

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-10N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

18 January, 2018



Project: Broomfield County
Site: Sec 9-T1S-R68W
Well: NORTHWEST A S20-25-10N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

PROJECT DETAILS: Broomfield 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: 8.25°
Magnetic Field
Strength: 52081.9nT
Dip Angle: 66.47°
Date: 1/4/2018
Model: IGRF2015

WELL DETAILS: NORTHWEST A S20-25-10N

+N/-S	+E/-W	Northing	Easting	5293.00	Latitude	Longitude	Slot
0.00	0.00	1237086.59	3136490.78		39° 58' 59.369 N	105° 0' 46.505 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	900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
3	2860.53	39.21	290.16	2711.04	222.37	-605.53	2.00	290.16	-38.64	
4	6698.06	39.21	290.16	5684.46	1058.64	-2882.82	0.00	0.00	-183.97	
5	8658.58	0.00	0.00	7495.50	1281.01	-3488.35	2.00	180.00	-222.61	
6	8688.58	0.00	0.00	7525.50	1281.01	-3488.35	0.00	0.00	-222.61	
7	9438.64	90.00	179.80	8003.00	803.51	-3486.70	12.00	179.80	234.20	NORTHWEST A S20-10N - LP
8	21702.00	90.00	179.80	8003.00	-11459.77	-3444.69	0.00	0.00	11966.30	NORTHWEST A S20-10N - PBHL

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
5122.00	5972.14	SUSSEX
7825.00	9012.32	NIORARA
7993.00	9340.74	NIO B TARGET

