

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-12N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

18 January, 2018



Project: Broomfield County
Site: Sec 9-T1S-R68W
Well: NORTHWEST A S20-25-12N
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: 52082.0snT
Dip Angle: 66.47°
Date: 1/4/2018
Model: IGRF2015

WELL DETAILS: NORTHWEST A S20-25-12N

+N/-S	+E/-W	Northing	Easting	5293.00	Latitude	Longitude	Slot
0.00	0.00	1237094.80	3136526.05		39° 58' 59.448 N	105° 0' 46.051 W	

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
5122.00	5769.38	SUSSEX
7825.00	8783.96	NIOBRARA
7993.00	9112.38	NIO B TARGET

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	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	
3	3139.09	36.78	293.41	3015.35	0.00	0.00	0.00	293.41	-91.38	
4	6591.12	36.78	293.41	5780.15	1047.79	-2420.22	0.00	0.00	-422.57	
5	8430.22	0.00	0.00	7495.50	1274.38	-2943.60	2.00	180.00	-513.96	
6	8460.22	0.00	0.00	7525.50	1274.38	-2943.60	0.00	0.00	-513.96	
7	9210.28	90.00	179.80	8003.00	796.88	-2941.96	12.00	179.80	-51.42	NORTHWEST A S20-12N - LP
8	17710.28	90.00	179.80	8002.95	-7703.07	-2912.79	0.00	0.00	8182.06	
9	18070.11	90.00	187.00	8002.95	-8062.03	-2934.13	2.00	90.00	8535.30	
10	18370.11	90.00	187.00	8002.95	-8359.79	-2970.69	0.00	0.00	8832.94	
11	18817.33	90.00	178.06	8002.95	-8806.13	-2990.39	2.00	-90.00	9270.49	NORTHWEST A S20-12N - PBHL
12	21482.42	90.00	178.06	8003.00	-11469.68	-2899.96	0.00	0.00	11830.61	NORTHWEST A S20-12N - PBHL

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	Start Build 2.00
3139.09	36.78	293.41	3015.35	226.59	-523.38	-91.38	570.32	Start 3452.03 hold at 3139.09 MD
6591.12	36.78	293.41	5780.15	1047.79	-2420.22	-422.57	2637.30	Start Drop -2.00
8430.22	0.00	0.00	7495.50	1274.38	-2943.60	-513.96	3207.62	Start 30.00 hold at 8430.22 MD
8460.22	0.00	0.00	7525.50	1274.38	-2943.60	-513.96	3207.62	Start DLS 12.00 TFO 179.80
9210.28	90.00	179.80	8003.00	796.88	-2941.96	-51.42	3685.12	Start 8500.00 hold at 9210.28 MD
17710.28	90.00	179.80	8002.95	-7703.07	-2912.79	8182.06	12185.12	Start DLS 2.00 TFO 90.00
18070.11	90.00	187.00	8002.95	-8062.03	-2934.13	8535.30	12544.95	Start 300.00 hold at 18070.11 MD
18370.11	90.00	187.00	8002.95	-8359.79	-2970.69	8832.94	12844.95	Start Turn -2.00
18817.33	90.00	178.06	8002.95	-8806.13	-2990.39	9270.49	13292.18	Start 2665.08 hold at 18817.33 MD
21482.42	90.00	178.06	8002.95	-11469.68	-2899.96	11830.61	15957.26	TD at 21482.42

