



# Enseco Survey Report

20 January, 2011

## Wexpro Company

Moffat County, Colorado  
Sec 15, T11N, R97W, 6 PM  
Musser #42

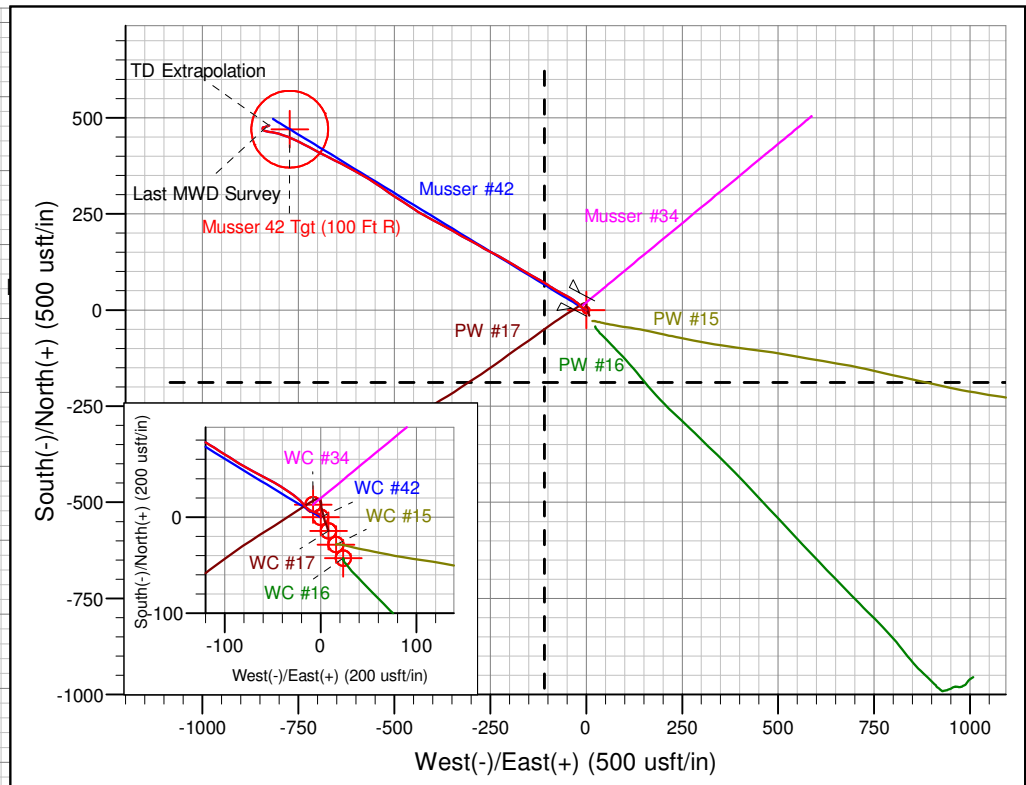
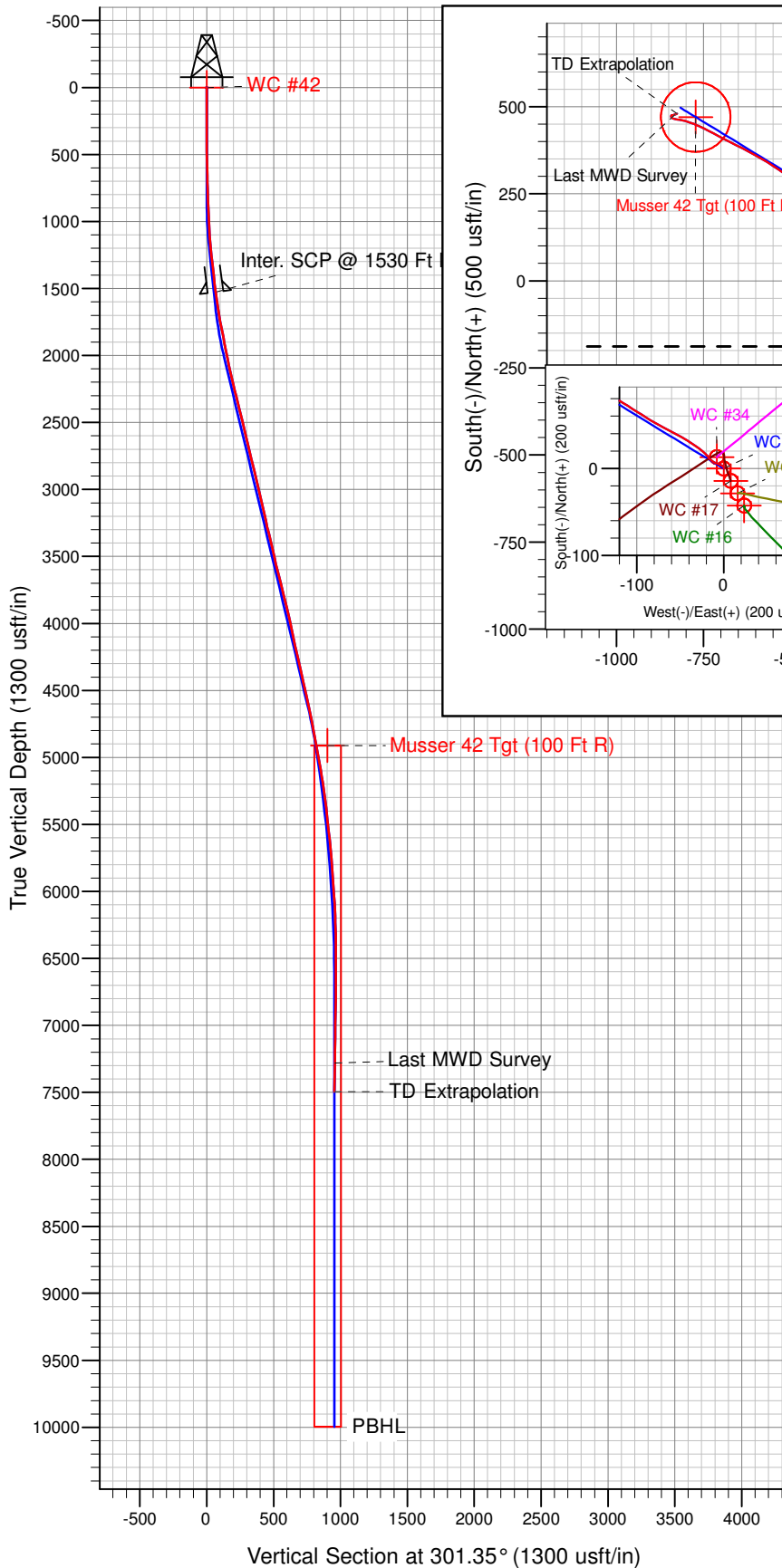
10558-159