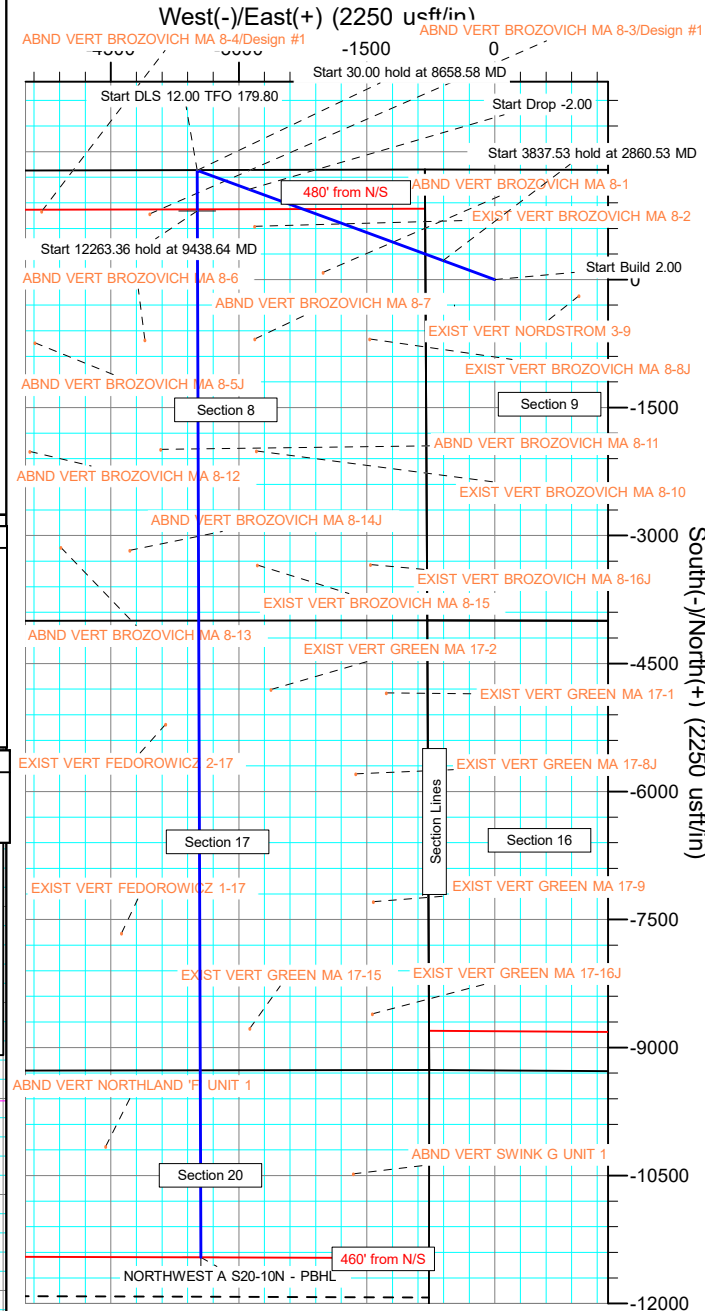
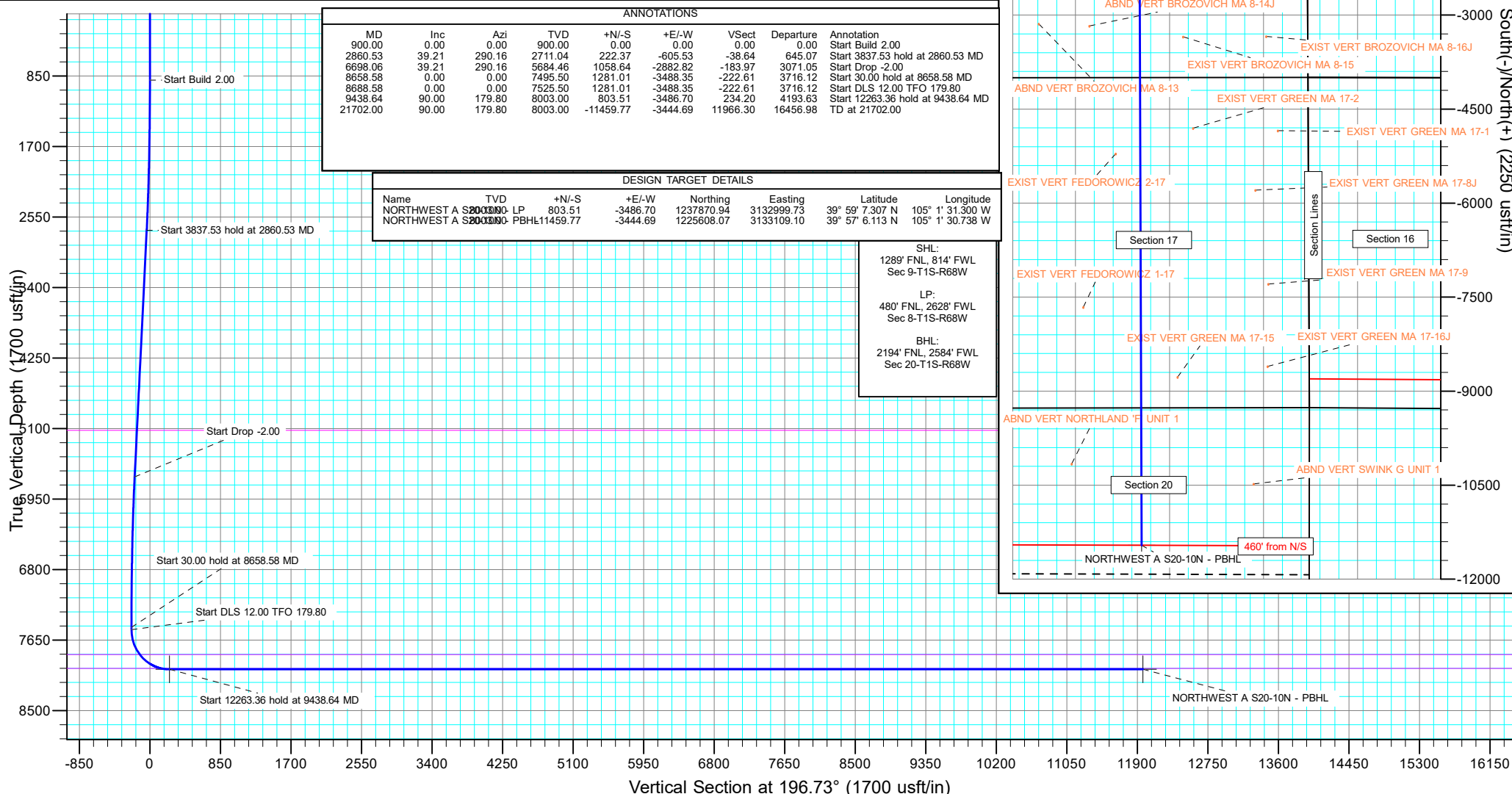
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	Start Build 2.00
2860.53	39.21	290.16	2711.04	222.37	-605.53	-38.64	645.07	Start 3837.53 hold at 2860.53 MD
6698.06	39.21	290.16	5684.46	1058.64	-2882.82	-183.97	3071.05	Start Drop -2.00
8658.58	0.00	0.00	7495.50	1281.01	-3488.35	-222.61	3716.12	Start 30.00 hold at 8658.58 MD
8688.58	0.00	0.00	7525.50	1281.01	-3488.35	-222.61	3716.12	Start DLS 12.00 TFO 179.80
9438.64	90.00	179.80	8003.00	803.51	-3486.70	234.20	4193.63	Start 12263.36 hold at 9438.64 MD
21702.00	90.00	179.80	8003.00	-11459.77	-3444.69	11966.30	16456.98	TD at 21702.00

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
NORTHWEST A S20-10N - LP	803.51	-3486.70	1237870.94	3132999.73	39° 59' 7.307 N	105° 1' 31.300 W	
NORTHWEST A S20-10N - PBHL	11459.77	-3444.69	1225608.07	3133109.10	39° 57' 6.113 N	105° 1' 30.738 W	

SHL:
1289' FNL, 814' FWL
Sec 9-T1S-R68W
LP:
480' FNL, 2628' FWL
Sec 8-T1S-R68W
BHL:
2194' FNL, 2584' FWL
Sec 20-T1S-R68W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-10N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Project	Broomfield 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 9-T1S-R68W			
Site Position:		Northing:	1,238,372.37 usft	Latitude:	39° 59' 12.120 N
From:	Lat/Long	Easting:	3,135,664.83 usft	Longitude:	105° 0' 57.025 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.31 °

Well	NORTHWEST A S20-25-10N					
Well Position	+N/-S	-1,290.27 usft	Northing:	1,237,086.59 usft	Latitude:	39° 58' 59.369 N
	+E/-W	818.92 usft	Easting:	3,136,490.79 usft	Longitude:	105° 0' 46.505 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,293.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/4/2018	8.25	66.47	52,081.93053752