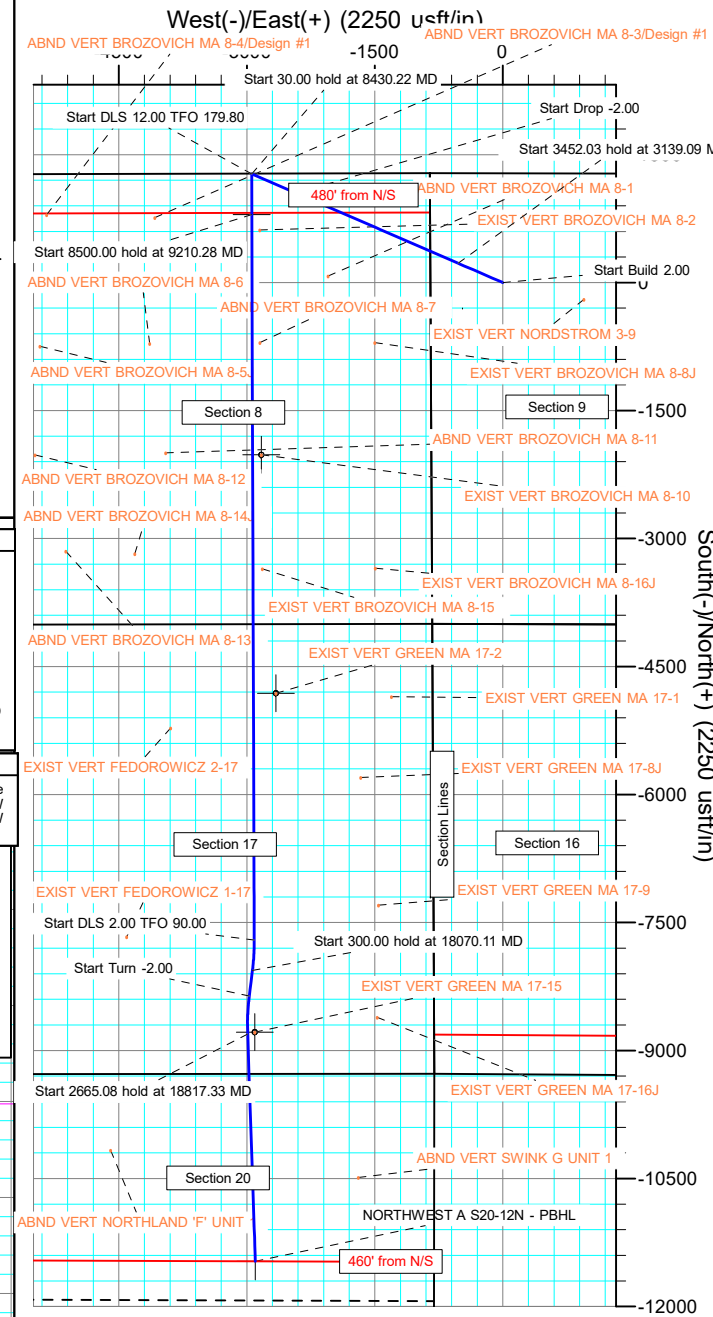
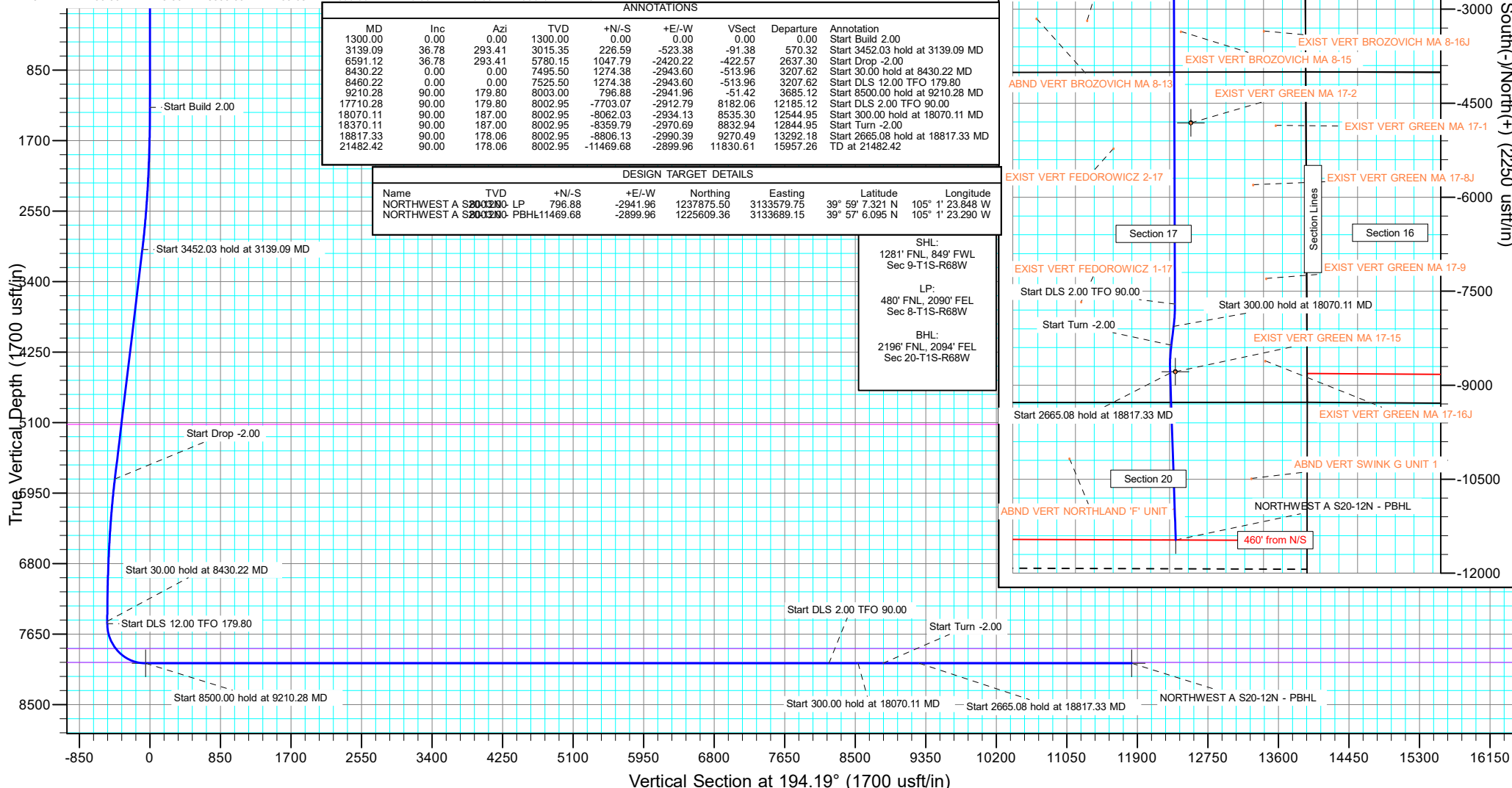
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
NORTHWEST A S20-12N - LP	796.88	-2941.96	1237875.50	3133579.75	39° 59' 7.321 N	105° 1' 23.848 W	
NORTHWEST A S20-12N - PBHL	11469.68	-2899.96	1225609.36	3133689.15	39° 57' 6.095 N	105° 1' 23.290 W	

SHL:
1281' FNL, 849' FWL
Sec 9-T1S-R68W

LP:
480' FNL, 2090' FEL
Sec 8-T1S-R68W

BHL:
2196' FNL, 2094' FEL
Sec 20-T1S-R68W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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 S20-25-12N					
Well Position	+N/-S	-1,282.26 usft	Northing:	1,237,094.80 usft	Latitude:	39° 58' 59.448 N
	+E/-W	854.23 usft	Easting:	3,136,526.05 usft	Longitude:	105° 0' 46.051 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	52,081.95561845

