.77	-498.48	40.02	0.00	0.00	0.00
4,300.00	8.20	270.78	4,263.95	6.96	-512.74	41.16	0.00	0.00	0.00
4,400.00	8.20	270.78	4,362.92	7.16	-527.00	42.31	0.00	0.00	0.00

Planning Report

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Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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)
4,500.00	8.20	270.78	4,461.90	7.35	-541.26	43.45	0.00	0.00	0.00
4,600.00	8.20	270.78	4,560.88	7.54	-555.52	44.60	0.00	0.00	0.00
4,700.00	8.20	270.78	4,659.86	7.74	-569.78	45.74	0.00	0.00	0.00
4,800.00	8.20	270.78	4,758.83	7.93	-584.05	46.89	0.00	0.00	0.00
4,900.00	8.20	270.78	4,857.81	8.13	-598.31	48.03	0.00	0.00	0.00
5,000.00	8.20	270.78	4,956.79	8.32	-612.57	49.18	0.00	0.00	0.00
5,100.00	8.20	270.78	5,055.77	8.51	-626.83	50.32	0.00	0.00	0.00
5,200.00	8.20	270.78	5,154.74	8.71	-641.09	51.47	0.00	0.00	0.00
5,300.00	8.20	270.78	5,253.72	8.90	-655.35	52.61	0.00	0.00	0.00
5,400.00	8.20	270.78	5,352.70	9.09	-669.61	53.76	0.00	0.00	0.00
5,500.00	8.20	270.78	5,451.68	9.29	-683.87	54.90	0.00	0.00	0.00
5,600.00	8.20	270.78	5,550.66	9.48	-698.14	56.05	0.00	0.00	0.00
5,700.00	8.20	270.78	5,649.63	9.68	-712.40	57.19	0.00	0.00	0.00
5,800.00	8.20	270.78	5,748.61	9.87	-726.66	58.34	0.00	0.00	0.00
5,900.00	8.20	270.78	5,847.59	10.06	-740.92	59.48	0.00	0.00	0.00
6,000.00	8.20	270.78	5,946.57	10.26	-755.18	60.63	0.00	0.00	0.00
6,080.61	8.20	270.78	6,026.35	10.41	-766.68	61.55	0.00	0.00	0.00
DROP 2°/100'									
6,100.00	7.81	270.78	6,045.55	10.45	-769.38	61.77	2.00	-2.00	0.00
6,200.00	5.81	270.78	6,144.84	10.61	-781.24	62.72	2.00	-2.00	0.00
6,300.00	3.81	270.78	6,244.48	10.72	-789.62	63.39	2.00	-2.00	0.00
6,400.00	1.81	270.78	6,344.36	10.79	-794.53	63.79	2.00	-2.00	0.00
6,490.60	0.00	0.00	6,434.94	10.81	-795.96	63.90	2.00	-2.00	98.48
HOLD VERTICAL									
6,500.00	0.00	0.00	6,444.34	10.81	-795.96	63.90	0.00	0.00	0.00
6,520.60	0.00	0.00	6,464.94	10.81	-795.96	63.90	0.00	0.00	0.00
KOP, BUILD 10°/100'									
6,550.00	2.94	181.12	6,494.33	10.06	-795.97	64.65	10.00	10.00	0.00
6,600.00	7.94	181.12	6,544.09	5.32	-796.07	69.38	10.00	10.00	0.00
6,650.00	12.94	181.12	6,593.25	-3.74	-796.25	78.41	10.00	10.00	0.00
6,700.00	17.94	181.12	6,641.43	-17.04	-796.51	91.68	10.00	10.00	0.00
6,750.00	22.94	181.12	6,688.27	-34.49	-796.85	109.08	10.00	10.00	0.00
6,800.00	27.94	181.12	6,733.40	-55.95	-797.27	130.49	10.00	10.00	0.00
6,850.00	32.93	181.12	6,776.50	-81.27	-797.77	155.74	10.00	10.00	0.00
6,900.00	37.93	181.12	6,817.23	-110.24	-798.34	184.64	10.00	10.00	0.00
