EXTRACTION OIL & GAS

Broomfield County
Sec 7-T1S-R68W
LIVINGSTON S20-25-2C

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

07 December, 2017

Project: Broomfield County
Site: Sec 7-T1S-R68W
Well: LIVINGSTON S20-25-2C
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: 52086.2snT
Dip Angle: 66.46°
Date: 12/4/2017
Model: IGRF2015

WELL DETAILS: LIVINGSTON S20-25-2C

5311.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	1235372.38	3129146.27	39° 58' 42.816 N	105° 2' 20.972 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
3	1874.58	29.49	27.65	1810.32	328.82	172.23	2.00	27.65	-296.90	
4	7129.30	29.49	27.65	6384.18	2620.37	1372.55	0.00	0.00	-2365.97	
5	8603.88	0.00	0.00	7794.50	2949.19	1544.78	2.00	180.00	-2662.86	
6	8633.88	0.00	0.00	7824.50	2949.19	1544.78	0.00	0.00	-2662.86	
7	9383.94	90.00	179.79	8302.00	2471.69	1546.50	12.00	179.79	-2191.28	LIVINGSTON S20 2C - LP
8	21633.46	90.00	179.79	8302.00	-9777.75	1590.72	0.00	0.00	9906.30	LIVINGSTON S20 2C - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4646.00	5132.38	PARKMAN
5127.00	5684.98	SUSSEX
6047.00	6741.93	SHANNON
7880.00	8689.50	NIOBRARA
8048.00	8866.47	NIO B TARGET
8283.00	9248.78	FORT HAYS
8302.00	9383.94	CODELL

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	BUILD 2°/100'
1874.58	29.49	27.65	1810.32	328.82	172.23	-296.90	371.20	HOLD 29.49° INC
7129.30	29.49	27.65	6384.18	2620.37	1372.55	-2365.97	2958.08	DROP 2°/100'
8603.88	0.00	0.00	7794.50	2949.19	1544.78	-2662.86	3329.27	HOLD VERTICAL
8633.88	0.00	0.00	7824.50	2949.19	1544.78	-2662.86	3329.27	KOP, BUILD 12°/100'
9383.94	90.00	179.79	8302.00	2471.69	1546.50	-2191.28	3806.78	LP @ 90° INC, 179.79° AZM HOLD
21633.46	90.00	179.79	8302.00	-9777.75	1590.72	9906.30	16056.30	TD at 21633.46' MD

