

EXTRACTION OIL & GAS

Broomfield County

Sec 7-T1S-R68W

LIVINGSTON S19-25-10N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

05 December, 2017



Project: Broomfield County
Site: Sec 7-T1S-R68W
Well: LIVINGSTON S19-25-10N
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: 8.27°
Magnetic Field
Strength: 52086.1snT
Dip Angle: 66.46°
Date: 12/4/2017
Model: IGRF2015

WELL DETAILS: LIVINGSTON S19-25-10N

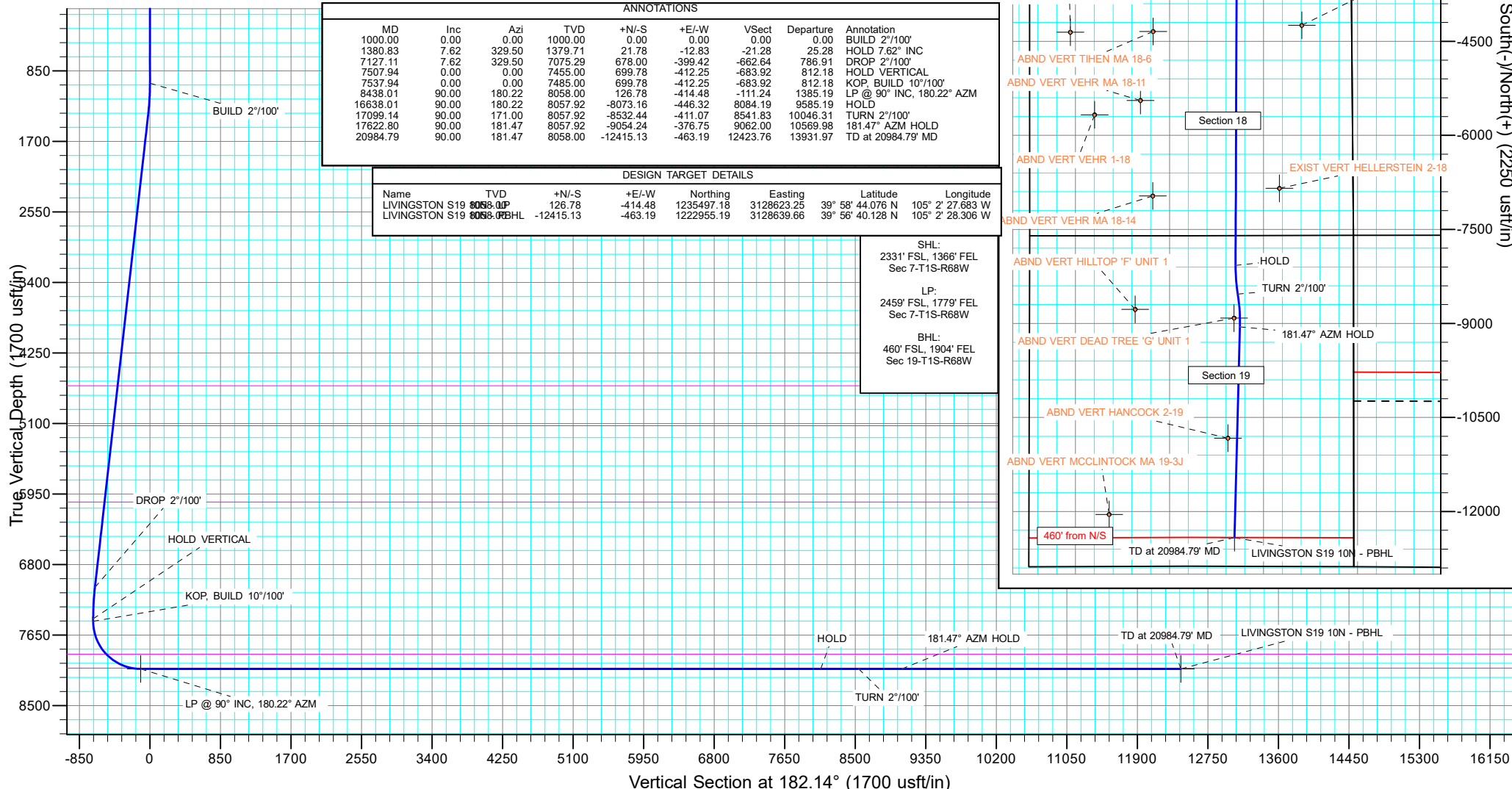
+N/-S	+E/-W	Northing	Easting	5311.00	Latitude	Longitude	Slot
0.00	0.00	1235372.55	3129038.37		39° 58' 42.823 N	105° 2' 22.358 W	

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	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1380.83	7.62	329.50	1379.71	21.78	-12.83	2.00	329.50	-21.28	
4	7127.11	7.62	329.50	7075.29	678.00	-399.42	0.00	0.00	-662.64	
5	7507.94	0.00	0.00	7455.00	699.78	-412.25	2.00	180.00	-683.92	
6	7537.94	0.00	0.00	7485.00	699.78	-412.25	0.00	0.00	-683.92	
7	8438.01	90.00	180.22	8058.00	126.78	-414.48	10.00	180.22	-111.24	LIVINGSTON S19 10N - LP
8	16638.01	90.00	180.22	8057.92	-8073.16	-446.32	0.00	0.00	8084.19	
9	17099.14	90.00	171.00	8057.92	-8532.44	-411.07	2.00	-90.00	8541.83	
10	17622.80	90.00	181.47	8057.92	-9054.24	-376.75	2.00	90.00	9062.00	LIVINGSTON S19 10N - PBHL
11	20984.79	90.00	181.47	8058.00	-12415.13	-463.19	0.00	0.00	12423.76	LIVINGSTON S19 10N - PBHL

