

# **MALLARD EXPLORATION**

**WELD COUNTY, COLORADO (NAD 83)**

**SW SW SEC. 31 T8N R59W 6th P.M.**

**MOTTLED SOUTH 6-1HN**

**ORIGINAL WELLBORE**

**19 April, 2018**

**Plan: PROPOSAL #1**



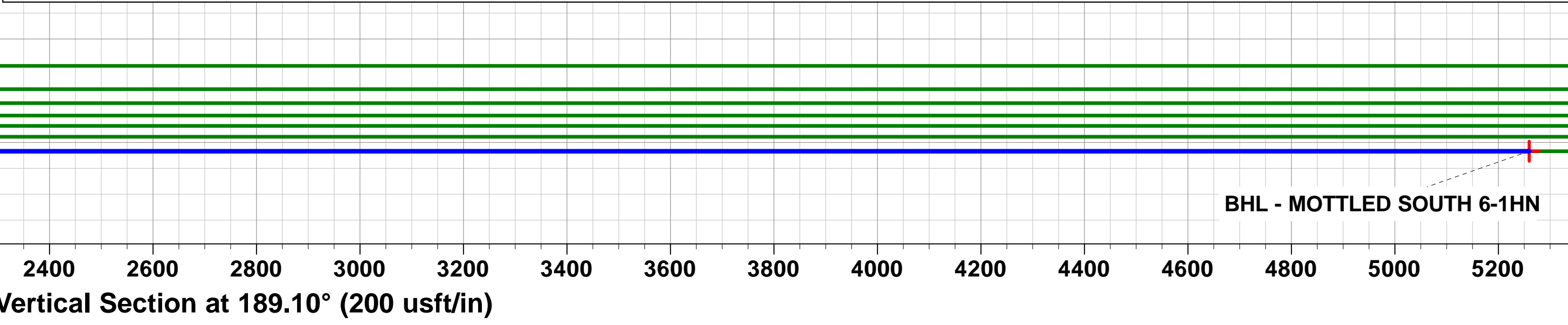
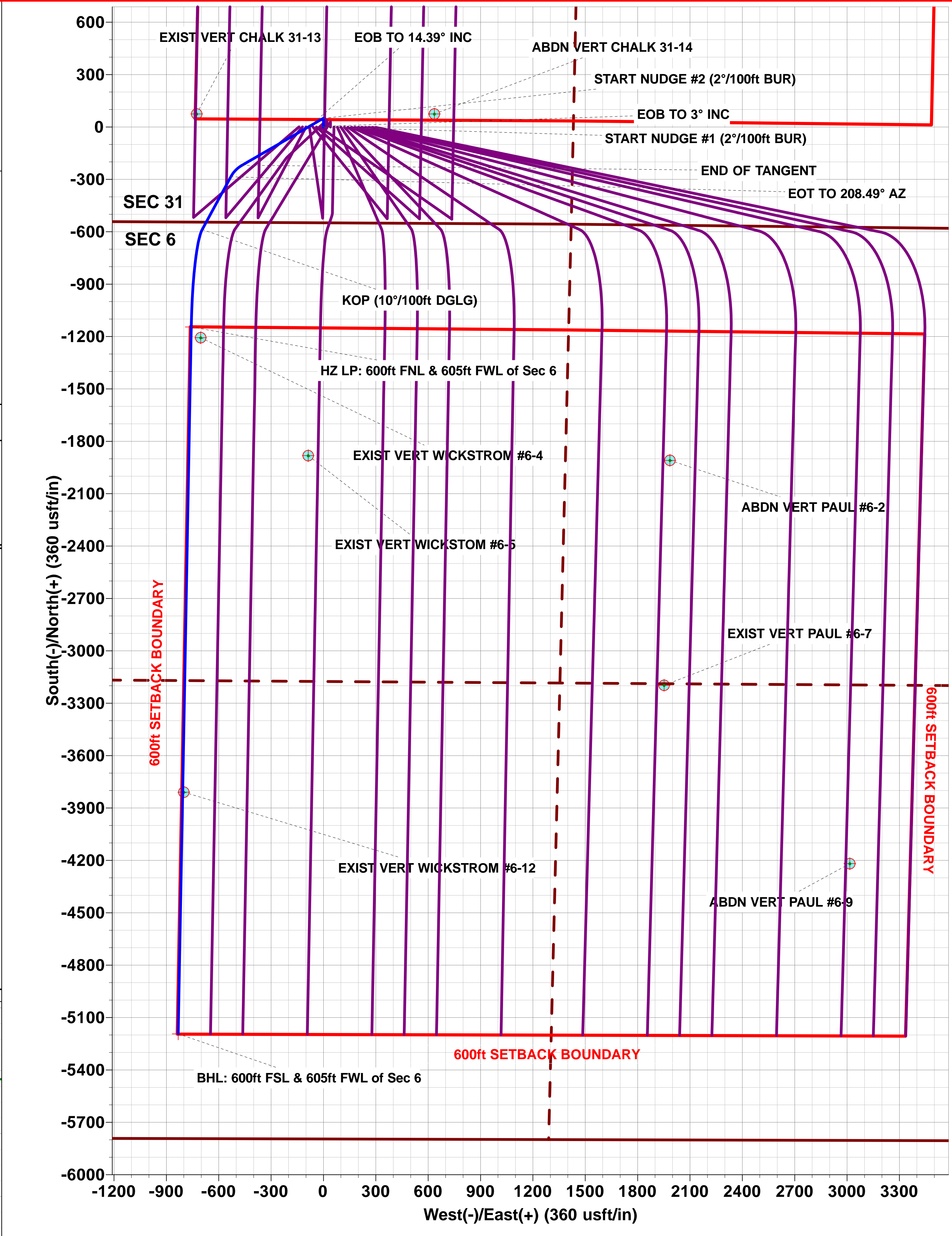