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	194.19	

Plan Survey Tool Program	Date	1/18/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	21,482.29	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG	
			OWSG MWD - Standard		

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 S20-25-12N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,139.09	36.78	293.41	3,015.35	226.59	-523.38	2.00	2.00	0.00	293.41	
6,591.12	36.78	293.41	5,780.15	1,047.79	-2,420.22	0.00	0.00	0.00	0.00	
8,430.22	0.00	0.00	7,495.50	1,274.38	-2,943.60	2.00	-2.00	0.00	180.00	
8,460.22	0.00	0.00	7,525.50	1,274.38	-2,943.60	0.00	0.00	0.00	0.00	
9,210.28	90.00	179.80	8,003.00	796.88	-2,941.96	12.00	12.00	23.97	179.80	NORTHWEST A S20-
17,710.28	90.00	179.80	8,002.95	-7,703.07	-2,912.79	0.00	0.00	0.00	0.00	
18,070.11	90.00	187.00	8,002.95	-8,062.03	-2,934.13	2.00	0.00	2.00	90.00	
18,370.11	90.00	187.00	8,002.95	-8,359.79	-2,970.69	0.00	0.00	0.00	0.00	
18,817.33	90.00	178.06	8,002.95	-8,806.13	-2,990.39	2.00	0.00	-2.00	-90.00	NORTHWEST A S20-
21,482.42	90.00	178.06	8,003.00	-11,469.68	-2,899.96	0.00	0.00	0.00	0.00	NORTHWEST A S20-

Planning Report

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Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-12N	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
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	2.00	293.41	1,399.98	0.69	-1.60	-0.28	2.00	2.00	0.00
1,500.00	4.00	293.41	1,499.84	2.77	-6.40	-1.12	2.00	2.00	0.00
1,600.00	6.00	293.41	1,599.45	6.24	-14.40	-2.51	2.00	2.00	0.00
1,700.00	8.00	293.41	1,698.70	11.08	-25.59	-4.47	2.00	2.00	0.00
1,800.00	10.00	293.41	1,797.47	17.29	-39.94	-6.97	2.00	2.00	0.00
1,900.00	12.00	293.41	1,895.62	24.87	-57.45	-10.03	2.00	2.00	0.00
2,000.00	14.00	293.41	1,993.06	33.81	-78.09	-13.63	2.00	2.00	0.00
2,100.00	16.00	293.41	2,089.64	44.09	-101.84	-17.78	2.00	2.00	0.00
2,200.00	18.00	293.41	2,185.27	55.71	-128.67	-22.47	2.00	2.00	0.00
2,300.00	20.00	293.41	2,279.82	68.64	-158.55	-27.68	2.00	2.00	0.00
2,400.00	22.00	293.41	2,373.17	82.88	-191.43	-33.42	2.00	2.00	0.00
2,500.00	24.00	293.41	2,465.21	98.40	-227.29	-39.68	2.00	2.00	0.00
2,600.00	26.00	293.41	2,555.84	115.19	-266.07	-46.46	2.00	2.00	0.00
2,700.00	28.00	293.41	2,644.94	133.23	-307.73	-53.73	2.00	2.00	0.00
2,800.00	30.00	293.41	2,732.39	152.49	-352.22	-61.50	2.00	2.00	0.00
2,900.00	32.00	293.41	2,818.11	172.95	-399.48	-69.75	2.00	2.00	0.00
3,000.00	34.00	293.41	2,901.97	194.59	-449.46	-78.48	2.00	2.00	0.00
3,100.00	36.00	293.41	2,983.88	217.37	-502.09	-87.67	2.00	2.00	0.00
3,139.09	36.78	293.41	3,015.35	226.59	-523.38	-91.38	2.00	2.00	0.00
Start 3452.03 hold at 3139.09 MD									
3,200.00	36.78	293.41	3,064.13	241.08	-556.84	-97.23	0.00	0.00	0.00
3,300.00	36.78	293.41	3,144.22	264.87	-611.79	-106.82	0.00	0.00	0.00
3,400.00	36.78	293.41	3,224.32	288.65	-666.74	-116.41	0.00	0.00	0.00
3,500.00	36.78	293.41	3,304.41	312.44	-721.69	-126.01	0.00	0.00	0.00
3,600.00	36.78	293.41	3,384.50	336.23	-776.64	-135.60	0.00	0.00	0.00
3,700.00	36.78	293.41	3,464.59	360.02	-831.59	-145.20	0.00	0.00	0.00
3,800.00	36.78	293.41	3,544.68	383.81	-886.54	-154.79	0.00	0.00	0.00
3,900.00	36.78	293.41	3,624.77	407.60	-941.49	-164.38	0.00	0.00	0.00
4,000.00	36.78	293.41	3,704.87	431.39	-996.43	-173.98	0.00	0.00	0.00
4,100.00	36.78	293.41	3,784.96	455.18	-1,051.38	-183.57	0.00	0.00	0.00
4,200.00	36.78	293.41	3,865.05	478.97	-1,106.33	-193.17	0.00	0.00	0.00
4,300.00	36.78	293.41	3,945.14	502.76	-1,161.28	-202.76	0.00	0.00	0.00
4,400.00	36.78	293.41	4,025.23	526.54	-1,216.23	-212.35	0.00	0.00	0.00
4,500.00	36.78	293.41	4,105.33	550.33	-1,271.18	-221.95	0.00	0.00	0.00
4,600.00	36.78	293.41	4,185.42	574.12	-1,326.13	-231.54	0.00	0.00	0.00
4,700.00	36.78	293.41	4,265.51	597.91	-1,381.07	-241.14	0.00	0.00	0.00
4,800.00	36.78	293.41	4,345.60	621.70	-1,436.02	-250.73	0.00	0.00	0.00
4,900.00	36.78	293.41	4,425.69	645.49	-1,490.97	-260.33	0.00	0.00	0.00
5,000.00	36.78	293.41	4,505.79	669.28	-1,545.92	-269.92	0.00	0.00	0.00