FORMATION TOP DETAILS

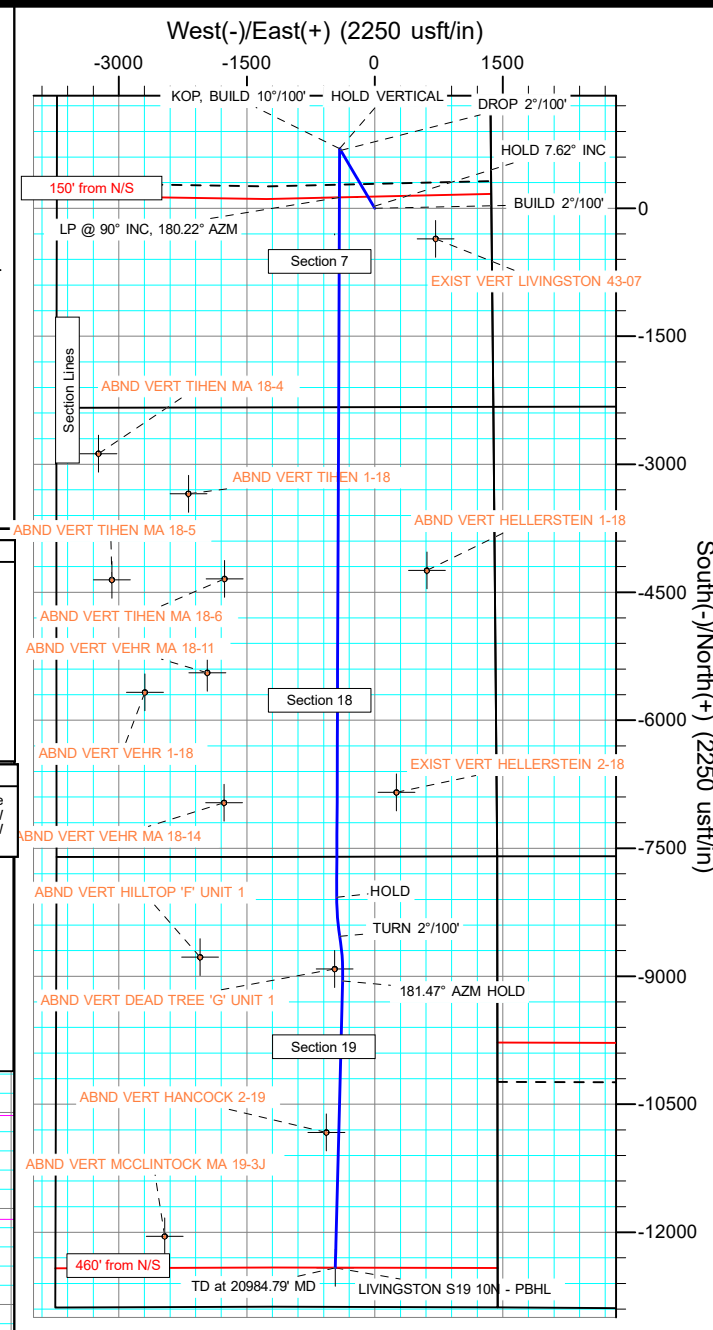
TVDPath	MDPath	Formation
4646.00	4676.20	PARKMAN
5127.00	5161.48	SUSSEX
6047.00	6089.67	SHANNON
7880.00	7973.76	NIOBRARA
8048.00	8330.80	NIO B TARGET



ANNOTATIONS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation		
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	BUILD 2"/100'		
1380.83	7.62	329.50	1379.71	21.78	-12.83	-21.28	25.28	HOLD 7.62" INC		
7127.11	7.62	329.50	7075.29	678.00	-399.42	-662.64	786.91	DROP 2"/100'		
7507.94	0.00	0.00	7455.00	699.78	-412.25	-683.92	812.18	HOLD VERTICAL		
7537.94	0.00	0.00	7485.00	699.78	-412.25	-683.92	812.18	KOP, BUILD 10"/100'		
8438.01	90.00	180.22	8058.00	126.78	-414.48	-111.24	1385.19	LP @ 90° INC, 180.22° AZM		
16638.01	90.00	180.22	8057.92	-8073.16	-446.32	8084.19	9585.19	HOLD		
17099.14	90.00	171.00	8057.92	-8532.44	-411.07	8541.83	10046.31	TURN 2"/100'		
17622.80	90.00	181.47	8057.92	-9054.24	-376.75	9062.00	10569.98	181.47° AZM HOLD		
20984.79	90.00	181.47	8058.00	-12415.13	-463.19	12423.76	13931.97	TD at 20984.79' MD		

