



# Enseco Survey Report

06 January, 2012

## Wexpro Company

Moffat County, Colorado  
Sec 4, T11N, R97W, 6 PM  
B.W. Musser #39

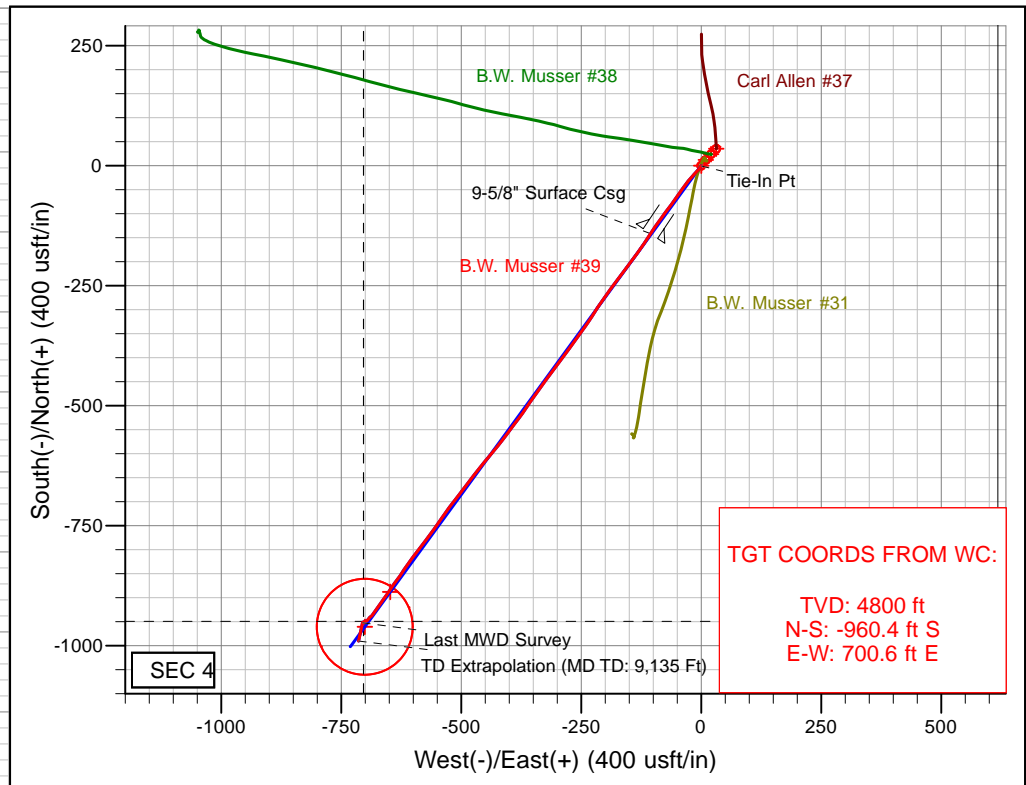
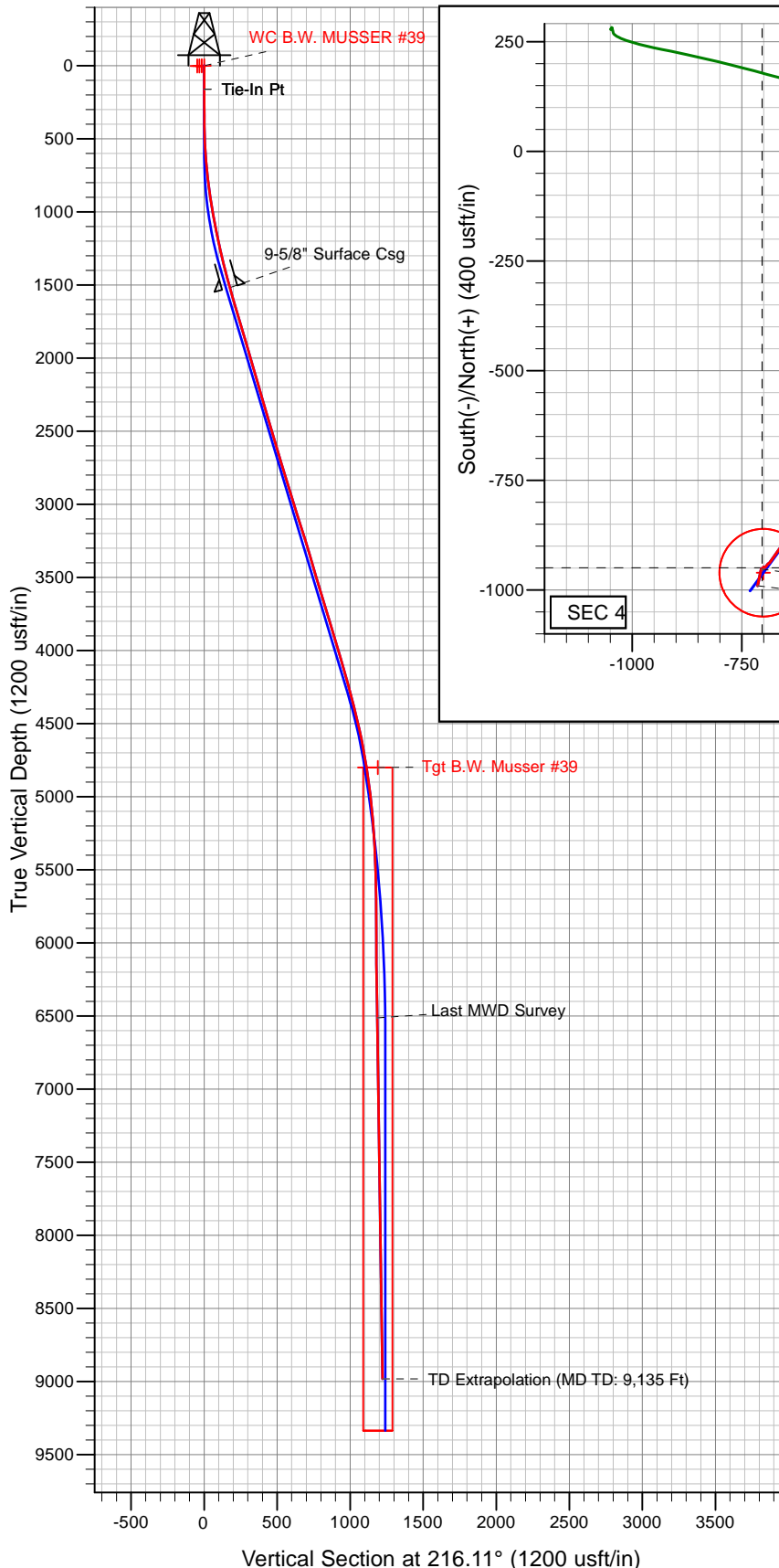
11280-159

