

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 7-T1S-R68W**

**LIVINGSTON S19-25-5C**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**05 December, 2017**



Project: Broomfield County  
Site: Sec 7-T1S-R68W  
Well: LIVINGSTON S19-25-5C  
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 S19-25-5C

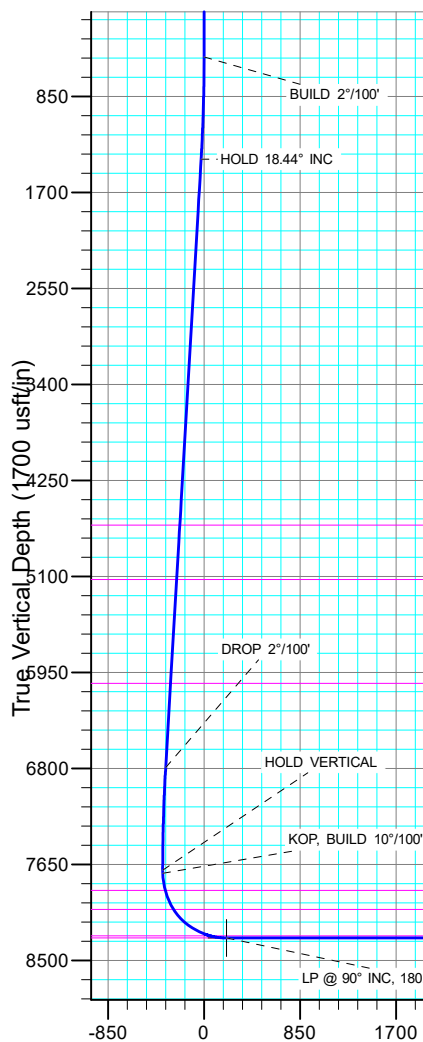
	+N/-S	+E/-W	Northing	Easting	5311.00	Latitude	Longitude	Slot
	0.00	0.00	1235372.45	3128948.42		39° 58' 42.827 N	105° 2' 23.514 W	

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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1421.99	18.44	289.34	1406.15	48.71	-138.79	2.00	289.34	-25.75	
4	7100.22	18.44	289.34	6792.85	643.49	-1833.51	0.00	0.00	-340.15	
5	8022.21	0.00	0.00	7699.00	692.20	-1972.30	2.00	180.00	-365.89	
6	8052.21	0.00	0.00	7729.00	692.20	-1972.30	0.00	0.00	-365.89	
7	8952.27	90.00	180.23	8302.00	119.20	-1974.57	10.00	180.23	200.00	LIVINGSTON S19 5C - LP
8	21488.81	90.00	180.23	8302.00	-12417.23	-2024.08	0.00	0.00	12581.12	LIVINGSTON S19 5C - PBHL

FORMATION TOP DETAILS

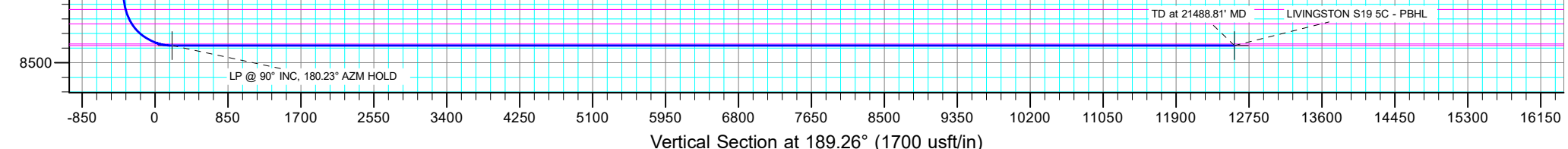
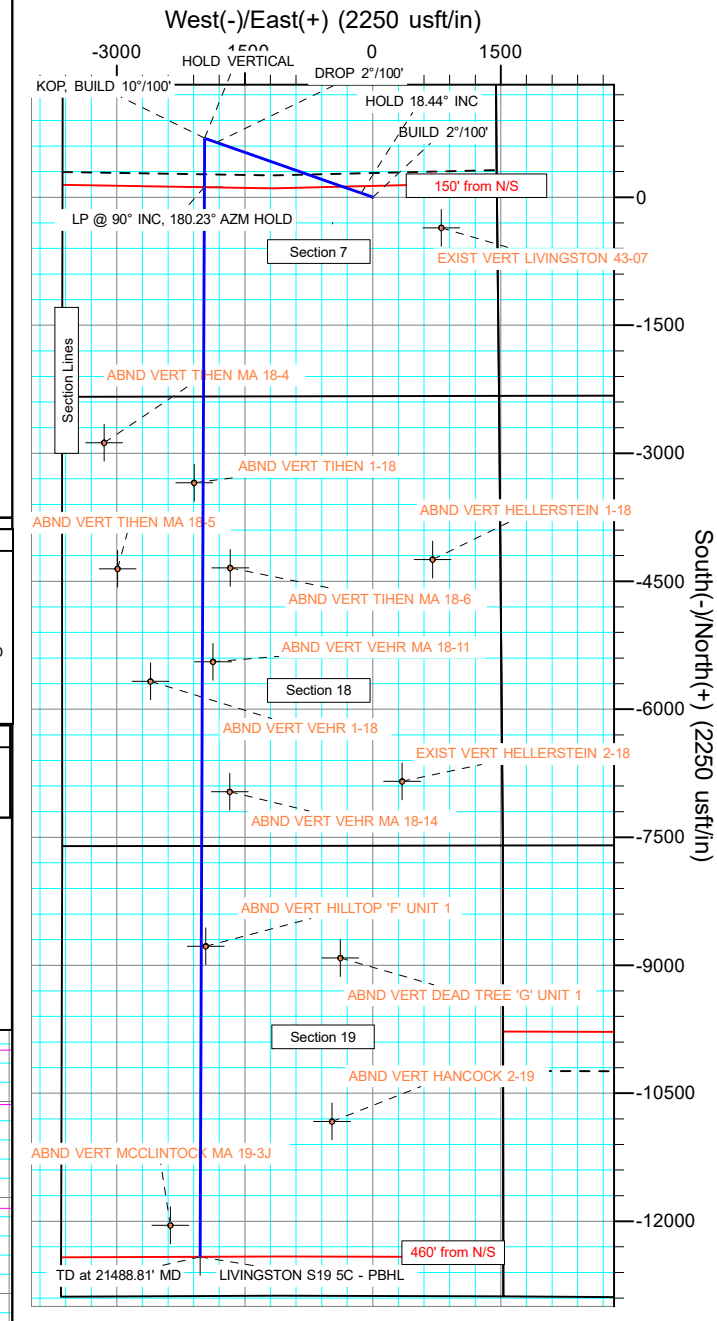
TVDPATH	MDPATH	FORMATION
4646.00	4837.18	PARKMAN
5127.00	5344.21	SUSSEX
6047.00	6314.01	SHANNON
7880.00	8205.01	NIOBRARA
8048.00	8390.52	NIO B TARGET
8283.00	8804.30	FORT HAYS
8302.00	8952.27	CODELL