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LIVINGSTON S19 10N - LP	8058.00	126.78	-414.48	1235497.18	3128623.25	39° 58' 44.076 N	105° 2' 27.683 W
LIVINGSTON S19 10N - PBHL	8058.00	-12415.13	-463.19	1222955.19	3128639.66	39° 56' 40.128 N	105° 2' 28.306 W

SHL:
2331' FSL, 1366' FEL
Sec 7-T1S-R68W
LP:
2459' FSL, 1779' FEL
Sec 7-T1S-R68W
BHL:
460' FSL, 1904' FEL
Sec 19-T1S-R68W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-10N
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 S19-25-10N	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 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 S19-25-10N				
Well Position	+N/-S	-2,949.69 usft	Northing:	1,235,372.55 usft	Latitude:	39° 58' 42.823 N
	+E/-W	-1,343.53 usft	Easting:	3,129,038.37 usft	Longitude:	105° 2' 22.358 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	52,086.14906765

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	182.14	

Plan Survey Tool Program	Date	12/5/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	20,984.79	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG	
			OWSG MWD - Standard		

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Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S19-25-10N	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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,380.83	7.62	329.50	1,379.71	21.78	-12.83	2.00	2.00	0.00	329.50	
7,127.11	7.62	329.50	7,075.29	678.00	-399.42	0.00	0.00	0.00	0.00	
7,507.94	0.00	0.00	7,455.00	699.78	-412.25	2.00	-2.00	0.00	180.00	
7,537.94	0.00	0.00	7,485.00	699.78	-412.25	0.00	0.00	0.00	0.00	
8,438.01	90.00	180.22	8,058.00	126.78	-414.48	10.00	10.00	-19.97	180.22	LIVINGSTON S19 10N
16,638.01	90.00	180.22	8,057.92	-8,073.16	-446.32	0.00	0.00	0.00	0.00	
17,099.14	90.00	171.00	8,057.92	-8,532.44	-411.07	2.00	0.00	-2.00	-90.00	
17,622.80	90.00	181.47	8,057.92	-9,054.24	-376.75	2.00	0.00	2.00	90.00	LIVINGSTON S19 10N
20,984.79	90.00	181.47	8,058.00	-12,415.13	-463.19	0.00	0.00	0.00	0.00	LIVINGSTON S19 10N

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 S19-25-10N	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
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
BUILD 2°/100'									
1,100.00	2.00	329.50	1,099.98	1.50	-0.89	-1.47	2.00	2.00	0.00
1,200.00	4.00	329.50	1,199.84	6.01	-3.54	-5.88	2.00	2.00	0.00
1,300.00	6.00	329.50	1,299.45	13.52	-7.97	-13.22	2.00	2.00	0.00
1,380.83	7.62	329.50	1,379.71	21.78	-12.83	-21.28	2.00	2.00	0.00
HOLD 7.62° INC									
1,400.00	7.62	329.50	1,398.71	23.97	-14.12	-23.42	0.00	0.00	0.00
1,500.00	7.62	329.50	1,497.83	35.39	-20.85	-34.58	0.00	0.00	0.00
1,600.00	7.62	329.50	1,596.95	46.81	-27.57	-45.75	0.00	0.00	0.00
1,700.00	7.62	329.50	1,696.06	58.23	-34.30	-56.91	0.00	0.00	0.00
1,800.00	7.62	329.50	1,795.18	69.65	-41.03	-68.07	0.00	0.00	0.00
1,900.00	7.62	329.50	1,894.30	81.07	-47.76	-79.23	0.00	0.00	0.00
2,000.00	7.62	329.50	1,993.42	92.49	-54.49	-90.39	0.00	0.00	0.00
2,100.00	7.62	329.50	2,092.53	103.91	-61.21	-101.55	0.00	0.00	0.00
2,200.00	7.62	329.50	2,191.65	115.33	-67.94	-112.71	0.00	0.00	0.00
2,300.00	7.62	329.50	2,290.77	126.75	-74.67	-123.87	0.00	0.00	0.00
2,400.00	7.62	329.50	2,389.89	138.17	-81.40	-135.04	0.00	0.00	0.00
2,500.00	7.62	329.50	2,489.01	149.59	-88.12	-146.20	0.00	0.00	0.00
2,600.00	7.62	329.50	2,588.12	161.01	-94.85	-157.36	0.00	0.00	0.00
2,700.00	7.62	329.50	2,687.24	172.43	-101.58	-168.52	0.00	0.00	0.00
2,800.00	7.62	329.50	2,786.36	183.85	-108.31	-179.68	0.00	0.00	0.00
2,900.00	7.62	329.50	2,885.48	195.27	-115.03	-190.84	0.00	0.00	0.00
3,000.00	7.62	329.50	2,984.59	206.69	-121.76	-202.00	0.00	0.00	0.00
3,100.00	7.62	329.50	3,083.71	218.11	-128.49	-213.16	0.00	0.00	0.00
3,200.00	7.62	329.50	3,182.83	229.53	-135.22	-224.33	0.00	0.00	0.00
3,300.00	7.62	329.50	3,281.95	240.95	-141.94	-235.49	0.00	0.00	0.00
3,400.00	7.62	329.50	3,381.06	252.37	-148.67	-246.65	0.00	0.00	0.00
3,500.00	7.62	329.50	3,480.18	263.79	-155.40	-257.81	0.00	0.00	0.00
3,600.00	7.62	329.50	3,579.30	275.21	-162.13	-268.97	0.00	0.00	0.00
3,700.00	7.62	329.50	3,678.42	286.63	-168.86	-280.13	0.00	0.00	0.00
3,800.00	7.62	329.50	3,777.54	298.05	-175.58	-291.29	0.00	0.00	0.00
3,900.00	7.62	329.50	3,876.65	309.47	-182.31	-302.45	0.00	0.00	0.00
4,000.00	7.62	329.50	3,975.77	320.89	-189.04	-313.62	0.00	0.00	0.00
4,100.00	7.62	329.50	4,074.89	332.31	-195.77	-324.78	0.00	0.00	0.00
4,200.00	7.62	329.50	4,174.01	343.73	-202.49	-335.94	0.00	0.00	0.00
4,300.00	7.62	329.50	4,273.12	355.15	-209.22	-347.10	0.00	0.00	0.00
4,400.00	7.62	329.50	4,372.24	366.57	-215.95	-358.26	0.00	0.00	0.00
4,500.00	7.62	329.50	4,471.36	377.99	-222.68	-369.42	0.00	0.00	0.00
4,600.00	7.62	329.50	4,570.48	389.41	-229.40	-380.58	0.00	0.00	0.00
4,676.20	7.62	329.50	4,646.00	398.11	-234.53	-389.09	0.00	0.00	0.00
PARKMAN									
4,700.00	7.62	329.50	4,669.60	400.83	-236.13	-391.74	0.00	0.00	0.00

