

8 NORTH LLC

Weld County

Sec 11-T9N-R60W

CREIGHTON 11S-15-1N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

22 January, 2018



Project: Weld County
Site: Sec 11-T9N-R60W
Well: CREIGHTON 11S-15-1N
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: 7.80°

Magnetic Field
Strength: 52585.9nT
Dip Angle: 67.24°
Date: 1/15/2018
Model: IGRF2015

WELL DETAILS: CREIGHTON 11S-15-1N

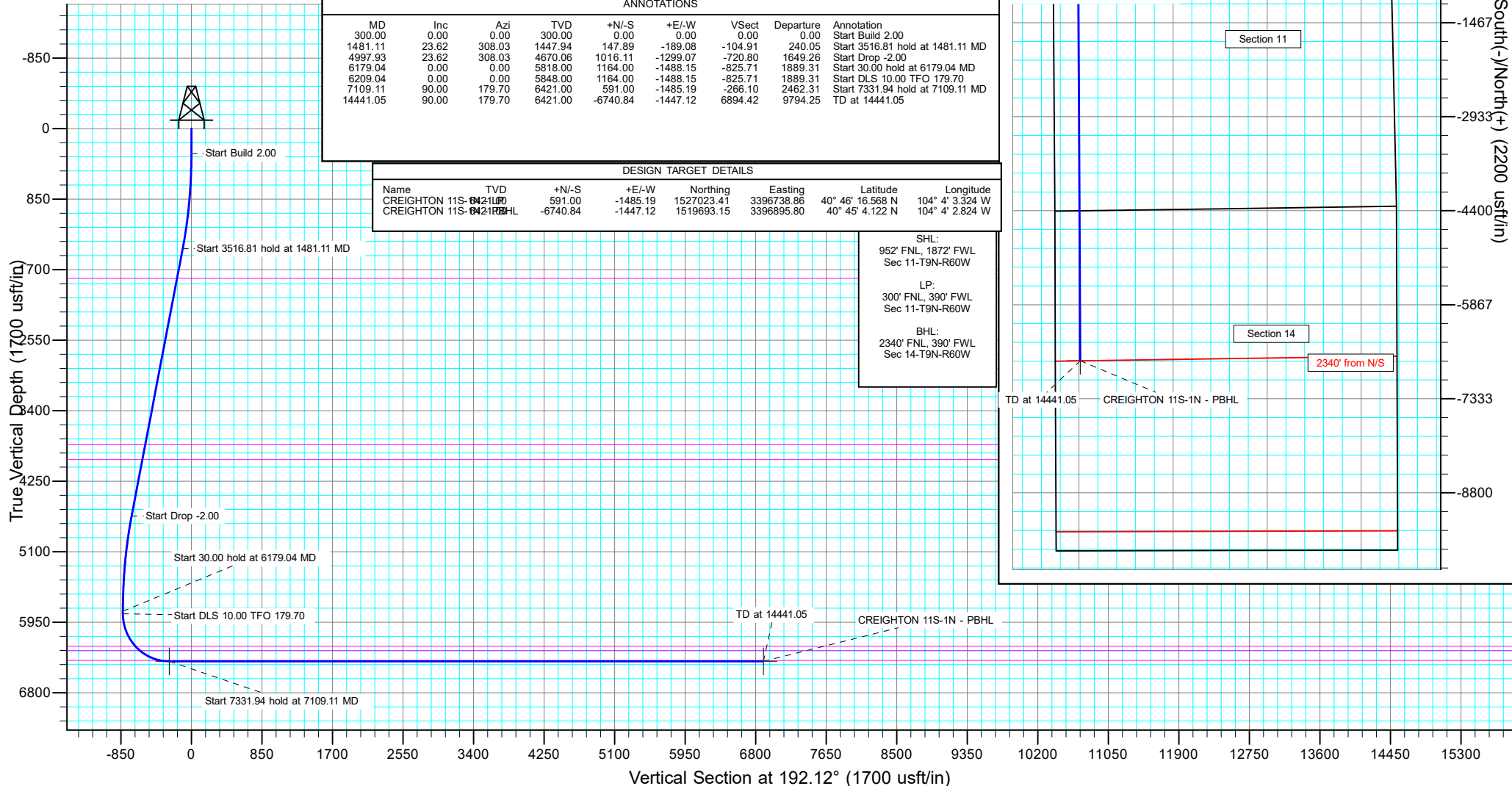
+N/-S	+E/-W	Northing	Easting	5079.00	Latitude	Longitude	Slot
0.00	0.00	1526456.56	3398233.44		40° 46' 10.729 N	104° 3' 44.021 W	