6,950.00	42.93	181.12	6,855.27	-142.65	-798.97	216.97	10.00	10.00	0.00
7,000.00	47.93	181.12	6,890.35	-178.26	-799.67	252.48	10.00	10.00	0.00
7,050.00	52.93	181.12	6,922.19	-216.78	-800.43	290.90	10.00	10.00	0.00
7,089.69	56.90	181.12	6,945.00	-249.25	-801.07	323.29	10.00	10.00	0.00
NIOBRARA									
7,100.00	57.93	181.12	6,950.55	-257.93	-801.24	331.95	10.00	10.00	0.00
7,150.00	62.93	181.12	6,975.22	-301.39	-802.09	375.30	10.00	10.00	0.00
7,200.00	67.93	181.12	6,996.00	-346.84	-802.98	420.64	10.00	10.00	0.00
7,250.00	72.93	181.12	7,012.75	-393.93	-803.91	467.60	10.00	10.00	0.00
7,300.00	77.93	181.12	7,025.32	-442.30	-804.86	515.84	10.00	10.00	0.00
7,313.54	79.28	181.12	7,028.00	-455.57	-805.12	529.08	10.00	10.00	0.00
NIO B TARGET									
7,350.00	82.93	181.12	7,033.64	-491.58	-805.82	565.00	10.00	10.00	0.00
7,400.00	87.92	181.12	7,037.62	-541.39	-806.80	614.68	10.00	10.00	0.00
7,420.81	90.00	181.12	7,038.00	-562.19	-807.21	635.43	10.00	10.00	0.00
LP @ 90° INC, 181.12° AZM HOLD									
7,500.00	90.00	181.12	7,037.99	-641.37	-808.77	714.40	0.00	0.00	0.00
7,600.00	90.00	181.12	7,037.99	-741.35	-810.73	814.13	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUNSTON WEST 31S-20-3N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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)	
7,700.00	90.00	181.12	7,037.98	-841.33	-812.69	913.85	0.00	0.00	0.00	
7,800.00	90.00	181.12	7,037.97	-941.31	-814.66	1,013.58	0.00	0.00	0.00	
7,900.00	90.00	181.12	7,037.96	-1,041.29	-816.62	1,113.30	0.00	0.00	0.00	
8,000.00	90.00	181.12	7,037.95	-1,141.27	-818.58	1,213.02	0.00	0.00	0.00	
8,100.00	90.00	181.12	7,037.95	-1,241.25	-820.54	1,312.75	0.00	0.00	0.00	
8,200.00	90.00	181.12	7,037.94	-1,341.23	-822.51	1,412.47	0.00	0.00	0.00	
8,300.00	90.00	181.12	7,037.93	-1,441.21	-824.47	1,512.20	0.00	0.00	0.00	
8,400.00	90.00	181.12	7,037.93	-1,541.19	-826.43	1,611.92	0.00	0.00	0.00	
8,500.00	90.00	181.12	7,037.92	-1,641.17	-828.40	1,711.64	0.00	0.00	0.00	
8,600.00	90.00	181.12	7,037.91	-1,741.16	-830.36	1,811.37	0.00	0.00	0.00	
8,700.00	90.00	181.12	7,037.91	-1,841.14	-832.32	1,911.09	0.00	0.00	0.00	
8,800.00	90.00	181.12	7,037.90	-1,941.12	-834.28	2,010.82	0.00	0.00	0.00	
8,900.00	90.00	181.12	7,037.89	-2,041.10	-836.25	2,110.54	0.00	0.00	0.00	
9,000.00	90.00	181.12	7,037.89	-2,141.08	-838.21	2,210.26	0.00	0.00	0.00	
9,100.00	90.00	181.12	7,037.88	-2,241.06	-840.17	2,309.99	0.00	0.00	0.00	
9,200.00	90.00	181.12	7,037.88	-2,341.04	-842.14	2,409.71	0.00	0.00	0.00	
9,300.00	90.00	181.12	7,037.87	-2,441.02	-844.10	2,509.44	0.00	0.00	0.00	