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Project:	Broomfield County	MD Reference:	KB 25' @ 5336.00usft
Site:	Sec 7-T1S-R68W	North Reference:	True
Well:	LIVINGSTON S19-25-10N	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)
4,800.00	7.62	329.50	4,768.71	412.25	-242.86	-402.91	0.00	0.00	0.00
4,900.00	7.62	329.50	4,867.83	423.67	-249.59	-414.07	0.00	0.00	0.00
5,000.00	7.62	329.50	4,966.95	435.09	-256.32	-425.23	0.00	0.00	0.00
5,100.00	7.62	329.50	5,066.07	446.51	-263.04	-436.39	0.00	0.00	0.00
5,161.48	7.62	329.50	5,127.00	453.53	-267.18	-443.25	0.00	0.00	0.00
SUSSEX									
5,200.00	7.62	329.50	5,165.18	457.93	-269.77	-447.55	0.00	0.00	0.00
5,300.00	7.62	329.50	5,264.30	469.35	-276.50	-458.71	0.00	0.00	0.00
5,400.00	7.62	329.50	5,363.42	480.77	-283.23	-469.87	0.00	0.00	0.00
5,500.00	7.62	329.50	5,462.54	492.19	-289.95	-481.03	0.00	0.00	0.00
5,600.00	7.62	329.50	5,561.65	503.61	-296.68	-492.20	0.00	0.00	0.00
5,700.00	7.62	329.50	5,660.77	515.03	-303.41	-503.36	0.00	0.00	0.00
5,800.00	7.62	329.50	5,759.89	526.45	-310.14	-514.52	0.00	0.00	0.00
5,900.00	7.62	329.50	5,859.01	537.87	-316.86	-525.68	0.00	0.00	0.00
6,000.00	7.62	329.50	5,958.13	549.29	-323.59	-536.84	0.00	0.00	0.00
6,089.67	7.62	329.50	6,047.00	559.53	-329.62	-546.85	0.00	0.00	0.00
SHANNON									
6,100.00	7.62	329.50	6,057.24	560.71	-330.32	-548.00	0.00	0.00	0.00
6,200.00	7.62	329.50	6,156.36	572.13	-337.05	-559.16	0.00	0.00	0.00
6,300.00	7.62	329.50	6,255.48	583.55	-343.78	-570.32	0.00	0.00	0.00
6,400.00	7.62	329.50	6,354.60	594.97	-350.50	-581.49	0.00	0.00	0.00
6,500.00	7.62	329.50	6,453.71	606.39	-357.23	-592.65	0.00	0.00	0.00
6,600.00	7.62	329.50	6,552.83	617.81	-363.96	-603.81	0.00	0.00	0.00
6,700.00	7.62	329.50	6,651.95	629.23	-370.69	-614.97	0.00	0.00	0.00
6,800.00	7.62	329.50	6,751.07	640.65	-377.41	-626.13	0.00	0.00	0.00
6,900.00	7.62	329.50	6,850.18	652.07	-384.14	-637.29	0.00	0.00	0.00
7,000.00	7.62	329.50	6,949.30	663.49	-390.87	-648.45	0.00	0.00	0.00
7,100.00	7.62	329.50	7,048.42	674.91	-397.60	-659.61	0.00	0.00	0.00
7,127.11	7.62	329.50	7,075.29	678.00	-399.42	-662.64	0.00	0.00	0.00
DROP 2°/100'									
7,200.00	6.16	329.50	7,147.65	685.53	-403.86	-670.00	2.00	-2.00	0.00
7,300.00	4.16	329.50	7,247.24	693.28	-408.42	-677.57	2.00	-2.00	0.00
7,400.00	2.16	329.50	7,347.09	698.03	-411.22	-682.21	2.00	-2.00	0.00
7,507.94	0.00	0.00	7,455.00	699.78	-412.25	-683.92	2.00	-2.00	0.00
HOLD VERTICAL									
7,537.94	0.00	0.00	7,485.00	699.78	-412.25	-683.92	0.00	0.00	0.00
KOP, BUILD 10°/100'									
7,550.00	1.21	180.22	7,497.06	699.65	-412.25	-683.80	10.00	10.00	0.00
7,600.00	6.21	180.22	7,546.94	696.42	-412.26	-680.57	10.00	10.00	0.00
7,650.00	11.21	180.22	7,596.35	688.86	-412.29	-673.01	10.00	10.00	0.00
7,700.00	16.20	180.22	7,644.91	677.01	-412.34	-661.17	10.00	10.00	0.00
7,750.00	21.20	180.22	7,692.25	660.99	-412.40	-645.15	10.00	10.00	0.00
7,800.00	26.20	180.22	7,738.02	640.89	-412.48	-625.07	10.00	10.00	0.00
7,850.00	31.20	180.22	7,781.86	616.89	-412.57	-601.07	10.00	10.00	0.00
7,900.00	36.20	180.22	7,823.44	589.15	-412.68	-573.35	10.00	10.00	0.00
7,950.00	41.20	180.22	7,862.45	557.90	-412.80	-542.12	10.00	10.00	0.00
7,973.76	43.58	180.22	7,880.00	541.88	-412.86	-526.11	10.00	10.00	0.00
NIOBRARA									
8,000.00	46.20	180.22	7,898.59	523.36	-412.94	-507.60	10.00	10.00	0.00
8,050.00	51.20	180.22	7,931.57	485.81	-413.08	-470.07	10.00	10.00	0.00
8,100.00	56.20	180.22	7,961.16	445.52	-413.24	-429.81	10.00	10.00	0.00
8,150.00	61.20	180.22	7,987.13	402.81	-413.40	-387.12	10.00	10.00	0.00