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	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	1481.11	23.62	308.03	1447.94	147.89	-189.08	2.00	308.03	-104.91	
4	4997.93	23.62	308.03	4670.06	1016.11	-1299.07	0.00	0.00	-720.80	
5	6179.04	0.00	0.00	5818.00	1164.00	-1488.15	2.00	180.00	-825.71	
6	6209.04	0.00	0.00	5848.00	1164.00	-1488.15	0.00	0.00	-825.71	
7	7109.11	90.00	179.70	6421.00	591.00	-1485.19	10.00	179.70	-266.10	CREIGHTON 11S-1N - LP
8	14441.05	90.00	179.70	6421.00	-6740.84	-1447.12	0.00	0.00	6894.42	CREIGHTON 11S-1N - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1805.00	1870.83	PARKMAN
3810.00	4059.20	SUSSEX
3990.00	4255.67	SHANNON
6240.00	6640.74	SHARON SPRINGS
6294.00	6720.19	NIOBRARA
6411.00	7001.90	NIO B TARGET



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well CREIGHTON 11S-15-1N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5104.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5104.00usft
Site:	Sec 11-T9N-R60W	North Reference:	True
Well:	CREIGHTON 11S-15-1N	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 11-T9N-R60W			
Site Position:		Northing:	1,522,020.36 usft	Latitude:	40° 45' 27.184 N
From:	Lat/Long	Easting:	3,396,461.70 usft	Longitude:	104° 4' 7.975 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.92 °

Well	CREIGHTON 11S-15-1N					
Well Position	+N/-S	4,407.04 usft	Northing:	1,526,456.57 usft	Latitude:	40° 46' 10.729 N
	+E/-W	1,843.10 usft	Easting:	3,398,233.44 usft	Longitude:	104° 3' 44.021 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,079.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/15/2018	7.80	67.24	52,585.92694134

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	192.12

Plan Survey Tool Program	Date	1/22/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,441.03	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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,481.11	23.62	308.03	1,447.94	147.89	-189.08	2.00	2.00	0.00	308.03	
4,997.93	23.62	308.03	4,670.06	1,016.11	-1,299.07	0.00	0.00	0.00	0.00	
6,179.04	0.00	0.00	5,818.00	1,164.00	-1,488.15	2.00	-2.00	0.00	180.00	
6,209.04	0.00	0.00	5,848.00	1,164.00	-1,488.15	0.00	0.00	0.00	0.00	
7,109.11	90.00	179.70	6,421.00	591.00	-1,485.19	10.00	10.00	19.97	179.70	CREIGHTON 11S-1N
14,441.05	90.00	179.70	6,421.00	-6,740.84	-1,447.12	0.00	0.00	0.00	0.00	CREIGHTON 11S-1N