Survey: Final Surveys to TD (MD TD: 9,135 Ft)





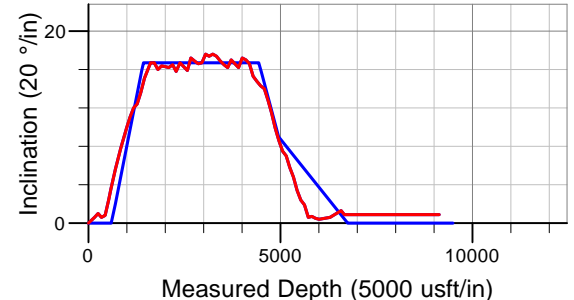
**Wexpro Company**  
**Project: Moffat County, Colorado**  
**Site: Sec 4, T11N, R97W, 6 PM**  
**Well: B.W. Musser #39**  
**Wellbore: 11280-159**  
**Design: Final Surveys**



#### Ref Information: Well Center

Geodetic System: US State Plane 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Northern Zone  
 Northing: 1600533.52  
 Easting: 2229572.38  
 Latitude: 40° 56' 54.830 N  
 Longitude: 108° 17' 21.379 W

Ground Elevation: 6577.0  
 KB Elevation: Actual Kb @ 6605.0usft (SST 88)



#### ANNOTATIONS

TVD	MD	Inc	Azi	Vsect	Annotation
161.0	161.0	0.60	128.30	0.0	Tie-In Pt
1518.2	1535.0	15.81	213.87	176.2	9-5/8\" Surface Csg
6512.5	6665.0	0.90	192.30	1184.9	Last MWD Survey
8982.2	9135.0	0.90	192.30	1220.4	TD Ext (MD TD: 9,135 Ft)

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well B.W. Musser #39
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Site:</b>	Sec 4, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	B.W. Musser #39	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	11280-159		
<b>Design:</b>	Final Surveys		

Project	Moffat County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Sec 4, T11N, R97W, 6 PM		Site Reference Pt.: Musser #39		
Site Position:		Northing:	1,600,533.49 usft	Latitude:	40° 56' 54.830 N
From:	Lat/Long	Easting:	2,229,572.32 usft	Longitude:	108° 17' 21.380 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.80 °

Well	B.W. Musser #39					
Well Position	+N/-S	0.0 usft	Northing:	1,600,533.52 usft	Latitude:	40° 56' 54.830 N
	+E/-W	0.1 usft	Easting:	2,229,572.38 usft	Longitude:	108° 17' 21.379 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	6,605.0 usft	Ground Level:	6,577.0 usft

Wellbore	11280-159				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	22-Nov-2011	10.62	66.86	52,942

Design	Final Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	216.11	

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well B.W. Musser #39
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Site:</b>	Sec 4, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	B.W. Musser #39	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	11280-159		
<b>Design:</b>	Final Surveys		

Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	6,605.00	0.0	0.0	0.0	0.00	0.00	0.00
<b>Tie-In Pt</b>										
161.0	0.60	128.30	161.0	6,444.00	-0.5	0.7	0.0	0.37	0.37	0.00
253.0	1.00	233.10	253.0	6,352.01	-1.3	0.4	0.8	1.40	0.43	113.91
344.0	0.60	228.80	344.0	6,261.02	-2.1	-0.6	2.0	0.44	-0.44	-4.73
436.0	0.80	198.70	436.0	6,169.02	-3.0	-1.2	3.1	0.45	0.22	-32.72
526.0	2.40	219.20	525.9	6,079.06	-5.1	-2.6	5.6	1.86	1.78	22.78
617.0	4.00	225.30	616.8	5,988.21	-8.8	-6.0	10.6	1.80	1.76	6.70
706.0	5.70	224.10	705.5	5,899.53	-14.1	-11.3	18.1	1.91	1.91	-1.35
797.0	7.10	220.20	795.9	5,809.10	-21.7	-18.1	28.2	1.61	1.54	-4.29
893.0	8.40	220.60	891.0	5,713.98	-31.5	-26.5	41.1	1.36	1.35	0.42
988.0	9.80	215.90	984.8	5,620.17	-43.4	-35.7	56.1	1.67	1.47	-4.95
1,083.0	11.00	213.20	1,078.3	5,526.73	-57.5	-45.4	73.2	1.36	1.26	-2.84
1,179.0	12.00	217.20	1,172.3	5,432.66	-73.1	-56.5	92.3	1.33	1.04	4.17
1,274.0	12.40	216.80	1,265.2	5,339.81	-89.1	-68.6	112.4	0.43	0.42	-0.42
1,369.0	13.60	215.30	1,357.8	5,247.24	-106.4	-81.1	133.8	1.31	1.26	-1.58
1,465.0	15.10	214.90	1,450.8	5,154.24	-125.9	-94.8	157.6	1.57	1.56	-0.42
<b>9-5/8" Surface Csg</b>										
1,535.0	15.81	213.87	1,518.2	5,086.77	-141.3	-105.3	176.2	1.09	1.02	-1.48
1,622.0	16.70	212.70	1,601.7	5,003.25	-161.6	-118.7	200.5	1.09	1.02	-1.34
1,717.0	16.70	216.80	1,692.7	4,912.26	-184.1	-134.2	227.8	1.24	0.00	4.32
1,812.0	16.00	217.10	1,783.9	4,821.10	-205.4	-150.3	254.6	0.74	-0.74	0.32
1,908.0	16.40	217.90	1,876.1	4,728.91	-226.7	-166.6	281.3	0.48	0.42	0.83
2,003.0	16.30	215.50	1,967.2	4,637.75	-248.1	-182.6	308.1	0.72	-0.11	-2.53
2,099.0	16.20	214.60	2,059.4	4,545.59	-270.1	-198.0	334.9	0.28	-0.10	-0.94
2,195.0	16.50	213.40	2,151.5	4,453.47	-292.5	-213.1	361.9	0.47	0.31	-1.25
2,290.0	15.80	213.20	2,242.8	4,362.22	-314.6	-227.6	388.3	0.74	-0.74	-0.21
2,385.0	16.70	215.00	2,334.0	4,271.01	-336.6	-242.6	414.9	1.09	0.95	1.89