8,200.00	66.20	180.22	8,009.28	358.00	-413.58	-342.34	10.00	10.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-10N
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 S19-25-10N	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)
8,250.00	71.20	180.22	8,027.43	311.43	-413.76	-295.79	10.00	10.00	0.00
8,300.00	76.20	180.22	8,041.46	263.46	-413.94	-247.84	10.00	10.00	0.00
8,330.80	79.28	180.22	8,048.00	233.37	-414.06	-217.77	10.00	10.00	0.00
NIO B TARGET									
8,350.00	81.20	180.22	8,051.26	214.44	-414.13	-198.85	10.00	10.00	0.00
8,400.00	86.20	180.22	8,056.74	164.76	-414.33	-149.20	10.00	10.00	0.00
8,438.01	90.00	180.22	8,058.00	126.78	-414.48	-111.24	10.00	10.00	0.00
LP @ 90° INC, 180.22° AZM									
8,500.00	90.00	180.22	8,058.00	64.79	-414.72	-49.28	0.00	0.00	0.00
8,600.00	90.00	180.22	8,058.00	-35.21	-415.10	50.66	0.00	0.00	0.00
8,700.00	90.00	180.22	8,058.00	-135.21	-415.49	150.60	0.00	0.00	0.00
8,800.00	90.00	180.22	8,058.00	-235.21	-415.88	250.55	0.00	0.00	0.00
8,900.00	90.00	180.22	8,058.00	-335.21	-416.27	350.49	0.00	0.00	0.00
9,000.00	90.00	180.22	8,057.99	-435.21	-416.66	450.44	0.00	0.00	0.00
9,100.00	90.00	180.22	8,057.99	-535.20	-417.05	550.38	0.00	0.00	0.00
9,200.00	90.00	180.22	8,057.99	-635.20	-417.43	650.33	0.00	0.00	0.00
9,300.00	90.00	180.22	8,057.99	-735.20	-417.82	750.27	0.00	0.00	0.00
9,400.00	90.00	180.22	8,057.99	-835.20	-418.21	850.21	0.00	0.00	0.00
9,500.00	90.00	180.22	8,057.99	-935.20	-418.60	950.16	0.00	0.00	0.00
9,600.00	90.00	180.22	8,057.99	-1,035.20	-418.99	1,050.10	0.00	0.00	0.00
9,700.00	90.00	180.22	8,057.99	-1,135.20	-419.38	1,150.05	0.00	0.00	0.00
9,800.00	90.00	180.22	8,057.99	-1,235.20	-419.76	1,249.99	0.00	0.00	0.00
9,900.00	90.00	180.22	8,057.99	-1,335.20	-420.15	1,349.93	0.00	0.00	0.00
10,000.00	90.00	180.22	8,057.99	-1,435.20	-420.54	1,449.88	0.00	0.00	0.00
10,100.00	90.00	180.22	8,057.98	-1,535.20	-420.93	1,549.82	0.00	0.00	0.00
10,200.00	90.00	180.22	8,057.98	-1,635.20	-421.32	1,649.77	0.00	0.00	0.00
10,300.00	90.00	180.22	8,057.98	-1,735.20	-421.71	1,749.71	0.00	0.00	0.00
10,400.00	90.00	180.22	8,057.98	-1,835.19	-422.09	1,849.66	0.00	0.00	0.00
10,500.00	90.00	180.22	8,057.98	-1,935.19	-422.48	1,949.60	0.00	0.00	0.00
10,600.00	90.00	180.22	8,057.98	-2,035.19	-422.87	2,049.54	0.00	0.00	0.00
10,700.00	90.00	180.22	8,057.98	-2,135.19	-423.26	2,149.49	0.00	0.00	0.00
10,800.00	90.00	180.22	8,057.98	-2,235.19	-423.65	2,249.43	0.00	0.00	0.00
10,900.00	90.00	180.22	8,057.98	-2,335.19	-424.04	2,349.38	0.00	0.00	0.00
11,000.00	90.00	180.22	8,057.98	-2,435.19	-424.42	2,449.32	0.00	0.00	0.00
11,100.00	90.00	180.22	8,057.98	-2,535.19	-424.81	2,549.27	0.00	0.00	0.00
11,200.00	90.00	180.22	8,057.97	-2,635.19	-425.20	2,649.21	0.00	0.00	0.00
11,300.00	90.00	180.22	8,057.97	-2,735.19	-425.59	2,749.15	0.00	0.00	0.00
11,400.00	90.00	180.22	8,057.97	-2,835.19	-425.98	2,849.10	0.00	0.00	0.00
11,500.00	90.00	180.22	8,057.97	-2,935.19	-426.37	2,949.04	0.00	0.00	0.00
11,600.00	90.00	180.22	8,057.97	-3,035.19	-426.76	3,048.99	0.00	0.00	0.00
11,700.00	90.00	180.22	8,057.97	-3,135.19	-427.14	3,148.93	0.00	0.00	0.00
11,800.00	90.00	180.22	8,057.97	-3,235.18	-427.53	3,248.87	0.00	0.00	0.00
11,900.00	90.00	180.22	8,057.97	-3,335.18	-427.92	3,348.82	0.00	0.00	0.00
12,000.00	90.00	180.22	8,057.97	-3,435.18	-428.31	3,448.76	0.00	0.00	0.00
12,100.00	90.00	180.22	8,057.97	-3,535.18	-428.70	3,548.71	0.00	0.00	0.00
12,200.00	90.00	180.22	8,057.97	-3,635.18	-429.09	3,648.65	0.00	0.00	0.00
12,300.00	90.00	180.22	8,057.96	-3,735.18	-429.47	3,748.60	0.00	0.00	0.00
