

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S20-25-4N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

07 December, 2017



Project: Broomfield County
Site: Sec 7-T1S-R68W
Well: LIVINGSTON S20-25-4N
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: 8.27°

Magnetic Field
Strength: 52086.2anT
Dip Angle: 66.46°
Date: 12/4/2017
Model: IGRF2015

WELL DETAILS: LIVINGSTON S20-25-4N

+N/-S	+E/-W	Northing	Easting	5311.00	Latitude	Longitude	Slot
0.00	0.00	1235372.57	3129182.42		39° 58' 42.816 N	105° 2' 20.508 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4646.00	5270.13	PARKMAN
5127.00	5840.22	SUSSEX
6047.00	6930.44	SHANNON
7880.00	8866.99	NIOBRARA
8048.00	9195.41	NIO B TARGET

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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1823.21	32.46	35.29	1737.74	365.41	258.66	2.00	35.29	-301.83	
4	6890.04	32.46	35.29	6012.76	2585.27	1830.02	0.00	0.00	-2135.49	
5	8513.25	0.00	0.00	7550.50	2950.68	2088.68	2.00	180.00	-2437.32	
6	8543.25	0.00	0.00	7580.50	2950.68	2088.68	0.00	0.00	-2437.32	
7	9293.31	90.00	179.79	8058.00	2473.18	2090.39	12.00	179.79	-1970.44	LIVINGSTON S20 4N - LP
8	21546.10	90.00	179.79	8058.00	-9779.53	2134.88	0.00	0.00	10009.84	LIVINGSTON S20 4N - PBHL

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	BUILD 2°/100'
1823.21	32.46	35.29	1737.74	365.41	258.66	-301.83	447.69	HOLD 32.46° INC
6890.04	32.46	35.29	6012.76	2585.27	1830.02	-2135.49	3167.43	DROP 2°/100'
8513.25	0.00	0.00	7550.50	2950.68	2088.68	-2437.32	3615.12	HOLD VERTICAL
8543.25	0.00	0.00	7580.50	2950.68	2088.68	-2437.32	3615.12	KOP, BUILD 12°/100'
9293.31	90.00	179.79	8058.00	2473.18	2090.39	-1970.44	4092.62	LP @ 90° INC, 179.79° AZM HOLD
21546.10	90.00	179.79	8058.00	-9779.53	2134.88	10009.84	16345.41	TD at 21546.10' MD

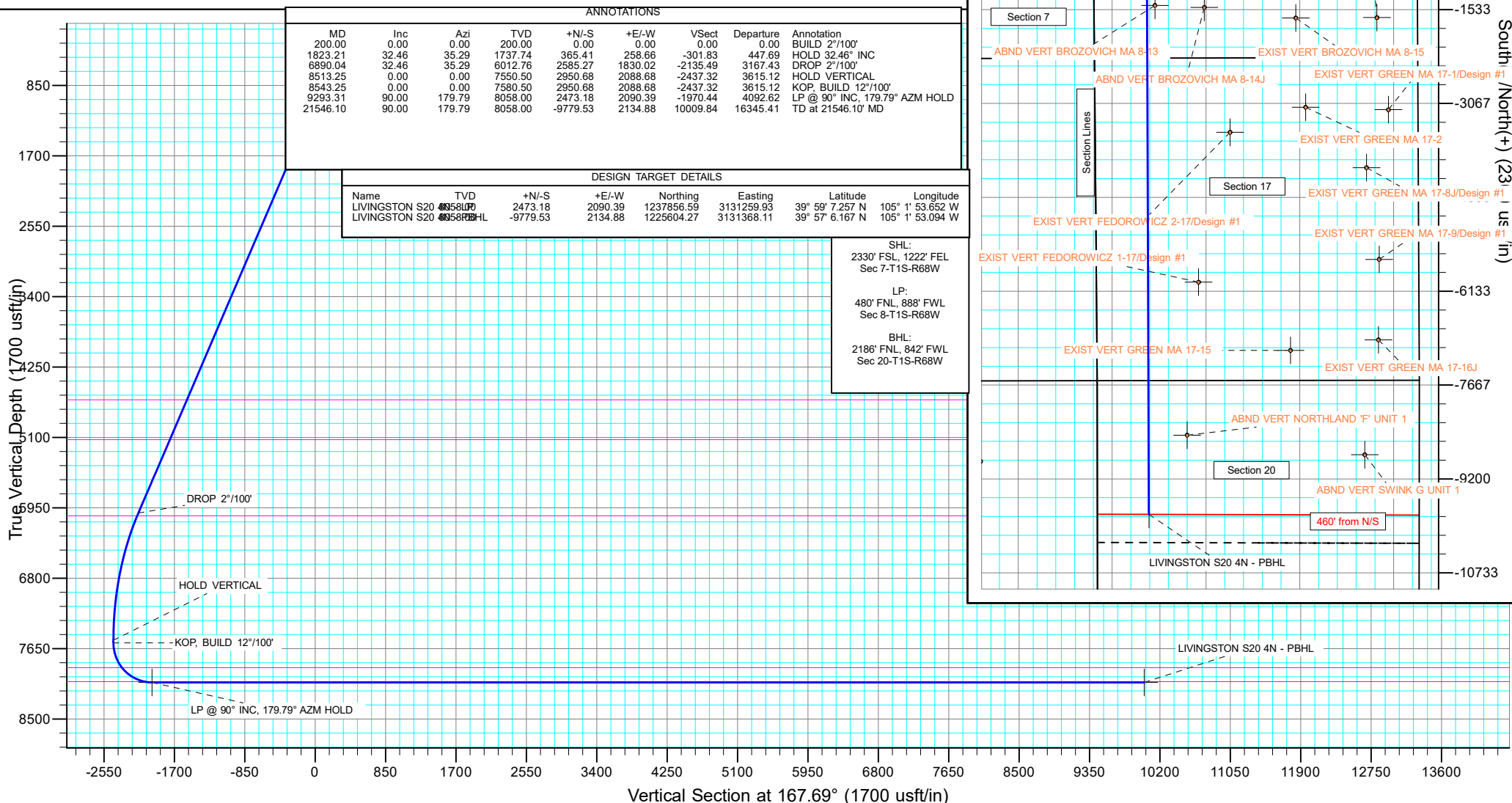
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LIVINGSTON S20 4N - LP	8058.00	2473.18	2090.39	1237856.59	3131259.93	39° 59' 7.257 N	105° 1' 53.652 W
LIVINGSTON S20 4N - PBHL	-9779.53	2134.88	1225604.27	3131368.11	39° 57' 6.167 N	105° 1' 53.094 W	