2,481.0	16.30	217.00	2,426.0	4,178.97	-358.7	-258.6	442.1	0.72	-0.42	2.08
2,576.0	15.90	216.20	2,517.3	4,087.69	-379.8	-274.3	468.5	0.48	-0.42	-0.84
2,671.0	17.20	216.30	2,608.4	3,996.63	-401.6	-290.3	495.6	1.37	1.37	0.11
2,767.0	16.90	216.40	2,700.2	3,904.85	-424.3	-307.0	523.7	0.31	-0.31	0.10
2,863.0	16.60	216.50	2,792.1	3,812.92	-446.6	-323.4	551.4	0.31	-0.31	0.10
2,958.0	16.70	215.60	2,883.1	3,721.90	-468.6	-339.4	578.6	0.29	0.11	-0.95
3,053.0	17.60	215.50	2,973.9	3,631.13	-491.4	-355.7	606.6	0.95	0.95	-0.11
3,148.0	17.40	214.00	3,064.5	3,540.53	-514.8	-372.0	635.2	0.52	-0.21	-1.58
3,244.0	17.60	218.10	3,156.0	3,448.97	-538.1	-389.0	664.0	1.30	0.21	4.27
3,339.0	17.40	215.50	3,246.6	3,358.36	-561.0	-406.1	692.6	0.85	-0.21	-2.74
3,435.0	16.90	219.60	3,338.4	3,266.63	-583.5	-423.3	720.8	1.36	-0.52	4.27
3,530.0	16.50	219.80	3,429.4	3,175.63	-604.5	-440.8	748.1	0.43	-0.42	0.21
3,626.0	16.20	219.60	3,521.5	3,083.52	-625.2	-458.0	775.1	0.32	-0.31	-0.21
3,721.0	17.00	216.80	3,612.5	2,992.47	-646.6	-474.8	802.2	1.19	0.84	-2.95
3,817.0	16.60	217.20	3,704.4	2,900.57	-668.7	-491.5	829.9	0.43	-0.42	0.42
3,912.0	16.20	218.20	3,795.6	2,809.44	-690.0	-507.9	856.7	0.52	-0.42	1.05
4,008.0	17.20	216.10	3,887.5	2,717.49	-712.0	-524.5	884.3	1.22	1.04	-2.19
4,103.0	17.00	214.90	3,978.3	2,626.69	-734.7	-540.8	912.2	0.43	-0.21	-1.26
4,198.0	16.60	215.00	4,069.3	2,535.74	-757.2	-556.5	939.7	0.42	-0.42	0.11
4,294.0	15.30	218.30	4,161.6	2,443.44	-778.4	-572.2	966.1	1.65	-1.35	3.44
4,389.0	14.80	217.20	4,253.3	2,351.70	-797.9	-587.3	990.7	0.61	-0.53	-1.16
4,485.0	14.30	217.30	4,346.2	2,258.77	-817.1	-601.9	1,014.8	0.52	-0.52	0.10
4,580.0	14.00	212.10	4,438.3	2,166.65	-836.1	-615.1	1,038.0	1.37	-0.32	-5.47
4,675.0	12.80	215.90	4,530.8	2,074.24	-854.4	-627.4	1,060.0	1.57	-1.26	4.00
4,771.0	11.50	216.10	4,624.6	1,980.39	-870.8	-639.3	1,080.2	1.35	-1.35	0.21
4,866.0	9.90	213.60	4,718.0	1,887.05	-885.2	-649.4	1,097.8	1.75	-1.68	-2.63