12,400.00	90.00	180.22	8,057.96	-3,835.18	-429.86	3,848.54	0.00	0.00	0.00
12,500.00	90.00	180.22	8,057.96	-3,935.18	-430.25	3,948.48	0.00	0.00	0.00
12,600.00	90.00	180.22	8,057.96	-4,035.18	-430.64	4,048.43	0.00	0.00	0.00
12,700.00	90.00	180.22	8,057.96	-4,135.18	-431.03	4,148.37	0.00	0.00	0.00
12,800.00	90.00	180.22	8,057.96	-4,235.18	-431.42	4,248.32	0.00	0.00	0.00
12,900.00	90.00	180.22	8,057.96	-4,335.18	-431.80	4,348.26	0.00	0.00	0.00
13,000.00	90.00	180.22	8,057.96	-4,435.18	-432.19	4,448.21	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-10N
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 S19-25-10N	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)
13,100.00	90.00	180.22	8,057.96	-4,535.17	-432.58	4,548.15	0.00	0.00	0.00
13,200.00	90.00	180.22	8,057.96	-4,635.17	-432.97	4,648.09	0.00	0.00	0.00
13,300.00	90.00	180.22	8,057.95	-4,735.17	-433.36	4,748.04	0.00	0.00	0.00
13,400.00	90.00	180.22	8,057.95	-4,835.17	-433.75	4,847.98	0.00	0.00	0.00
13,500.00	90.00	180.22	8,057.95	-4,935.17	-434.13	4,947.93	0.00	0.00	0.00
13,600.00	90.00	180.22	8,057.95	-5,035.17	-434.52	5,047.87	0.00	0.00	0.00
13,700.00	90.00	180.22	8,057.95	-5,135.17	-434.91	5,147.81	0.00	0.00	0.00
13,800.00	90.00	180.22	8,057.95	-5,235.17	-435.30	5,247.76	0.00	0.00	0.00
13,900.00	90.00	180.22	8,057.95	-5,335.17	-435.69	5,347.70	0.00	0.00	0.00
14,000.00	90.00	180.22	8,057.95	-5,435.17	-436.08	5,447.65	0.00	0.00	0.00
14,100.00	90.00	180.22	8,057.95	-5,535.17	-436.46	5,547.59	0.00	0.00	0.00
14,200.00	90.00	180.22	8,057.95	-5,635.17	-436.85	5,647.54	0.00	0.00	0.00
14,300.00	90.00	180.22	8,057.95	-5,735.17	-437.24	5,747.48	0.00	0.00	0.00
14,400.00	90.00	180.22	8,057.94	-5,835.16	-437.63	5,847.42	0.00	0.00	0.00
14,500.00	90.00	180.22	8,057.94	-5,935.16	-438.02	5,947.37	0.00	0.00	0.00
14,600.00	90.00	180.22	8,057.94	-6,035.16	-438.41	6,047.31	0.00	0.00	0.00
14,700.00	90.00	180.22	8,057.94	-6,135.16	-438.79	6,147.26	0.00	0.00	0.00
14,800.00	90.00	180.22	8,057.94	-6,235.16	-439.18	6,247.20	0.00	0.00	0.00
14,900.00	90.00	180.22	8,057.94	-6,335.16	-439.57	6,347.14	0.00	0.00	0.00
15,000.00	90.00	180.22	8,057.94	-6,435.16	-439.96	6,447.09	0.00	0.00	0.00
15,100.00	90.00	180.22	8,057.94	-6,535.16	-440.35	6,547.03	0.00	0.00	0.00
15,200.00	90.00	180.22	8,057.94	-6,635.16	-440.74	6,646.98	0.00	0.00	0.00
15,300.00	90.00	180.22	8,057.94	-6,735.16	-441.12	6,746.92	0.00	0.00	0.00
15,400.00	90.00	180.22	8,057.94	-6,835.16	-441.51	6,846.87	0.00	0.00	0.00
15,500.00	90.00	180.22	8,057.93	-6,935.16	-441.90	6,946.81	0.00	0.00	0.00
15,600.00	90.00	180.22	8,057.93	-7,035.16	-442.29	7,046.75	0.00	0.00	0.00
15,700.00	90.00	180.22	8,057.93	-7,135.16	-442.68	7,146.70	0.00	0.00	0.00
15,800.00	90.00	180.22	8,057.93	-7,235.15	-443.07	7,246.64	0.00	0.00	0.00
15,900.00	90.00	180.22	8,057.93	-7,335.15	-443.45	7,346.59	0.00	0.00	0.00
16,000.00	90.00	180.22	8,057.93	-7,435.15	-443.84	7,446.53	0.00	0.00	0.00
16,100.00	90.00	180.22	8,057.93	-7,535.15	-444.23	7,546.48	0.00	0.00	0.00
16,200.00	90.00	180.22	8,057.93	-7,635.15	-444.62	7,646.42	0.00	0.00	0.00
16,300.00	90.00	180.22	8,057.93	-7,735.15	-445.01	7,746.36	0.00	0.00	0.00
16,400.00	90.00	180.22	8,057.93	-7,835.15	-445.40	7,846.31	0.00	0.00	0.00
16,500.00	90.00	180.22	8,057.92	-7,935.15	-445.78	7,946.25	0.00	0.00	0.00
16,600.00	90.00	180.22	8,057.92	-8,035.15	-446.17	8,046.20	0.00	0.00	0.00
16,638.01	90.00	180.22	8,057.92	-8,073.16	-446.32	8,084.19	0.00	0.00	0.00
HOLD									
16,700.00	90.00	178.98	8,057.92	-8,135.15	-445.89	8,146.11	2.00	0.00	-2.00