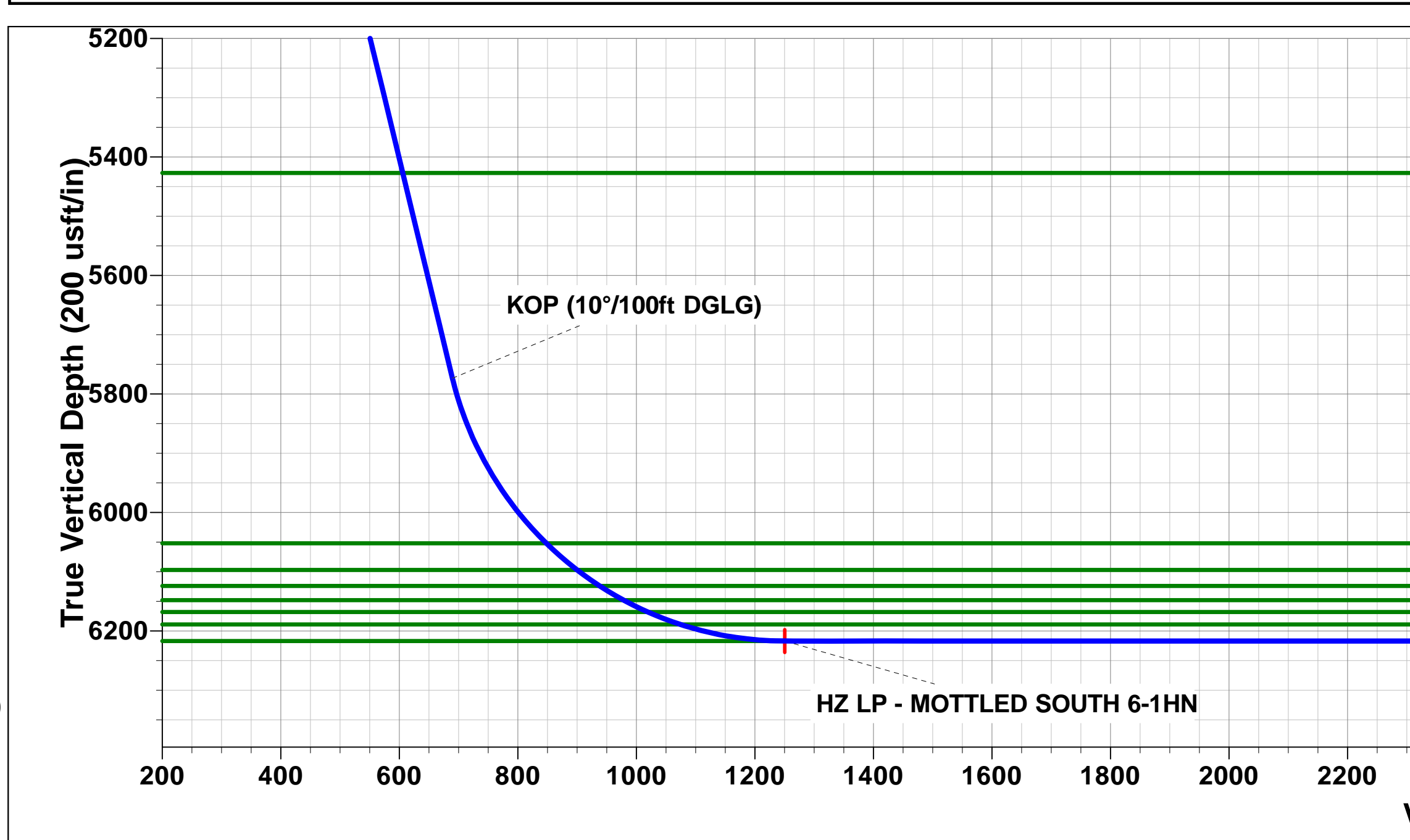
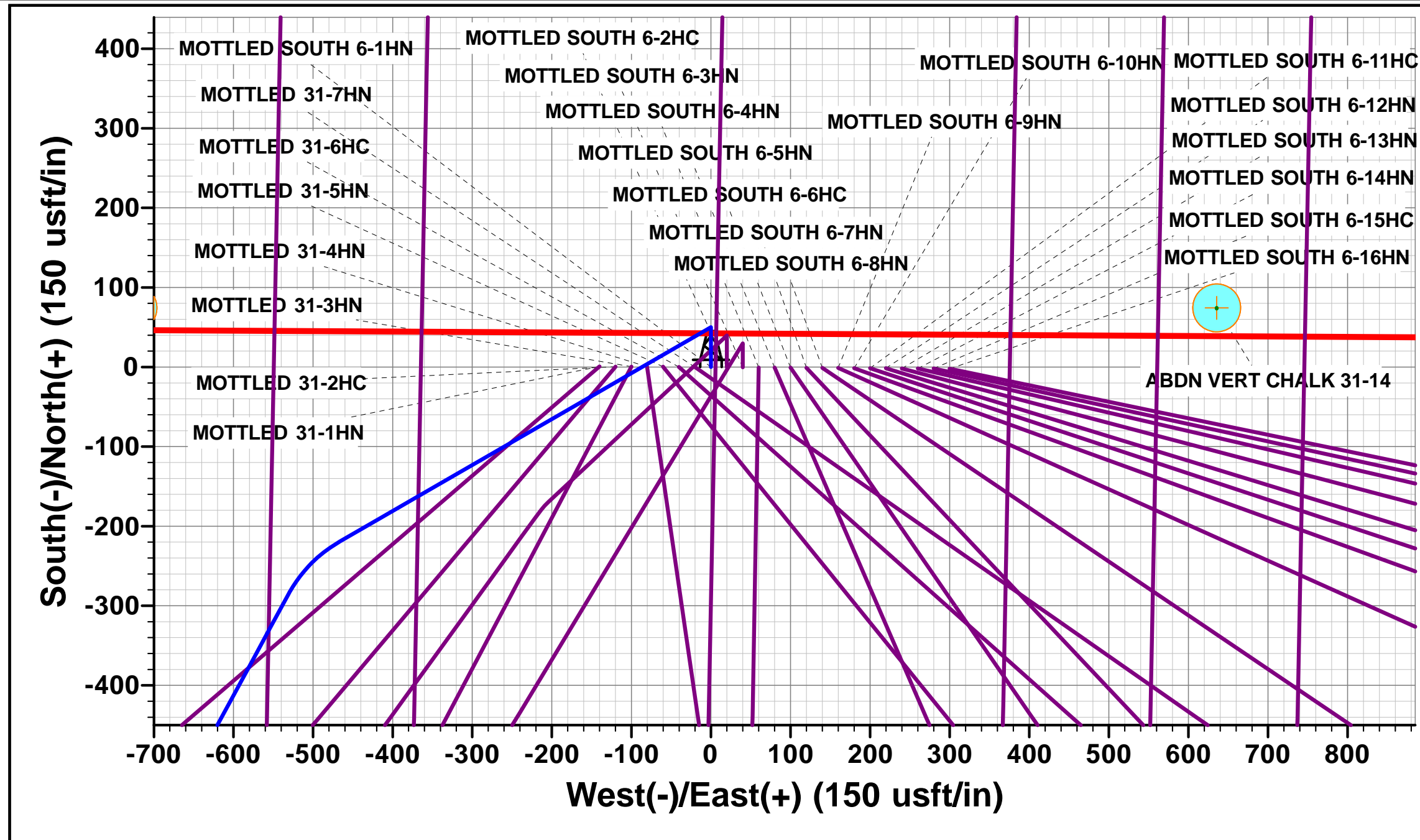
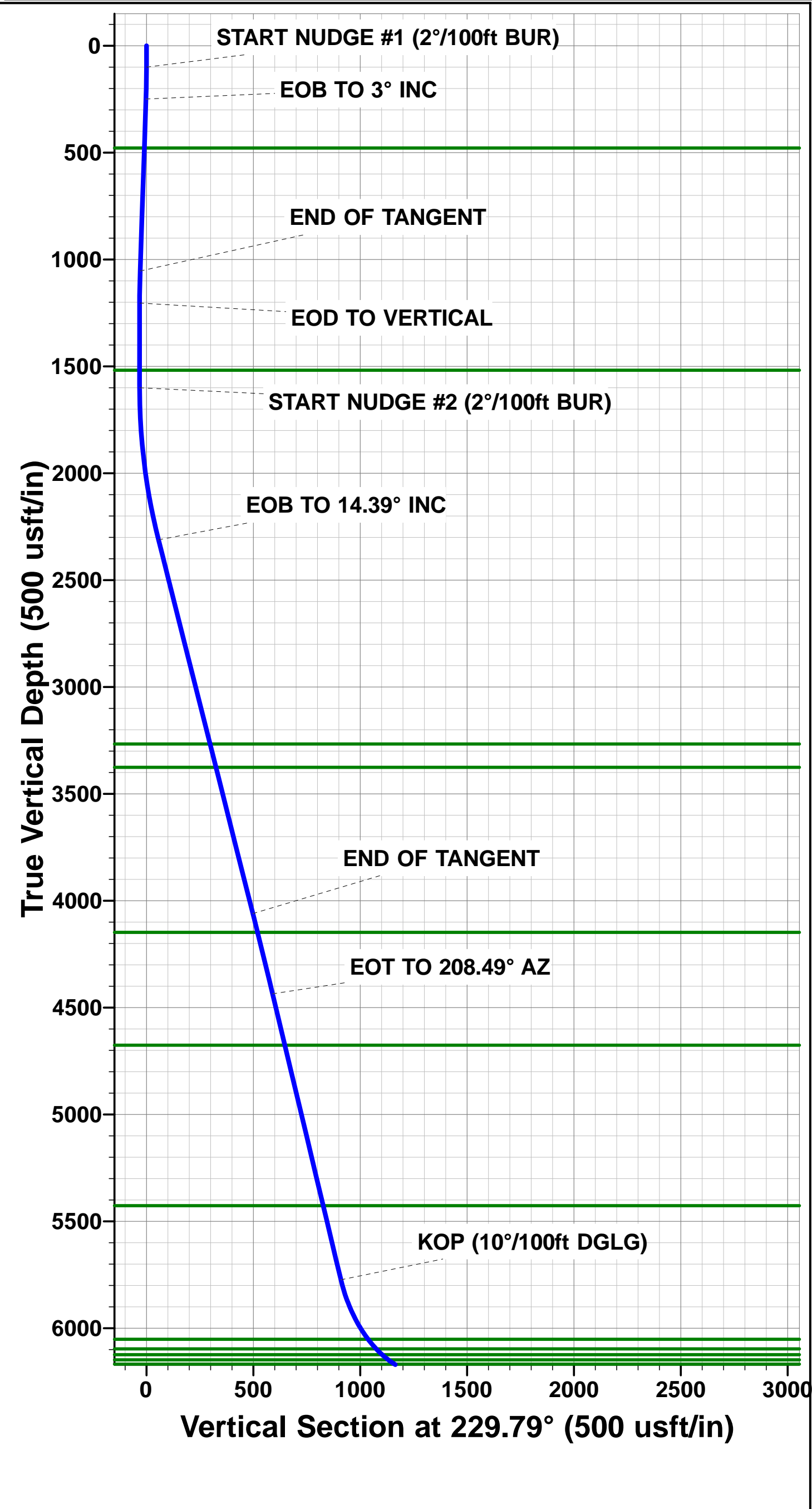