ANNOTATIONS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation		
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	BUILD 2°/100'		
1421.99	18.44	289.34	1406.15	48.71	-138.79	-25.75	147.09	HOLD 18.44° INC		
7100.22	18.44	289.34	6792.85	643.49	-1833.51	-340.15	1943.15	DROP 2°/100'		
8022.21	0.00	0.00	7699.00	692.20	-1972.30	-365.89	2090.24	HOLD VERTICAL		
8052.21	0.00	0.00	7729.00	692.20	-1972.30	-365.89	2090.24	KOP, BUILD 10°/100'		
8952.27	90.00	180.23	8302.00	119.20	-1974.57	200.00	2663.24	LP @ 90° INC, 180.23° AZM HOLD		
21488.81	90.00	180.23	8301.99	-12417.23	-2024.31	12581.16	15199.78	TD at 21488.81' MD		

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LIVINGSTON S19 5C - LP	8302.00	119.20	-1974.57	1235481.41	3126973.25	39° 58' 44.004 N	105° 2' 48.880 W
LIVINGSTON S19 5C - PBHL	8302.00	-12417.23	-2024.08	1222944.88	3126988.80	39° 56' 40.110 N	105° 2' 49.502 W

SHL:  
2332' FSL, 1456' FEL  
Sec 7-T1S-R68W  
LP:  
2455' FSL, 1664' FWL  
Sec 7-T1S-R68W  
BHL:  
460' FSL, 1631' FWL  
Sec 19-T1S-R68W



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	Broomfield County		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 S19-25-5C				
Well Position	+N/-S	-2,949.32 usft	Northing:	1,235,372.45 usft	Latitude:	39° 58' 42.827 N
	+E/-W	-1,433.49 usft	Easting:	3,128,948.41 usft	Longitude:	105° 2' 23.514 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,311.00 usft

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	12/4/2017	8.27	66.46	52,086.11501628

<b>Design</b>	PROPOSAL 1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	189.26

<b>Plan Survey Tool Program</b>	<b>Date</b>	12/5/2017		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	21,488.72	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	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	
1,421.99	18.44	289.34	1,406.15	48.71	-138.79	2.00	2.00	0.00	289.34	
7,100.22	18.44	289.34	6,792.85	643.49	-1,833.51	0.00	0.00	0.00	0.00	
8,022.21	0.00	0.00	7,699.00	692.20	-1,972.30	2.00	-2.00	0.00	180.00	
8,052.21	0.00	0.00	7,729.00	692.20	-1,972.30	0.00	0.00	0.00	0.00	
8,952.27	90.00	180.23	8,302.00	119.20	-1,974.57	10.00	10.00	-19.97	180.23	LIVINGSTON S19 5C
21,488.81	90.00	180.23	8,302.00	-12,417.23	-2,024.08	0.00	0.00	0.00	0.00	LIVINGSTON S19 5C