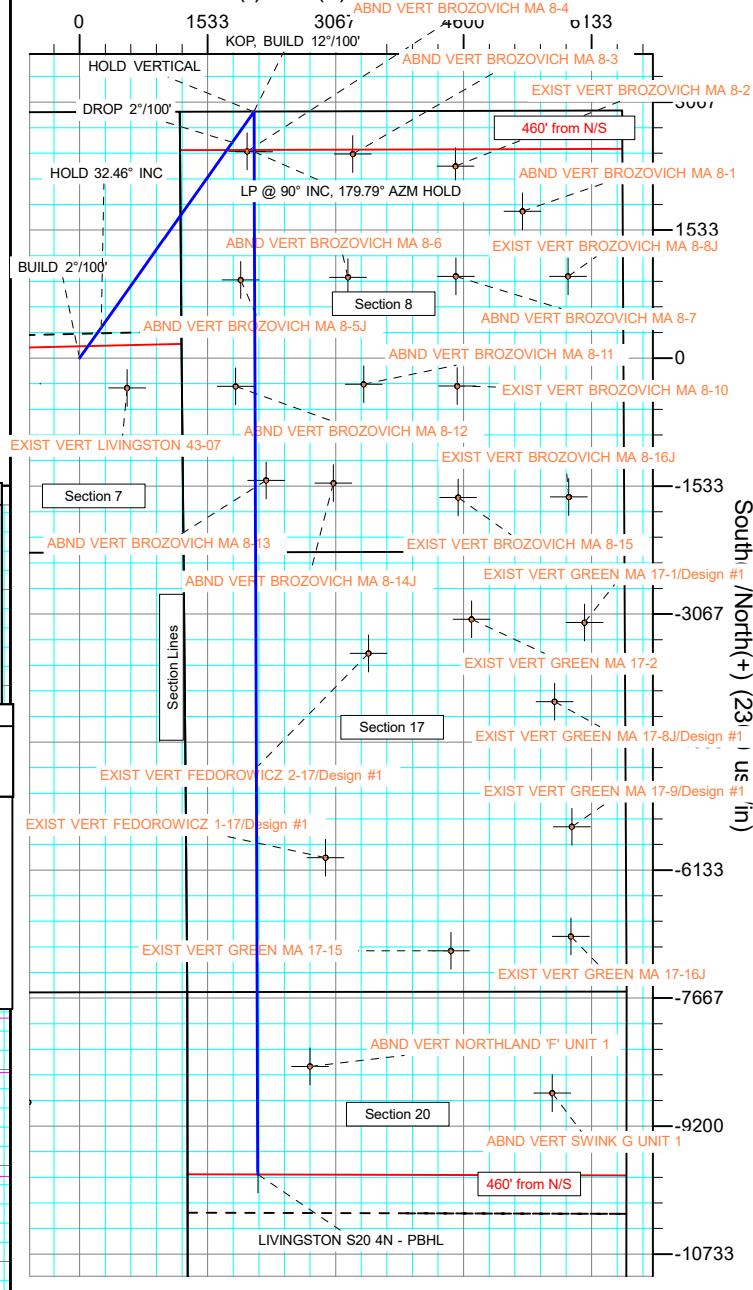
SHL:
2330' FSL, 1222' FEL
Sec 7-T1S-R68W

LP:
480' FNL, 888' FWL
Sec 8-T1S-R68W

BHL:
2186' FNL, 842' FWL
Sec 20-T1S-R68W



West(-)/East(+) (2300 usft/in)



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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 7-T1S-R68W			
Site Position:		Northing:	1,238,329.25 usft	Latitude:	39° 59' 11.974 N
From:	Lat/Long	Easting:	3,130,366.41 usft	Longitude:	105° 2' 5.099 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.30 °

Well	LIVINGSTON S20-25-4N					
Well Position	+N/-S	-2,950.43 usft	Northing:	1,235,372.57 usft	Latitude:	39° 58' 42.816 N
	+E/-W	-1,199.49 usft	Easting:	3,129,182.42 usft	Longitude:	105° 2' 20.508 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,311.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/4/2017	8.27	66.46	52,086.20338165