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Project:	Weld County	MD Reference:	KB 25' @ 5104.00usft
Site:	Sec 11-T9N-R60W	North Reference:	True
Well:	CREIGHTON 11S-15-1N	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	308.03	399.98	1.08	-1.37	-0.76	2.00	2.00	0.00
500.00	4.00	308.03	499.84	4.30	-5.50	-3.05	2.00	2.00	0.00
600.00	6.00	308.03	599.45	9.67	-12.36	-6.86	2.00	2.00	0.00
700.00	8.00	308.03	698.70	17.18	-21.96	-12.18	2.00	2.00	0.00
800.00	10.00	308.03	797.47	26.81	-34.28	-19.02	2.00	2.00	0.00
900.00	12.00	308.03	895.62	38.57	-49.31	-27.36	2.00	2.00	0.00
1,000.00	14.00	308.03	993.06	52.43	-67.03	-37.19	2.00	2.00	0.00
1,100.00	16.00	308.03	1,089.64	68.37	-87.41	-48.50	2.00	2.00	0.00
1,200.00	18.00	308.03	1,185.27	86.39	-110.44	-61.28	2.00	2.00	0.00
1,300.00	20.00	308.03	1,279.82	106.44	-136.08	-75.51	2.00	2.00	0.00
1,400.00	22.00	308.03	1,373.17	128.52	-164.31	-91.17	2.00	2.00	0.00
1,481.11	23.62	308.03	1,447.94	147.89	-189.08	-104.91	2.00	2.00	0.00
Start 3516.81 hold at 1481.11 MD									
1,500.00	23.62	308.03	1,465.24	152.56	-195.04	-108.22	0.00	0.00	0.00
1,600.00	23.62	308.03	1,556.86	177.24	-226.60	-125.73	0.00	0.00	0.00
1,700.00	23.62	308.03	1,648.48	201.93	-258.17	-143.24	0.00	0.00	0.00
1,800.00	23.62	308.03	1,740.10	226.62	-289.73	-160.76	0.00	0.00	0.00
1,870.83	23.62	308.03	1,805.00	244.11	-312.08	-173.16	0.00	0.00	0.00
PARKMAN									
1,900.00	23.62	308.03	1,831.72	251.31	-321.29	-178.27	0.00	0.00	0.00
2,000.00	23.62	308.03	1,923.34	275.99	-352.85	-195.78	0.00	0.00	0.00
2,100.00	23.62	308.03	2,014.96	300.68	-384.42	-213.30	0.00	0.00	0.00
2,200.00	23.62	308.03	2,106.58	325.37	-415.98	-230.81	0.00	0.00	0.00
2,300.00	23.62	308.03	2,198.20	350.06	-447.54	-248.32	0.00	0.00	0.00
2,400.00	23.62	308.03	2,289.83	374.74	-479.10	-265.83	0.00	0.00	0.00
2,500.00	23.62	308.03	2,381.45	399.43	-510.66	-283.35	0.00	0.00	0.00
2,600.00	23.62	308.03	2,473.07	424.12	-542.23	-300.86	0.00	0.00	0.00
2,700.00	23.62	308.03	2,564.69	448.81	-573.79	-318.37	0.00	0.00	0.00
2,800.00	23.62	308.03	2,656.31	473.49	-605.35	-335.88	0.00	0.00	0.00
2,900.00	23.62	308.03	2,747.93	498.18	-636.91	-353.40	0.00	0.00	0.00
3,000.00	23.62	308.03	2,839.55	522.87	-668.48	-370.91	0.00	0.00	0.00
3,100.00	23.62	308.03	2,931.17	547.56	-700.04	-388.42	0.00	0.00	0.00
3,200.00	23.62	308.03	3,022.79	572.24	-731.60	-405.93	0.00	0.00	0.00
3,300.00	23.62	308.03	3,114.41	596.93	-763.16	-423.45	0.00	0.00	0.00
3,400.00	23.62	308.03	3,206.03	621.62	-794.73	-440.96	0.00	0.00	0.00
3,500.00	23.62	308.03	3,297.65	646.31	-826.29	-458.47	0.00	0.00	0.00
3,600.00	23.62	308.03	3,389.27	670.99	-857.85	-475.98	0.00	0.00	0.00
3,700.00	23.62	308.03	3,480.89	695.68	-889.41	-493.50	0.00	0.00	0.00
3,800.00	23.62	308.03	3,572.51	720.37	-920.98	-511.01	0.00	0.00	0.00
3,900.00	23.62	308.03	3,664.14	745.06	-952.54	-528.52	0.00	0.00	0.00
4,000.00	23.62	308.03	3,755.76	769.74	-984.10	-546.03	0.00	0.00	0.00
4,059.20	23.62	308.03	3,810.00	784.36	-1,002.79	-556.40	0.00	0.00	0.00
SUSSEX									
4,100.00	23.62	308.03	3,847.38	794.43	-1,015.66	-563.55	0.00	0.00	0.00
4,200.00	23.62	308.03	3,939.00	819.12	-1,047.23	-581.06	0.00	0.00	0.00
4,255.67	23.62	308.03	3,990.00	832.86	-1,064.80	-590.81	0.00	0.00	0.00
SHANNON									
4,300.00	23.62	308.03	4,030.62	843.81	-1,078.79	-598.57	0.00	0.00	0.00