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	196.73

Plan Survey Tool Program	Date	1/18/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,701.04	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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,860.53	39.21	290.16	2,711.04	222.37	-605.53	2.00	2.00	0.00	290.16	
6,698.06	39.21	290.16	5,684.46	1,058.64	-2,882.82	0.00	0.00	0.00	0.00	
8,658.58	0.00	0.00	7,495.50	1,281.01	-3,488.35	2.00	-2.00	0.00	180.00	
8,688.58	0.00	0.00	7,525.50	1,281.01	-3,488.35	0.00	0.00	0.00	0.00	
9,438.64	90.00	179.80	8,003.00	803.51	-3,486.70	12.00	12.00	23.97	179.80	NORTHWEST A S20-
21,702.00	90.00	179.80	8,003.00	-11,459.77	-3,444.69	0.00	0.00	0.00	0.00	NORTHWEST A S20-

Planning Report

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Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,000.00	2.00	290.16	999.98	0.60	-1.64	-0.10	2.00	2.00	0.00
1,100.00	4.00	290.16	1,099.84	2.41	-6.55	-0.42	2.00	2.00	0.00
1,200.00	6.00	290.16	1,199.45	5.41	-14.73	-0.94	2.00	2.00	0.00
1,300.00	8.00	290.16	1,298.70	9.61	-26.17	-1.67	2.00	2.00	0.00
1,400.00	10.00	290.16	1,397.47	15.00	-40.86	-2.61	2.00	2.00	0.00
1,500.00	12.00	290.16	1,495.62	21.58	-58.77	-3.75	2.00	2.00	0.00
1,600.00	14.00	290.16	1,593.06	29.33	-79.88	-5.10	2.00	2.00	0.00
1,700.00	16.00	290.16	1,689.64	38.26	-104.18	-6.65	2.00	2.00	0.00
1,800.00	18.00	290.16	1,785.27	48.33	-131.62	-8.40	2.00	2.00	0.00
1,900.00	20.00	290.16	1,879.82	59.56	-162.18	-10.35	2.00	2.00	0.00
2,000.00	22.00	290.16	1,973.17	71.91	-195.82	-12.50	2.00	2.00	0.00
2,100.00	24.00	290.16	2,065.21	85.38	-232.49	-14.84	2.00	2.00	0.00
2,200.00	26.00	290.16	2,155.84	99.95	-272.16	-17.37	2.00	2.00	0.00
2,300.00	28.00	290.16	2,244.94	115.59	-314.78	-20.09	2.00	2.00	0.00
2,400.00	30.00	290.16	2,332.39	132.31	-360.28	-22.99	2.00	2.00	0.00
2,500.00	32.00	290.16	2,418.11	150.06	-408.63	-26.08	2.00	2.00	0.00
2,600.00	34.00	290.16	2,501.97	168.83	-459.75	-29.34	2.00	2.00	0.00
2,700.00	36.00	290.16	2,583.88	188.60	-513.59	-32.78	2.00	2.00	0.00
2,800.00	38.00	290.16	2,663.74	209.35	-570.08	-36.38	2.00	2.00	0.00
2,860.53	39.21	290.16	2,711.04	222.37	-605.53	-38.64	2.00	2.00	0.00
Start 3837.53 hold at 2860.53 MD									
2,900.00	39.21	290.16	2,741.62	230.97	-628.96	-40.14	0.00	0.00	0.00
3,000.00	39.21	290.16	2,819.11	252.76	-688.30	-43.92	0.00	0.00	0.00
3,100.00	39.21	290.16	2,896.59	274.55	-747.64	-47.71	0.00	0.00	0.00
3,200.00	39.21	290.16	2,974.07	296.34	-806.98	-51.50	0.00	0.00	0.00
3,300.00	39.21	290.16	3,051.55	318.14	-866.33	-55.28	0.00	0.00	0.00
3,400.00	39.21	290.16	3,129.04	339.93	-925.67	-59.07	0.00	0.00	0.00
3,500.00	39.21	290.16	3,206.52	361.72	-985.01	-62.86	0.00	0.00	0.00
3,600.00	39.21	290.16	3,284.00	383.51	-1,044.35	-66.65	0.00	0.00	0.00
3,700.00	39.21	290.16	3,361.49	405.31	-1,103.70	-70.43	0.00	0.00	0.00
3,800.00	39.21	290.16	3,438.97	427.10	-1,163.04	-74.22	0.00	0.00	0.00
3,900.00	39.21	290.16	3,516.45	448.89	-1,222.38	-78.01	0.00	0.00	0.00
4,000.00	39.21	290.16	3,593.93	470.68	-1,281.72	-81.79	0.00	0.00	0.00
4,100.00	39.21	290.16	3,671.42	492.47	-1,341.07	-85.58	0.00	0.00	0.00
4,200.00	39.21	290.16	3,748.90	514.27	-1,400.41	-89.37	0.00	0.00	0.00
4,300.00	39.21	290.16	3,826.38	536.06	-1,459.75	-93.15	0.00	0.00	0.00
4,400.00	39.21	290.16	3,903.86	557.85	-1,519.09	-96.94	0.00	0.00	0.00
4,500.00	39.21	290.16	3,981.35	579.64	-1,578.44	-100.73	0.00	0.00	0.00
4,600.00	39.21	290.16	4,058.83	601.43	-1,637.78	-104.52	0.00	0.00	0.00
4,700.00	39.21	290.16	4,136.31	623.23	-1,697.12	-108.30	0.00	0.00	0.00
4,800.00	39.21	290.16	4,213.80	645.02	-1,756.46	-112.09	0.00	0.00	0.00
4,900.00	39.21	290.16	4,291.28	666.81	-1,815.81	-115.88	0.00	0.00	0.00