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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
BUILD 2°/100'									
600.00	2.00	289.34	599.98	0.58	-1.65	-0.31	2.00	2.00	0.00
700.00	4.00	289.34	699.84	2.31	-6.58	-1.22	2.00	2.00	0.00
800.00	6.00	289.34	799.45	5.20	-14.81	-2.75	2.00	2.00	0.00
900.00	8.00	289.34	898.70	9.23	-26.31	-4.88	2.00	2.00	0.00
1,000.00	10.00	289.34	997.47	14.41	-41.07	-7.62	2.00	2.00	0.00
1,100.00	12.00	289.34	1,095.62	20.73	-59.07	-10.96	2.00	2.00	0.00
1,200.00	14.00	289.34	1,193.06	28.18	-80.30	-14.90	2.00	2.00	0.00
1,300.00	16.00	289.34	1,289.64	36.75	-104.72	-19.43	2.00	2.00	0.00
1,400.00	18.00	289.34	1,385.27	46.43	-132.30	-24.54	2.00	2.00	0.00
1,421.99	18.44	289.34	1,406.15	48.71	-138.79	-25.75	2.00	2.00	0.00
HOLD 18.44° INC									
1,500.00	18.44	289.34	1,480.16	56.88	-162.07	-30.07	0.00	0.00	0.00
1,600.00	18.44	289.34	1,575.03	67.36	-191.92	-35.60	0.00	0.00	0.00
1,700.00	18.44	289.34	1,669.89	77.83	-221.76	-41.14	0.00	0.00	0.00
1,800.00	18.44	289.34	1,764.76	88.31	-251.61	-46.68	0.00	0.00	0.00
1,900.00	18.44	289.34	1,859.62	98.78	-281.46	-52.21	0.00	0.00	0.00
2,000.00	18.44	289.34	1,954.49	109.25	-311.30	-57.75	0.00	0.00	0.00
2,100.00	18.44	289.34	2,049.35	119.73	-341.15	-63.29	0.00	0.00	0.00
2,200.00	18.44	289.34	2,144.22	130.20	-370.99	-68.83	0.00	0.00	0.00
2,300.00	18.44	289.34	2,239.09	140.68	-400.84	-74.36	0.00	0.00	0.00
2,400.00	18.44	289.34	2,333.95	151.15	-430.69	-79.90	0.00	0.00	0.00
2,500.00	18.44	289.34	2,428.82	161.63	-460.53	-85.44	0.00	0.00	0.00
2,600.00	18.44	289.34	2,523.68	172.10	-490.38	-90.97	0.00	0.00	0.00
2,700.00	18.44	289.34	2,618.55	182.58	-520.22	-96.51	0.00	0.00	0.00
2,800.00	18.44	289.34	2,713.41	193.05	-550.07	-102.05	0.00	0.00	0.00
2,900.00	18.44	289.34	2,808.28	203.53	-579.92	-107.58	0.00	0.00	0.00
3,000.00	18.44	289.34	2,903.15	214.00	-609.76	-113.12	0.00	0.00	0.00
3,100.00	18.44	289.34	2,998.01	224.48	-639.61	-118.66	0.00	0.00	0.00
3,200.00	18.44	289.34	3,092.88	234.95	-669.45	-124.19	0.00	0.00	0.00
3,300.00	18.44	289.34	3,187.74	245.43	-699.30	-129.73	0.00	0.00	0.00
3,400.00	18.44	289.34	3,282.61	255.90	-729.15	-135.27	0.00	0.00	0.00
3,500.00	18.44	289.34	3,377.47	266.38	-758.99	-140.81	0.00	0.00	0.00
3,600.00	18.44	289.34	3,472.34	276.85	-788.84	-146.34	0.00	0.00	0.00
3,700.00	18.44	289.34	3,567.21	287.33	-818.68	-151.88	0.00	0.00	0.00
3,800.00	18.44	289.34	3,662.07	297.80	-848.53	-157.42	0.00	0.00	0.00
3,900.00	18.44	289.34	3,756.94	308.28	-878.38	-162.95	0.00	0.00	0.00
4,000.00	18.44	289.34	3,851.80	318.75	-908.22	-168.49	0.00	0.00	0.00
4,100.00	18.44	289.34	3,946.67	329.22	-938.07	-174.03	0.00	0.00	0.00
4,200.00	18.44	289.34	4,041.53	339.70	-967.91	-179.56	0.00	0.00	0.00
4,300.00	18.44	289.34	4,136.40	350.17	-997.76	-185.10	0.00	0.00	0.00
4,400.00	18.44	289.34	4,231.27	360.65	-1,027.61	-190.64	0.00	0.00	0.00
4,500.00	18.44	289.34	4,326.13	371.12	-1,057.45	-196.17	0.00	0.00	0.00
4,600.00	18.44	289.34	4,421.00	381.60	-1,087.30	-201.71	0.00	0.00	0.00
4,700.00	18.44	289.34	4,515.86	392.07	-1,117.14	-207.25	0.00	0.00	0.00
4,800.00	18.44	289.34	4,610.73	402.55	-1,146.99	-212.79	0.00	0.00	0.00
4,837.18	18.44	289.34	4,646.00	406.44	-1,158.09	-214.84	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
<b>PARKMAN</b>										
4,900.00	18.44	289.34	4,705.59	413.02	-1,176.83	-218.32	0.00	0.00	0.00	