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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)	
4,400.00	23.62	308.03	4,122.24	868.49	-1,110.35	-616.09	0.00	0.00	0.00	
4,500.00	23.62	308.03	4,213.86	893.18	-1,141.91	-633.60	0.00	0.00	0.00	
4,600.00	23.62	308.03	4,305.48	917.87	-1,173.47	-651.11	0.00	0.00	0.00	
4,700.00	23.62	308.03	4,397.10	942.56	-1,205.04	-668.62	0.00	0.00	0.00	
4,800.00	23.62	308.03	4,488.72	967.24	-1,236.60	-686.14	0.00	0.00	0.00	
4,900.00	23.62	308.03	4,580.34	991.93	-1,268.16	-703.65	0.00	0.00	0.00	
4,997.93	23.62	308.03	4,670.06	1,016.11	-1,299.07	-720.80	0.00	0.00	0.00	
Start Drop -2.00										
5,000.00	23.58	308.03	4,671.96	1,016.62	-1,299.72	-721.16	2.00	-2.00	0.00	
5,100.00	21.58	308.03	4,764.29	1,040.27	-1,329.97	-737.94	2.00	-2.00	0.00	
5,200.00	19.58	308.03	4,857.91	1,061.93	-1,357.66	-753.30	2.00	-2.00	0.00	
5,300.00	17.58	308.03	4,952.69	1,081.56	-1,382.75	-767.23	2.00	-2.00	0.00	
5,400.00	15.58	308.03	5,048.52	1,099.14	-1,405.23	-779.70	2.00	-2.00	0.00	
5,500.00	13.58	308.03	5,145.30	1,114.65	-1,425.06	-790.70	2.00	-2.00	0.00	
5,600.00	11.58	308.03	5,242.89	1,128.07	-1,442.21	-800.22	2.00	-2.00	0.00	
5,700.00	9.58	308.03	5,341.19	1,139.38	-1,456.68	-808.25	2.00	-2.00	0.00	
5,800.00	7.58	308.03	5,440.06	1,148.57	-1,468.43	-814.77	2.00	-2.00	0.00	
5,900.00	5.58	308.03	5,539.40	1,155.63	-1,477.45	-819.78	2.00	-2.00	0.00	
6,000.00	3.58	308.03	5,639.08	1,160.55	-1,483.74	-823.27	2.00	-2.00	0.00	
6,100.00	1.58	308.03	5,738.97	1,163.33	-1,487.29	-825.23	2.00	-2.00	0.00	
6,179.04	0.00	0.00	5,818.00	1,164.00	-1,488.15	-825.71	2.00	-2.00	0.00	
Start 30.00 hold at 6179.04 MD										
6,209.04	0.00	0.00	5,848.00	1,164.00	-1,488.15	-825.71	0.00	0.00	0.00	
Start DLS 10.00 TFO 179.70										
6,250.00	4.10	179.70	5,888.92	1,162.54	-1,488.14	-824.28	10.00	10.00	0.00	
6,300.00	9.10	179.70	5,938.58	1,156.80	-1,488.11	-818.67	10.00	10.00	0.00	
6,350.00	14.09	179.70	5,987.54	1,146.75	-1,488.06	-808.86	10.00	10.00	0.00	
6,400.00	19.09	179.70	6,035.44	1,132.47	-1,487.99	-794.92	10.00	10.00	0.00	
6,450.00	24.09	179.70	6,081.92	1,114.08	-1,487.89	-776.96	10.00	10.00	0.00	
6,500.00	29.09	179.70	6,126.62	1,091.70	-1,487.78	-755.10	10.00	10.00	0.00	
6,550.00	34.09	179.70	6,169.19	1,065.52	-1,487.64	-729.53	10.00	10.00	0.00	
6,600.00	39.09	179.70	6,209.32	1,035.72	-1,487.49	-700.43	10.00	10.00	0.00	
6,640.74	43.17	179.70	6,240.00	1,008.93	-1,487.35	-674.26	10.00	10.00	0.00	
SHARON SPRINGS										
6,650.00	44.09	179.70	6,246.71	1,002.54	-1,487.32	-668.02	10.00	10.00	0.00	
6,700.00	49.09	179.70	6,281.05	966.23	-1,487.13	-632.56	10.00	10.00	0.00	
6,720.19	51.11	179.70	6,294.00	950.74	-1,487.05	-617.43	10.00	10.00	0.00	
NIOBRARA										
6,750.00	54.09	179.70	6,312.11	927.06	-1,486.93	-594.31	10.00	10.00	0.00	
6,800.00	59.09	179.70	6,339.63	885.34	-1,486.71	-553.56	10.00	10.00	0.00	
6,850.00	64.09	179.70	6,363.41	841.37	-1,486.49	-510.62	10.00	10.00	0.00	
6,900.00	69.09	179.70	6,383.27	795.50	-1,486.25	-465.82	10.00	10.00	0.00	
6,950.00	74.09	179.70	6,399.05	748.08	-1,486.00	-419.50	10.00	10.00	0.00	
7,000.00	79.09	179.70	6,410.64	699.46	-1,485.75	-372.02	10.00	10.00	0.00	
7,001.90	79.28	179.70	6,411.00	697.59	-1,485.74	-370.20	10.00	10.00	0.00	
NIO B TARGET										
7,050.00	84.09	179.70	6,417.95	650.01	-1,485.50	-323.73	10.00	10.00	0.00	
7,100.00	89.09	179.70	6,420.93	600.11	-1,485.24	-275.00	10.00	10.00	0.00	
7,109.11	90.00	179.70	6,421.00	591.00	-1,485.19	-266.10	10.00	10.00	0.00	
Start 7331.94 hold at 7109.11 MD										
7,200.00	90.00	179.70	6,421.00	500.12	-1,484.72	-177.34	0.00	0.00	0.00	
7,300.00	90.00	179.70	6,421.00	400.12	-1,484.21	-79.67	0.00	0.00	0.00	
7,400.00	90.00	179.70	6,421.00	300.12	-1,483.69	17.99	0.00	0.00	0.00	