Project: WELD COUNTY, COLORADO (NAD 83)  
Site: SW SW SEC. 31 T8N R59W 6th P.M.  
Well: MOTTLED SOUTH 6-1HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #1

ANNOTATIONS										
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 550ft FSL & 1339ft FWL of Sec 31		
100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE #1 (2°/100ft BUR)		
249.93	250.00	3.00	0.00	3.93	0.00	-3.88	3.93	EOB TO 3° INC		
1054.23	1055.40	3.00	0.00	46.08	0.00	-45.50	46.08	END OF TANGENT		
1204.16	1205.40	0.00	0.00	50.00	0.00	-49.37	50.00	EOD TO VERTICAL		
1600.00	1601.24	0.00	0.00	50.00	0.00	-49.37	50.00	START NUDGE #2 (2°/100ft BUR)		
2311.96	2320.74	14.39	240.00	5.06	-77.84	7.32	139.88	EOB TO 14.39° INC		
4060.33	4125.74	14.39	240.00	-219.23	-466.32	290.25	588.46	END OF TANGENT		
4435.66	4512.64	14.39	208.49	-285.62	-530.98	366.04	682.48	EOT TO 208.49° AZ		
5773.50	5893.80	14.39	208.49	-587.27	-694.71	689.80	1025.70	KOP (10°/100ft DGLG)		
6217.00	6666.38	90.00	181.06	-1145.05	-757.44	1250.48	1589.29	HZ LP: 600ft FNL & 605ft FWL of Sec 6		
6217.00	10715.44	90.00	181.06	-5193.42	-832.27	5259.68	5638.35	BHL: 600ft FSL & 605ft FWL of Sec 6		