Planning Report

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Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-12N	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)	
5,100.00	36.78	293.41	4,585.88	693.07	-1,600.87	-279.51	0.00	0.00	0.00	
5,200.00	36.78	293.41	4,665.97	716.86	-1,655.82	-289.11	0.00	0.00	0.00	
5,300.00	36.78	293.41	4,746.06	740.65	-1,710.77	-298.70	0.00	0.00	0.00	
5,400.00	36.78	293.41	4,826.15	764.44	-1,765.72	-308.30	0.00	0.00	0.00	
5,500.00	36.78	293.41	4,906.25	788.22	-1,820.66	-317.89	0.00	0.00	0.00	
5,600.00	36.78	293.41	4,986.34	812.01	-1,875.61	-327.48	0.00	0.00	0.00	
5,700.00	36.78	293.41	5,066.43	835.80	-1,930.56	-337.08	0.00	0.00	0.00	
5,769.38	36.78	293.41	5,122.00	852.31	-1,968.69	-343.73	0.00	0.00	0.00	
SUSSEX										
5,800.00	36.78	293.41	5,146.52	859.59	-1,985.51	-346.67	0.00	0.00	0.00	
5,900.00	36.78	293.41	5,226.61	883.38	-2,040.46	-356.27	0.00	0.00	0.00	
6,000.00	36.78	293.41	5,306.71	907.17	-2,095.41	-365.86	0.00	0.00	0.00	
6,100.00	36.78	293.41	5,386.80	930.96	-2,150.36	-375.45	0.00	0.00	0.00	
6,200.00	36.78	293.41	5,466.89	954.75	-2,205.30	-385.05	0.00	0.00	0.00	
6,300.00	36.78	293.41	5,546.98	978.54	-2,260.25	-394.64	0.00	0.00	0.00	
6,400.00	36.78	293.41	5,627.07	1,002.33	-2,315.20	-404.24	0.00	0.00	0.00	
6,500.00	36.78	293.41	5,707.17	1,026.12	-2,370.15	-413.83	0.00	0.00	0.00	
6,591.12	36.78	293.41	5,780.15	1,047.79	-2,420.22	-422.57	0.00	0.00	0.00	
Start Drop -2.00										
6,600.00	36.60	293.41	5,787.27	1,049.90	-2,425.09	-423.42	2.00	-2.00	0.00	
6,700.00	34.60	293.41	5,868.57	1,073.03	-2,478.51	-432.75	2.00	-2.00	0.00	
6,800.00	32.60	293.41	5,951.85	1,095.02	-2,529.30	-441.62	2.00	-2.00	0.00	
6,900.00	30.60	293.41	6,037.02	1,115.84	-2,577.39	-450.01	2.00	-2.00	0.00	
7,000.00	28.60	293.41	6,123.96	1,135.46	-2,622.72	-457.93	2.00	-2.00	0.00	
7,100.00	26.60	293.41	6,212.57	1,153.87	-2,665.24	-465.35	2.00	-2.00	0.00	
7,200.00	24.60	293.41	6,302.75	1,171.04	-2,704.90	-472.28	2.00	-2.00	0.00	
7,300.00	22.60	293.41	6,394.37	1,186.95	-2,741.64	-478.69	2.00	-2.00	0.00	
7,400.00	20.60	293.41	6,487.34	1,201.57	-2,775.43	-484.59	2.00	-2.00	0.00	
7,500.00	18.60	293.41	6,581.54	1,214.90	-2,806.22	-489.97	2.00	-2.00	0.00	
7,600.00	16.60	293.41	6,676.85	1,226.92	-2,833.97	-494.81	2.00	-2.00	0.00	
7,700.00	14.60	293.41	6,773.16	1,237.61	-2,858.66	-499.12	2.00	-2.00	0.00	
7,800.00	12.60	293.41	6,870.35	1,246.95	-2,880.24	-502.89	2.00	-2.00	0.00	
7,900.00	10.60	293.41	6,968.30	1,254.94	-2,898.70	-506.12	2.00	-2.00	0.00	
8,000.00	8.60	293.41	7,066.90	1,261.57	-2,914.01	-508.79	2.00	-2.00	0.00	
8,100.00	6.60	293.41	7,166.01	1,266.83	-2,926.15	-510.91	2.00	-2.00	0.00	
8,200.00	4.60	293.41	7,265.53	1,270.71	-2,935.12	-512.47	2.00	-2.00	0.00	
8,300.00	2.60	293.41	7,365.33	1,273.20	-2,940.88	-513.48	2.00	-2.00	0.00	
8,400.00	0.60	293.41	7,465.28	1,274.32	-2,943.45	-513.93	2.00	-2.00	0.00	
8,430.22	0.00	0.00	7,495.50	1,274.38	-2,943.60	-513.96	2.00	-2.00	0.00	
Start 30.00 hold at 8430.22 MD										
8,460.22	0.00	0.00	7,525.50	1,274.38	-2,943.60	-513.96	0.00	0.00	0.00	
Start DLS 12.00 TFO 179.80										
8,475.00	1.77	179.80	7,540.28	1,274.15	-2,943.60	-513.73	12.00	12.00	0.00	
8,500.00	4.77	179.80	7,565.24	1,272.72	-2,943.59	-512.35	12.00	12.00	0.00	
8,525.00	7.77	179.80	7,590.08	1,269.99	-2,943.59	-509.71	12.00	12.00	0.00	
8,550.00	10.77	179.80	7,614.75	1,265.96	-2,943.57	-505.80	12.00	12.00	0.00	
8,575.00	13.77	179.80	7,639.18	1,260.65	-2,943.55	-500.66	12.00	12.00	0.00	
8,600.00	16.77	179.80	7,663.29	1,254.07	-2,943.53	-494.28	12.00	12.00	0.00	
8,625.00	19.77	179.80	7,687.03	1,246.23	-2,943.50	-486.69	12.00	12.00	0.00	
8,650.00	22.77	179.80	7,710.32	1,237.16	-2,943.47	-477.90	12.00	12.00	0.00	
8,675.00	25.77	179.80	7,733.11	1,226.88	-2,943.44	-467.95	12.00	12.00	0.00	
8,700.00	28.77	179.80	7,755.33	1,215.43	-2,943.40	-456.85	12.00	12.00	0.00	