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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)
7,500.00	90.00	179.70	6,421.00	200.12	-1,483.18	115.65	0.00	0.00	0.00
7,600.00	90.00	179.70	6,421.00	100.12	-1,482.66	213.32	0.00	0.00	0.00
7,700.00	90.00	179.70	6,421.00	0.12	-1,482.15	310.98	0.00	0.00	0.00
7,800.00	90.00	179.70	6,420.99	-99.88	-1,481.63	408.64	0.00	0.00	0.00
7,900.00	90.00	179.70	6,420.99	-199.87	-1,481.11	506.30	0.00	0.00	0.00
8,000.00	90.00	179.70	6,420.99	-299.87	-1,480.60	603.97	0.00	0.00	0.00
8,100.00	90.00	179.70	6,420.99	-399.87	-1,480.08	701.63	0.00	0.00	0.00
8,200.00	90.00	179.70	6,420.99	-499.87	-1,479.57	799.29	0.00	0.00	0.00
8,300.00	90.00	179.70	6,420.99	-599.87	-1,479.05	896.96	0.00	0.00	0.00
8,400.00	90.00	179.70	6,420.99	-699.87	-1,478.53	994.62	0.00	0.00	0.00
8,500.00	90.00	179.70	6,420.99	-799.87	-1,478.02	1,092.28	0.00	0.00	0.00
8,600.00	90.00	179.70	6,420.99	-899.86	-1,477.50	1,189.94	0.00	0.00	0.00
8,700.00	90.00	179.70	6,420.99	-999.86	-1,476.99	1,287.61	0.00	0.00	0.00
8,800.00	90.00	179.70	6,420.99	-1,099.86	-1,476.47	1,385.27	0.00	0.00	0.00
8,900.00	90.00	179.70	6,420.98	-1,199.86	-1,475.95	1,482.93	0.00	0.00	0.00
9,000.00	90.00	179.70	6,420.98	-1,299.86	-1,475.44	1,580.59	0.00	0.00	0.00
9,100.00	90.00	179.70	6,420.98	-1,399.86	-1,474.92	1,678.26	0.00	0.00	0.00
9,200.00	90.00	179.70	6,420.98	-1,499.86	-1,474.41	1,775.92	0.00	0.00	0.00
9,300.00	90.00	179.70	6,420.98	-1,599.86	-1,473.89	1,873.58	0.00	0.00	0.00
9,400.00	90.00	179.70	6,420.98	-1,699.85	-1,473.37	1,971.25	0.00	0.00	0.00
9,500.00	90.00	179.70	6,420.98	-1,799.85	-1,472.86	2,068.91	0.00	0.00	0.00
9,600.00	90.00	179.70	6,420.98	-1,899.85	-1,472.34	2,166.57	0.00	0.00	0.00
9,700.00	90.00	179.70	6,420.98	-1,999.85	-1,471.83	2,264.23	0.00	0.00	0.00
9,800.00	90.00	179.70	6,420.98	-2,099.85	-1,471.31	2,361.90	0.00	0.00	0.00
9,900.00	90.00	179.70	6,420.98	-2,199.85	-1,470.79	2,459.56	0.00	0.00	0.00
10,000.00	90.00	179.70	6,420.98	-2,299.85	-1,470.28	2,557.22	0.00	0.00	0.00
10,100.00	90.00	179.70	6,420.97	-2,399.84	-1,469.76	2,654.88	0.00	0.00	0.00
10,200.00	90.00	179.70	6,420.97	-2,499.84	-1,469.25	2,752.55	0.00	0.00	0.00
10,300.00	90.00	179.70	6,420.97	-2,599.84	-1,468.73	2,850.21	0.00	0.00	0.00
10,400.00	90.00	179.70	6,420.97	-2,699.84	-1,468.22	2,947.87	0.00	0.00	0.00
10,500.00	90.00	179.70	6,420.97	-2,799.84	-1,467.70	3,045.54	0.00	0.00	0.00
10,600.00	90.00	179.70	6,420.97	-2,899.84	-1,467.18	3,143.20	0.00	0.00	0.00
10,700.00	90.00	179.70	6,420.97	-2,999.84	-1,466.67	3,240.86	0.00	0.00	0.00
10,800.00	90.00	179.70	6,420.97	-3,099.84	-1,466.15	3,338.52	0.00	0.00	0.00
10,900.00	90.00	179.70	6,420.97	-3,199.83	-1,465.64	3,436.19	0.00	0.00	0.00
11,000.00	90.00	179.70	6,420.97	-3,299.83	-1,465.12	3,533.85	0.00	0.00	0.00
11,100.00	90.00	179.70	6,420.97	-3,399.83	-1,464.60	3,631.51	0.00	0.00	0.00
11,200.00	90.00	179.70	6,420.96	-3,499.83	-1,464.09	3,729.17	0.00	0.00	0.00