PROPOSED LOCAL COORDINATES:  
SHL: 550ft FSL & 1339ft FWL Sec 31  
HZ LP: 600ft FNL & 605ft FWL Sec 6  
BHL: 600ft FSL & 605ft FWL of Sec 6

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - MOTTLED SOUTH 6-1HN	6217.00	-1145.05	-757.44	40.609943	-104.028577
BHL - MOTTLED SOUTH 6-1HN	6217.00	-5193.42	-832.27	40.598831	-104.028846



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well MOTTLED SOUTH 6-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 31 T8N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	MOTTLED SOUTH 6-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<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

Site		SW SW SEC. 31 T8N R59W 6th P.M.			
Site Position:		Northing:	1,469,589.22 usft	Latitude:	40.613088
From:	Lat/Long	Easting:	3,409,117.03 usft	Longitude:	-104.026353
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.95 °

Well	MOTTLED SOUTH 6-1HN					
Well Position	+N-S	-0.74 usft	Northing:	1,469,590.81 usft	Latitude:	40.613086
	+E-W	139.93 usft	Easting:	3,409,256.95 usft	Longitude:	-104.025849
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,968.00 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	19/04/2018	7.74	67.11	52,481

<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>
	6,217.00	0.00	0.00	189.10

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,988.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	-4,888.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	3.00	0.00	249.93	-4,738.07	3.93	0.00	2.00	2.00	0.00	0.00	
1,055.40	3.00	0.00	1,054.23	-3,933.77	46.08	0.00	0.00	0.00	0.00	0.00	
1,205.40	0.00	0.00	1,204.16	-3,783.84	50.00	0.00	2.00	-2.00	0.00	180.00	
1,601.24	0.00	0.00	1,600.00	-3,388.00	50.00	0.00	0.00	0.00	0.00	0.00	
2,320.74	14.39	240.00	2,311.96	-2,676.04	5.06	-77.84	2.00	2.00	0.00	240.00	
4,125.74	14.39	240.00	4,060.33	-927.67	-219.23	-466.32	0.00	0.00	0.00	0.00	
4,512.64	14.39	208.49	4,435.66	-552.34	-285.62	-530.98	2.00	0.00	-8.14	-105.29	
5,893.80	14.39	208.49	5,773.50	785.50	-587.27	-694.71	0.00	0.00	0.00	0.00	
6,666.38	90.00	181.06	6,217.00	1,229.00	-1,145.05	-757.44	10.00	9.79	-3.55	-28.19	HZ LP - MOTTLED
10,715.44	90.00	181.06	6,217.00	1,229.00	-5,193.42	-832.27	0.00	0.00	0.00	0.00	BHL - MOTTLED S