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Well:	NORTHWEST A S20-25-10N	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)	
5,000.00	39.21	290.16	4,368.76	688.60	-1,875.15	-119.66	0.00	0.00	0.00	
5,100.00	39.21	290.16	4,446.24	710.39	-1,934.49	-123.45	0.00	0.00	0.00	
5,200.00	39.21	290.16	4,523.73	732.19	-1,993.83	-127.24	0.00	0.00	0.00	
5,300.00	39.21	290.16	4,601.21	753.98	-2,053.18	-131.02	0.00	0.00	0.00	
5,400.00	39.21	290.16	4,678.69	775.77	-2,112.52	-134.81	0.00	0.00	0.00	
5,500.00	39.21	290.16	4,756.17	797.56	-2,171.86	-138.60	0.00	0.00	0.00	
5,600.00	39.21	290.16	4,833.66	819.35	-2,231.20	-142.38	0.00	0.00	0.00	
5,700.00	39.21	290.16	4,911.14	841.15	-2,290.55	-146.17	0.00	0.00	0.00	
5,800.00	39.21	290.16	4,988.62	862.94	-2,349.89	-149.96	0.00	0.00	0.00	
5,900.00	39.21	290.16	5,066.11	884.73	-2,409.23	-153.75	0.00	0.00	0.00	
5,972.14	39.21	290.16	5,122.00	900.45	-2,452.04	-156.48	0.00	0.00	0.00	
SUSSEX										
6,000.00	39.21	290.16	5,143.59	906.52	-2,468.57	-157.53	0.00	0.00	0.00	
6,100.00	39.21	290.16	5,221.07	928.31	-2,527.92	-161.32	0.00	0.00	0.00	
6,200.00	39.21	290.16	5,298.55	950.11	-2,587.26	-165.11	0.00	0.00	0.00	
6,300.00	39.21	290.16	5,376.04	971.90	-2,646.60	-168.89	0.00	0.00	0.00	
6,400.00	39.21	290.16	5,453.52	993.69	-2,705.94	-172.68	0.00	0.00	0.00	
6,500.00	39.21	290.16	5,531.00	1,015.48	-2,765.29	-176.47	0.00	0.00	0.00	
6,600.00	39.21	290.16	5,608.48	1,037.27	-2,824.63	-180.25	0.00	0.00	0.00	
6,698.06	39.21	290.16	5,684.46	1,058.64	-2,882.82	-183.97	0.00	0.00	0.00	
Start Drop -2.00										
6,700.00	39.17	290.16	5,685.97	1,059.07	-2,883.97	-184.04	2.00	-2.00	0.00	
6,800.00	37.17	290.16	5,764.58	1,080.37	-2,941.98	-187.74	2.00	-2.00	0.00	
6,900.00	35.17	290.16	5,845.30	1,100.71	-2,997.38	-191.28	2.00	-2.00	0.00	
7,000.00	33.17	290.16	5,928.03	1,120.08	-3,050.10	-194.64	2.00	-2.00	0.00	
7,100.00	31.17	290.16	6,012.67	1,138.43	-3,100.08	-197.83	2.00	-2.00	0.00	
7,200.00	29.17	290.16	6,099.12	1,155.75	-3,147.26	-200.84	2.00	-2.00	0.00	
7,300.00	27.17	290.16	6,187.27	1,172.03	-3,191.58	-203.67	2.00	-2.00	0.00	
7,400.00	25.17	290.16	6,277.01	1,187.23	-3,232.98	-206.31	2.00	-2.00	0.00	
7,500.00	23.17	290.16	6,368.24	1,201.34	-3,271.41	-208.77	2.00	-2.00	0.00	
7,600.00	21.17	290.16	6,460.84	1,214.35	-3,306.84	-211.03	2.00	-2.00	0.00	
7,700.00	19.17	290.16	6,554.70	1,226.24	-3,339.20	-213.09	2.00	-2.00	0.00	
7,800.00	17.17	290.16	6,649.71	1,236.99	-3,368.48	-214.96	2.00	-2.00	0.00	
7,900.00	15.17	290.16	6,745.75	1,246.59	-3,394.62	-216.63	2.00	-2.00	0.00	
8,000.00	13.17	290.16	6,842.70	1,255.03	-3,417.60	-218.10	2.00	-2.00	0.00	
8,100.00	11.17	290.16	6,940.45	1,262.30	-3,437.39	-219.36	2.00	-2.00	0.00	
8,200.00	9.17	290.16	7,038.87	1,268.38	-3,453.97	-220.42	2.00	-2.00	0.00	
8,300.00	7.17	290.16	7,137.85	1,273.28	-3,467.31	-221.27	2.00	-2.00	0.00	
8,400.00	5.17	290.16	7,237.27	1,276.99	-3,477.40	-221.91	2.00	-2.00	0.00	
8,500.00	3.17	290.16	7,337.00	1,279.50	-3,484.23	-222.35	2.00	-2.00	0.00	
8,600.00	1.17	290.16	7,436.92	1,280.80	-3,487.79	-222.57	2.00	-2.00	0.00	
8,658.58	0.00	0.00	7,495.50	1,281.01	-3,488.35	-222.61	2.00	-2.00	0.00	
Start 30.00 hold at 8658.58 MD										
8,688.58	0.00	0.00	7,525.50	1,281.01	-3,488.35	-222.61	0.00	0.00	0.00	
Start DLS 12.00 TFO 179.80										
8,700.00	1.37	179.80	7,536.92	1,280.87	-3,488.35	-222.48	12.00	12.00	0.00	
8,725.00	4.37	179.80	7,561.88	1,279.62	-3,488.35	-221.28	12.00	12.00	0.00	
8,750.00	7.37	179.80	7,586.75	1,277.07	-3,488.34	-218.84	12.00	12.00	0.00	
8,775.00	10.37	179.80	7,611.45	1,273.21	-3,488.32	-215.15	12.00	12.00	0.00	
8,800.00	13.37	179.80	7,635.91	1,268.07	-3,488.31	-210.23	12.00	12.00	0.00	
8,825.00	16.37	179.80	7,660.07	1,261.66	-3,488.28	-204.09	12.00	12.00	0.00	
8,850.00	19.37	179.80	7,683.86	1,253.99	-3,488.26	-196.76	12.00	12.00	0.00	