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well B.W. Musser #39
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual Kb @ 6605.0usft (SST 88)
<b>Site:</b>	Sec 4, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	B.W. Musser #39	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	11280-159		
<b>Design:</b>	Final Surveys		

Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,961.0	8.60	215.80	4,811.7	1,793.28	-897.8	-658.0	1,113.1	1.42	-1.37	2.32
5,056.0	7.50	212.50	4,905.8	1,699.22	-908.8	-665.5	1,126.4	1.26	-1.16	-3.47
5,152.0	7.00	217.40	5,001.0	1,603.99	-918.7	-672.4	1,138.5	0.83	-0.52	5.10
5,247.0	5.80	216.60	5,095.4	1,509.58	-927.1	-678.8	1,149.1	1.27	-1.26	-0.84
5,343.0	4.80	215.00	5,191.0	1,413.99	-934.3	-684.0	1,158.0	1.05	-1.04	-1.67
5,438.0	3.40	230.20	5,285.8	1,319.24	-939.4	-688.5	1,164.7	1.85	-1.47	16.00
5,534.0	2.40	218.90	5,381.6	1,223.36	-942.8	-691.9	1,169.4	1.20	-1.04	-11.77
5,629.0	1.90	220.00	5,476.6	1,128.43	-945.5	-694.2	1,173.0	0.53	-0.53	1.16
5,725.0	0.60	202.30	5,572.5	1,032.45	-947.2	-695.4	1,175.1	1.40	-1.35	-18.44
5,820.0	0.70	245.40	5,667.5	937.46	-947.9	-696.1	1,176.1	0.51	0.11	45.37
5,915.0	0.50	268.70	5,762.5	842.46	-948.2	-697.1	1,176.8	0.33	-0.21	24.53
6,010.0	0.40	259.80	5,857.5	747.46	-948.2	-697.8	1,177.3	0.13	-0.11	-9.37
6,296.0	0.60	241.10	6,143.5	461.47	-949.1	-700.1	1,179.4	0.09	0.07	-6.54
6,583.0	1.30	247.20	6,430.5	174.52	-951.1	-704.4	1,183.5	0.25	0.24	2.13
Last MWD Survey										
6,665.0	0.90	192.30	6,512.5	92.53	-952.1	-705.4	1,184.9	1.31	-0.49	-66.95
TD Extrapolation (MD TD: 9,135 Ft)										
9,135.0	0.90	192.30	8,982.2	-2,377.17	-990.0	-713.7	1,220.4	0.00	0.00	0.00

Casing Points				
MD (usft)	TVD (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,535.0	1,518.2	9-5/8" Surface Csg	9-5/8	12-1/4

Survey Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
161.0	161.0	-0.5	0.7	Tie-In Pt
1,535.0	1,518.2	-141.3	-105.3	9-5/8" Surface Csg
6,665.0	6,512.5	-952.1	-705.4	Last MWD Survey
9,135.0	8,982.2	-990.0	-713.7	TD Extrapolation (MD TD: 9,135 Ft)