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well MOTTLED SOUTH 6-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 31 T8N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	MOTTLED SOUTH 6-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned 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)
<b>SHL: 550ft FSL &amp; 1339ft FWL of Sec 31</b>										
0.00	0.00	0.00	0.00	4,988.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE #1 (2°/100ft BUR)</b>										
100.00	0.00	0.00	100.00	4,888.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.00	0.00	199.98	4,788.02	1.75	0.00	-1.72	2.00	2.00	0.00
<b>EOB TO 3° INC</b>										
250.00	3.00	0.00	249.93	4,738.07	3.93	0.00	-3.88	2.00	2.00	0.00
300.00	3.00	0.00	299.86	4,688.14	6.54	0.00	-6.46	0.00	0.00	0.00
400.00	3.00	0.00	399.73	4,588.27	11.78	0.00	-11.63	0.00	0.00	0.00
<b>Fox Hills Base</b>										
479.38	3.00	0.00	479.00	4,509.00	15.93	0.00	-15.73	0.00	0.00	0.00
500.00	3.00	0.00	499.59	4,488.41	17.01	0.00	-16.80	0.00	0.00	0.00
600.00	3.00	0.00	599.45	4,388.55	22.24	0.00	-21.96	0.00	0.00	0.00
700.00	3.00	0.00	699.31	4,288.69	27.48	0.00	-27.13	0.00	0.00	0.00
800.00	3.00	0.00	799.18	4,188.82	32.71	0.00	-32.30	0.00	0.00	0.00
900.00	3.00	0.00	899.04	4,088.96	37.94	0.00	-37.47	0.00	0.00	0.00
1,000.00	3.00	0.00	998.90	3,989.10	43.18	0.00	-42.63	0.00	0.00	0.00
<b>END OF TANGENT</b>										
1,055.40	3.00	0.00	1,054.23	3,933.77	46.08	0.00	-45.50	0.00	0.00	0.00
1,100.00	2.11	360.00	1,098.78	3,889.22	48.06	0.00	-47.46	2.00	-2.00	0.00
1,200.00	0.11	360.00	1,198.76	3,789.24	50.00	0.00	-49.37	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
1,205.40	0.00	0.00	1,204.16	3,783.84	50.00	0.00	-49.37	2.00	-2.00	0.00
1,300.00	0.00	0.00	1,298.76	3,689.24	50.00	0.00	-49.37	0.00	0.00	0.00
1,400.00	0.00	0.00	1,398.76	3,589.24	50.00	0.00	-49.37	0.00	0.00	0.00
1,500.00	0.00	0.00	1,498.76	3,489.24	50.00	0.00	-49.37	0.00	0.00	0.00
<b>Pierre Shale Top</b>										
1,519.24	0.00	0.00	1,518.00	3,470.00	50.00	0.00	-49.37	0.00	0.00	0.00
1,600.00	0.00	0.00	1,598.76	3,389.24	50.00	0.00	-49.37	0.00	0.00	0.00
<b>START NUDGE #2 (2°/100ft BUR)</b>										
1,601.24	0.00	0.00	1,600.00	3,388.00	50.00	0.00	-49.37	0.00	0.00	0.00
1,700.00	1.98	240.00	1,698.74	3,289.26	49.15	-1.47	-48.30	2.00	2.00	0.00
1,800.00	3.98	240.00	1,798.60	3,189.40	46.56	-5.97	-45.03	2.00	2.00	0.00
1,900.00	5.98	240.00	1,898.22	3,089.78	42.22	-13.48	-39.56	2.00	2.00	0.00
2,000.00	7.98	240.00	1,997.47	2,990.53	36.15	-24.00	-31.90	2.00	2.00	0.00
2,100.00	9.98	240.00	2,096.24	2,891.76	28.35	-37.51	-22.06	2.00	2.00	0.00
2,200.00	11.98	240.00	2,194.41	2,793.59	18.83	-53.99	-10.05	2.00	2.00	0.00
2,300.00	13.98	240.00	2,291.85	2,696.15	7.61	-73.44	4.11	2.00	2.00	0.00
<b>EOB TO 14.39° INC</b>										
2,320.74	14.39	240.00	2,311.96	2,676.04	5.06	-77.84	7.32	2.00	2.00	0.00
2,400.00	14.39	240.00	2,388.73	2,599.27	-4.78	-94.90	19.74	0.00	0.00	0.00
2,500.00	14.39	240.00	2,485.59	2,502.41	-17.21	-116.42	35.42	0.00	0.00	0.00
2,600.00	14.39	240.00	2,582.46	2,405.54	-29.64	-137.94	51.09	0.00	0.00	0.00
2,700.00	14.39	240.00	2,679.32	2,308.68	-42.06	-159.46	66.77	0.00	0.00	0.00
2,800.00	14.39	240.00	2,776.18	2,211.82	-54.49	-180.99	82.44	0.00	0.00	0.00
2,900.00	14.39	240.00	2,873.05	2,114.95	-66.91	-202.51	98.12	0.00	0.00	0.00
3,000.00	14.39	240.00	2,969.91	2,018.09	-79.34	-224.03	113.79	0.00	0.00	0.00
3,100.00	14.39	240.00	3,066.77	1,921.23	-91.77	-245.55	129.47	0.00	0.00	0.00
3,200.00	14.39	240.00	3,163.63	1,824.37	-104.19	-267.08	145.14	0.00	0.00	0.00
3,300.00	14.39	240.00	3,260.50	1,727.50	-116.62	-288.60	160.82	0.00	0.00	0.00
<b>Richard Sandstone</b>										
3,306.71	14.39	240.00	3,267.00	1,721.00	-117.45	-290.04	161.87	0.00	0.00	0.00