8,875.00	22.37	179.80	7,707.22	1,245.08	-3,488.23	-188.24	12.00	12.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-10N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	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)	
8,900.00	25.37	179.80	7,730.08	1,234.97	-3,488.19	-178.56	12.00	12.00	0.00	
8,925.00	28.37	179.80	7,752.38	1,223.67	-3,488.15	-167.75	12.00	12.00	0.00	
8,950.00	31.37	179.80	7,774.05	1,211.22	-3,488.11	-155.84	12.00	12.00	0.00	
8,975.00	34.37	179.80	7,795.05	1,197.66	-3,488.06	-142.87	12.00	12.00	0.00	
9,000.00	37.37	179.80	7,815.31	1,183.01	-3,488.01	-128.86	12.00	12.00	0.00	
9,012.32	38.85	179.80	7,825.00	1,175.41	-3,487.98	-121.58	12.00	12.00	0.00	
NIOBRARA										
9,025.00	40.37	179.80	7,834.77	1,167.32	-3,487.96	-113.85	12.00	12.00	0.00	
9,050.00	43.37	179.80	7,853.38	1,150.64	-3,487.90	-97.89	12.00	12.00	0.00	
9,075.00	46.37	179.80	7,871.10	1,133.01	-3,487.84	-81.02	12.00	12.00	0.00	
9,100.00	49.37	179.80	7,887.87	1,114.47	-3,487.77	-63.28	12.00	12.00	0.00	
9,125.00	52.37	179.80	7,903.65	1,095.08	-3,487.71	-44.73	12.00	12.00	0.00	
9,150.00	55.37	179.80	7,918.39	1,074.89	-3,487.64	-25.42	12.00	12.00	0.00	
9,175.00	58.37	179.80	7,932.05	1,053.96	-3,487.56	-5.40	12.00	12.00	0.00	
9,200.00	61.37	179.80	7,944.60	1,032.34	-3,487.49	15.29	12.00	12.00	0.00	
9,225.00	64.37	179.80	7,956.00	1,010.09	-3,487.41	36.57	12.00	12.00	0.00	
9,250.00	67.37	179.80	7,966.22	987.28	-3,487.33	58.39	12.00	12.00	0.00	
9,275.00	70.36	179.80	7,975.23	963.97	-3,487.25	80.70	12.00	12.00	0.00	
9,300.00	73.36	179.80	7,983.01	940.21	-3,487.17	103.42	12.00	12.00	0.00	
9,325.00	76.36	179.80	7,989.54	916.08	-3,487.09	126.51	12.00	12.00	0.00	
9,340.74	78.25	179.80	7,993.00	900.72	-3,487.03	141.20	12.00	12.00	0.00	
NIO B TARGET										
9,350.00	79.36	179.80	7,994.80	891.64	-3,487.00	149.89	12.00	12.00	0.00	
9,375.00	82.36	179.80	7,998.77	866.96	-3,486.92	173.50	12.00	12.00	0.00	
9,400.00	85.36	179.80	8,001.44	842.11	-3,486.83	197.27	12.00	12.00	0.00	
9,425.00	88.36	179.80	8,002.81	817.15	-3,486.74	221.15	12.00	12.00	0.00	
9,438.64	90.00	179.80	8,003.00	803.51	-3,486.70	234.20	12.00	12.00	0.00	
Start 12263.36 hold at 9438.64 MD										
9,500.00	90.00	179.80	8,003.00	742.15	-3,486.48	292.90	0.00	0.00	0.00	
9,600.00	90.00	179.80	8,003.00	642.15	-3,486.14	388.57	0.00	0.00	0.00	
9,700.00	90.00	179.80	8,003.00	542.15	-3,485.79	484.24	0.00	0.00	0.00	
9,800.00	90.00	179.80	8,003.00	442.15	-3,485.45	579.90	0.00	0.00	0.00	
9,900.00	90.00	179.80	8,003.00	342.15	-3,485.10	675.57	0.00	0.00	0.00	
10,000.00	90.00	179.80	8,003.00	242.15	-3,484.75	771.24	0.00	0.00	0.00	
10,100.00	90.00	179.80	8,003.00	142.16	-3,484.41	866.90	0.00	0.00	0.00	
10,200.00	90.00	179.80	8,003.00	42.16	-3,484.06	962.57	0.00	0.00	0.00	
10,300.00	90.00	179.80	8,003.00	-57.84	-3,483.71	1,058.24	0.00	0.00	0.00	
10,400.00	90.00	179.80	8,002.99	-157.84	-3,483.37	1,153.90	0.00	0.00	0.00	
10,500.00	90.00	179.80	8,002.99	-257.84	-3,483.02	1,249.57	0.00	0.00	0.00	
10,600.00	90.00	179.80	8,002.99	-357.84	-3,482.67	1,345.24	0.00	0.00	0.00	
10,700.00	90.00	179.80	8,002.99	-457.84	-3,482.33	1,440.90	0.00	0.00	0.00	
10,800.00	90.00	179.80	8,002.99	-557.84	-3,481.98	1,536.57	0.00	0.00	0.00	
10,900.00	90.00	179.80	8,002.99	-657.84	-3,481.64	1,632.24	0.00	0.00	0.00	
11,000.00	90.00	179.80	8,002.99	-757.84	-3,481.29	1,727.90	0.00	0.00	0.00	
11,100.00	90.00	179.80	8,002.99	-857.84	-3,480.94	1,823.57	0.00	0.00	0.00	
11,200.00	90.00	179.80	8,002.99	-957.84	-3,480.60	1,919.24	0.00	0.00	0.00	
11,300.00	90.00	179.80	8,002.99	-1,057.84	-3,480.25	2,014.90	0.00	0.00	0.00	
11,400.00	90.00	179.80	8,002.99	-1,157.84	-3,479.90	2,110.57	0.00	0.00	0.00	
11,500.00	90.00	179.80	8,002.99	-1,257.84	-3,479.56	2,206.24	0.00	0.00	0.00	
11,600.00	90.00	179.80	8,002.99	-1,357.84	-3,479.21	2,301.90	0.00	0.00	0.00	