9,400.00	90.00	181.12	7,037.87	-2,541.00	-846.06	2,609.16	0.00	0.00	0.00	
9,500.00	90.00	181.12	7,037.86	-2,640.98	-848.02	2,708.88	0.00	0.00	0.00	
9,600.00	90.00	181.12	7,037.86	-2,740.96	-849.99	2,808.61	0.00	0.00	0.00	
9,700.00	90.00	181.12	7,037.85	-2,840.94	-851.95	2,908.33	0.00	0.00	0.00	
9,800.00	90.00	181.12	7,037.85	-2,940.92	-853.91	3,008.06	0.00	0.00	0.00	
9,900.00	90.00	181.12	7,037.84	-3,040.91	-855.87	3,107.78	0.00	0.00	0.00	
10,000.00	90.00	181.12	7,037.84	-3,140.89	-857.84	3,207.50	0.00	0.00	0.00	
10,100.00	90.00	181.12	7,037.83	-3,240.87	-859.80	3,307.23	0.00	0.00	0.00	
10,200.00	90.00	181.12	7,037.83	-3,340.85	-861.76	3,406.95	0.00	0.00	0.00	
10,300.00	90.00	181.12	7,037.83	-3,440.83	-863.72	3,506.68	0.00	0.00	0.00	
10,400.00	90.00	181.12	7,037.82	-3,540.81	-865.69	3,606.40	0.00	0.00	0.00	
10,500.00	90.00	181.12	7,037.82	-3,640.79	-867.65	3,706.12	0.00	0.00	0.00	
10,600.00	90.00	181.12	7,037.82	-3,740.77	-869.61	3,805.85	0.00	0.00	0.00	
10,700.00	90.00	181.12	7,037.81	-3,840.75	-871.57	3,905.57	0.00	0.00	0.00	
10,800.00	90.00	181.12	7,037.81	-3,940.73	-873.54	4,005.30	0.00	0.00	0.00	
10,900.00	90.00	181.12	7,037.81	-4,040.71	-875.50	4,105.02	0.00	0.00	0.00	
11,000.00	90.00	181.12	7,037.81	-4,140.69	-877.46	4,204.74	0.00	0.00	0.00	
11,100.00	90.00	181.12	7,037.80	-4,240.67	-879.42	4,304.47	0.00	0.00	0.00	
11,200.00	90.00	181.12	7,037.80	-4,340.65	-881.39	4,404.19	0.00	0.00	0.00	
11,300.00	90.00	181.12	7,037.80	-4,440.64	-883.35	4,503.92	0.00	0.00	0.00	
11,400.00	90.00	181.12	7,037.80	-4,540.62	-885.31	4,603.64	0.00	0.00	0.00	
11,500.00	90.00	181.12	7,037.80	-4,640.60	-887.27	4,703.36	0.00	0.00	0.00	
11,600.00	90.00	181.12	7,037.79	-4,740.58	-889.24	4,803.09	0.00	0.00	0.00	
11,700.00	90.00	181.12	7,037.79	-4,840.56	-891.20	4,902.81	0.00	0.00	0.00	
11,800.00	90.00	181.12	7,037.79	-4,940.54	-893.16	5,002.54	0.00	0.00	0.00	
11,900.00	90.00	181.12	7,037.79	-5,040.52	-895.12	5,102.26	0.00	0.00	0.00	
12,000.00	90.00	181.12	7,037.79	-5,140.50	-897.08	5,201.98	0.00	0.00	0.00	
12,100.00	90.00	181.12	7,037.79	-5,240.48	-899.05	5,301.71	0.00	0.00	0.00	
12,200.00	90.00	181.12	7,037.79	-5,340.46	-901.01	5,401.43	0.00	0.00	0.00	
12,300.00	90.00	181.12	7,037.79	-5,440.44	-902.97	5,501.16	0.00	0.00	0.00	
12,400.00	90.00	181.12	7,037.79	-5,540.42	-904.93	5,600.88	0.00	0.00	0.00	
12,500.00	90.00	181.12	7,037.79	-5,640.40	-906.89	5,700.60	0.00	0.00	0.00	
12,600.00	90.00	181.12	7,037.79	-5,740.39	-908.86	5,800.33	0.00	0.00	0.00	
12,700.00	90.00	181.12	7,037.79	-5,840.37	-910.82	5,900.05	0.00	0.00	0.00	