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	167.69

Plan Survey Tool Program	Date	12/7/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,545.99	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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,823.21	32.46	35.29	1,737.74	365.41	258.66	2.00	2.00	0.00	35.29	
6,890.04	32.46	35.29	6,012.76	2,585.27	1,830.02	0.00	0.00	0.00	0.00	
8,513.25	0.00	0.00	7,550.50	2,950.68	2,088.68	2.00	-2.00	0.00	180.00	
8,543.25	0.00	0.00	7,580.50	2,950.68	2,088.68	0.00	0.00	0.00	0.00	
9,293.31	90.00	179.79	8,058.00	2,473.18	2,090.39	12.00	12.00	23.97	179.79	LIVINGSTON S20 4N
21,546.10	90.00	179.79	8,058.00	-9,779.53	2,134.88	0.00	0.00	0.00	0.00	LIVINGSTON S20 4N

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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
BUILD 2°/100'									
300.00	2.00	35.29	299.98	1.42	1.01	-1.18	2.00	2.00	0.00
400.00	4.00	35.29	399.84	5.70	4.03	-4.70	2.00	2.00	0.00
500.00	6.00	35.29	499.45	12.81	9.07	-10.58	2.00	2.00	0.00
600.00	8.00	35.29	598.70	22.76	16.11	-18.80	2.00	2.00	0.00
700.00	10.00	35.29	697.47	35.52	25.15	-29.34	2.00	2.00	0.00
800.00	12.00	35.29	795.62	51.10	36.17	-42.21	2.00	2.00	0.00
900.00	14.00	35.29	893.06	69.46	49.17	-57.37	2.00	2.00	0.00
1,000.00	16.00	35.29	989.64	90.58	64.12	-74.82	2.00	2.00	0.00
1,100.00	18.00	35.29	1,085.27	114.44	81.01	-94.53	2.00	2.00	0.00
1,200.00	20.00	35.29	1,179.82	141.01	99.82	-116.48	2.00	2.00	0.00
1,300.00	22.00	35.29	1,273.17	170.26	120.52	-140.64	2.00	2.00	0.00
1,400.00	24.00	35.29	1,365.21	202.15	143.10	-166.98	2.00	2.00	0.00
1,500.00	26.00	35.29	1,455.84	236.65	167.51	-195.47	2.00	2.00	0.00
1,600.00	28.00	35.29	1,544.94	273.70	193.74	-226.08	2.00	2.00	0.00
1,700.00	30.00	35.29	1,632.39	313.27	221.75	-258.77	2.00	2.00	0.00
1,800.00	32.00	35.29	1,718.11	355.30	251.51	-293.49	2.00	2.00	0.00
1,823.21	32.46	35.29	1,737.74	365.41	258.66	-301.83	2.00	2.00	0.00
HOLD 32.46° INC									
1,900.00	32.46	35.29	1,802.53	399.05	282.47	-329.62	0.00	0.00	0.00
2,000.00	32.46	35.29	1,886.90	442.86	313.49	-365.81	0.00	0.00	0.00
2,100.00	32.46	35.29	1,971.27	486.67	344.50	-402.00	0.00	0.00	0.00
2,200.00	32.46	35.29	2,055.65	530.49	375.51	-438.19	0.00	0.00	0.00
2,300.00	32.46	35.29	2,140.02	574.30	406.52	-474.38	0.00	0.00	0.00
2,400.00	32.46	35.29	2,224.39	618.11	437.54	-510.57	0.00	0.00	0.00
2,500.00	32.46	35.29	2,308.77	661.92	468.55	-546.76	0.00	0.00	0.00
2,600.00	32.46	35.29	2,393.14	705.73	499.56	-582.95	0.00	0.00	0.00
2,700.00	32.46	35.29	2,477.51	749.54	530.57	-619.14	0.00	0.00	0.00
2,800.00	32.46	35.29	2,561.88	793.36	561.59	-655.33	0.00	0.00	0.00
2,900.00	32.46	35.29	2,646.26	837.17	592.60	-691.52	0.00	0.00	0.00
3,000.00	32.46	35.29	2,730.63	880.98	623.61	-727.71	0.00	0.00	0.00
3,100.00	32.46	35.29	2,815.00	924.79	654.63	-763.90	0.00	0.00	0.00
3,200.00	32.46	35.29	2,899.37	968.60	685.64	-800.08	0.00	0.00	0.00
3,300.00	32.46	35.29	2,983.75	1,012.41	716.65	-836.27	0.00	0.00	0.00
3,400.00	32.46	35.29	3,068.12	1,056.23	747.66	-872.46	0.00	0.00	0.00
3,500.00	32.46	35.29	3,152.49	1,100.04	778.68	-908.65	0.00	0.00	0.00
3,600.00	32.46	35.29	3,236.86	1,143.85	809.69	-944.84	0.00	0.00	0.00
3,700.00	32.46	35.29	3,321.24	1,187.66	840.70	-981.03	0.00	0.00	0.00
3,800.00	32.46	35.29	3,405.61	1,231.47	871.72	-1,017.22	0.00	0.00	0.00
3,900.00	32.46	35.29	3,489.98	1,275.28	902.73	-1,053.41	0.00	0.00	0.00
4,000.00	32.46	35.29	3,574.36	1,319.10	933.74	-1,089.60	0.00	0.00	0.00
4,100.00	32.46	35.29	3,658.73	1,362.91	964.75	-1,125.79	0.00	0.00	0.00
4,200.00	32.46	35.29	3,743.10	1,406.72	995.77	-1,161.98	0.00	0.00	0.00
4,300.00	32.46	35.29	3,827.47	1,450.53	1,026.78	-1,198.17	0.00	0.00	0.00
4,400.00	32.46	35.29	3,911.85	1,494.34	1,057.79	-1,234.36	0.00	0.00	0.00
4,500.00	32.46	35.29	3,996.22	1,538.15	1,088.80	-1,270.55	0.00	0.00	0.00
4,600.00	32.46	35.29	4,080.59	1,581.97	1,119.82	-1,306.74	0.00	0.00	0.00
4,700.00	32.46	35.29	4,164.96	1,625.78	1,150.83	-1,342.92	0.00	0.00	0.00
4,800.00	32.46	35.29	4,249.34	1,669.59	1,181.84	-1,379.11	0.00	0.00	0.00
4,900.00	32.46	35.29	4,333.71	1,713.40	1,212.86	-1,415.30	0.00	0.00	0.00