16,800.00	90.00	176.98	8,057.92	-8,235.08	-442.37	8,245.85	2.00	0.00	-2.00
16,900.00	90.00	174.98	8,057.92	-8,334.83	-435.37	8,345.26	2.00	0.00	-2.00
17,000.00	90.00	172.98	8,057.92	-8,434.27	-424.88	8,444.25	2.00	0.00	-2.00
17,099.14	90.00	171.00	8,057.92	-8,532.44	-411.07	8,541.83	2.00	0.00	-2.00
TURN 2°/100'									
17,200.00	90.00	173.02	8,057.92	-8,632.32	-397.05	8,641.12	2.00	0.00	2.00
17,300.00	90.00	175.02	8,057.92	-8,731.77	-386.63	8,740.11	2.00	0.00	2.00
17,400.00	90.00	177.02	8,057.92	-8,831.52	-379.68	8,839.53	2.00	0.00	2.00
17,500.00	90.00	179.02	8,057.92	-8,931.45	-376.22	8,939.27	2.00	0.00	2.00
17,600.00	90.00	181.02	8,057.92	-9,031.45	-376.25	9,039.20	2.00	0.00	2.00
17,622.80	90.00	181.47	8,057.92	-9,054.24	-376.75	9,062.00	2.00	0.00	2.00
181.47° AZM HOLD									
17,700.00	90.00	181.47	8,057.92	-9,131.42	-378.73	9,139.19	0.00	0.00	0.00
17,800.00	90.00	181.47	8,057.92	-9,231.38	-381.30	9,239.18	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-10N
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 S19-25-10N	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)
17,900.00	90.00	181.47	8,057.92	-9,331.35	-383.88	9,339.18	0.00	0.00	0.00
18,000.00	90.00	181.47	8,057.92	-9,431.32	-386.45	9,439.17	0.00	0.00	0.00
18,100.00	90.00	181.47	8,057.92	-9,531.29	-389.02	9,539.16	0.00	0.00	0.00
18,200.00	90.00	181.47	8,057.92	-9,631.25	-391.59	9,639.16	0.00	0.00	0.00
18,300.00	90.00	181.47	8,057.92	-9,731.22	-394.16	9,739.15	0.00	0.00	0.00
18,400.00	90.00	181.47	8,057.92	-9,831.19	-396.73	9,839.14	0.00	0.00	0.00
18,500.00	90.00	181.47	8,057.92	-9,931.15	-399.30	9,939.14	0.00	0.00	0.00
18,600.00	90.00	181.47	8,057.92	-10,031.12	-401.87	10,039.13	0.00	0.00	0.00
18,700.00	90.00	181.47	8,057.92	-10,131.09	-404.45	10,139.12	0.00	0.00	0.00
18,800.00	90.00	181.47	8,057.92	-10,231.05	-407.02	10,239.12	0.00	0.00	0.00
18,900.00	90.00	181.47	8,057.92	-10,331.02	-409.59	10,339.11	0.00	0.00	0.00
19,000.00	90.00	181.47	8,057.92	-10,430.99	-412.16	10,439.10	0.00	0.00	0.00
19,100.00	90.00	181.47	8,057.92	-10,530.96	-414.73	10,539.10	0.00	0.00	0.00
19,200.00	90.00	181.47	8,057.92	-10,630.92	-417.30	10,639.09	0.00	0.00	0.00
19,300.00	90.00	181.47	8,057.92	-10,730.89	-419.87	10,739.08	0.00	0.00	0.00
19,400.00	90.00	181.47	8,057.92	-10,830.86	-422.44	10,839.08	0.00	0.00	0.00
19,500.00	90.00	181.47	8,057.92	-10,930.82	-425.01	10,939.07	0.00	0.00	0.00
19,600.00	90.00	181.47	8,057.92	-11,030.79	-427.59	11,039.06	0.00	0.00	0.00
19,700.00	90.00	181.47	8,057.92	-11,130.76	-430.16	11,139.06	0.00	0.00	0.00
19,800.00	90.00	181.47	8,057.92	-11,230.72	-432.73	11,239.05	0.00	0.00	0.00
19,900.00	90.00	181.47	8,057.92	-11,330.69	-435.30	11,339.04	0.00	0.00	0.00
20,000.00	90.00	181.47	8,057.92	-11,430.66	-437.87	11,439.04	0.00	0.00	0.00
20,100.00	90.00	181.47	8,057.92	-11,530.62	-440.44	11,539.03	0.00	0.00	0.00
20,200.00	90.00	181.47	8,057.92	-11,630.59	-443.01	11,639.02	0.00	0.00	0.00
20,300.00	90.00	181.47	8,057.92	-11,730.56	-445.58	11,739.02	0.00	0.00	0.00
20,400.00	90.00	181.47	8,057.92	-11,830.53	-448.15	11,839.01	0.00	0.00	0.00
20,500.00	90.00	181.47	8,057.92	-11,930.49	-450.73	11,939.00	0.00	0.00	0.00
20,600.00	90.00	181.47	8,057.92	-12,030.46	-453.30	12,039.00	0.00	0.00	0.00
20,700.00	90.00	181.47	8,057.92	-12,130.43	-455.87	12,138.99	0.00	0.00	0.00
20,800.00	90.00	181.47	8,057.92	-12,230.39	-458.44	12,238.98	0.00	0.00	0.00
20,900.00	90.00	181.47	8,057.92	-12,330.36	-461.01	12,338.98	0.00	0.00	0.00
20,984.79	90.00	181.47	8,058.00	-12,415.13	-463.19	12,423.76	0.00	0.00	0.00
TD at 20984.79' MD									