12,800.00	90.00	181.12	7,037.79	-5,940.35	-912.78	5,999.78	0.00	0.00	0.00	
12,900.00	90.00	181.12	7,037.79	-6,040.33	-914.74	6,099.50	0.00	0.00	0.00	
13,000.00	90.00	181.12	7,037.79	-6,140.31	-916.70	6,199.22	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUNSTON WEST 31S-20-3N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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)	
13,100.00	90.00	181.12	7,037.79	-6,240.29	-918.67	6,298.95	0.00	0.00	0.00	
13,200.00	90.00	181.12	7,037.79	-6,340.27	-920.63	6,398.67	0.00	0.00	0.00	
13,300.00	90.00	181.12	7,037.79	-6,440.25	-922.59	6,498.40	0.00	0.00	0.00	
13,400.00	90.00	181.12	7,037.79	-6,540.23	-924.55	6,598.12	0.00	0.00	0.00	
13,500.00	90.00	181.12	7,037.80	-6,640.21	-926.51	6,697.84	0.00	0.00	0.00	
13,600.00	90.00	181.12	7,037.80	-6,740.19	-928.47	6,797.57	0.00	0.00	0.00	
13,700.00	90.00	181.12	7,037.80	-6,840.17	-930.44	6,897.29	0.00	0.00	0.00	
13,800.00	90.00	181.12	7,037.80	-6,940.15	-932.40	6,997.02	0.00	0.00	0.00	
13,900.00	90.00	181.12	7,037.80	-7,040.14	-934.36	7,096.74	0.00	0.00	0.00	
14,000.00	90.00	181.12	7,037.81	-7,140.12	-936.32	7,196.46	0.00	0.00	0.00	
14,100.00	90.00	181.12	7,037.81	-7,240.10	-938.28	7,296.19	0.00	0.00	0.00	
14,200.00	90.00	181.12	7,037.81	-7,340.08	-940.24	7,395.91	0.00	0.00	0.00	
14,300.00	90.00	181.12	7,037.82	-7,440.06	-942.21	7,495.63	0.00	0.00	0.00	
14,400.00	90.00	181.12	7,037.82	-7,540.04	-944.17	7,595.36	0.00	0.00	0.00	
14,500.00	90.00	181.12	7,037.82	-7,640.02	-946.13	7,695.08	0.00	0.00	0.00	
14,600.00	90.00	181.12	7,037.82	-7,740.00	-948.09	7,794.81	0.00	0.00	0.00	
14,700.00	90.00	181.12	7,037.83	-7,839.98	-950.05	7,894.53	0.00	0.00	0.00	
14,800.00	90.00	181.12	7,037.83	-7,939.96	-952.01	7,994.25	0.00	0.00	0.00	
14,900.00	90.00	181.12	7,037.84	-8,039.94	-953.97	8,093.98	0.00	0.00	0.00	
15,000.00	90.00	181.12	7,037.84	-8,139.92	-955.94	8,193.70	0.00	0.00	0.00	
15,100.00	90.00	181.12	7,037.84	-8,239.90	-957.90	8,293.43	0.00	0.00	0.00	
15,200.00	90.00	181.12	7,037.85	-8,339.89	-959.86	8,393.15	0.00	0.00	0.00	
15,300.00	90.00	181.12	7,037.85	-8,439.87	-961.82	8,492.87	0.00	0.00	0.00	
15,400.00	90.00	181.12	7,037.86	-8,539.85	-963.78	8,592.60	0.00	0.00	0.00	
15,500.00	90.00	181.12	7,037.86	-8,639.83	-965.74	8,692.32	0.00	0.00	0.00	
15,600.00	90.00	181.12	7,037.87	-8,739.81	-967.70	8,792.05	0.00	0.00	0.00	
15,700.00	90.00	181.12	7,037.87	-8,839.79	-969.67	8,891.77	0.00	0.00	0.00	
15,800.00	90.00	181.12	7,037.88	-8,939.77	-971.63	8,991.49	0.00	0.00	0.00	
15,900.00	90.00	181.12	7,037.88	-9,039.75	-973.59	9,091.22	0.00	0.00	0.00	