8,725.00	31.77	179.80	7,776.92	1,202.83	-2,943.35	-444.65	12.00	12.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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)
8,750.00	34.77	179.80	7,797.82	1,189.12	-2,943.31	-431.36	12.00	12.00	0.00
8,775.00	37.77	179.80	7,817.97	1,174.33	-2,943.26	-417.04	12.00	12.00	0.00
8,783.96	38.85	179.80	7,825.00	1,168.78	-2,943.24	-411.66	12.00	12.00	0.00
NIORARA									
8,800.00	40.77	179.80	7,837.32	1,158.50	-2,943.20	-401.71	12.00	12.00	0.00
8,825.00	43.77	179.80	7,855.82	1,141.69	-2,943.14	-385.43	12.00	12.00	0.00
8,850.00	46.77	179.80	7,873.41	1,123.93	-2,943.08	-368.22	12.00	12.00	0.00
8,875.00	49.77	179.80	7,890.05	1,105.28	-2,943.02	-350.15	12.00	12.00	0.00
8,900.00	52.77	179.80	7,905.69	1,085.78	-2,942.95	-331.26	12.00	12.00	0.00
8,925.00	55.77	179.80	7,920.29	1,065.49	-2,942.88	-311.61	12.00	12.00	0.00
8,950.00	58.77	179.80	7,933.80	1,044.46	-2,942.81	-291.24	12.00	12.00	0.00
8,975.00	61.77	179.80	7,946.20	1,022.75	-2,942.74	-270.21	12.00	12.00	0.00
9,000.00	64.77	179.80	7,957.45	1,000.42	-2,942.66	-248.59	12.00	12.00	0.00
9,025.00	67.77	179.80	7,967.51	977.54	-2,942.58	-226.42	12.00	12.00	0.00
9,050.00	70.77	179.80	7,976.35	954.16	-2,942.50	-203.78	12.00	12.00	0.00
9,075.00	73.77	179.80	7,983.97	930.35	-2,942.42	-180.71	12.00	12.00	0.00
9,100.00	76.77	179.80	7,990.32	906.18	-2,942.34	-157.30	12.00	12.00	0.00
9,112.38	78.25	179.80	7,993.00	894.09	-2,942.29	-145.59	12.00	12.00	0.00
NIO B TARGET									
9,125.00	79.77	179.80	7,995.41	881.70	-2,942.25	-133.59	12.00	12.00	0.00
9,150.00	82.77	179.80	7,999.20	857.00	-2,942.17	-109.66	12.00	12.00	0.00
9,175.00	85.77	179.80	8,001.70	832.12	-2,942.08	-85.56	12.00	12.00	0.00
9,200.00	88.77	179.80	8,002.89	807.16	-2,942.00	-61.38	12.00	12.00	0.00
9,210.28	90.00	179.80	8,003.00	796.88	-2,941.96	-51.42	12.00	12.00	0.00
Start 8500.00 hold at 9210.28 MD									
9,300.00	90.00	179.80	8,003.00	707.16	-2,941.65	35.49	0.00	0.00	0.00
9,400.00	90.00	179.80	8,003.00	607.16	-2,941.31	132.35	0.00	0.00	0.00
9,500.00	90.00	179.80	8,003.00	507.16	-2,940.97	229.21	0.00	0.00	0.00
9,600.00	90.00	179.80	8,003.00	407.16	-2,940.62	326.08	0.00	0.00	0.00
9,700.00	90.00	179.80	8,003.00	307.16	-2,940.28	422.94	0.00	0.00	0.00
9,800.00	90.00	179.80	8,003.00	207.16	-2,939.94	519.81	0.00	0.00	0.00
9,900.00	90.00	179.80	8,003.00	107.16	-2,939.59	616.67	0.00	0.00	0.00
10,000.00	90.00	179.80	8,003.00	7.16	-2,939.25	713.54	0.00	0.00	0.00
10,100.00	90.00	179.80	8,002.99	-92.84	-2,938.91	810.40	0.00	0.00	0.00
10,200.00	90.00	179.80	8,002.99	-192.84	-2,938.56	907.27	0.00	0.00	0.00
10,300.00	90.00	179.80	8,002.99	-292.84	-2,938.22	1,004.13	0.00	0.00	0.00
10,400.00	90.00	179.80	8,002.99	-392.84	-2,937.88	1,101.00	0.00	0.00	0.00
10,500.00	90.00	179.80	8,002.99	-492.84	-2,937.54	1,197.86	0.00	0.00	0.00
10,600.00	90.00	179.80	8,002.99	-592.84	-2,937.19	1,294.72	0.00	0.00	0.00
10,700.00	90.00	179.80	8,002.99	-692.83	-2,936.85	1,391.59	0.00	0.00	0.00
10,800.00	90.00	179.80	8,002.99	-792.83	-2,936.51	1,488.45	0.00	0.00	0.00
10,900.00	90.00	179.80	8,002.99	-892.83	-2,936.16	1,585.32	0.00	0.00	0.00
11,000.00	90.00	179.80	8,002.99	-992.83	-2,935.82	1,682.18	0.00	0.00	0.00
11,100.00	90.00	179.80	8,002.99	-1,092.83	-2,935.48	1,779.05	0.00	0.00	0.00
11,200.00	90.00	179.80	8,002.99	-1,192.83	-2,935.13	1,875.91	0.00	0.00	0.00
11,300.00	90.00	179.80	8,002.99	-1,292.83	-2,934.79	1,972.78	0.00	0.00	0.00
11,400.00	90.00	179.80	8,002.99	-1,392.83	-2,934.45	2,069.64	0.00	0.00	0.00
11,500.00	90.00	179.80	8,002.99	-1,492.83	-2,934.10	2,166.50	0.00	0.00	0.00
11,600.00	90.00	179.80	8,002.99	-1,592.83	-2,933.76	2,263.37	0.00	0.00	0.00
11,700.00	90.00	179.80	8,002.99	-1,692.83	-2,933.42	2,360.23	0.00	0.00	0.00
11,800.00	90.00	179.80	8,002.98	-1,792.83	-2,933.07	2,457.10	0.00	0.00	0.00
11,900.00	90.00	179.80	8,002.98	-1,892.83	-2,932.73	2,553.96	0.00	0.00	0.00