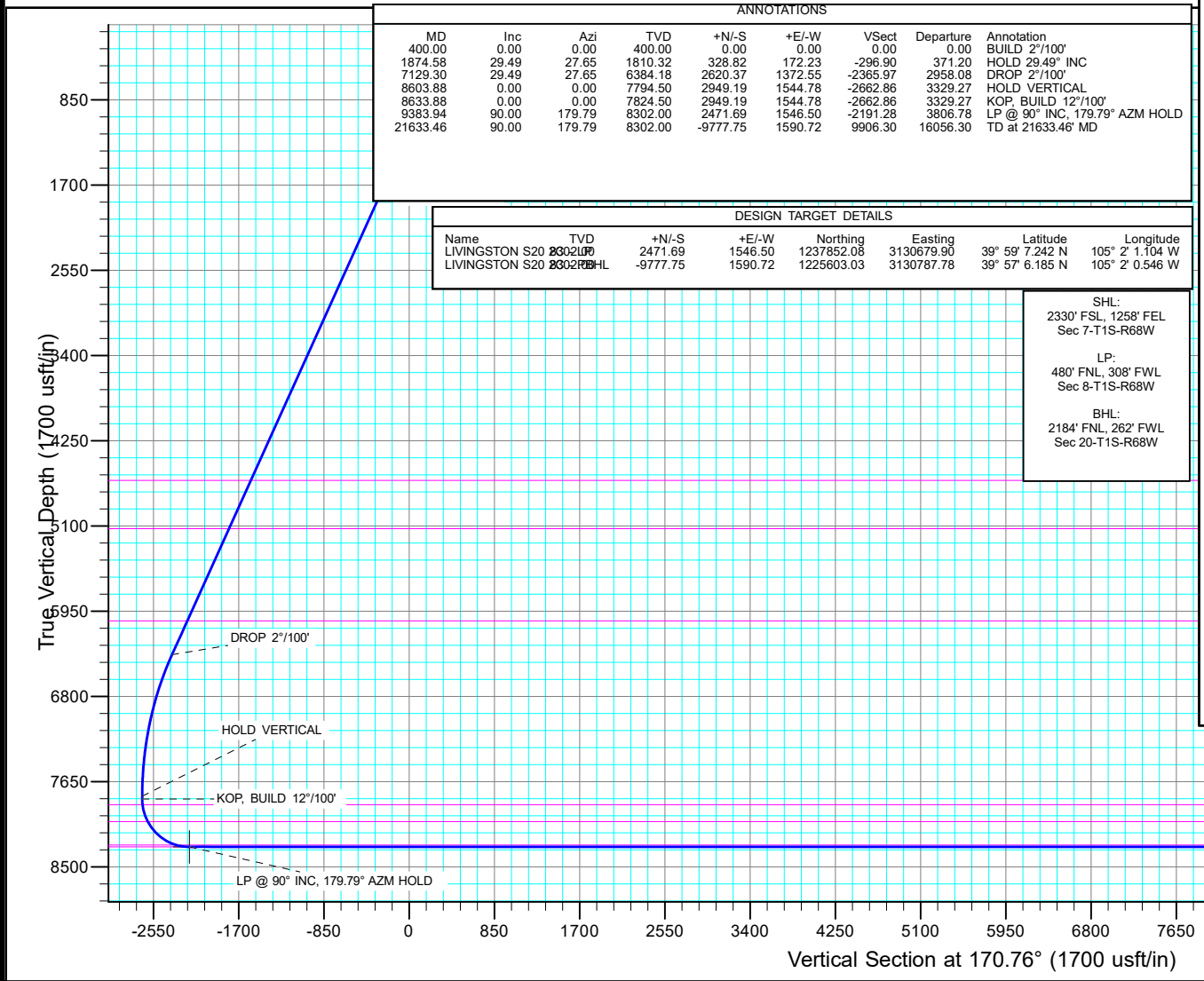
DESIGN TARGET DETAILS

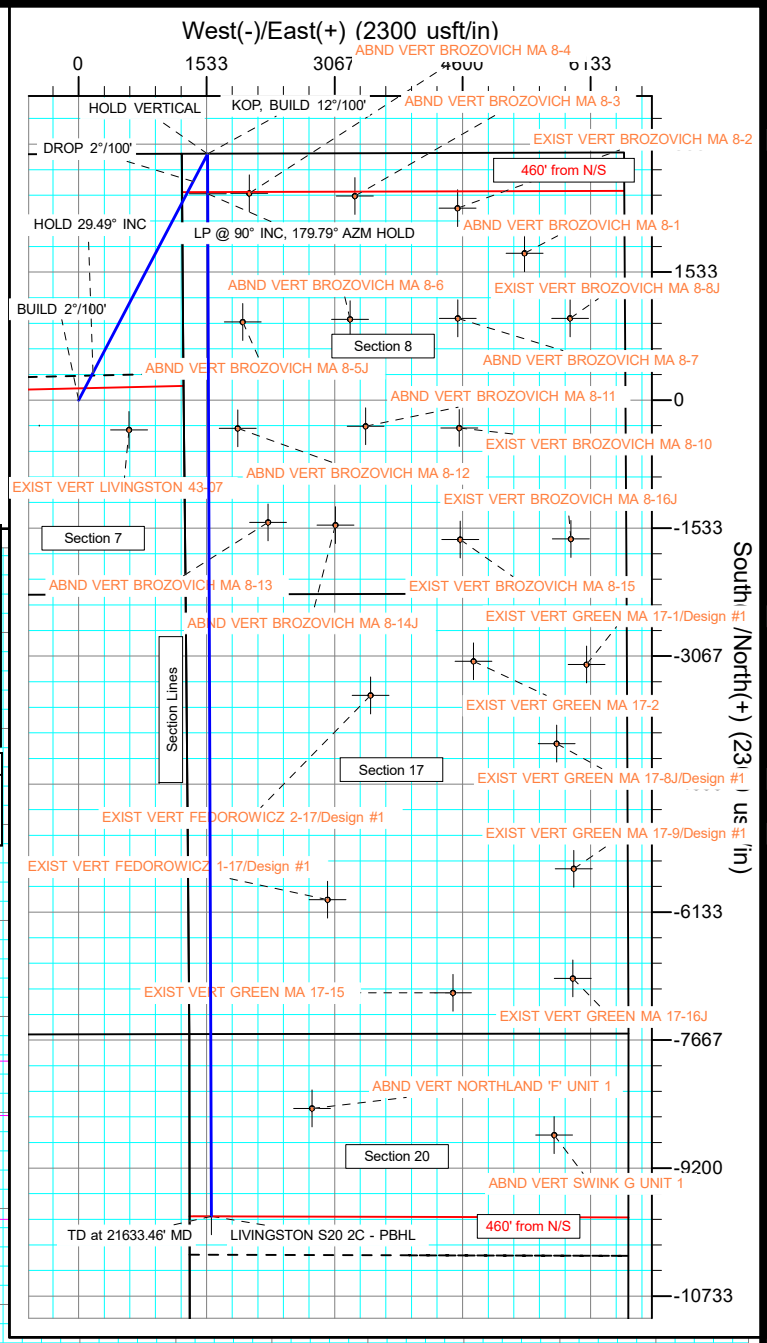
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LIVINGSTON S20 2C - LP	8302.00	2471.69	1546.50	1237852.08	3130679.90	39° 59' 7.242 N	105° 2' 1.104 W
LIVINGSTON S20 2C - PBHL	8302.00	-9777.75	1590.72	1225603.03	3130787.78	39° 57' 6.185 N	105° 2' 0.546 W

SHL:
2330' FSL, 1258' FEL
Sec 7-T1S-R68W

LP:
480' FNL, 308' FWL
Sec 8-T1S-R68W

BHL:
2184' FNL, 262' FWL
Sec 20-T1S-R68W





Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**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 S20-25-2C

Well Position	**+N/-S**	-2,950.42 usft	**Northing:**	1,235,372.38 usft	**Latitude:**	39° 58' 42.816 N
	+E/-W	-1,235.64 usft	**Easting:**	3,129,146.27 usft	**Longitude:**	105° 2' 20.972 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	52,086.18948712