Survey: Final Surveys to TD





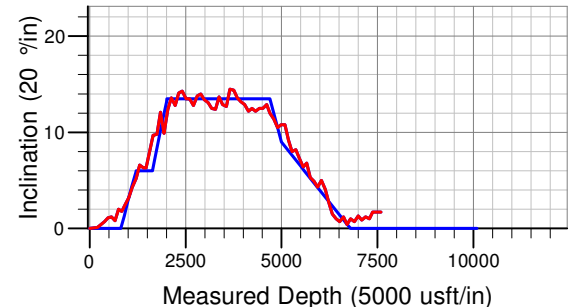
**Wexpro Company**  
**Project: Moffat County, Colorado**  
**Site: Sec 15, T11N, R97W, 6 PM**  
**Well: Musser #42**  
**Wellbore: 10558-159**  
**Design: Final Surveys**



#### Ref Information: Well Center

Geodetic System: US State Plane 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Northern Zone  
 Northing: 1596055.46  
 Easting: 2220944.56  
 Latitude: 40° 56' 7.911 N  
 Longitude: 108° 19' 11.899 W

Ground Elevation: 7037.0  
 KB Elevation: Actual KB @ 7065.0usft (SST-88)



#### ANNOTATIONS

TVD	MD	Annotation
1527.2	1530.0	Inter. SCP @ 1530 Ft MD
7279.9	7376.0	Last MWD Survey
7493.8	7590.0	TD Extrapolation