Planning Report

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Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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	32.46	35.29	4,418.08	1,757.21	1,243.87	-1,451.49	0.00	0.00	0.00
5,100.00	32.46	35.29	4,502.45	1,801.02	1,274.88	-1,487.68	0.00	0.00	0.00
5,200.00	32.46	35.29	4,586.83	1,844.84	1,305.89	-1,523.87	0.00	0.00	0.00
5,270.13	32.46	35.29	4,646.00	1,875.56	1,327.64	-1,549.25	0.00	0.00	0.00
PARKMAN									
5,300.00	32.46	35.29	4,671.20	1,888.65	1,336.91	-1,560.06	0.00	0.00	0.00
5,400.00	32.46	35.29	4,755.57	1,932.46	1,367.92	-1,596.25	0.00	0.00	0.00
5,500.00	32.46	35.29	4,839.94	1,976.27	1,398.93	-1,632.44	0.00	0.00	0.00
5,600.00	32.46	35.29	4,924.32	2,020.08	1,429.94	-1,668.63	0.00	0.00	0.00
5,700.00	32.46	35.29	5,008.69	2,063.90	1,460.96	-1,704.82	0.00	0.00	0.00
5,800.00	32.46	35.29	5,093.06	2,107.71	1,491.97	-1,741.01	0.00	0.00	0.00
5,840.22	32.46	35.29	5,127.00	2,125.33	1,504.44	-1,755.56	0.00	0.00	0.00
SUSSEX									
5,900.00	32.46	35.29	5,177.44	2,151.52	1,522.98	-1,777.20	0.00	0.00	0.00
6,000.00	32.46	35.29	5,261.81	2,195.33	1,554.00	-1,813.39	0.00	0.00	0.00
6,100.00	32.46	35.29	5,346.18	2,239.14	1,585.01	-1,849.58	0.00	0.00	0.00
6,200.00	32.46	35.29	5,430.55	2,282.95	1,616.02	-1,885.76	0.00	0.00	0.00
6,300.00	32.46	35.29	5,514.93	2,326.77	1,647.03	-1,921.95	0.00	0.00	0.00
6,400.00	32.46	35.29	5,599.30	2,370.58	1,678.05	-1,958.14	0.00	0.00	0.00
6,500.00	32.46	35.29	5,683.67	2,414.39	1,709.06	-1,994.33	0.00	0.00	0.00
6,600.00	32.46	35.29	5,768.04	2,458.20	1,740.07	-2,030.52	0.00	0.00	0.00
6,700.00	32.46	35.29	5,852.42	2,502.01	1,771.08	-2,066.71	0.00	0.00	0.00
6,800.00	32.46	35.29	5,936.79	2,545.82	1,802.10	-2,102.90	0.00	0.00	0.00
6,890.04	32.46	35.29	6,012.76	2,585.27	1,830.02	-2,135.49	0.00	0.00	0.00
DROP 2°/100'									
6,900.00	32.27	35.29	6,021.17	2,589.62	1,833.10	-2,139.08	2.00	-2.00	0.00
6,930.44	31.66	35.29	6,047.00	2,602.78	1,842.41	-2,149.94	2.00	-2.00	0.00
SHANNON									
7,000.00	30.27	35.29	6,106.64	2,631.98	1,863.09	-2,174.07	2.00	-2.00	0.00
7,100.00	28.27	35.29	6,193.88	2,671.88	1,891.33	-2,207.03	2.00	-2.00	0.00
7,200.00	26.27	35.29	6,282.76	2,709.27	1,917.79	-2,237.91	2.00	-2.00	0.00
7,300.00	24.27	35.29	6,373.19	2,744.10	1,942.45	-2,266.68	2.00	-2.00	0.00
7,400.00	22.27	35.29	6,465.06	2,776.34	1,965.27	-2,293.31	2.00	-2.00	0.00
7,500.00	20.27	35.29	6,558.24	2,805.94	1,986.23	-2,317.76	2.00	-2.00	0.00
7,600.00	18.27	35.29	6,652.64	2,832.87	2,005.29	-2,340.01	2.00	-2.00	0.00
7,700.00	16.27	35.29	6,748.13	2,857.09	2,022.43	-2,360.02	2.00	-2.00	0.00
7,800.00	14.27	35.29	6,844.59	2,878.58	2,037.64	-2,377.77	2.00	-2.00	0.00
7,900.00	12.27	35.29	6,941.92	2,897.31	2,050.90	-2,393.23	2.00	-2.00	0.00
8,000.00	10.27	35.29	7,039.99	2,913.25	2,062.19	-2,406.40	2.00	-2.00	0.00
8,100.00	8.27	35.29	7,138.68	2,926.39	2,071.49	-2,417.26	2.00	-2.00	0.00
8,200.00	6.27	35.29	7,237.87	2,936.72	2,078.79	-2,425.78	2.00	-2.00	0.00
8,300.00	4.27	35.29	7,337.44	2,944.20	2,084.10	-2,431.97	2.00	-2.00	0.00
8,400.00	2.27	35.29	7,437.28	2,948.85	2,087.39	-2,435.81	2.00	-2.00	0.00
8,500.00	0.27	35.29	7,537.25	2,950.66	2,088.66	-2,437.30	2.00	-2.00	0.00
8,513.25	0.00	0.00	7,550.50	2,950.68	2,088.68	-2,437.32	2.00	-2.00	0.00
HOLD VERTICAL									
8,543.25	0.00	0.00	7,580.50	2,950.68	2,088.68	-2,437.32	0.00	0.00	0.00
KOP, BUILD 12°/100'									
8,550.00	0.81	179.79	7,587.25	2,950.63	2,088.68	-2,437.27	12.00	12.00	0.00
8,575.00	3.81	179.79	7,612.22	2,949.63	2,088.68	-2,436.29	12.00	12.00	0.00
8,600.00	6.81	179.79	7,637.11	2,947.31	2,088.69	-2,434.03	12.00	12.00	0.00
8,625.00	9.81	179.79	7,661.85	2,943.70	2,088.71	-2,430.49	12.00	12.00	0.00
8,650.00	12.81	179.79	7,686.36	2,938.80	2,088.72	-2,425.70	12.00	12.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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)	