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	170.76

Plan Survey Tool Program **Date** 12/7/2017

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,633.46	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	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,874.58	29.49	27.65	1,810.32	328.82	172.23	2.00	2.00	0.00	27.65	
7,129.30	29.49	27.65	6,384.18	2,620.37	1,372.55	0.00	0.00	0.00	0.00	
8,603.88	0.00	0.00	7,794.50	2,949.19	1,544.78	2.00	-2.00	0.00	180.00	
8,633.88	0.00	0.00	7,824.50	2,949.19	1,544.78	0.00	0.00	0.00	0.00	
9,383.94	90.00	179.79	8,302.00	2,471.69	1,546.50	12.00	12.00	23.97	179.79	LIVINGSTON S20 2C
21,633.46	90.00	179.79	8,302.00	-9,777.75	1,590.72	0.00	0.00	0.00	0.00	LIVINGSTON S20 2C

Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**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
BUILD 2°/100'									
500.00	2.00	27.65	499.98	1.55	0.81	-1.40	2.00	2.00	0.00
600.00	4.00	27.65	599.84	6.18	3.24	-5.58	2.00	2.00	0.00
700.00	6.00	27.65	699.45	13.90	7.28	-12.55	2.00	2.00	0.00
800.00	8.00	27.65	798.70	24.70	12.94	-22.30	2.00	2.00	0.00
900.00	10.00	27.65	897.47	38.55	20.19	-34.81	2.00	2.00	0.00
1,000.00	12.00	27.65	995.62	55.46	29.05	-50.07	2.00	2.00	0.00
1,100.00	14.00	27.65	1,093.06	75.38	39.48	-68.06	2.00	2.00	0.00
1,200.00	16.00	27.65	1,189.64	98.31	51.49	-88.76	2.00	2.00	0.00
1,300.00	18.00	27.65	1,285.27	124.21	65.06	-112.15	2.00	2.00	0.00
1,400.00	20.00	27.65	1,379.82	153.04	80.16	-138.19	2.00	2.00	0.00
1,500.00	22.00	27.65	1,473.17	184.79	96.79	-166.85	2.00	2.00	0.00
1,600.00	24.00	27.65	1,565.21	219.40	114.92	-198.10	2.00	2.00	0.00
1,700.00	26.00	27.65	1,655.84	256.83	134.53	-231.90	2.00	2.00	0.00
1,800.00	28.00	27.65	1,744.94	297.05	155.59	-268.21	2.00	2.00	0.00
1,874.58	29.49	27.65	1,810.32	328.82	172.23	-296.90	2.00	2.00	0.00
HOLD 29.49° INC									
1,900.00	29.49	27.65	1,832.45	339.91	178.04	-306.91	0.00	0.00	0.00
2,000.00	29.49	27.65	1,919.49	383.51	200.88	-346.28	0.00	0.00	0.00
2,100.00	29.49	27.65	2,006.54	427.12	223.73	-385.66	0.00	0.00	0.00
2,200.00	29.49	27.65	2,093.58	470.73	246.57	-425.03	0.00	0.00	0.00
2,300.00	29.49	27.65	2,180.62	514.34	269.41	-464.41	0.00	0.00	0.00
2,400.00	29.49	27.65	2,267.66	557.95	292.25	-503.78	0.00	0.00	0.00
2,500.00	29.49	27.65	2,354.71	601.56	315.10	-543.16	0.00	0.00	0.00
2,600.00	29.49	27.65	2,441.75	645.17	337.94	-582.53	0.00	0.00	0.00
2,700.00	29.49	27.65	2,528.79	688.78	360.78	-621.91	0.00	0.00	0.00
2,800.00	29.49	27.65	2,615.83	732.39	383.62	-661.28	0.00	0.00	0.00
2,900.00	29.49	27.65	2,702.88	776.00	406.47	-700.66	0.00	0.00	0.00
3,000.00	29.49	27.65	2,789.92	819.61	429.31	-740.04	0.00	0.00	0.00
3,100.00	29.49	27.65	2,876.96	863.22	452.15	-779.41	0.00	0.00	0.00
3,200.00	29.49	27.65	2,964.01	906.83	474.99	-818.79	0.00	0.00	0.00
3,300.00	29.49	27.65	3,051.05	950.44	497.84	-858.16	0.00	0.00	0.00
3,400.00	29.49	27.65	3,138.09	994.05	520.68	-897.54	0.00	0.00	0.00
3,500.00	29.49	27.65	3,225.13	1,037.66	543.52	-936.91	0.00	0.00	0.00
3,600.00	29.49	27.65	3,312.18	1,081.26	566.36	-976.29	0.00	0.00	0.00
3,700.00	29.49	27.65	3,399.22	1,124.87	589.21	-1,015.66	0.00	0.00	0.00
3,800.00	29.49	27.65	3,486.26	1,168.48	612.05	-1,055.04	0.00	0.00	0.00
3,900.00	29.49	27.65	3,573.31	1,212.09	634.89	-1,094.42	0.00	0.00	0.00
4,000.00	29.49	27.65	3,660.35	1,255.70	657.73	-1,133.79	0.00	0.00	0.00
4,100.00	29.49	27.65	3,747.39	1,299.31	680.58	-1,173.17	0.00	0.00	0.00
4,200.00	29.49	27.65	3,834.43	1,342.92	703.42	-1,212.54	0.00	0.00	0.00
4,300.00	29.49	27.65	3,921.48	1,386.53	726.26	-1,251.92	0.00	0.00	0.00
4,400.00	29.49	27.65	4,008.52	1,430.14	749.10	-1,291.29	0.00	0.00	0.00
4,500.00	29.49	27.65	4,095.56	1,473.75	771.95	-1,330.67	0.00	0.00	0.00
4,600.00	29.49	27.65	4,182.60	1,517.36	794.79	-1,370.04	0.00	0.00	0.00