12,000.00	90.00	179.80	8,002.98	-1,992.83	-2,932.39	2,650.83	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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)	
12,100.00	90.00	179.80	8,002.98	-2,092.83	-2,932.04	2,747.69	0.00	0.00	0.00	
12,200.00	90.00	179.80	8,002.98	-2,192.83	-2,931.70	2,844.56	0.00	0.00	0.00	
12,300.00	90.00	179.80	8,002.98	-2,292.83	-2,931.36	2,941.42	0.00	0.00	0.00	
12,400.00	90.00	179.80	8,002.98	-2,392.82	-2,931.01	3,038.28	0.00	0.00	0.00	
12,500.00	90.00	179.80	8,002.98	-2,492.82	-2,930.67	3,135.15	0.00	0.00	0.00	
12,600.00	90.00	179.80	8,002.98	-2,592.82	-2,930.33	3,232.01	0.00	0.00	0.00	
12,700.00	90.00	179.80	8,002.98	-2,692.82	-2,929.99	3,328.88	0.00	0.00	0.00	
12,800.00	90.00	179.80	8,002.98	-2,792.82	-2,929.64	3,425.74	0.00	0.00	0.00	
12,900.00	90.00	179.80	8,002.98	-2,892.82	-2,929.30	3,522.61	0.00	0.00	0.00	
13,000.00	90.00	179.80	8,002.98	-2,992.82	-2,928.96	3,619.47	0.00	0.00	0.00	
13,100.00	90.00	179.80	8,002.98	-3,092.82	-2,928.61	3,716.34	0.00	0.00	0.00	
13,200.00	90.00	179.80	8,002.98	-3,192.82	-2,928.27	3,813.20	0.00	0.00	0.00	
13,300.00	90.00	179.80	8,002.98	-3,292.82	-2,927.93	3,910.07	0.00	0.00	0.00	
13,400.00	90.00	179.80	8,002.98	-3,392.82	-2,927.58	4,006.93	0.00	0.00	0.00	
13,500.00	90.00	179.80	8,002.97	-3,492.82	-2,927.24	4,103.79	0.00	0.00	0.00	
13,600.00	90.00	179.80	8,002.97	-3,592.82	-2,926.90	4,200.66	0.00	0.00	0.00	
13,700.00	90.00	179.80	8,002.97	-3,692.82	-2,926.55	4,297.52	0.00	0.00	0.00	
13,800.00	90.00	179.80	8,002.97	-3,792.82	-2,926.21	4,394.39	0.00	0.00	0.00	
13,900.00	90.00	179.80	8,002.97	-3,892.82	-2,925.87	4,491.25	0.00	0.00	0.00	
14,000.00	90.00	179.80	8,002.97	-3,992.82	-2,925.52	4,588.12	0.00	0.00	0.00	
14,100.00	90.00	179.80	8,002.97	-4,092.81	-2,925.18	4,684.98	0.00	0.00	0.00	
14,200.00	90.00	179.80	8,002.97	-4,192.81	-2,924.84	4,781.85	0.00	0.00	0.00	
14,300.00	90.00	179.80	8,002.97	-4,292.81	-2,924.49	4,878.71	0.00	0.00	0.00	
14,400.00	90.00	179.80	8,002.97	-4,392.81	-2,924.15	4,975.57	0.00	0.00	0.00	
14,500.00	90.00	179.80	8,002.97	-4,492.81	-2,923.81	5,072.44	0.00	0.00	0.00	
14,600.00	90.00	179.80	8,002.97	-4,592.81	-2,923.46	5,169.30	0.00	0.00	0.00	
14,700.00	90.00	179.80	8,002.97	-4,692.81	-2,923.12	5,266.17	0.00	0.00	0.00	
14,800.00	90.00	179.80	8,002.97	-4,792.81	-2,922.78	5,363.03	0.00	0.00	0.00	
14,900.00	90.00	179.80	8,002.97	-4,892.81	-2,922.44	5,459.90	0.00	0.00	0.00	
15,000.00	90.00	179.80	8,002.97	-4,992.81	-2,922.09	5,556.76	0.00	0.00	0.00	
15,100.00	90.00	179.80	8,002.97	-5,092.81	-2,921.75	5,653.63	0.00	0.00	0.00	
15,200.00	90.00	179.80	8,002.96	-5,192.81	-2,921.41	5,750.49	0.00	0.00	0.00	
15,300.00	90.00	179.80	8,002.96	-5,292.81	-2,921.06	5,847.36	0.00	0.00	0.00	
15,400.00	90.00	179.80	8,002.96	-5,392.81	-2,920.72	5,944.22	0.00	0.00	0.00	
15,500.00	90.00	179.80	8,002.96	-5,492.81	-2,920.38	6,041.08	0.00	0.00	0.00	
15,600.00	90.00	179.80	8,002.96	-5,592.81	-2,920.03	6,137.95	0.00	0.00	0.00	
15,700.00	90.00	179.80	8,002.96	-5,692.81	-2,919.69	6,234.81	0.00	0.00	0.00	
15,800.00	90.00	179.80	8,002.96	-5,792.80	-2,919.35	6,331.68	0.00	0.00	0.00	
15,900.00	90.00	179.80	8,002.96	-5,892.80	-2,919.00	6,428.54	0.00	0.00	0.00	
16,000.00	90.00	179.80	8,002.96	-5,992.80	-2,918.66	6,525.41	0.00	0.00	0.00	
16,100.00	90.00	179.80	8,002.96	-6,092.80	-2,918.32	6,622.27	0.00	0.00	0.00	
16,200.00	90.00	179.80	8,002.96	-6,192.80	-2,917.97	6,719.14	0.00	0.00	0.00	
16,300.00	90.00	179.80	8,002.96	-6,292.80	-2,917.63	6,816.00	0.00	0.00	0.00	
16,400.00	90.00	179.80	8,002.96	-6,392.80	-2,917.29	6,912.86	0.00	0.00	0.00	
16,500.00	90.00	179.80	8,002.96	-6,492.80	-2,916.94	7,009.73	0.00	0.00	0.00	
16,600.00	90.00	179.80	8,002.96	-6,592.80	-2,916.60	7,106.59	0.00	0.00	0.00	
16,700.00	90.00	179.80	8,002.96	-6,692.80	-2,916.26	7,203.46	0.00	0.00	0.00	
16,800.00	90.00	179.80	8,002.96	-6,792.80	-2,915.91	7,300.32	0.00	0.00	0.00	