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									
LIVINGSTON S19 10N - - plan hits target center - Point	0.00	0.00	8,058.00	-12,415.13	-463.19	1,222,955.19	3,128,639.66	39° 56' 40.128 N	105° 2' 28.306 W
LIVINGSTON S19 10N - - plan hits target center - Point	0.00	0.00	8,058.00	126.78	-414.48	1,235,497.18	3,128,623.25	39° 58' 44.076 N	105° 2' 27.683 W

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well LIVINGSTON S19-25-10N
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 S19-25-10N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,676.20	4,646.00	PARKMAN				
5,161.48	5,127.00	SUSSEX				
6,089.67	6,047.00	SHANNON				
7,973.76	7,880.00	NIOBRARA				
8,330.80	8,048.00	NIO B TARGET				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,000.00	1,000.00	0.00	0.00	BUILD 2°/100'	
1,380.83	1,379.71	21.78	-12.83	HOLD 7.62° INC	
7,127.11	7,075.29	678.00	-399.42	DROP 2°/100'	
7,507.94	7,455.00	699.78	-412.25	HOLD VERTICAL	
7,537.94	7,485.00	699.78	-412.25	KOP, BUILD 10°/100'	
8,438.01	8,058.00	126.78	-414.48	LP @ 90° INC, 180.22° AZM	
16,638.01	8,057.92	-8,073.16	-446.32	HOLD	
17,099.14	8,057.92	-8,532.44	-411.07	TURN 2°/100'	
17,622.80	8,057.92	-9,054.24	-376.75	181.47° AZM HOLD	
20,984.79	8,058.00	-12,415.13	-463.19	TD at 20984.79' MD	