11,700.00	90.00	179.80	8,002.99	-1,457.83	-3,478.87	2,397.57	0.00	0.00	0.00	
11,800.00	90.00	179.80	8,002.99	-1,557.83	-3,478.52	2,493.24	0.00	0.00	0.00	
11,900.00	90.00	179.80	8,002.99	-1,657.83	-3,478.17	2,588.91	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-10N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	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)	
12,000.00	90.00	179.80	8,002.98	-1,757.83	-3,477.83	2,684.57	0.00	0.00	0.00	
12,100.00	90.00	179.80	8,002.98	-1,857.83	-3,477.48	2,780.24	0.00	0.00	0.00	
12,200.00	90.00	179.80	8,002.98	-1,957.83	-3,477.13	2,875.91	0.00	0.00	0.00	
12,300.00	90.00	179.80	8,002.98	-2,057.83	-3,476.79	2,971.57	0.00	0.00	0.00	
12,400.00	90.00	179.80	8,002.98	-2,157.83	-3,476.44	3,067.24	0.00	0.00	0.00	
12,500.00	90.00	179.80	8,002.98	-2,257.83	-3,476.10	3,162.91	0.00	0.00	0.00	
12,600.00	90.00	179.80	8,002.98	-2,357.83	-3,475.75	3,258.57	0.00	0.00	0.00	
12,700.00	90.00	179.80	8,002.98	-2,457.83	-3,475.40	3,354.24	0.00	0.00	0.00	
12,800.00	90.00	179.80	8,002.98	-2,557.83	-3,475.06	3,449.91	0.00	0.00	0.00	
12,900.00	90.00	179.80	8,002.98	-2,657.83	-3,474.71	3,545.57	0.00	0.00	0.00	
13,000.00	90.00	179.80	8,002.98	-2,757.83	-3,474.36	3,641.24	0.00	0.00	0.00	
13,100.00	90.00	179.80	8,002.98	-2,857.83	-3,474.02	3,736.91	0.00	0.00	0.00	
13,200.00	90.00	179.80	8,002.98	-2,957.83	-3,473.67	3,832.57	0.00	0.00	0.00	
13,300.00	90.00	179.80	8,002.98	-3,057.83	-3,473.33	3,928.24	0.00	0.00	0.00	
13,400.00	90.00	179.80	8,002.98	-3,157.82	-3,472.98	4,023.91	0.00	0.00	0.00	
13,500.00	90.00	179.80	8,002.98	-3,257.82	-3,472.63	4,119.57	0.00	0.00	0.00	
13,600.00	90.00	179.80	8,002.98	-3,357.82	-3,472.29	4,215.24	0.00	0.00	0.00	
13,700.00	90.00	179.80	8,002.97	-3,457.82	-3,471.94	4,310.91	0.00	0.00	0.00	
13,800.00	90.00	179.80	8,002.97	-3,557.82	-3,471.59	4,406.57	0.00	0.00	0.00	
13,900.00	90.00	179.80	8,002.97	-3,657.82	-3,471.25	4,502.24	0.00	0.00	0.00	
14,000.00	90.00	179.80	8,002.97	-3,757.82	-3,470.90	4,597.91	0.00	0.00	0.00	
14,100.00	90.00	179.80	8,002.97	-3,857.82	-3,470.55	4,693.58	0.00	0.00	0.00	
14,200.00	90.00	179.80	8,002.97	-3,957.82	-3,470.21	4,789.24	0.00	0.00	0.00	
14,300.00	90.00	179.80	8,002.97	-4,057.82	-3,469.86	4,884.91	0.00	0.00	0.00	
14,400.00	90.00	179.80	8,002.97	-4,157.82	-3,469.52	4,980.58	0.00	0.00	0.00	
14,500.00	90.00	179.80	8,002.97	-4,257.82	-3,469.17	5,076.24	0.00	0.00	0.00	
14,600.00	90.00	179.80	8,002.97	-4,357.82	-3,468.82	5,171.91	0.00	0.00	0.00	
14,700.00	90.00	179.80	8,002.97	-4,457.82	-3,468.48	5,267.58	0.00	0.00	0.00	
14,800.00	90.00	179.80	8,002.97	-4,557.82	-3,468.13	5,363.24	0.00	0.00	0.00	
14,900.00	90.00	179.80	8,002.97	-4,657.82	-3,467.78	5,458.91	0.00	0.00	0.00	
15,000.00	90.00	179.80	8,002.97	-4,757.82	-3,467.44	5,554.58	0.00	0.00	0.00	
15,100.00	90.00	179.80	8,002.97	-4,857.81	-3,467.09	5,650.24	0.00	0.00	0.00	
15,200.00	90.00	179.80	8,002.97	-4,957.81	-3,466.75	5,745.91	0.00	0.00	0.00	
15,300.00	90.00	179.80	8,002.97	-5,057.81	-3,466.40	5,841.58	0.00	0.00	0.00	
15,400.00	90.00	179.80	8,002.96	-5,157.81	-3,466.05	5,937.24	0.00	0.00	0.00	
15,500.00	90.00	179.80	8,002.96	-5,257.81	-3,465.71	6,032.91	0.00	0.00	0.00	
15,600.00	90.00	179.80	8,002.96	-5,357.81	-3,465.36	6,128.58	0.00	0.00	0.00	
15,700.00	90.00	179.80	8,002.96	-5,457.81	-3,465.01	6,224.24	0.00	0.00	0.00	
15,800.00	90.00	179.80	8,002.96	-5,557.81	-3,464.67	6,319.91	0.00	0.00	0.00	
15,900.00	90.00	179.80	8,002.96	-5,657.81	-3,464.32	6,415.58	0.00	0.00	0.00	
16,000.00	90.00	179.80	8,002.96	-5,757.81	-3,463.98	6,511.25	0.00	0.00	0.00	
16,100.00	90.00	179.80	8,002.96	-5,857.81	-3,463.63	6,606.91	0.00	0.00	0.00	
16,200.00	90.00	179.80	8,002.96	-5,957.81	-3,463.28	6,702.58	0.00	0.00	0.00	
16,300.00	90.00	179.80	8,002.96	-6,057.81	-3,462.94	6,798.25	0.00	0.00	0.00	
16,400.00	90.00	179.80	8,002.96	-6,157.81	-3,462.59	6,893.91	0.00	0.00	0.00	