16,000.00	90.00	181.12	7,037.89	-9,139.73	-975.55	9,190.94	0.00	0.00	0.00	
16,100.00	90.00	181.12	7,037.90	-9,239.71	-977.51	9,290.67	0.00	0.00	0.00	
16,200.00	90.00	181.12	7,037.90	-9,339.69	-979.47	9,390.39	0.00	0.00	0.00	
16,300.00	90.00	181.12	7,037.91	-9,439.67	-981.43	9,490.11	0.00	0.00	0.00	
16,400.00	90.00	181.12	7,037.92	-9,539.65	-983.39	9,589.84	0.00	0.00	0.00	
16,500.00	90.00	181.12	7,037.92	-9,639.64	-985.35	9,689.56	0.00	0.00	0.00	
16,600.00	90.00	181.12	7,037.93	-9,739.62	-987.32	9,789.28	0.00	0.00	0.00	
16,700.00	90.00	181.12	7,037.94	-9,839.60	-989.28	9,889.01	0.00	0.00	0.00	
16,800.00	90.00	181.12	7,037.94	-9,939.58	-991.24	9,988.73	0.00	0.00	0.00	
16,900.00	90.00	181.12	7,037.95	-10,039.56	-993.20	10,088.46	0.00	0.00	0.00	
17,000.00	90.00	181.12	7,037.96	-10,139.54	-995.16	10,188.18	0.00	0.00	0.00	
17,100.00	90.00	181.12	7,037.97	-10,239.52	-997.12	10,287.90	0.00	0.00	0.00	
17,200.00	90.00	181.12	7,037.97	-10,339.50	-999.08	10,387.63	0.00	0.00	0.00	
17,300.00	90.00	181.12	7,037.98	-10,439.48	-1,001.04	10,487.35	0.00	0.00	0.00	
17,400.00	90.00	181.12	7,037.99	-10,539.46	-1,003.00	10,587.08	0.00	0.00	0.00	
17,500.00	90.00	181.12	7,038.00	-10,639.44	-1,004.96	10,686.80	0.00	0.00	0.00	
17,534.07	90.00	181.12	7,038.00	-10,673.50	-1,005.63	10,720.77	0.00	0.00	0.00	
TD at 17534.07' MD										

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUNSTON WEST 31S-20-3N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5293.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5293.00usft
Site:	Sec 30-T12N-R61W	North Reference:	True
Well:	DUNSTON WEST 31S-20-3N	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
DW 31S-3N - LP - plan hits target center - Point	0.00	0.00	7,038.00	-562.19	-807.21	1,599,533.98	3,344,084.58	40° 58' 20.798 N	104° 15' 14.368 W
DW 31S-3N - PBHL - plan hits target center - Point	0.00	0.00	7,038.00	-10,673.50	-1,005.63	1,589,420.87	3,344,028.59	40° 56' 40.895 N	104° 15' 16.949 W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,204.86	3,180.00	PARKMAN				
3,780.75	3,750.00	SUSSEX				
4,189.93	4,155.00	SHANNON				
7,089.69	6,945.00	NIOBRARA				
7,313.54	7,028.00	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	BUILD 2°/100'	
909.99	908.59	0.40	-29.28	HOLD 8.20° INC	
6,080.61	6,026.35	10.41	-766.68	DROP 2°/100'	
6,490.60	6,434.94	10.81	-795.96	HOLD VERTICAL	
6,520.60	6,464.94	10.81	-795.96	KOP, BUILD 10°/100'	
7,420.81	7,038.00	-562.19	-807.21	LP @ 90° INC, 181.12° AZM HOLD	
17,534.07	7,038.00	-10,673.50	-1,005.63	TD at 17534.07' MD	