3,400.00	14.39	240.00	3,357.36	1,630.64	-129.04	-310.12	176.49	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well MOTTLED SOUTH 6-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 31 T8N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	MOTTLED SOUTH 6-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned 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)
<b>Parkman Sandstone</b>										
3,419.24	14.39	240.00	3,376.00	1,612.00	-131.44	-314.26	179.51	0.00	0.00	0.00
3,500.00	14.39	240.00	3,454.22	1,533.78	-141.47	-331.64	192.17	0.00	0.00	0.00
3,600.00	14.39	240.00	3,551.08	1,436.92	-153.90	-353.17	207.84	0.00	0.00	0.00
3,700.00	14.39	240.00	3,647.95	1,340.05	-166.32	-374.69	223.52	0.00	0.00	0.00
3,800.00	14.39	240.00	3,744.81	1,243.19	-178.75	-396.21	239.19	0.00	0.00	0.00
3,900.00	14.39	240.00	3,841.67	1,146.33	-191.17	-417.73	254.87	0.00	0.00	0.00
4,000.00	14.39	240.00	3,938.53	1,049.47	-203.60	-439.26	270.54	0.00	0.00	0.00
4,100.00	14.39	240.00	4,035.40	952.60	-216.03	-460.78	286.22	0.00	0.00	0.00
<b>END OF TANGENT</b>										
4,125.74	14.39	240.00	4,060.33	927.67	-219.23	-466.32	290.25	0.00	0.00	0.00
4,200.00	14.07	234.10	4,132.32	855.68	-229.13	-481.62	302.46	2.00	-0.43	-7.95
<b>Sussex Sandstone</b>										
4,216.17	14.02	232.78	4,148.00	840.00	-231.47	-484.77	305.26	2.00	-0.31	-8.14
4,300.00	13.88	225.85	4,229.37	758.63	-244.62	-500.07	320.66	2.00	-0.17	-8.27
4,400.00	13.96	217.53	4,326.44	661.56	-262.54	-516.03	340.88	2.00	0.09	-8.31
4,500.00	14.32	209.48	4,423.42	564.58	-282.87	-529.46	363.09	2.00	0.36	-8.06
<b>EOT TO 208.49° AZ</b>										
4,512.64	14.39	208.49	4,435.66	552.34	-285.62	-530.98	366.04	2.00	0.51	-7.80
4,600.00	14.39	208.49	4,520.28	467.72	-304.70	-541.34	386.52	0.00	0.00	0.00
4,700.00	14.39	208.49	4,617.15	370.85	-326.54	-553.19	409.96	0.00	0.00	0.00
<b>Shannon Sandstone</b>										
4,760.76	14.39	208.49	4,676.00	312.00	-339.81	-560.40	424.20	0.00	0.00	0.00
4,800.00	14.39	208.49	4,714.01	273.99	-348.38	-565.05	433.40	0.00	0.00	0.00
4,900.00	14.39	208.49	4,810.87	177.13	-370.22	-576.90	456.84	0.00	0.00	0.00
5,000.00	14.39	208.49	4,907.74	80.26	-392.06	-588.75	480.28	0.00	0.00	0.00
5,100.00	14.39	208.49	5,004.60	-16.60	-413.90	-600.61	503.72	0.00	0.00	0.00
5,200.00	14.39	208.49	5,101.46	-113.46	-435.74	-612.46	527.16	0.00	0.00	0.00
5,300.00	14.39	208.49	5,198.32	-210.32	-457.58	-624.32	550.60	0.00	0.00	0.00
5,400.00	14.39	208.49	5,295.19	-307.19	-479.42	-636.17	574.04	0.00	0.00	0.00
5,500.00	14.39	208.49	5,392.05	-404.05	-501.26	-648.02	597.49	0.00	0.00	0.00
<b>TeePee Buttes</b>										
5,536.08	14.39	208.49	5,427.00	-439.00	-509.14	-652.30	605.94	0.00	0.00	0.00
5,600.00	14.39	208.49	5,488.91	-500.91	-523.10	-659.88	620.93	0.00	0.00	0.00
5,700.00	14.39	208.49	5,585.78	-597.78	-544.94	-671.73	644.37	0.00	0.00	0.00
5,800.00	14.39	208.49	5,682.64	-694.64	-566.78	-683.59	667.81	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
5,893.80	14.39	208.49	5,773.50	-785.50	-587.27	-694.71	689.80	0.00	0.00	0.00
5,900.00	14.94	207.35	5,779.50	-791.50	-588.66	-695.44	691.28	10.00	8.86	-18.32
6,000.00	24.26	196.26	5,873.63	-885.63	-619.91	-707.14	723.99	10.00	9.32	-11.09
6,100.00	33.96	191.17	5,960.91	-972.91	-667.15	-718.34	772.41	10.00	9.70	-5.09
6,200.00	43.78	188.14	6,038.68	-1,050.68	-728.95	-728.67	835.07	10.00	9.82	-3.02
<b>Sharon Springs</b>										
6,218.75	45.63	187.70	6,052.00	-1,064.00	-742.01	-730.49	848.25	10.00	9.86	-2.37
<b>Niobrara Top</b>										
6,287.40	52.41	186.28	6,097.00	-1,109.00	-793.43	-736.76	900.01	10.00	9.88	-2.07
6,300.00	53.66	186.05	6,104.58	-1,116.58	-803.44	-737.84	910.07	10.00	9.89	-1.84
<b>Niobrara A Chalk</b>										
6,334.16	57.04	185.45	6,124.00	-1,136.00	-831.40	-740.65	938.12	10.00	9.90	-1.74
<b>Niobrara A Chalk Base</b>										
6,381.28	61.70	184.71	6,148.00	-1,160.00	-871.77	-744.23	978.55	10.00	9.91	-1.59
6,400.00	63.56	184.43	6,156.60	-1,168.60	-888.34	-745.56	995.12	10.00	9.91	-1.49
<b>Niobrara B1 Chalk Top</b>										