16,500.00	90.00	179.80	8,002.96	-6,257.81	-3,462.24	6,989.58	0.00	0.00	0.00	
16,600.00	90.00	179.80	8,002.96	-6,357.81	-3,461.90	7,085.25	0.00	0.00	0.00	
16,700.00	90.00	179.80	8,002.96	-6,457.80	-3,461.55	7,180.91	0.00	0.00	0.00	
16,800.00	90.00	179.80	8,002.96	-6,557.80	-3,461.21	7,276.58	0.00	0.00	0.00	
16,900.00	90.00	179.80	8,002.96	-6,657.80	-3,460.86	7,372.25	0.00	0.00	0.00	
17,000.00	90.00	179.80	8,002.95	-6,757.80	-3,460.51	7,467.91	0.00	0.00	0.00	
17,100.00	90.00	179.80	8,002.95	-6,857.80	-3,460.17	7,563.58	0.00	0.00	0.00	
17,200.00	90.00	179.80	8,002.95	-6,957.80	-3,459.82	7,659.25	0.00	0.00	0.00	
17,300.00	90.00	179.80	8,002.95	-7,057.80	-3,459.47	7,754.91	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-10N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	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)	
17,400.00	90.00	179.80	8,002.95	-7,157.80	-3,459.13	7,850.58	0.00	0.00	0.00	
17,500.00	90.00	179.80	8,002.95	-7,257.80	-3,458.78	7,946.25	0.00	0.00	0.00	
17,600.00	90.00	179.80	8,002.95	-7,357.80	-3,458.44	8,041.91	0.00	0.00	0.00	
17,700.00	90.00	179.80	8,002.95	-7,457.80	-3,458.09	8,137.58	0.00	0.00	0.00	
17,800.00	90.00	179.80	8,002.95	-7,557.80	-3,457.74	8,233.25	0.00	0.00	0.00	
17,900.00	90.00	179.80	8,002.95	-7,657.80	-3,457.40	8,328.91	0.00	0.00	0.00	
18,000.00	90.00	179.80	8,002.95	-7,757.80	-3,457.05	8,424.58	0.00	0.00	0.00	
18,100.00	90.00	179.80	8,002.95	-7,857.80	-3,456.70	8,520.25	0.00	0.00	0.00	
18,200.00	90.00	179.80	8,002.95	-7,957.80	-3,456.36	8,615.92	0.00	0.00	0.00	
18,300.00	90.00	179.80	8,002.95	-8,057.80	-3,456.01	8,711.58	0.00	0.00	0.00	
18,400.00	90.00	179.80	8,002.95	-8,157.79	-3,455.66	8,807.25	0.00	0.00	0.00	
18,500.00	90.00	179.80	8,002.95	-8,257.79	-3,455.32	8,902.92	0.00	0.00	0.00	
18,600.00	90.00	179.80	8,002.95	-8,357.79	-3,454.97	8,998.58	0.00	0.00	0.00	
18,700.00	90.00	179.80	8,002.94	-8,457.79	-3,454.63	9,094.25	0.00	0.00	0.00	
18,800.00	90.00	179.80	8,002.94	-8,557.79	-3,454.28	9,189.92	0.00	0.00	0.00	
18,900.00	90.00	179.80	8,002.94	-8,657.79	-3,453.93	9,285.58	0.00	0.00	0.00	
19,000.00	90.00	179.80	8,002.94	-8,757.79	-3,453.59	9,381.25	0.00	0.00	0.00	
19,100.00	90.00	179.80	8,002.94	-8,857.79	-3,453.24	9,476.92	0.00	0.00	0.00	
19,200.00	90.00	179.80	8,002.94	-8,957.79	-3,452.89	9,572.58	0.00	0.00	0.00	
19,300.00	90.00	179.80	8,002.94	-9,057.79	-3,452.55	9,668.25	0.00	0.00	0.00	
19,400.00	90.00	179.80	8,002.94	-9,157.79	-3,452.20	9,763.92	0.00	0.00	0.00	
19,500.00	90.00	179.80	8,002.94	-9,257.79	-3,451.86	9,859.58	0.00	0.00	0.00	
19,600.00	90.00	179.80	8,002.94	-9,357.79	-3,451.51	9,955.25	0.00	0.00	0.00	
19,700.00	90.00	179.80	8,002.94	-9,457.79	-3,451.16	10,050.92	0.00	0.00	0.00	
19,800.00	90.00	179.80	8,002.94	-9,557.79	-3,450.82	10,146.58	0.00	0.00	0.00	
19,900.00	90.00	179.80	8,002.94	-9,657.79	-3,450.47	10,242.25	0.00	0.00	0.00	
20,000.00	90.00	179.80	8,002.94	-9,757.79	-3,450.12	10,337.92	0.00	0.00	0.00	
20,100.00	90.00	179.80	8,002.94	-9,857.78	-3,449.78	10,433.59	0.00	0.00	0.00	
20,200.00	90.00	179.80	8,002.94	-9,957.78	-3,449.43	10,529.25	0.00	0.00	0.00	
20,300.00	90.00	179.80	8,002.94	-10,057.78	-3,449.09	10,624.92	0.00	0.00	0.00	
20,400.00	90.00	179.80	8,002.93	-10,157.78	-3,448.74	10,720.59	0.00	0.00	0.00	
20,500.00	90.00	179.80	8,002.93	-10,257.78	-3,448.39	10,816.25	0.00	0.00	0.00	
20,600.00	90.00	179.80	8,002.93	-10,357.78	-3,448.05	10,911.92	0.00	0.00	0.00	
20,700.00	90.00	179.80	8,002.93	-10,457.78	-3,447.70	11,007.59	0.00	0.00	0.00	
20,800.00	90.00	179.80	8,002.93	-10,557.78	-3,447.35	11,103.25	0.00	0.00	0.00	
20,900.00	90.00	179.80	8,002.93	-10,657.78	-3,447.01	11,198.92	0.00	0.00	0.00	
21,000.00	90.00	179.80	8,002.93	-10,757.78	-3,446.66	11,294.59	0.00	0.00	0.00	
21,702.00	90.00	179.80	8,003.00	-11,459.77	-3,444.69	11,966.30	0.00	0.00	0.00	
TD at 21702.00										