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Musser #42
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Site:</b>	Sec 15, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	Musser #42	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	10558-159		
<b>Design:</b>	Final Surveys		

<b>Project</b>	Moffat County, Colorado		
<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		Using geodetic scale factor

<b>Site</b>	Sec 15, T11N, R97W, 6 PM		
<b>Site Position:</b>		<b>Northing:</b>	1,596,083.30 usft
<b>From:</b>	Map	<b>Easting:</b>	2,220,929.13 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16"
		<b>Latitude:</b>	40° 56' 8.182 N
		<b>Longitude:</b>	108° 19' 12.112 W
		<b>Grid Convergence:</b>	-1.82 °

<b>Well</b>	Musser #42		
<b>Well Position</b>	<b>+N/-S</b>	-27.3 usft	<b>Northing:</b> 1,596,055.46 usft
	<b>+E/-W</b>	16.3 usft	<b>Easting:</b> 2,220,944.56 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	7,065.0 usft
		<b>Latitude:</b>	40° 56' 7.911 N
		<b>Longitude:</b>	108° 19' 11.899 W
		<b>Ground Level:</b>	7,037.0 usft

<b>Wellbore</b>	10558-159				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/29/2010	10.77	66.87	53,035

<b>Design</b>	Final Surveys			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	301.35