5,000.00	18.44	289.34	4,800.46	423.50	-1,206.68	-223.86	0.00	0.00	0.00	
5,100.00	18.44	289.34	4,895.33	433.97	-1,236.53	-229.40	0.00	0.00	0.00	
5,200.00	18.44	289.34	4,990.19	444.45	-1,266.37	-234.93	0.00	0.00	0.00	
5,300.00	18.44	289.34	5,085.06	454.92	-1,296.22	-240.47	0.00	0.00	0.00	
5,344.21	18.44	289.34	5,127.00	459.55	-1,309.41	-242.92	0.00	0.00	0.00	
<b>SUSSEX</b>										
5,400.00	18.44	289.34	5,179.92	465.40	-1,326.06	-246.01	0.00	0.00	0.00	
5,500.00	18.44	289.34	5,274.79	475.87	-1,355.91	-251.54	0.00	0.00	0.00	
5,600.00	18.44	289.34	5,369.65	486.35	-1,385.76	-257.08	0.00	0.00	0.00	
5,700.00	18.44	289.34	5,464.52	496.82	-1,415.60	-262.62	0.00	0.00	0.00	
5,800.00	18.44	289.34	5,559.38	507.30	-1,445.45	-268.15	0.00	0.00	0.00	
5,900.00	18.44	289.34	5,654.25	517.77	-1,475.29	-273.69	0.00	0.00	0.00	
6,000.00	18.44	289.34	5,749.12	528.25	-1,505.14	-279.23	0.00	0.00	0.00	
6,100.00	18.44	289.34	5,843.98	538.72	-1,534.99	-284.77	0.00	0.00	0.00	
6,200.00	18.44	289.34	5,938.85	549.19	-1,564.83	-290.30	0.00	0.00	0.00	
6,300.00	18.44	289.34	6,033.71	559.67	-1,594.68	-295.84	0.00	0.00	0.00	
6,314.01	18.44	289.34	6,047.00	561.14	-1,598.86	-296.61	0.00	0.00	0.00	
<b>SHANNON</b>										
6,400.00	18.44	289.34	6,128.58	570.14	-1,624.52	-301.38	0.00	0.00	0.00	
6,500.00	18.44	289.34	6,223.44	580.62	-1,654.37	-306.91	0.00	0.00	0.00	
6,600.00	18.44	289.34	6,318.31	591.09	-1,684.22	-312.45	0.00	0.00	0.00	
6,700.00	18.44	289.34	6,413.18	601.57	-1,714.06	-317.99	0.00	0.00	0.00	
6,800.00	18.44	289.34	6,508.04	612.04	-1,743.91	-323.52	0.00	0.00	0.00	
6,900.00	18.44	289.34	6,602.91	622.52	-1,773.75	-329.06	0.00	0.00	0.00	
7,000.00	18.44	289.34	6,697.77	632.99	-1,803.60	-334.60	0.00	0.00	0.00	
7,100.22	18.44	289.34	6,792.85	643.49	-1,833.51	-340.15	0.00	0.00	0.00	
<b>DROP 2°/100'</b>										
7,200.00	16.44	289.34	6,888.03	653.39	-1,861.73	-345.38	2.00	-2.00	0.00	
7,300.00	14.44	289.34	6,984.42	662.21	-1,886.86	-350.04	2.00	-2.00	0.00	
7,400.00	12.44	289.34	7,081.67	669.91	-1,908.79	-354.11	2.00	-2.00	0.00	
7,500.00	10.44	289.34	7,179.68	676.48	-1,927.51	-357.59	2.00	-2.00	0.00	
7,600.00	8.44	289.34	7,278.32	681.92	-1,943.00	-360.46	2.00	-2.00	0.00	
7,700.00	6.44	289.34	7,377.47	686.21	-1,955.22	-362.73	2.00	-2.00	0.00	
7,800.00	4.44	289.34	7,477.02	689.35	-1,964.17	-364.39	2.00	-2.00	0.00	
7,900.00	2.44	289.34	7,576.83	691.34	-1,969.84	-365.44	2.00	-2.00	0.00	
8,000.00	0.44	289.34	7,676.79	692.17	-1,972.22	-365.88	2.00	-2.00	0.00	
8,022.21	0.00	0.00	7,699.00	692.20	-1,972.30	-365.89	2.00	-2.00	0.00	
<b>HOLD VERTICAL</b>										
8,052.21	0.00	0.00	7,729.00	692.20	-1,972.30	-365.89	0.00	0.00	0.00	
<b>KOP, BUILD 10°/100'</b>										
8,100.00	4.78	180.23	7,776.74	690.21	-1,972.31	-363.93	10.00	10.00	0.00	
8,150.00	9.78	180.23	7,826.32	683.88	-1,972.33	-357.67	10.00	10.00	0.00	
8,200.00	14.78	180.23	7,875.16	673.25	-1,972.38	-347.17	10.00	10.00	0.00	
8,205.01	15.28	180.23	7,880.00	671.95	-1,972.38	-345.89	10.00	10.00	0.00	
<b>NIORARA</b>										
8,250.00	19.78	180.23	7,922.89	658.40	-1,972.43	-332.51	10.00	10.00	0.00	
8,300.00	24.78	180.23	7,969.14	639.45	-1,972.51	-313.80	10.00	10.00	0.00	
8,350.00	29.78	180.23	8,013.57	616.54	-1,972.60	-291.17	10.00	10.00	0.00	
8,390.52	33.83	180.23	8,048.00	595.19	-1,972.68	-270.09	10.00	10.00	0.00	
<b>NIO B TARGET</b>										
8,400.00	34.78	180.23	8,055.83	589.85	-1,972.71	-264.81	10.00	10.00	0.00	