11,300.00	90.00	179.70	6,420.96	-3,599.83	-1,463.57	3,826.84	0.00	0.00	0.00
11,400.00	90.00	179.70	6,420.96	-3,699.83	-1,463.06	3,924.50	0.00	0.00	0.00
11,500.00	90.00	179.70	6,420.96	-3,799.83	-1,462.54	4,022.16	0.00	0.00	0.00
11,600.00	90.00	179.70	6,420.96	-3,899.82	-1,462.02	4,119.83	0.00	0.00	0.00
11,700.00	90.00	179.70	6,420.96	-3,999.82	-1,461.51	4,217.49	0.00	0.00	0.00
11,800.00	90.00	179.70	6,420.96	-4,099.82	-1,460.99	4,315.15	0.00	0.00	0.00
11,900.00	90.00	179.70	6,420.96	-4,199.82	-1,460.48	4,412.81	0.00	0.00	0.00
12,000.00	90.00	179.70	6,420.96	-4,299.82	-1,459.96	4,510.48	0.00	0.00	0.00
12,100.00	90.00	179.70	6,420.96	-4,399.82	-1,459.44	4,608.14	0.00	0.00	0.00
12,200.00	90.00	179.70	6,420.96	-4,499.82	-1,458.93	4,705.80	0.00	0.00	0.00
12,300.00	90.00	179.70	6,420.96	-4,599.82	-1,458.41	4,803.46	0.00	0.00	0.00
12,400.00	90.00	179.70	6,420.95	-4,699.81	-1,457.90	4,901.13	0.00	0.00	0.00
12,500.00	90.00	179.70	6,420.95	-4,799.81	-1,457.38	4,998.79	0.00	0.00	0.00
12,600.00	90.00	179.70	6,420.95	-4,899.81	-1,456.86	5,096.45	0.00	0.00	0.00
12,700.00	90.00	179.70	6,420.95	-4,999.81	-1,456.35	5,194.12	0.00	0.00	0.00
12,800.00	90.00	179.70	6,420.95	-5,099.81	-1,455.83	5,291.78	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well CREIGHTON 11S-15-1N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5104.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5104.00usft
Site:	Sec 11-T9N-R60W	North Reference:	True
Well:	CREIGHTON 11S-15-1N	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)	
12,900.00	90.00	179.70	6,420.95	-5,199.81	-1,455.32	5,389.44	0.00	0.00	0.00	
13,000.00	90.00	179.70	6,420.95	-5,299.81	-1,454.80	5,487.10	0.00	0.00	0.00	
13,100.00	90.00	179.70	6,420.95	-5,399.80	-1,454.28	5,584.77	0.00	0.00	0.00	
13,200.00	90.00	179.70	6,420.95	-5,499.80	-1,453.77	5,682.43	0.00	0.00	0.00	
13,300.00	90.00	179.70	6,420.95	-5,599.80	-1,453.25	5,780.09	0.00	0.00	0.00	
13,400.00	90.00	179.70	6,420.95	-5,699.80	-1,452.74	5,877.75	0.00	0.00	0.00	
13,500.00	90.00	179.70	6,420.94	-5,799.80	-1,452.22	5,975.42	0.00	0.00	0.00	
13,600.00	90.00	179.70	6,420.94	-5,899.80	-1,451.71	6,073.08	0.00	0.00	0.00	
13,700.00	90.00	179.70	6,420.94	-5,999.80	-1,451.19	6,170.74	0.00	0.00	0.00	
13,800.00	90.00	179.70	6,420.94	-6,099.80	-1,450.67	6,268.41	0.00	0.00	0.00	
13,900.00	90.00	179.70	6,420.94	-6,199.79	-1,450.16	6,366.07	0.00	0.00	0.00	
14,000.00	90.00	179.70	6,420.94	-6,299.79	-1,449.64	6,463.73	0.00	0.00	0.00	
14,100.00	90.00	179.70	6,420.94	-6,399.79	-1,449.13	6,561.39	0.00	0.00	0.00	
14,200.00	90.00	179.70	6,420.94	-6,499.79	-1,448.61	6,659.06	0.00	0.00	0.00	
14,300.00	90.00	179.70	6,420.94	-6,599.79	-1,448.09	6,756.72	0.00	0.00	0.00	
14,400.00	90.00	179.70	6,420.94	-6,699.79	-1,447.58	6,854.38	0.00	0.00	0.00	
14,441.05	90.00	179.70	6,421.00	-6,740.84	-1,447.12	6,894.42	0.00	0.00	0.00	
TD at 14441.05										