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Musser #42
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Site:</b>	Sec 15, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	Musser #42	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	10558-159		
<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	7,065.00	0.0	0.0	0.0	0.00	0.00	0.00
206.0	0.10	21.90	206.0	6,859.00	0.2	0.1	0.0	0.05	0.05	0.00
388.0	0.70	2.20	388.0	6,677.01	1.4	0.2	0.6	0.33	0.33	-10.82
479.0	1.10	305.80	479.0	6,586.02	2.5	-0.5	1.7	1.01	0.44	-61.98
571.0	1.20	288.00	571.0	6,494.04	3.3	-2.2	3.6	0.40	0.11	-19.35
661.0	0.80	308.20	661.0	6,404.05	4.0	-3.5	5.1	0.59	-0.44	22.44
751.0	2.00	289.60	750.9	6,314.08	4.9	-5.5	7.3	1.41	1.33	-20.67
841.0	1.80	286.60	840.9	6,224.13	5.8	-8.3	10.2	0.25	-0.22	-3.33
932.0	2.50	299.30	931.8	6,133.19	7.2	-11.4	13.5	0.93	0.77	13.96
1,023.0	3.20	317.20	1,022.7	6,042.30	10.0	-14.9	18.0	1.24	0.77	19.67
1,115.0	4.30	321.40	1,114.5	5,950.50	14.6	-18.8	23.7	1.23	1.20	4.57
1,211.0	5.20	307.30	1,210.2	5,854.83	20.1	-24.5	31.4	1.53	0.94	-14.69
1,306.0	6.60	304.90	1,304.7	5,760.34	25.8	-32.4	41.1	1.50	1.47	-2.53
1,402.0	6.30	302.80	1,400.1	5,664.94	31.8	-41.4	51.9	0.40	-0.31	-2.19
1,475.0	6.30	297.70	1,472.6	5,592.38	35.8	-48.3	59.9	0.77	0.00	-6.99
Inter. SCP @ 1530 Ft MD - Inter. SCP @ 1530 Ft MD										
1,530.0	7.34	298.10	1,527.2	5,537.77	38.9	-54.0	66.4	1.89	1.89	0.73
1,655.0	9.70	298.70	1,650.8	5,414.16	47.7	-70.3	84.9	1.89	1.89	0.48
1,751.0	9.80	300.50	1,745.5	5,319.55	55.8	-84.5	101.1	0.33	0.10	1.88
1,846.0	12.10	302.90	1,838.7	5,226.29	65.3	-99.8	119.2	2.47	2.42	2.53
1,942.0	9.90	301.00	1,932.9	5,132.06	75.0	-115.3	137.5	2.32	-2.29	-1.98
2,037.0	12.40	298.40	2,026.1	5,038.86	84.0	-131.3	155.8	2.68	2.63	-2.74
2,133.0	13.60	300.10	2,119.7	4,945.32	94.6	-150.1	177.4	1.31	1.25	1.77
2,228.0	12.80	301.40	2,212.2	4,852.83	105.7	-168.8	199.1	0.90	-0.84	1.37
2,324.0	14.10	300.70	2,305.5	4,759.46	117.2	-187.9	221.4	1.36	1.35	-0.73
2,419.0	14.30	300.70	2,397.6	4,667.37	129.1	-207.9	244.7	0.21	0.21	0.00
2,515.0	13.50	298.60	2,490.8	4,574.18	140.5	-228.0	267.8	0.99	-0.83	-2.19
2,610.0	13.50	297.50	2,583.2	4,481.80	150.9	-247.5	289.9	0.27	0.00	-1.16
2,705.0	12.80	297.70	2,675.7	4,389.30	161.0	-266.7	311.5	0.74	-0.74	0.21
2,801.0	13.80	299.80	2,769.1	4,295.87	171.6	-286.0	333.6	1.16	1.04	2.19
2,896.0	14.00	298.20	2,861.3	4,203.65	182.7	-306.0	356.4	0.46	0.21	-1.68
2,991.0	13.40	299.40	2,953.6	4,111.36	193.5	-325.7	378.8	0.70	-0.63	1.26
3,087.0	13.10	299.40	3,047.1	4,017.91	204.3	-344.9	400.8	0.31	-0.31	0.00
3,182.0	12.50	299.80	3,139.7	3,925.27	214.7	-363.2	421.9	0.64	-0.63	0.42
3,278.0	12.40	297.90	3,233.5	3,831.53	224.7	-381.3	442.5	0.44	-0.10	-1.98
3,373.0	13.70	298.00	3,326.0	3,738.99	234.7	-400.3	463.9	1.37	1.37	0.11
3,468.0	12.90	299.80	3,418.5	3,646.54	245.3	-419.4	485.8	0.95	-0.84	1.89
3,564.0	12.70	300.50	3,512.1	3,552.92	256.0	-437.8	507.0	0.26	-0.21	0.73
3,659.0	14.50	303.10	3,604.4	3,460.59	267.8	-456.8	529.4	2.00	1.89	2.74
3,755.0	14.40	302.10	3,697.4	3,367.63	280.7	-476.9	553.3	0.28	-0.10	-1.04
3,850.0	13.60	302.90	3,789.6	3,275.45	293.0	-496.3	576.3	0.87	-0.84	0.84
3,945.0	13.20	305.90	3,882.0	3,183.04	305.4	-514.5	598.3	0.84	-0.42	3.16
4,041.0	12.90	305.80	3,975.5	3,089.52	318.1	-532.1	619.9	0.31	-0.31	-0.10
4,136.0	12.20	303.70	4,068.2	2,996.79	329.9	-549.0	640.5	0.88	-0.74	-2.21
4,232.0	12.50	300.80	4,162.0	2,903.01	340.8	-566.4	661.0	0.72	0.31	-3.02
4,327.0	12.20	299.80	4,254.8	2,810.21	351.1	-583.9	681.3	0.39	-0.32	-1.05
4,423.0	12.50	299.10	4,348.6	2,716.43	361.2	-601.8	701.8	0.35	0.31	-0.73
4,518.0	12.50	300.00	4,441.3	2,623.68	371.3	-619.7	722.4	0.21	0.00	0.95
4,613.0	12.90	296.30	4,534.0	2,531.00	381.2	-638.1	743.2	0.95	0.42	-3.89
4,705.0	12.00	296.30	4,623.8	2,441.17	390.0	-655.9	763.0	0.98	-0.98	0.00
4,801.0	11.40	296.10	4,717.8	2,347.16	398.6	-673.3	782.4	0.63	-0.63	-0.21
4,896.0	10.50	296.60	4,811.1	2,253.89	406.6	-689.5	800.4	0.95	-0.95	0.53
4,991.0	10.80	297.30	4,904.5	2,160.53	414.5	-705.2	817.9	0.34	0.32	0.74
5,087.0	10.80	299.30	4,998.8	2,066.23	423.0	-721.0	835.8	0.39	0.00	2.08