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
8,450.00	39.78	180.23	8,095.60	559.58	-1,972.83	-234.91	10.00	10.00	0.00	
8,500.00	44.78	180.23	8,132.59	525.95	-1,972.96	-201.71	10.00	10.00	0.00	
8,550.00	49.78	180.23	8,166.50	489.23	-1,973.11	-165.44	10.00	10.00	0.00	
8,600.00	54.78	180.23	8,197.08	449.70	-1,973.26	-126.40	10.00	10.00	0.00	
8,650.00	59.77	180.23	8,224.10	407.65	-1,973.43	-84.87	10.00	10.00	0.00	
8,700.00	64.77	180.23	8,247.36	363.40	-1,973.60	-41.17	10.00	10.00	0.00	
8,750.00	69.77	180.23	8,266.67	317.30	-1,973.79	4.36	10.00	10.00	0.00	
8,800.00	74.77	180.23	8,281.89	269.69	-1,973.98	51.38	10.00	10.00	0.00	
8,804.30	75.20	180.23	8,283.00	265.54	-1,973.99	55.49	10.00	10.00	0.00	
FORT HAYS										
8,850.00	79.77	180.23	8,292.90	220.93	-1,974.17	99.53	10.00	10.00	0.00	
8,900.00	84.77	180.23	8,299.62	171.40	-1,974.37	148.45	10.00	10.00	0.00	
8,952.27	90.00	180.23	8,302.00	119.20	-1,974.57	200.00	10.00	10.00	0.00	
LP @ 90° INC, 180.23° AZM HOLD - CODELL										
9,000.00	90.00	180.23	8,302.00	71.48	-1,974.76	247.14	0.00	0.00	0.00	
9,100.00	90.00	180.23	8,302.00	-28.52	-1,975.16	345.90	0.00	0.00	0.00	
9,200.00	90.00	180.23	8,302.00	-128.52	-1,975.56	444.66	0.00	0.00	0.00	
9,300.00	90.00	180.23	8,302.00	-228.52	-1,975.95	543.42	0.00	0.00	0.00	
9,400.00	90.00	180.23	8,302.00	-328.52	-1,976.35	642.18	0.00	0.00	0.00	
9,500.00	90.00	180.23	8,302.00	-428.52	-1,976.75	740.94	0.00	0.00	0.00	
9,600.00	90.00	180.23	8,302.00	-528.52	-1,977.14	839.70	0.00	0.00	0.00	
9,700.00	90.00	180.23	8,302.00	-628.52	-1,977.54	938.46	0.00	0.00	0.00	
9,800.00	90.00	180.23	8,302.00	-728.52	-1,977.94	1,037.22	0.00	0.00	0.00	
9,900.00	90.00	180.23	8,302.00	-828.52	-1,978.33	1,135.98	0.00	0.00	0.00	
10,000.00	90.00	180.23	8,302.00	-928.51	-1,978.73	1,234.75	0.00	0.00	0.00	
10,100.00	90.00	180.23	8,302.00	-1,028.51	-1,979.13	1,333.51	0.00	0.00	0.00	
10,200.00	90.00	180.23	8,302.00	-1,128.51	-1,979.52	1,432.27	0.00	0.00	0.00	
10,300.00	90.00	180.23	8,302.00	-1,228.51	-1,979.92	1,531.03	0.00	0.00	0.00	
10,400.00	90.00	180.23	8,302.00	-1,328.51	-1,980.32	1,629.79	0.00	0.00	0.00	
10,500.00	90.00	180.23	8,302.00	-1,428.51	-1,980.71	1,728.55	0.00	0.00	0.00	
10,600.00	90.00	180.23	8,302.00	-1,528.51	-1,981.11	1,827.31	0.00	0.00	0.00	
10,700.00	90.00	180.23	8,302.00	-1,628.51	-1,981.51	1,926.07	0.00	0.00	0.00	
10,800.00	90.00	180.23	8,302.00	-1,728.51	-1,981.90	2,024.83	0.00	0.00	0.00	
10,900.00	90.00	180.23	8,302.00	-1,828.51	-1,982.30	2,123.59	0.00	0.00	0.00	
11,000.00	90.00	180.23	8,302.00	-1,928.51	-1,982.70	2,222.35	0.00	0.00	0.00	
11,100.00	90.00	180.23	8,302.00	-2,028.51	-1,983.09	2,321.11	0.00	0.00	0.00	
11,200.00	90.00	180.23	8,302.00	-2,128.50	-1,983.49	2,419.87	0.00	0.00	0.00	
11,300.00	90.00	180.23	8,302.00	-2,228.50	-1,983.89	2,518.63	0.00	0.00	0.00	
11,400.00	90.00	180.23	8,302.00	-2,328.50	-1,984.28	2,617.39	0.00	0.00	0.00	
11,500.00	90.00	180.23	8,302.00	-2,428.50	-1,984.68	2,716.15	0.00	0.00	0.00	