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										
CREIGHTON 11S-1N - F	0.00	0.00	6,421.00	-6,740.84	-1,447.12	1,519,693.16	3,396,895.80	40° 45' 4.122 N	104° 4' 2.824 W	
- plan hits target center										
- Point										
CREIGHTON 11S-1N - L	0.00	0.00	6,421.00	591.00	-1,485.19	1,527,023.41	3,396,738.86	40° 46' 16.568 N	104° 4' 3.324 W	
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,870.83	1,805.00	PARKMAN				
4,059.20	3,810.00	SUSSEX				
4,255.67	3,990.00	SHANNON				
6,640.74	6,240.00	SHARON SPRINGS				
6,720.19	6,294.00	NIOBRARA				
7,001.90	6,411.00	NIO B TARGET				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well CREIGHTON 11S-15-1N
Company:	8 NORTH LLC	TVD Reference:	KB 25' @ 5104.00usft
Project:	Weld County	MD Reference:	KB 25' @ 5104.00usft
Site:	Sec 11-T9N-R60W	North Reference:	True
Well:	CREIGHTON 11S-15-1N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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
1,481.11	1,447.94	147.89	-189.08	Start 3516.81 hold at 1481.11 MD
4,997.93	4,670.06	1,016.11	-1,299.07	Start Drop -2.00
6,179.04	5,818.00	1,164.00	-1,488.15	Start 30.00 hold at 6179.04 MD
6,209.04	5,848.00	1,164.00	-1,488.15	Start DLS 10.00 TFO 179.70
7,109.11	6,421.00	591.00	-1,485.19	Start 7331.94 hold at 7109.11 MD
14,441.05	6,421.00	-6,740.84	-1,447.12	TD at 14441.05