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Musser #42
<b>Company:</b>	Wexpro Company	<b>TVD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Project:</b>	Moffat County, Colorado	<b>MD Reference:</b>	Actual KB @ 7065.0usft (SST-88)
<b>Site:</b>	Sec 15, T11N, R97W, 6 PM	<b>North Reference:</b>	True
<b>Well:</b>	Musser #42	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	10558-159		
<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)
5,182.0	9.20	297.30	5,092.3	1,972.68	430.9	-735.5	852.3	1.72	-1.68	-2.11
5,278.0	8.00	297.10	5,187.2	1,877.76	437.5	-748.3	866.6	1.25	-1.25	-0.21
5,373.0	8.20	296.60	5,281.3	1,783.71	443.5	-760.2	880.0	0.22	0.21	-0.53
5,469.0	7.30	291.70	5,376.4	1,688.58	448.8	-772.0	892.8	1.16	-0.94	-5.10
5,564.0	6.40	287.70	5,470.7	1,594.26	452.7	-782.7	903.9	1.07	-0.95	-4.21
5,659.0	6.80	290.50	5,565.1	1,499.89	456.2	-793.0	914.6	0.54	0.42	2.95
5,754.0	5.30	283.30	5,659.6	1,405.42	459.2	-802.5	924.3	1.77	-1.58	-7.58
5,850.0	4.90	278.90	5,755.2	1,309.80	460.9	-810.9	932.3	0.58	-0.42	-4.58
5,945.0	4.30	278.90	5,849.9	1,215.11	462.1	-818.4	939.3	0.63	-0.63	0.00
6,041.0	5.00	281.90	5,945.6	1,119.43	463.5	-826.0	946.6	0.77	0.73	3.13
6,136.0	4.10	281.70	6,040.3	1,024.73	465.0	-833.4	953.7	0.95	-0.95	-0.21
6,232.0	2.70	296.40	6,136.1	928.90	466.7	-838.8	959.2	1.71	-1.46	15.31
6,327.0	1.50	323.90	6,231.0	833.96	468.7	-841.5	962.5	1.62	-1.26	28.95
6,422.0	1.00	338.30	6,326.0	738.98	470.5	-842.6	964.4	0.62	-0.53	15.16
6,518.0	0.70	347.90	6,422.0	643.00	471.8	-843.0	965.4	0.34	-0.31	10.00
6,613.0	1.20	21.30	6,517.0	548.01	473.3	-842.8	966.0	0.76	0.53	35.16
6,709.0	0.40	30.00	6,613.0	452.02	474.6	-842.2	966.2	0.84	-0.83	9.06
6,805.0	1.00	58.80	6,709.0	356.03	475.3	-841.4	965.8	0.71	0.63	30.00
6,900.0	0.70	57.60	6,804.0	261.04	476.0	-840.2	965.2	0.32	-0.32	-1.26
6,996.0	1.30	97.80	6,899.9	165.05	476.2	-838.6	963.9	0.93	0.63	41.88
7,091.0	0.90	65.50	6,994.9	70.07	476.4	-836.8	962.5	0.76	-0.42	-34.00
7,187.0	1.20	83.70	7,090.9	-25.91	476.8	-835.2	961.3	0.46	0.31	18.96
7,287.0	1.00	69.00	7,190.9	-125.90	477.2	-833.3	959.9	0.34	-0.20	-14.70
Last MWD Survey										
7,376.0	1.70	67.20	7,279.9	-214.90	478.0	-831.4	958.7	0.79	0.79	-2.02
TD Extrapolation										
7,590.0	1.70	67.20	7,493.8	-428.80	480.5	-825.5	955.0	0.00	0.00	0.00

Casing Points					
MD (usft)	TVD (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,530.0	1,527.2	Inter. SCP @ 1530 Ft MD	9-5/8	12-1/4	

Survey Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,530.0	1,527.2	38.9	-54.0	Inter. SCP @ 1530 Ft MD	
7,376.0	7,279.9	478.0	-831.4	Last MWD Survey	
7,590.0	7,493.8	480.5	-825.5	TD Extrapolation	