8,675.00	15.81	179.79	7,710.58	2,932.62	2,088.74	-2,419.66	12.00	12.00	0.00	
8,700.00	18.81	179.79	7,734.45	2,925.18	2,088.77	-2,412.39	12.00	12.00	0.00	
8,725.00	21.81	179.79	7,757.89	2,916.51	2,088.80	-2,403.91	12.00	12.00	0.00	
8,750.00	24.81	179.79	7,780.85	2,906.62	2,088.84	-2,394.24	12.00	12.00	0.00	
8,775.00	27.81	179.79	7,803.26	2,895.54	2,088.88	-2,383.40	12.00	12.00	0.00	
8,800.00	30.81	179.79	7,825.05	2,883.30	2,088.92	-2,371.44	12.00	12.00	0.00	
8,825.00	33.81	179.79	7,846.18	2,869.94	2,088.97	-2,358.38	12.00	12.00	0.00	
8,850.00	36.81	179.79	7,866.58	2,855.49	2,089.02	-2,344.25	12.00	12.00	0.00	
8,866.99	38.85	179.79	7,880.00	2,845.08	2,089.06	-2,334.06	12.00	12.00	0.00	
NIOBRARA										
8,875.00	39.81	179.79	7,886.20	2,840.00	2,089.08	-2,329.10	12.00	12.00	0.00	
8,900.00	42.81	179.79	7,904.97	2,823.50	2,089.14	-2,312.97	12.00	12.00	0.00	
8,925.00	45.81	179.79	7,922.86	2,806.04	2,089.20	-2,295.90	12.00	12.00	0.00	
8,950.00	48.81	179.79	7,939.81	2,787.67	2,089.26	-2,277.93	12.00	12.00	0.00	
8,975.00	51.81	179.79	7,955.78	2,768.43	2,089.33	-2,259.13	12.00	12.00	0.00	
9,000.00	54.81	179.79	7,970.71	2,748.39	2,089.41	-2,239.53	12.00	12.00	0.00	
9,025.00	57.81	179.79	7,984.58	2,727.59	2,089.48	-2,219.19	12.00	12.00	0.00	
9,050.00	60.81	179.79	7,997.34	2,706.10	2,089.56	-2,198.18	12.00	12.00	0.00	
9,075.00	63.81	179.79	8,008.96	2,683.96	2,089.64	-2,176.54	12.00	12.00	0.00	
9,100.00	66.80	179.79	8,019.40	2,661.25	2,089.72	-2,154.33	12.00	12.00	0.00	
9,125.00	69.80	179.79	8,028.64	2,638.03	2,089.80	-2,131.62	12.00	12.00	0.00	
9,150.00	72.80	179.79	8,036.66	2,614.35	2,089.89	-2,108.47	12.00	12.00	0.00	
9,175.00	75.80	179.79	8,043.42	2,590.28	2,089.97	-2,084.94	12.00	12.00	0.00	
9,195.41	78.25	179.79	8,048.00	2,570.39	2,090.04	-2,065.49	12.00	12.00	0.00	
NIO B TARGET										
9,200.00	78.80	179.79	8,048.91	2,565.90	2,090.06	-2,061.10	12.00	12.00	0.00	
9,225.00	81.80	179.79	8,053.12	2,541.26	2,090.15	-2,037.00	12.00	12.00	0.00	
9,250.00	84.80	179.79	8,056.04	2,516.43	2,090.24	-2,012.73	12.00	12.00	0.00	
9,275.00	87.80	179.79	8,057.65	2,491.49	2,090.33	-1,988.34	12.00	12.00	0.00	
9,293.31	90.00	179.79	8,058.00	2,473.18	2,090.39	-1,970.44	12.00	12.00	0.00	
LP @ 90° INC, 179.79° AZM HOLD										
9,300.00	90.00	179.79	8,058.00	2,466.49	2,090.42	-1,963.90	0.00	0.00	0.00	
9,400.00	90.00	179.79	8,058.00	2,366.49	2,090.78	-1,866.13	0.00	0.00	0.00	
9,500.00	90.00	179.79	8,058.00	2,266.49	2,091.13	-1,768.35	0.00	0.00	0.00	
9,600.00	90.00	179.79	8,058.00	2,166.49	2,091.49	-1,670.58	0.00	0.00	0.00	
9,700.00	90.00	179.79	8,058.00	2,066.49	2,091.85	-1,572.80	0.00	0.00	0.00	
9,800.00	90.00	179.79	8,058.00	1,966.49	2,092.21	-1,475.03	0.00	0.00	0.00	
9,900.00	90.00	179.79	8,058.00	1,866.49	2,092.57	-1,377.25	0.00	0.00	0.00	
10,000.00	90.00	179.79	8,058.00	1,766.50	2,092.93	-1,279.48	0.00	0.00	0.00	
10,100.00	90.00	179.79	8,057.99	1,666.50	2,093.29	-1,181.70	0.00	0.00	0.00	
10,200.00	90.00	179.79	8,057.99	1,566.50	2,093.65	-1,083.92	0.00	0.00	0.00	
10,300.00	90.00	179.79	8,057.99	1,466.50	2,094.00	-986.15	0.00	0.00	0.00	
10,400.00	90.00	179.79	8,057.99	1,366.50	2,094.36	-888.37	0.00	0.00	0.00	
10,500.00	90.00	179.79	8,057.99	1,266.50	2,094.72	-790.60	0.00	0.00	0.00	
10,600.00	90.00	179.79	8,057.99	1,166.50	2,095.08	-692.82	0.00	0.00	0.00	
10,700.00	90.00	179.79	8,057.99	1,066.50	2,095.44	-595.05	0.00	0.00	0.00	
10,800.00	90.00	179.79	8,057.99	966.50	2,095.80	-497.27	0.00	0.00	0.00	
10,900.00	90.00	179.79	8,057.99	866.50	2,096.16	-399.50	0.00	0.00	0.00	
11,000.00	90.00	179.79	8,057.99	766.50	2,096.52	-301.72	0.00	0.00	0.00	
11,100.00	90.00	179.79	8,057.99	666.50	2,096.87	-203.95	0.00	0.00	0.00	
11,200.00	90.00	179.79	8,057.99	566.50	2,097.23	-106.17	0.00	0.00	0.00	