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										
NORTHWEST A S20-10	0.00	0.00	8,003.00	803.51	-3,486.70	1,237,870.94	3,132,999.73	39° 59' 7.307 N	105° 1' 31.300 W	
- plan hits target center										
- Point										
NORTHWEST A S20-10	0.00	0.00	8,003.00	-11,459.77	-3,444.69	1,225,608.07	3,133,109.10	39° 57' 6.113 N	105° 1' 30.738 W	
- plan hits target center										
- Point										

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-10N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-10N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,972.14	5,122.00	SUSSEX			
9,012.32	7,825.00	NIOBRARA			
9,340.74	7,993.00	NIO B TARGET			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
900.00	900.00	0.00	0.00	Start Build 2.00	
2,860.53	2,711.04	222.37	-605.53	Start 3837.53 hold at 2860.53 MD	
6,698.06	5,684.46	1,058.64	-2,882.82	Start Drop -2.00	
8,658.58	7,495.50	1,281.01	-3,488.35	Start 30.00 hold at 8658.58 MD	
8,688.58	7,525.50	1,281.01	-3,488.35	Start DLS 12.00 TFO 179.80	
9,438.64	8,003.00	803.51	-3,486.70	Start 12263.36 hold at 9438.64 MD	
21,702.00	8,003.00	-11,459.77	-3,444.69	TD at 21702.00	