11,600.00	90.00	180.23	8,302.00	-2,528.50	-1,985.08	2,814.91	0.00	0.00	0.00	
11,700.00	90.00	180.23	8,302.00	-2,628.50	-1,985.47	2,913.67	0.00	0.00	0.00	
11,800.00	90.00	180.23	8,302.00	-2,728.50	-1,985.87	3,012.44	0.00	0.00	0.00	
11,900.00	90.00	180.23	8,302.00	-2,828.50	-1,986.27	3,111.20	0.00	0.00	0.00	
12,000.00	90.00	180.23	8,302.00	-2,928.50	-1,986.66	3,209.96	0.00	0.00	0.00	
12,100.00	90.00	180.23	8,302.00	-3,028.50	-1,987.06	3,308.72	0.00	0.00	0.00	
12,200.00	90.00	180.23	8,302.00	-3,128.50	-1,987.46	3,407.48	0.00	0.00	0.00	
12,300.00	90.00	180.23	8,302.00	-3,228.50	-1,987.85	3,506.24	0.00	0.00	0.00	
12,400.00	90.00	180.23	8,302.00	-3,328.50	-1,988.25	3,605.00	0.00	0.00	0.00	
12,500.00	90.00	180.23	8,302.00	-3,428.49	-1,988.65	3,703.76	0.00	0.00	0.00	
12,600.00	90.00	180.23	8,302.00	-3,528.49	-1,989.04	3,802.52	0.00	0.00	0.00	
12,700.00	90.00	180.23	8,302.00	-3,628.49	-1,989.44	3,901.28	0.00	0.00	0.00	
12,800.00	90.00	180.23	8,302.00	-3,728.49	-1,989.84	4,000.04	0.00	0.00	0.00	
12,900.00	90.00	180.23	8,302.00	-3,828.49	-1,990.23	4,098.80	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
13,000.00	90.00	180.23	8,302.00	-3,928.49	-1,990.63	4,197.56	0.00	0.00	0.00
13,100.00	90.00	180.23	8,302.00	-4,028.49	-1,991.03	4,296.32	0.00	0.00	0.00
13,200.00	90.00	180.23	8,302.00	-4,128.49	-1,991.42	4,395.08	0.00	0.00	0.00
13,300.00	90.00	180.23	8,302.00	-4,228.49	-1,991.82	4,493.84	0.00	0.00	0.00
13,400.00	90.00	180.23	8,302.00	-4,328.49	-1,992.22	4,592.60	0.00	0.00	0.00
13,500.00	90.00	180.23	8,302.00	-4,428.49	-1,992.62	4,691.36	0.00	0.00	0.00
13,600.00	90.00	180.23	8,302.00	-4,528.49	-1,993.01	4,790.13	0.00	0.00	0.00
13,700.00	90.00	180.23	8,302.00	-4,628.49	-1,993.41	4,888.89	0.00	0.00	0.00
13,800.00	90.00	180.23	8,302.00	-4,728.48	-1,993.81	4,987.65	0.00	0.00	0.00
13,900.00	90.00	180.23	8,302.00	-4,828.48	-1,994.20	5,086.41	0.00	0.00	0.00
14,000.00	90.00	180.23	8,302.00	-4,928.48	-1,994.60	5,185.17	0.00	0.00	0.00
14,100.00	90.00	180.23	8,302.00	-5,028.48	-1,995.00	5,283.93	0.00	0.00	0.00
14,200.00	90.00	180.23	8,302.00	-5,128.48	-1,995.39	5,382.69	0.00	0.00	0.00
14,300.00	90.00	180.23	8,302.00	-5,228.48	-1,995.79	5,481.45	0.00	0.00	0.00
14,400.00	90.00	180.23	8,302.00	-5,328.48	-1,996.19	5,580.21	0.00	0.00	0.00
14,500.00	90.00	180.23	8,302.00	-5,428.48	-1,996.58	5,678.97	0.00	0.00	0.00
14,600.00	90.00	180.23	8,302.00	-5,528.48	-1,996.98	5,777.73	0.00	0.00	0.00
14,700.00	90.00	180.23	8,302.00	-5,628.48	-1,997.38	5,876.49	0.00	0.00	0.00
14,800.00	90.00	180.23	8,302.00	-5,728.48	-1,997.77	5,975.25	0.00	0.00	0.00
14,900.00	90.00	180.23	8,302.00	-5,828.48	-1,998.17	6,074.01	0.00	0.00	0.00
15,000.00	90.00	180.23	8,302.00	-5,928.48	-1,998.57	6,172.77	0.00	0.00	0.00
15,100.00	90.00	180.23	8,302.00	-6,028.47	-1,998.96	6,271.53	0.00	0.00	0.00
15,200.00	90.00	180.23	8,302.00	-6,128.47	-1,999.36	6,370.29	0.00	0.00	0.00
15,300.00	90.00	180.23	8,302.00	-6,228.47	-1,999.76	6,469.05	0.00	0.00	0.00