4,700.00	29.49	27.65	4,269.65	1,560.97	817.63	-1,409.42	0.00	0.00	0.00
4,800.00	29.49	27.65	4,356.69	1,604.58	840.47	-1,448.80	0.00	0.00	0.00
4,900.00	29.49	27.65	4,443.73	1,648.19	863.32	-1,488.17	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 S20-25-2C	**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	29.49	27.65	4,530.78	1,691.80	886.16	-1,527.55	0.00	0.00	0.00
5,100.00	29.49	27.65	4,617.82	1,735.41	909.00	-1,566.92	0.00	0.00	0.00
5,132.38	29.49	27.65	4,646.00	1,749.52	916.40	-1,579.67	0.00	0.00	0.00
PARKMAN									
5,200.00	29.49	27.65	4,704.86	1,779.01	931.84	-1,606.30	0.00	0.00	0.00
5,300.00	29.49	27.65	4,791.90	1,822.62	954.69	-1,645.67	0.00	0.00	0.00
5,400.00	29.49	27.65	4,878.95	1,866.23	977.53	-1,685.05	0.00	0.00	0.00
5,500.00	29.49	27.65	4,965.99	1,909.84	1,000.37	-1,724.42	0.00	0.00	0.00
5,600.00	29.49	27.65	5,053.03	1,953.45	1,023.21	-1,763.80	0.00	0.00	0.00
5,684.98	29.49	27.65	5,127.00	1,990.51	1,042.63	-1,797.26	0.00	0.00	0.00
SUSSEX									
5,700.00	29.49	27.65	5,140.08	1,997.06	1,046.06	-1,803.17	0.00	0.00	0.00
5,800.00	29.49	27.65	5,227.12	2,040.67	1,068.90	-1,842.55	0.00	0.00	0.00
5,900.00	29.49	27.65	5,314.16	2,084.28	1,091.74	-1,881.93	0.00	0.00	0.00
6,000.00	29.49	27.65	5,401.20	2,127.89	1,114.58	-1,921.30	0.00	0.00	0.00
6,100.00	29.49	27.65	5,488.25	2,171.50	1,137.43	-1,960.68	0.00	0.00	0.00
6,200.00	29.49	27.65	5,575.29	2,215.11	1,160.27	-2,000.05	0.00	0.00	0.00
6,300.00	29.49	27.65	5,662.33	2,258.72	1,183.11	-2,039.43	0.00	0.00	0.00
6,400.00	29.49	27.65	5,749.37	2,302.33	1,205.95	-2,078.80	0.00	0.00	0.00
6,500.00	29.49	27.65	5,836.42	2,345.94	1,228.80	-2,118.18	0.00	0.00	0.00
6,600.00	29.49	27.65	5,923.46	2,389.55	1,251.64	-2,157.55	0.00	0.00	0.00
6,700.00	29.49	27.65	6,010.50	2,433.16	1,274.48	-2,196.93	0.00	0.00	0.00
6,741.93	29.49	27.65	6,047.00	2,451.44	1,284.06	-2,213.44	0.00	0.00	0.00
SHANNON									
6,800.00	29.49	27.65	6,097.55	2,476.76	1,297.32	-2,236.31	0.00	0.00	0.00
6,900.00	29.49	27.65	6,184.59	2,520.37	1,320.17	-2,275.68	0.00	0.00	0.00
7,000.00	29.49	27.65	6,271.63	2,563.98	1,343.01	-2,315.06	0.00	0.00	0.00
7,100.00	29.49	27.65	6,358.67	2,607.59	1,365.85	-2,354.43	0.00	0.00	0.00
7,129.30	29.49	27.65	6,384.18	2,620.37	1,372.55	-2,365.97	0.00	0.00	0.00
DROP 2°/100'									
7,200.00	28.08	27.65	6,446.14	2,650.53	1,388.34	-2,393.20	2.00	-2.00	0.00
7,300.00	26.08	27.65	6,535.17	2,690.85	1,409.46	-2,429.60	2.00	-2.00	0.00
7,400.00	24.08	27.65	6,625.74	2,728.39	1,429.13	-2,463.50	2.00	-2.00	0.00
7,500.00	22.08	27.65	6,717.74	2,763.11	1,447.31	-2,494.85	2.00	-2.00	0.00
7,600.00	20.08	27.65	6,811.04	2,794.97	1,464.00	-2,523.62	2.00	-2.00	0.00
7,700.00	18.08	27.65	6,905.54	2,823.92	1,479.16	-2,549.76	2.00	-2.00	0.00
7,800.00	16.08	27.65	7,001.13	2,849.93	1,492.79	-2,573.24	2.00	-2.00	0.00
7,900.00	14.08	27.65	7,097.68	2,872.97	1,504.86	-2,594.05	2.00	-2.00	0.00
8,000.00	12.08	27.65	7,195.08	2,893.02	1,515.36	-2,612.15	2.00	-2.00	0.00
8,100.00	10.08	27.65	7,293.22	2,910.04	1,524.27	-2,627.51	2.00	-2.00	0.00
8,200.00	8.08	27.65	7,391.96	2,924.01	1,531.59	-2,640.13	2.00	-2.00	0.00
8,300.00	6.08	27.65	7,491.19	2,934.93	1,537.31	-2,649.99	2.00	-2.00	0.00
8,400.00	4.08	27.65	7,590.79	2,942.77	1,541.42	-2,657.06	2.00	-2.00	0.00
8,500.00	2.08	27.65	7,690.64	2,947.52	1,543.91	-2,661.36	2.00	-2.00	0.00
8,603.88	0.00	0.00	7,794.50	2,949.19	1,544.78	-2,662.86	2.00	-2.00	0.00
HOLD VERTICAL									
8,633.88	0.00	0.00	7,824.50	2,949.19	1,544.78	-2,662.86	0.00	0.00	0.00
KOP, BUILD 12°/100'									
8,650.00	1.93	179.79	7,840.62	2,948.92	1,544.78	-2,662.60	12.00	12.00	0.00
8,675.00	4.93	179.79	7,865.57	2,947.42	1,544.79	-2,661.12	12.00	12.00	0.00
8,689.50	6.67	179.79	7,880.00	2,945.95	1,544.79	-2,659.67	12.00	12.00	0.00
NIOBRARA									
8,700.00	7.93	179.79	7,890.41	2,944.62	1,544.80	-2,658.35	12.00	12.00	0.00

Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**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)
8,725.00	10.93	179.79	7,915.07	2,940.52	1,544.81	-2,654.30	12.00	12.00	0.00
8,750.00	13.93	179.79	7,939.48	2,935.14	1,544.83	-2,648.99	12.00	12.00	0.00
8,775.00	16.93	179.79	7,963.58	2,928.49	1,544.85	-2,642.42	12.00	12.00	0.00
8,800.00	19.93	179.79	7,987.29	2,920.58	1,544.88	-2,634.61	12.00	12.00	0.00
8,825.00	22.93	179.79	8,010.56	2,911.45	1,544.92	-2,625.59	12.00	12.00	0.00
8,850.00	25.93	179.79	8,033.32	2,901.11	1,544.95	-2,615.38	12.00	12.00	0.00
8,866.47	27.91	179.79	8,048.00	2,893.65	1,544.98	-2,608.02	12.00	12.00	0.00
NIO B TARGET									
8,875.00	28.93	179.79	8,055.50	2,889.59	1,544.99	-2,604.01	12.00	12.00	0.00
8,900.00	31.93	179.79	8,077.06	2,876.93	1,545.04	-2,591.50	12.00	12.00	0.00
8,925.00	34.93	179.79	8,097.92	2,863.16	1,545.09	-2,577.90	12.00	12.00	0.00
8,950.00	37.93	179.79	8,118.03	2,848.32	1,545.14	-2,563.24	12.00	12.00	0.00
8,975.00	40.93	179.79	8,137.34	2,832.44	1,545.20	-2,547.56	12.00	12.00	0.00
9,000.00	43.93	179.79	8,155.79	2,815.57	1,545.26	-2,530.90	12.00	12.00	0.00
9,025.00	46.93	179.79	8,173.33	2,797.77	1,545.33	-2,513.32	12.00	12.00	0.00
9,050.00	49.93	179.79	8,189.92	2,779.06	1,545.39	-2,494.85	12.00	12.00	0.00
9,075.00	52.93	179.79	8,205.50	2,759.52	1,545.46	-2,475.55	12.00	12.00	0.00
9,100.00	55.93	179.79	8,220.04	2,739.19	1,545.54	-2,455.46	12.00	12.00	0.00
9,125.00	58.93	179.79	8,233.50	2,718.12	1,545.61	-2,434.66	12.00	12.00	0.00
9,150.00	61.93	179.79	8,245.83	2,696.38	1,545.69	-2,413.19	12.00	12.00	0.00
9,175.00	64.93	179.79	8,257.01	2,674.02	1,545.77	-2,391.11	12.00	12.00	0.00
9,200.00	67.93	179.79	8,267.01	2,651.11	1,545.85	-2,368.48	12.00	12.00	0.00
9,225.00	70.93	179.79	8,275.79	2,627.71	1,545.94	-2,345.37	12.00	12.00	0.00
9,248.78	73.78	179.79	8,283.00	2,605.05	1,546.02	-2,322.99	12.00	12.00	0.00
FORT HAYS									
9,250.00	73.93	179.79	8,283.34	2,603.88	1,546.02	-2,321.83	12.00	12.00	0.00
9,275.00	76.93	179.79	8,289.63	2,579.68	1,546.11	-2,297.94	12.00	12.00	0.00
9,300.00	79.93	179.79	8,294.64	2,555.20	1,546.20	-2,273.75	12.00	12.00	0.00
9,325.00	82.93	179.79	8,298.37	2,530.48	1,546.29	-2,249.34	12.00	12.00	0.00
9,350.00	85.93	179.79	8,300.79	2,505.60	1,546.38	-2,224.77	12.00	12.00	0.00
9,375.00	88.93	179.79	8,301.92	2,480.63	1,546.47	-2,200.11	12.00	12.00	0.00
9,383.94	90.00	179.79	8,302.00	2,471.69	1,546.50	-2,191.28	12.00	12.00	0.00
LP @ 90° INC, 179.79° AZM HOLD - CODELL									
9,400.00	90.00	179.79	8,302.00	2,455.63	1,546.56	-2,175.42	0.00	0.00	0.00
9,500.00	90.00	179.79	8,302.00	2,355.63	1,546.92	-2,076.66	0.00	0.00	0.00
9,600.00	90.00	179.79	8,302.00	2,255.63	1,547.28	-1,977.90	0.00	0.00	0.00
9,700.00	90.00	179.79	8,302.00	2,155.63	1,547.64	-1,879.14	0.00	0.00	0.00
9,800.00	90.00	179.79	8,302.00	2,055.63	1,548.00	-1,780.38	0.00	0.00	0.00
9,900.00	90.00	179.79	8,302.00	1,955.63	1,548.36	-1,681.62	0.00	0.00	0.00
10,000.00	90.00	179.79	8,302.00	1,855.63	1,548.72	-1,582.86	0.00	0.00	0.00
10,100.00	90.00	179.79	8,302.00	1,755.63	1,549.08	-1,484.10	0.00	0.00	0.00
10,200.00	90.00	179.79	8,301.99	1,655.63	1,549.44	-1,385.35	0.00	0.00	0.00
10,300.00	90.00	179.79	8,301.99	1,555.63	1,549.80	-1,286.59	0.00	0.00	0.00
10,400.00	90.00	179.79	8,301.99	1,455.63	1,550.16	-1,187.83	0.00	0.00	0.00
10,500.00	90.00	179.79	8,301.99	1,355.63	1,550.52	-1,089.07	0.00	0.00	0.00
10,600.00	90.00	179.79	8,301.99	1,255.64	1,550.88	-990.31	0.00	0.00	0.00
10,700.00	90.00	179.79	8,301.99	1,155.64	1,551.24	-891.55	0.00	0.00	0.00
10,800.00	90.00	179.79	8,301.99	1,055.64	1,551.60	-792.79	0.00	0.00	0.00
10,900.00	90.00	179.79	8,301.99	955.64	1,551.96	-694.03	0.00	0.00	0.00
11,000.00	90.00	179.79	8,301.99	855.64	1,552.32	-595.27	0.00	0.00	0.00
11,100.00	90.00	179.79	8,301.99	755.64	1,552.68	-496.51	0.00	0.00	0.00
11,200.00	90.00	179.79	8,301.99	655.64	1,553.04	-397.75	0.00	0.00	0.00
11,300.00	90.00	179.79	8,301.99	555.64	1,553.40	-298.99	0.00	0.00	0.00

Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**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)
11,400.00	90.00	179.79	8,301.99	455.64	1,553.76	-200.23	0.00	0.00	0.00
11,500.00	90.00	179.79	8,301.99	355.64	1,554.12	-101.47	0.00	0.00	0.00
11,600.00	90.00	179.79	8,301.99	255.64	1,554.47	-2.71	0.00	0.00	0.00
11,700.00	90.00	179.79	8,301.99	155.64	1,554.83	96.05	0.00	0.00	0.00
11,800.00	90.00	179.79	8,301.98	55.64	1,555.19	194.81	0.00	0.00	0.00
11,900.00	90.00	179.79	8,301.98	-44.36	1,555.55	293.57	0.00	0.00	0.00
12,000.00	90.00	179.79	8,301.98	-144.36	1,555.91	392.33	0.00	0.00	0.00
12,100.00	90.00	179.79	8,301.98	-244.36	1,556.27	491.09	0.00	0.00	0.00
12,200.00	90.00	179.79	8,301.98	-344.35	1,556.63	589.84	0.00	0.00	0.00
12,300.00	90.00	179.79	8,301.98	-444.35	1,556.99	688.60	0.00	0.00	0.00
12,400.00	90.00	179.79	8,301.98	-544.35	1,557.35	787.36	0.00	0.00	0.00
12,500.00	90.00	179.79	8,301.98	-644.35	1,557.71	886.12	0.00	0.00	0.00
12,600.00	90.00	179.79	8,301.98	-744.35	1,558.07	984.88	0.00	0.00	0.00
12,700.00	90.00	179.79	8,301.98	-844.35	1,558.43	1,083.64	0.00	0.00	0.00
12,800.00	90.00	179.79	8,301.98	-944.35	1,558.79	1,182.40	0.00	0.00	0.00
12,900.00	90.00	179.79	8,301.98	-1,044.35	1,559.15	1,281.16	0.00	0.00	0.00
13,000.00	90.00	179.79	8,301.98	-1,144.35	1,559.51	1,379.92	0.00	0.00	0.00
13,100.00	90.00	179.79	8,301.98	-1,244.35	1,559.87	1,478.68	0.00	0.00	0.00
13,200.00	90.00	179.79	8,301.98	-1,344.35	1,560.23	1,577.44	0.00	0.00	0.00
13,300.00	90.00	179.79	8,301.97	-1,444.35	1,560.59	1,676.20	0.00	0.00	0.00
13,400.00	90.00	179.79	8,301.97	-1,544.35	1,560.95	1,774.96	0.00	0.00	0.00
13,500.00	90.00	179.79	8,301.97	-1,644.35	1,561.31	1,873.72	0.00	0.00	0.00
13,600.00	90.00	179.79	8,301.97	-1,744.35	1,561.67	1,972.48	0.00	0.00	0.00
13,700.00	90.00	179.79	8,301.97	-1,844.34	1,562.03	2,071.24	0.00	0.00	0.00
13,800.00	90.00	179.79	8,301.97	-1,944.34	1,562.39	2,170.00	0.00	0.00	0.00
13,900.00	90.00	179.79	8,301.97	-2,044.34	1,562.75	2,268.76	0.00	0.00	0.00
14,000.00	90.00	179.79	8,301.97	-2,144.34	1,563.11	2,367.52	0.00	0.00	0.00
14,100.00	90.00	179.79	8,301.97	-2,244.34	1,563.47	2,466.28	0.00	0.00	0.00
14,200.00	90.00	179.79	8,301.97	-2,344.34	1,563.83	2,565.03	0.00	0.00	0.00
14,300.00	90.00	179.79	8,301.97	-2,444.34	1,564.19	2,663.79	0.00	0.00	0.00
14,400.00	90.00	179.79	8,301.97	-2,544.34	1,564.55	2,762.55	0.00	0.00	0.00
14,500.00	90.00	179.79	8,301.97	-2,644.34	1,564.91	2,861.31	0.00	0.00	0.00
14,600.00	90.00	179.79	8,301.97	-2,744.34	1,565.27	2,960.07	0.00	0.00	0.00
14,700.00	90.00	179.79	8,301.97	-2,844.34	1,565.63	3,058.83	0.00	0.00	0.00
14,800.00	90.00	179.79	8,301.97	-2,944.34	1,565.99	3,157.59	0.00	0.00	0.00
14,900.00	90.00	179.79	8,301.96	-3,044.34	1,566.35	3,256.35	0.00	0.00	0.00
15,000.00	90.00	179.79	8,301.96	-3,144.34	1,566.71	3,355.11	0.00	0.00	0.00
15,100.00	90.00	179.79	8,301.96	-3,244.34	1,567.07	3,453.87	0.00	0.00	0.00
15,200.00	90.00	179.79	8,301.96	-3,344.34	1,567.43	3,552.63	0.00	0.00	0.00
15,300.00	90.00	179.79	8,301.96	-3,444.33	1,567.79	3,651.39	0.00	0.00	0.00
15,400.00	90.00	179.79	8,301.96	-3,544.33	1,568.15	3,750.15	0.00	0.00	0.00
15,500.00	90.00	179.79	8,301.96	-3,644.33	1,568.51	3,848.91	0.00	0.00	0.00
15,600.00	90.00	179.79	8,301.96	-3,744.33	1,568.87	3,947.67	0.00	0.00	0.00
15,700.00	90.00	179.79	8,301.96	-3,844.33	1,569.23	4,046.43	0.00	0.00	0.00
15,800.00	90.00	179.79	8,301.96	-3,944.33	1,569.59	4,145.19	0.00	0.00	0.00
15,900.00	90.00	179.79	8,301.96	-4,044.33	1,569.95	4,243.95	0.00	0.00	0.00
16,000.00	90.00	179.79	8,301.96	-4,144.33	1,570.31	4,342.71	0.00	0.00	0.00
16,100.00	90.00	179.79	8,301.96	-4,244.33	1,570.67	4,441.47	0.00	0.00	0.00
16,200.00	90.00	179.79	8,301.96	-4,344.33	1,571.03	4,540.22	0.00	0.00	0.00
16,300.00	90.00	179.79	8,301.96	-4,444.33	1,571.39	4,638.98	0.00	0.00	0.00
16,400.00	90.00	179.79	8,301.95	-4,544.33	1,571.75	4,737.74	0.00	0.00	0.00
16,500.00	90.00	179.79	8,301.95	-4,644.33	1,572.11	4,836.50	0.00	0.00	0.00
16,600.00	90.00	179.79	8,301.95	-4,744.33	1,572.47	4,935.26	0.00	0.00	0.00
16,700.00	90.00	179.79	8,301.95	-4,844.33	1,572.83	5,034.02	0.00	0.00	0.00

Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**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)
16,800.00	90.00	179.79	8,301.95	-4,944.32	1,573.19	5,132.78	0.00	0.00	0.00
16,900.00	90.00	179.79	8,301.95	-5,044.32	1,573.55	5,231.54	0.00	0.00	0.00
17,000.00	90.00	179.79	8,301.95	-5,144.32	1,573.91	5,330.30	0.00	0.00	0.00
17,100.00	90.00	179.79	8,301.95	-5,244.32	1,574.27	5,429.06	0.00	0.00	0.00
17,200.00	90.00	179.79	8,301.95	-5,344.32	1,574.63	5,527.82	0.00	0.00	0.00
17,300.00	90.00	179.79	8,301.95	-5,444.32	1,574.99	5,626.58	0.00	0.00	0.00
17,400.00	90.00	179.79	8,301.95	-5,544.32	1,575.35	5,725.34	0.00	0.00	0.00
17,500.00	90.00	179.79	8,301.95	-5,644.32	1,575.71	5,824.10	0.00	0.00	0.00
17,600.00	90.00	179.79	8,301.95	-5,744.32	1,576.07	5,922.86	0.00	0.00	0.00
17,700.00	90.00	179.79	8,301.95	-5,844.32	1,576.43	6,021.62	0.00	0.00	0.00
17,800.00	90.00	179.79	8,301.95	-5,944.32	1,576.79	6,120.38	0.00	0.00	0.00
17,900.00	90.00	179.79	8,301.94	-6,044.32	1,577.15	6,219.14	0.00	0.00	0.00
18,000.00	90.00	179.79	8,301.94	-6,144.32	1,577.51	6,317.90	0.00	0.00	0.00
18,100.00	90.00	179.79	8,301.94	-6,244.32	1,577.87	6,416.66	0.00	0.00	0.00
18,200.00	90.00	179.79	8,301.94	-6,344.32	1,578.23	6,515.41	0.00	0.00	0.00
18,300.00	90.00	179.79	8,301.94	-6,444.32	1,578.59	6,614.17	0.00	0.00	0.00
18,400.00	90.00	179.79	8,301.94	-6,544.31	1,578.95	6,712.93	0.00	0.00	0.00
18,500.00	90.00	179.79	8,301.94	-6,644.31	1,579.31	6,811.69	0.00	0.00	0.00
18,600.00	90.00	179.79	8,301.94	-6,744.31	1,579.67	6,910.45	0.00	0.00	0.00
18,700.00	90.00	179.79	8,301.94	-6,844.31	1,580.03	7,009.21	0.00	0.00	0.00
18,800.00	90.00	179.79	8,301.94	-6,944.31	1,580.39	7,107.97	0.00	0.00	0.00
18,900.00	90.00	179.79	8,301.94	-7,044.31	1,580.75	7,206.73	0.00	0.00	0.00
19,000.00	90.00	179.79	8,301.94	-7,144.31	1,581.11	7,305.49	0.00	0.00	0.00
19,100.00	90.00	179.79	8,301.94	-7,244.31	1,581.47	7,404.25	0.00	0.00	0.00
19,200.00	90.00	179.79	8,301.94	-7,344.31	1,581.83	7,503.01	0.00	0.00	0.00
19,300.00	90.00	179.79	8,301.94	-7,444.31	1,582.19	7,601.77	0.00	0.00	0.00
19,400.00	90.00	179.79	8,301.94	-7,544.31	1,582.55	7,700.53	0.00	0.00	0.00
19,500.00	90.00	179.79	8,301.93	-7,644.31	1,582.91	7,799.29	0.00	0.00	0.00
19,600.00	90.00	179.79	8,301.93	-7,744.31	1,583.27	7,898.05	0.00	0.00	0.00
19,700.00	90.00	179.79	8,301.93	-7,844.31	1,583.63	7,996.81	0.00	0.00	0.00
19,800.00	90.00	179.79	8,301.93	-7,944.31	1,583.99	8,095.57	0.00	0.00	0.00
19,900.00	90.00	179.79	8,301.93	-8,044.30	1,584.35	8,194.33	0.00	0.00	0.00
20,000.00	90.00	179.79	8,301.93	-8,144.30	1,584.71	8,293.09	0.00	0.00	0.00
20,100.00	90.00	179.79	8,301.93	-8,244.30	1,585.07	8,391.85	0.00	0.00	0.00
20,200.00	90.00	179.79	8,301.93	-8,344.30	1,585.43	8,490.60	0.00	0.00	0.00
20,300.00	90.00	179.79	8,301.93	-8,444.30	1,585.79	8,589.36	0.00	0.00	0.00
20,400.00	90.00	179.79	8,301.93	-8,544.30	1,586.15	8,688.12	0.00	0.00	0.00
20,500.00	90.00	179.79	8,301.93	-8,644.30	1,586.51	8,786.88	0.00	0.00	0.00
20,600.00	90.00	179.79	8,301.93	-8,744.30	1,586.87	8,885.64	0.00	0.00	0.00
20,700.00	90.00	179.79	8,301.93	-8,844.30	1,587.23	8,984.40	0.00	0.00	0.00
20,800.00	90.00	179.79	8,301.93	-8,944.30	1,587.59	9,083.16	0.00	0.00	0.00
20,900.00	90.00	179.79	8,301.93	-9,044.30	1,587.95	9,181.92	0.00	0.00	0.00
21,000.00	90.00	179.79	8,301.92	-9,144.30	1,588.31	9,280.68	0.00	0.00	0.00
21,633.46	90.00	179.79	8,302.00	-9,777.75	1,590.72	9,906.30	0.00	0.00	0.00
TD at 21633.46' MD									