11,300.00	90.00	179.79	8,057.99	466.50	2,097.59	-8.40	0.00	0.00	0.00	
11,400.00	90.00	179.79	8,057.99	366.50	2,097.95	89.38	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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)	
11,500.00	90.00	179.79	8,057.99	266.50	2,098.31	187.15	0.00	0.00	0.00	
11,600.00	90.00	179.79	8,057.99	166.51	2,098.67	284.93	0.00	0.00	0.00	
11,700.00	90.00	179.79	8,057.98	66.51	2,099.03	382.70	0.00	0.00	0.00	
11,800.00	90.00	179.79	8,057.98	-33.49	2,099.39	480.48	0.00	0.00	0.00	
11,900.00	90.00	179.79	8,057.98	-133.49	2,099.74	578.25	0.00	0.00	0.00	
12,000.00	90.00	179.79	8,057.98	-233.49	2,100.10	676.03	0.00	0.00	0.00	
12,100.00	90.00	179.79	8,057.98	-333.49	2,100.46	773.80	0.00	0.00	0.00	
12,200.00	90.00	179.79	8,057.98	-433.49	2,100.82	871.58	0.00	0.00	0.00	
12,300.00	90.00	179.79	8,057.98	-533.49	2,101.18	969.35	0.00	0.00	0.00	
12,400.00	90.00	179.79	8,057.98	-633.49	2,101.54	1,067.13	0.00	0.00	0.00	
12,500.00	90.00	179.79	8,057.98	-733.49	2,101.90	1,164.90	0.00	0.00	0.00	
12,600.00	90.00	179.79	8,057.98	-833.49	2,102.26	1,262.68	0.00	0.00	0.00	
12,700.00	90.00	179.79	8,057.98	-933.49	2,102.61	1,360.45	0.00	0.00	0.00	
12,800.00	90.00	179.79	8,057.98	-1,033.49	2,102.97	1,458.23	0.00	0.00	0.00	
12,900.00	90.00	179.79	8,057.98	-1,133.49	2,103.33	1,556.00	0.00	0.00	0.00	
13,000.00	90.00	179.79	8,057.98	-1,233.49	2,103.69	1,653.78	0.00	0.00	0.00	
13,100.00	90.00	179.79	8,057.98	-1,333.48	2,104.05	1,751.55	0.00	0.00	0.00	
13,200.00	90.00	179.79	8,057.98	-1,433.48	2,104.41	1,849.33	0.00	0.00	0.00	
13,300.00	90.00	179.79	8,057.97	-1,533.48	2,104.77	1,947.10	0.00	0.00	0.00	
13,400.00	90.00	179.79	8,057.97	-1,633.48	2,105.13	2,044.88	0.00	0.00	0.00	
13,500.00	90.00	179.79	8,057.97	-1,733.48	2,105.48	2,142.65	0.00	0.00	0.00	
13,600.00	90.00	179.79	8,057.97	-1,833.48	2,105.84	2,240.43	0.00	0.00	0.00	
13,700.00	90.00	179.79	8,057.97	-1,933.48	2,106.20	2,338.20	0.00	0.00	0.00	
13,800.00	90.00	179.79	8,057.97	-2,033.48	2,106.56	2,435.98	0.00	0.00	0.00	
13,900.00	90.00	179.79	8,057.97	-2,133.48	2,106.92	2,533.75	0.00	0.00	0.00	
14,000.00	90.00	179.79	8,057.97	-2,233.48	2,107.28	2,631.53	0.00	0.00	0.00	
14,100.00	90.00	179.79	8,057.97	-2,333.48	2,107.64	2,729.30	0.00	0.00	0.00	
14,200.00	90.00	179.79	8,057.97	-2,433.48	2,108.00	2,827.08	0.00	0.00	0.00	
14,300.00	90.00	179.79	8,057.97	-2,533.48	2,108.36	2,924.85	0.00	0.00	0.00	
14,400.00	90.00	179.79	8,057.97	-2,633.48	2,108.71	3,022.63	0.00	0.00	0.00	
14,500.00	90.00	179.79	8,057.97	-2,733.48	2,109.07	3,120.40	0.00	0.00	0.00	
14,600.00	90.00	179.79	8,057.97	-2,833.48	2,109.43	3,218.18	0.00	0.00	0.00	
14,700.00	90.00	179.79	8,057.97	-2,933.47	2,109.79	3,315.95	0.00	0.00	0.00	
14,800.00	90.00	179.79	8,057.96	-3,033.47	2,110.15	3,413.73	0.00	0.00	0.00	
14,900.00	90.00	179.79	8,057.96	-3,133.47	2,110.51	3,511.50	0.00	0.00	0.00	
15,000.00	90.00	179.79	8,057.96	-3,233.47	2,110.87	3,609.28	0.00	0.00	0.00	
15,100.00	90.00	179.79	8,057.96	-3,333.47	2,111.23	3,707.05	0.00	0.00	0.00	
15,200.00	90.00	179.79	8,057.96	-3,433.47	2,111.58	3,804.83	0.00	0.00	0.00	
15,300.00	90.00	179.79	8,057.96	-3,533.47	2,111.94	3,902.60	0.00	0.00	0.00	
15,400.00	90.00	179.79	8,057.96	-3,633.47	2,112.30	4,000.38	0.00	0.00	0.00	
15,500.00	90.00	179.79	8,057.96	-3,733.47	2,112.66	4,098.15	0.00	0.00	0.00	
15,600.00	90.00	179.79	8,057.96	-3,833.47	2,113.02	4,195.93	0.00	0.00	0.00	
15,700.00	90.00	179.79	8,057.96	-3,933.47	2,113.38	4,293.70	0.00	0.00	0.00	
15,800.00	90.00	179.79	8,057.96	-4,033.47	2,113.74	4,391.48	0.00	0.00	0.00	
15,900.00	90.00	179.79	8,057.96	-4,133.47	2,114.10	4,489.25	0.00	0.00	0.00	
16,000.00	90.00	179.79	8,057.96	-4,233.47	2,114.45	4,587.03	0.00	0.00	0.00	
16,100.00	90.00	179.79	8,057.96	-4,333.47	2,114.81	4,684.80	0.00	0.00	0.00	
16,200.00	90.00	179.79	8,057.96	-4,433.46	2,115.17	4,782.58	0.00	0.00	0.00	