15,400.00	90.00	180.23	8,302.00	-6,328.47	-2,000.15	6,567.82	0.00	0.00	0.00
15,500.00	90.00	180.23	8,302.00	-6,428.47	-2,000.55	6,666.58	0.00	0.00	0.00
15,600.00	90.00	180.23	8,302.00	-6,528.47	-2,000.95	6,765.34	0.00	0.00	0.00
15,700.00	90.00	180.23	8,302.00	-6,628.47	-2,001.34	6,864.10	0.00	0.00	0.00
15,800.00	90.00	180.23	8,302.00	-6,728.47	-2,001.74	6,962.86	0.00	0.00	0.00
15,900.00	90.00	180.23	8,302.00	-6,828.47	-2,002.14	7,061.62	0.00	0.00	0.00
16,000.00	90.00	180.23	8,302.00	-6,928.47	-2,002.53	7,160.38	0.00	0.00	0.00
16,100.00	90.00	180.23	8,302.00	-7,028.47	-2,002.93	7,259.14	0.00	0.00	0.00
16,200.00	90.00	180.23	8,302.00	-7,128.47	-2,003.33	7,357.90	0.00	0.00	0.00
16,300.00	90.00	180.23	8,302.00	-7,228.46	-2,003.72	7,456.66	0.00	0.00	0.00
16,400.00	90.00	180.23	8,302.00	-7,328.46	-2,004.12	7,555.42	0.00	0.00	0.00
16,500.00	90.00	180.23	8,302.00	-7,428.46	-2,004.52	7,654.18	0.00	0.00	0.00
16,600.00	90.00	180.23	8,302.00	-7,528.46	-2,004.91	7,752.94	0.00	0.00	0.00
16,700.00	90.00	180.23	8,302.00	-7,628.46	-2,005.31	7,851.70	0.00	0.00	0.00
16,800.00	90.00	180.23	8,302.00	-7,728.46	-2,005.71	7,950.46	0.00	0.00	0.00
16,900.00	90.00	180.23	8,302.00	-7,828.46	-2,006.10	8,049.22	0.00	0.00	0.00
17,000.00	90.00	180.23	8,302.00	-7,928.46	-2,006.50	8,147.98	0.00	0.00	0.00
17,100.00	90.00	180.23	8,302.00	-8,028.46	-2,006.90	8,246.74	0.00	0.00	0.00
17,200.00	90.00	180.23	8,302.00	-8,128.46	-2,007.29	8,345.51	0.00	0.00	0.00
17,300.00	90.00	180.23	8,302.00	-8,228.46	-2,007.69	8,444.27	0.00	0.00	0.00
17,400.00	90.00	180.23	8,302.00	-8,328.46	-2,008.09	8,543.03	0.00	0.00	0.00
17,500.00	90.00	180.23	8,302.00	-8,428.46	-2,008.48	8,641.79	0.00	0.00	0.00
17,600.00	90.00	180.23	8,302.00	-8,528.45	-2,008.88	8,740.55	0.00	0.00	0.00
17,700.00	90.00	180.23	8,302.00	-8,628.45	-2,009.28	8,839.31	0.00	0.00	0.00
17,800.00	90.00	180.23	8,302.00	-8,728.45	-2,009.67	8,938.07	0.00	0.00	0.00
17,900.00	90.00	180.23	8,302.00	-8,828.45	-2,010.07	9,036.83	0.00	0.00	0.00
18,000.00	90.00	180.23	8,302.00	-8,928.45	-2,010.47	9,135.59	0.00	0.00	0.00
18,100.00	90.00	180.23	8,302.00	-9,028.45	-2,010.86	9,234.35	0.00	0.00	0.00
18,200.00	90.00	180.23	8,302.00	-9,128.45	-2,011.26	9,333.11	0.00	0.00	0.00
18,300.00	90.00	180.23	8,302.00	-9,228.45	-2,011.66	9,431.87	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
18,400.00	90.00	180.23	8,302.00	-9,328.45	-2,012.05	9,530.63	0.00	0.00	0.00	
18,500.00	90.00	180.23	8,302.00	-9,428.45	-2,012.45	9,629.39	0.00	0.00	0.00	
18,600.00	90.00	180.23	8,302.00	-9,528.45	-2,012.85	9,728.15	0.00	0.00	0.00	
18,700.00	90.00	180.23	8,302.00	-9,628.45	-2,013.24	9,826.91	0.00	0.00	0.00	
18,800.00	90.00	180.23	8,302.00	-9,728.45	-2,013.64	9,925.67	0.00	0.00	0.00	
18,900.00	90.00	180.23	8,302.00	-9,828.44	-2,014.04	10,024.43	0.00	0.00	0.00	
19,000.00	90.00	180.23	8,302.00	-9,928.44	-2,014.43	10,123.20	0.00	0.00	0.00	
19,100.00	90.00	180.23	8,302.00	-10,028.44	-2,014.83	10,221.96	0.00	0.00	0.00	