Database:	EDT_32Bit_ODBC	**Local Co-ordinate Reference:**	Well LIVINGSTON S20-25-2C
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 S20-25-2C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LIVINGSTON S20 2C - I - plan hits target center - Point	0.00	0.00	8,302.00	-9,777.75	1,590.72	1,225,603.03	3,130,787.78	39° 57' 6.185 N	105° 2' 0.546 W
LIVINGSTON S20 2C - I - plan hits target center - Point	0.00	0.00	8,302.00	2,471.69	1,546.50	1,237,852.08	3,130,679.90	39° 59' 7.242 N	105° 2' 1.104 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,132.38	4,646.00	PARKMAN			
5,684.98	5,127.00	SUSSEX			
6,741.93	6,047.00	SHANNON			
8,689.50	7,880.00	NIOBRARA			
8,866.47	8,048.00	NIO B TARGET			
9,248.78	8,283.00	FORT HAYS			
9,383.94	8,302.00	CODELL			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
400.00	400.00	0.00	0.00	BUILD 2°/100'
1,874.58	1,810.32	328.82	172.23	HOLD 29.49° INC
7,129.30	6,384.18	2,620.37	1,372.55	DROP 2°/100'
8,603.88	7,794.50	2,949.19	1,544.78	HOLD VERTICAL
8,633.88	7,824.50	2,949.19	1,544.78	KOP, BUILD 12°/100'
9,383.94	8,302.00	2,471.69	1,546.50	LP @ 90° INC, 179.79° AZM HOLD
21,633.46	8,302.00	-9,777.75	1,590.72	TD at 21633.46' MD