16,300.00	90.00	179.79	8,057.96	-4,533.46	2,115.53	4,880.35	0.00	0.00	0.00	
16,400.00	90.00	179.79	8,057.95	-4,633.46	2,115.89	4,978.13	0.00	0.00	0.00	
16,500.00	90.00	179.79	8,057.95	-4,733.46	2,116.25	5,075.90	0.00	0.00	0.00	
16,600.00	90.00	179.79	8,057.95	-4,833.46	2,116.61	5,173.68	0.00	0.00	0.00	
16,700.00	90.00	179.79	8,057.95	-4,933.46	2,116.97	5,271.45	0.00	0.00	0.00	
16,800.00	90.00	179.79	8,057.95	-5,033.46	2,117.32	5,369.23	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	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)
16,900.00	90.00	179.79	8,057.95	-5,133.46	2,117.68	5,467.00	0.00	0.00	0.00
17,000.00	90.00	179.79	8,057.95	-5,233.46	2,118.04	5,564.78	0.00	0.00	0.00
17,100.00	90.00	179.79	8,057.95	-5,333.46	2,118.40	5,662.55	0.00	0.00	0.00
17,200.00	90.00	179.79	8,057.95	-5,433.46	2,118.76	5,760.33	0.00	0.00	0.00
17,300.00	90.00	179.79	8,057.95	-5,533.46	2,119.12	5,858.10	0.00	0.00	0.00
17,400.00	90.00	179.79	8,057.95	-5,633.46	2,119.48	5,955.88	0.00	0.00	0.00
17,500.00	90.00	179.79	8,057.95	-5,733.46	2,119.84	6,053.65	0.00	0.00	0.00
17,600.00	90.00	179.79	8,057.95	-5,833.46	2,120.19	6,151.43	0.00	0.00	0.00
17,700.00	90.00	179.79	8,057.95	-5,933.46	2,120.55	6,249.20	0.00	0.00	0.00
17,800.00	90.00	179.79	8,057.95	-6,033.45	2,120.91	6,346.98	0.00	0.00	0.00
17,900.00	90.00	179.79	8,057.94	-6,133.45	2,121.27	6,444.75	0.00	0.00	0.00
18,000.00	90.00	179.79	8,057.94	-6,233.45	2,121.63	6,542.53	0.00	0.00	0.00
18,100.00	90.00	179.79	8,057.94	-6,333.45	2,121.99	6,640.30	0.00	0.00	0.00
18,200.00	90.00	179.79	8,057.94	-6,433.45	2,122.35	6,738.08	0.00	0.00	0.00
18,300.00	90.00	179.79	8,057.94	-6,533.45	2,122.71	6,835.85	0.00	0.00	0.00
18,400.00	90.00	179.79	8,057.94	-6,633.45	2,123.06	6,933.63	0.00	0.00	0.00
18,500.00	90.00	179.79	8,057.94	-6,733.45	2,123.42	7,031.40	0.00	0.00	0.00
18,600.00	90.00	179.79	8,057.94	-6,833.45	2,123.78	7,129.18	0.00	0.00	0.00
18,700.00	90.00	179.79	8,057.94	-6,933.45	2,124.14	7,226.95	0.00	0.00	0.00
18,800.00	90.00	179.79	8,057.94	-7,033.45	2,124.50	7,324.73	0.00	0.00	0.00
18,900.00	90.00	179.79	8,057.94	-7,133.45	2,124.86	7,422.50	0.00	0.00	0.00
19,000.00	90.00	179.79	8,057.94	-7,233.45	2,125.22	7,520.28	0.00	0.00	0.00
19,100.00	90.00	179.79	8,057.94	-7,333.45	2,125.58	7,618.05	0.00	0.00	0.00
19,200.00	90.00	179.79	8,057.94	-7,433.45	2,125.93	7,715.83	0.00	0.00	0.00
19,300.00	90.00	179.79	8,057.94	-7,533.45	2,126.29	7,813.60	0.00	0.00	0.00
19,400.00	90.00	179.79	8,057.94	-7,633.44	2,126.65	7,911.38	0.00	0.00	0.00
19,500.00	90.00	179.79	8,057.93	-7,733.44	2,127.01	8,009.15	0.00	0.00	0.00
19,600.00	90.00	179.79	8,057.93	-7,833.44	2,127.37	8,106.93	0.00	0.00	0.00
19,700.00	90.00	179.79	8,057.93	-7,933.44	2,127.73	8,204.70	0.00	0.00	0.00
19,800.00	90.00	179.79	8,057.93	-8,033.44	2,128.09	8,302.48	0.00	0.00	0.00
19,900.00	90.00	179.79	8,057.93	-8,133.44	2,128.45	8,400.25	0.00	0.00	0.00
20,000.00	90.00	179.79	8,057.93	-8,233.44	2,128.80	8,498.03	0.00	0.00	0.00
20,100.00	90.00	179.79	8,057.93	-8,333.44	2,129.16	8,595.80	0.00	0.00	0.00
20,200.00	90.00	179.79	8,057.93	-8,433.44	2,129.52	8,693.58	0.00	0.00	0.00
20,300.00	90.00	179.79	8,057.93	-8,533.44	2,129.88	8,791.35	0.00	0.00	0.00
20,400.00	90.00	179.79	8,057.93	-8,633.44	2,130.24	8,889.13	0.00	0.00	0.00
20,500.00	90.00	179.79	8,057.93	-8,733.44	2,130.60	8,986.90	0.00	0.00	0.00
20,600.00	90.00	179.79	8,057.93	-8,833.44	2,130.96	9,084.68	0.00	0.00	0.00
20,700.00	90.00	179.79	8,057.93	-8,933.44	2,131.32	9,182.45	0.00	0.00	0.00
20,800.00	90.00	179.79	8,057.93	-9,033.44	2,131.67	9,280.23	0.00	0.00	0.00
20,900.00	90.00	179.79	8,057.93	-9,133.43	2,132.03	9,378.00	0.00	0.00	0.00
21,000.00	90.00	179.79	8,057.92	-9,233.43	2,132.39	9,475.78	0.00	0.00	0.00
21,546.10	90.00	179.79	8,058.00	-9,779.53	2,134.88	10,009.84	0.00	0.00	0.00
TD at 21546.10' MD									