16,900.00	90.00	179.80	8,002.95	-6,892.80	-2,915.57	7,397.19	0.00	0.00	0.00	
17,000.00	90.00	179.80	8,002.95	-6,992.80	-2,915.23	7,494.05	0.00	0.00	0.00	
17,100.00	90.00	179.80	8,002.95	-7,092.80	-2,914.89	7,590.92	0.00	0.00	0.00	
17,200.00	90.00	179.80	8,002.95	-7,192.80	-2,914.54	7,687.78	0.00	0.00	0.00	
17,300.00	90.00	179.80	8,002.95	-7,292.80	-2,914.20	7,784.65	0.00	0.00	0.00	
17,400.00	90.00	179.80	8,002.95	-7,392.80	-2,913.86	7,881.51	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	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)
17,500.00	90.00	179.80	8,002.95	-7,492.79	-2,913.51	7,978.37	0.00	0.00	0.00
17,600.00	90.00	179.80	8,002.95	-7,592.79	-2,913.17	8,075.24	0.00	0.00	0.00
17,700.00	90.00	179.80	8,002.95	-7,692.79	-2,912.83	8,172.10	0.00	0.00	0.00
17,710.28	90.00	179.80	8,002.95	-7,703.07	-2,912.79	8,182.06	0.00	0.00	0.00
Start DLS 2.00 TFO 90.00									
17,800.00	90.00	181.60	8,002.95	-7,792.78	-2,913.89	8,269.30	2.00	0.00	2.00
17,900.00	90.00	183.60	8,002.95	-7,892.68	-2,918.42	8,367.26	2.00	0.00	2.00
18,000.00	90.00	185.60	8,002.95	-7,992.35	-2,926.44	8,465.86	2.00	0.00	2.00
18,070.11	90.00	187.00	8,002.95	-8,062.03	-2,934.13	8,535.30	2.00	0.00	2.00
Start 300.00 hold at 18070.11 MD									
18,100.00	90.00	187.00	8,002.95	-8,091.70	-2,937.77	8,564.95	0.00	0.00	0.00
18,200.00	90.00	187.00	8,002.95	-8,190.96	-2,949.96	8,664.17	0.00	0.00	0.00
18,300.00	90.00	187.00	8,002.95	-8,290.21	-2,962.14	8,763.38	0.00	0.00	0.00
18,370.11	90.00	187.00	8,002.95	-8,359.79	-2,970.69	8,832.94	0.00	0.00	0.00
Start Turn -2.00									
18,400.00	90.00	186.40	8,002.95	-8,389.48	-2,974.18	8,862.58	2.00	0.00	-2.00
18,500.00	90.00	184.40	8,002.95	-8,489.03	-2,983.59	8,961.40	2.00	0.00	-2.00
18,600.00	90.00	182.40	8,002.95	-8,588.85	-2,989.52	9,059.63	2.00	0.00	-2.00
18,700.00	90.00	180.40	8,002.95	-8,688.82	-2,991.97	9,157.14	2.00	0.00	-2.00
18,800.00	90.00	178.40	8,002.95	-8,788.81	-2,990.93	9,253.82	2.00	0.00	-2.00
18,817.33	90.00	178.06	8,002.95	-8,806.13	-2,990.39	9,270.49	2.00	0.00	-2.00
Start 2665.08 hold at 18817.33 MD									
18,900.00	90.00	178.06	8,002.95	-8,888.75	-2,987.59	9,349.90	0.00	0.00	0.00
19,000.00	90.00	178.06	8,002.95	-8,988.69	-2,984.19	9,445.96	0.00	0.00	0.00
19,100.00	90.00	178.06	8,002.95	-9,088.64	-2,980.80	9,542.02	0.00	0.00	0.00
19,200.00	90.00	178.06	8,002.95	-9,188.58	-2,977.41	9,638.08	0.00	0.00	0.00
19,300.00	90.00	178.06	8,002.95	-9,288.52	-2,974.01	9,734.15	0.00	0.00	0.00
19,400.00	90.00	178.06	8,002.95	-9,388.46	-2,970.62	9,830.21	0.00	0.00	0.00
19,500.00	90.00	178.06	8,002.95	-9,488.41	-2,967.23	9,926.27	0.00	0.00	0.00
19,600.00	90.00	178.06	8,002.95	-9,588.35	-2,963.83	10,022.33	0.00	0.00	0.00
19,700.00	90.00	178.06	8,002.95	-9,688.29	-2,960.44	10,118.39	0.00	0.00	0.00
19,800.00	90.00	178.06	8,002.95	-9,788.23	-2,957.05	10,214.45	0.00	0.00	0.00
19,900.00	90.00	178.06	8,002.95	-9,888.18	-2,953.66	10,310.52	0.00	0.00	0.00
20,000.00	90.00	178.06	8,002.95	-9,988.12	-2,950.26	10,406.58	0.00	0.00	0.00
20,100.00	90.00	178.06	8,002.95	-10,088.06	-2,946.87	10,502.64	0.00	0.00	0.00
20,200.00	90.00	178.06	8,002.95	-10,188.00	-2,943.48	10,598.70	0.00	0.00	0.00
20,300.00	90.00	178.06	8,002.95	-10,287.94	-2,940.08	10,694.76	0.00	0.00	0.00
20,400.00	90.00	178.06	8,002.95	-10,387.89	-2,936.69	10,790.82	0.00	0.00	0.00
20,500.00	90.00	178.06	8,002.95	-10,487.83	-2,933.30	10,886.89	0.00	0.00	0.00
20,600.00	90.00	178.06	8,002.95	-10,587.77	-2,929.90	10,982.95	0.00	0.00	0.00
20,700.00	90.00	178.06	8,002.95	-10,687.71	-2,926.51	11,079.01	0.00	0.00	0.00
20,800.00	90.00	178.06	8,002.95	-10,787.66	-2,923.12	11,175.07	0.00	0.00	0.00
20,900.00	90.00	178.06	8,002.95	-10,887.60	-2,919.72	11,271.13	0.00	0.00	0.00
21,000.00	90.00	178.06	8,002.95	-10,987.54	-2,916.33	11,367.19	0.00	0.00	0.00
21,482.42	90.00	178.06	8,003.00	-11,469.68	-2,899.96	11,830.61	0.00	0.00	0.00
TD at 21482.42									