19,200.00	90.00	180.23	8,302.00	-10,128.44	-2,015.23	10,320.72	0.00	0.00	0.00	
19,300.00	90.00	180.23	8,302.00	-10,228.44	-2,015.63	10,419.48	0.00	0.00	0.00	
19,400.00	90.00	180.23	8,301.99	-10,328.44	-2,016.02	10,518.24	0.00	0.00	0.00	
19,500.00	90.00	180.23	8,301.99	-10,428.44	-2,016.42	10,617.00	0.00	0.00	0.00	
19,600.00	90.00	180.23	8,301.99	-10,528.44	-2,016.82	10,715.76	0.00	0.00	0.00	
19,700.00	90.00	180.23	8,301.99	-10,628.44	-2,017.21	10,814.52	0.00	0.00	0.00	
19,800.00	90.00	180.23	8,301.99	-10,728.44	-2,017.61	10,913.28	0.00	0.00	0.00	
19,900.00	90.00	180.23	8,301.99	-10,828.44	-2,018.01	11,012.04	0.00	0.00	0.00	
20,000.00	90.00	180.23	8,301.99	-10,928.44	-2,018.40	11,110.80	0.00	0.00	0.00	
20,100.00	90.00	180.23	8,301.99	-11,028.44	-2,018.80	11,209.56	0.00	0.00	0.00	
20,200.00	90.00	180.23	8,301.99	-11,128.43	-2,019.20	11,308.32	0.00	0.00	0.00	
20,300.00	90.00	180.23	8,301.99	-11,228.43	-2,019.59	11,407.08	0.00	0.00	0.00	
20,400.00	90.00	180.23	8,301.99	-11,328.43	-2,019.99	11,505.84	0.00	0.00	0.00	
20,500.00	90.00	180.23	8,301.99	-11,428.43	-2,020.39	11,604.60	0.00	0.00	0.00	
20,600.00	90.00	180.23	8,301.99	-11,528.43	-2,020.78	11,703.36	0.00	0.00	0.00	
20,700.00	90.00	180.23	8,301.99	-11,628.43	-2,021.18	11,802.12	0.00	0.00	0.00	
20,800.00	90.00	180.23	8,301.99	-11,728.43	-2,021.58	11,900.89	0.00	0.00	0.00	
20,900.00	90.00	180.23	8,301.99	-11,828.43	-2,021.97	11,999.65	0.00	0.00	0.00	
21,000.00	90.00	180.23	8,301.99	-11,928.43	-2,022.37	12,098.41	0.00	0.00	0.00	
21,488.81	90.00	180.23	8,302.00	-12,417.23	-2,024.08	12,581.12	0.00	0.00	0.00	
TD at 21488.81' MD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
LIVINGSTON S19 5C - I - hit/miss target - Shape - Point	0.00	0.00	8,302.00	119.20	-1,974.57	1,235,481.40	3,126,973.25	39° 58' 44.004 N	105° 2' 48.880 W	
LIVINGSTON S19 5C - I - plan hits target center - Point	0.00	0.00	8,302.00	-12,417.23	-2,024.08	1,222,944.88	3,126,988.80	39° 56' 40.110 N	105° 2' 49.502 W	



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well LIVINGSTON S19-25-5C
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5336.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5336.00usft
<b>Site:</b>	Sec 7-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	LIVINGSTON S19-25-5C	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,837.18	4,646.00	PARKMAN				
5,344.21	5,127.00	SUSSEX				
6,314.01	6,047.00	SHANNON				
8,205.01	7,880.00	NIOBRARA				
8,390.52	8,048.00	NIO B TARGET				
8,804.30	8,283.00	FORT HAYS				
8,952.27	8,302.00	CODELL				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
500.00	500.00	0.00	0.00	BUILD 2°/100'	
1,421.99	1,406.15	48.71	-138.79	HOLD 18.44° INC	
7,100.22	6,792.85	643.49	-1,833.51	DROP 2°/100'	
8,022.21	7,699.00	692.20	-1,972.30	HOLD VERTICAL	
8,052.21	7,729.00	692.20	-1,972.30	KOP, BUILD 10°/100'	
8,952.27	8,302.00	119.20	-1,974.57	LP @ 90° INC, 180.23° AZM HOLD	
21,488.81	8,302.00	-12,417.23	-2,024.08	TD at 21488.81' MD	