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S20-25-4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5336.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S20-25-4N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
LIVINGSTON S20 4N - I	0.00	0.00	8,058.00	2,473.18	2,090.39	1,237,856.58	3,131,259.93	39° 59' 7.257 N	105° 1' 53.652 W
- plan hits target center									
- Point									
LIVINGSTON S20 4N - I	0.00	0.00	8,058.00	-9,779.53	2,134.88	1,225,604.27	3,131,368.11	39° 57' 6.167 N	105° 1' 53.094 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
5,270.13	4,646.00	PARKMAN				
5,840.22	5,127.00	SUSSEX				
6,930.44	6,047.00	SHANNON				
8,866.99	7,880.00	NIOBRARA				
9,195.41	8,048.00	NIO B TARGET				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	BUILD 2°/100'
1,823.21	1,737.74	365.41	258.66	HOLD 32.46° INC
6,890.04	6,012.76	2,585.27	1,830.02	DROP 2°/100'
8,513.25	7,550.50	2,950.68	2,088.68	HOLD VERTICAL
8,543.25	7,580.50	2,950.68	2,088.68	KOP, BUILD 12°/100'
9,293.31	8,058.00	2,473.18	2,090.39	LP @ 90° INC, 179.79° AZM HOLD
21,546.10	8,058.00	-9,779.53	2,134.88	TD at 21546.10' MD