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-12N
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 S20-25-12N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
NORTHWEST A S20-12	0.00	0.00	8,003.00	-11,469.68	-2,899.96	1,225,609.36	3,133,689.15	39° 57' 6.095 N	105° 1' 23.290 W
- plan hits target center									
- Point									
NORTHWEST A S20-12	0.00	0.00	8,003.00	796.88	-2,941.96	1,237,875.50	3,133,579.75	39° 59' 7.321 N	105° 1' 23.848 W
- plan hits target center									
- Point									

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
5,769.38	5,122.00	SUSSEX			
8,783.96	7,825.00	NIOBRARA			
9,112.38	7,993.00	NIO B TARGET			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,300.00	1,300.00	0.00	0.00	Start Build 2.00
3,139.09	3,015.35	226.59	-523.38	Start 3452.03 hold at 3139.09 MD
6,591.12	5,780.15	1,047.79	-2,420.22	Start Drop -2.00
8,430.22	7,495.50	1,274.38	-2,943.60	Start 30.00 hold at 8430.22 MD
8,460.22	7,525.50	1,274.38	-2,943.60	Start DLS 12.00 TFO 179.80
9,210.28	8,003.00	796.88	-2,941.96	Start 8500.00 hold at 9210.28 MD
17,710.28	8,002.95	-7,703.07	-2,912.79	Start DLS 2.00 TFO 90.00
18,070.11	8,002.95	-8,062.03	-2,934.13	Start 300.00 hold at 18070.11 MD
18,370.11	8,002.95	-8,359.79	-2,970.69	Start Turn -2.00
18,817.33	8,002.95	-8,806.13	-2,990.39	Start 2665.08 hold at 18817.33 MD
21,482.42	8,003.00	-11,469.68	-2,899.96	TD at 21482.42