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well MOTTLED SOUTH 6-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 31 T8N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	MOTTLED SOUTH 6-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned 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)
<b>6,426.86</b>	<b>66.22</b>	<b>184.04</b>	<b>6,168.00</b>	<b>-1,180.00</b>	<b>-912.59</b>	<b>-747.35</b>	<b>1,019.35</b>	<b>10.00</b>	<b>9.92</b>	<b>-1.43</b>
<b>Niobrara B1 Chalk Base</b>										
<b>6,485.89</b>	<b>72.08</b>	<b>183.25</b>	<b>6,189.00</b>	<b>-1,201.00</b>	<b>-967.62</b>	<b>-750.85</b>	<b>1,074.24</b>	<b>10.00</b>	<b>9.92</b>	<b>-1.35</b>
6,500.00	73.48	183.07	6,193.18	-1,205.18	-981.08	-751.59	1,087.65	10.00	9.92	-1.29
6,600.00	83.41	181.84	6,213.19	-1,225.19	-1,078.84	-755.77	1,184.83	10.00	9.93	-1.23
<b>HZ LP: 600ft FNL &amp; 605ft FWL of Sec 6 - Niobrara B2 Chalk Top (Target)</b>										
<b>6,666.38</b>	<b>90.00</b>	<b>181.06</b>	<b>6,217.00</b>	<b>-1,229.00</b>	<b>-1,145.05</b>	<b>-757.44</b>	<b>1,250.48</b>	<b>10.00</b>	<b>9.93</b>	<b>-1.18</b>
6,700.00	90.00	181.06	6,217.00	-1,229.00	-1,178.66	-758.06	1,283.77	0.00	0.00	0.00
6,800.00	90.00	181.06	6,217.00	-1,229.00	-1,278.65	-759.91	1,382.78	0.00	0.00	0.00
6,900.00	90.00	181.06	6,217.00	-1,229.00	-1,378.63	-761.76	1,481.80	0.00	0.00	0.00
7,000.00	90.00	181.06	6,217.00	-1,229.00	-1,478.61	-763.61	1,580.81	0.00	0.00	0.00
7,100.00	90.00	181.06	6,217.00	-1,229.00	-1,578.60	-765.45	1,679.83	0.00	0.00	0.00
7,200.00	90.00	181.06	6,217.00	-1,229.00	-1,678.58	-767.30	1,778.85	0.00	0.00	0.00
7,300.00	90.00	181.06	6,217.00	-1,229.00	-1,778.56	-769.15	1,877.86	0.00	0.00	0.00
7,400.00	90.00	181.06	6,217.00	-1,229.00	-1,878.54	-771.00	1,976.88	0.00	0.00	0.00
7,500.00	90.00	181.06	6,217.00	-1,229.00	-1,978.53	-772.85	2,075.89	0.00	0.00	0.00
7,600.00	90.00	181.06	6,217.00	-1,229.00	-2,078.51	-774.69	2,174.91	0.00	0.00	0.00
7,700.00	90.00	181.06	6,217.00	-1,229.00	-2,178.49	-776.54	2,273.92	0.00	0.00	0.00
7,800.00	90.00	181.06	6,217.00	-1,229.00	-2,278.48	-778.39	2,372.94	0.00	0.00	0.00
7,900.00	90.00	181.06	6,217.00	-1,229.00	-2,378.46	-780.24	2,471.96	0.00	0.00	0.00
8,000.00	90.00	181.06	6,217.00	-1,229.00	-2,478.44	-782.09	2,570.97	0.00	0.00	0.00
8,100.00	90.00	181.06	6,217.00	-1,229.00	-2,578.43	-783.93	2,669.99	0.00	0.00	0.00
8,200.00	90.00	181.06	6,217.00	-1,229.00	-2,678.41	-785.78	2,769.00	0.00	0.00	0.00
8,300.00	90.00	181.06	6,217.00	-1,229.00	-2,778.39	-787.63	2,868.02	0.00	0.00	0.00
8,400.00	90.00	181.06	6,217.00	-1,229.00	-2,878.37	-789.48	2,967.03	0.00	0.00	0.00
8,500.00	90.00	181.06	6,217.00	-1,229.00	-2,978.36	-791.33	3,066.05	0.00	0.00	0.00
8,600.00	90.00	181.06	6,217.00	-1,229.00	-3,078.34	-793.17	3,165.07	0.00	0.00	0.00
8,700.00	90.00	181.06	6,217.00	-1,229.00	-3,178.32	-795.02	3,264.08	0.00	0.00	0.00
8,800.00	90.00	181.06	6,217.00	-1,229.00	-3,278.31	-796.87	3,363.10	0.00	0.00	0.00
8,900.00	90.00	181.06	6,217.00	-1,229.00	-3,378.29	-798.72	3,462.11	0.00	0.00	0.00
9,000.00	90.00	181.06	6,217.00	-1,229.00	-3,478.27	-800.57	3,561.13	0.00	0.00	0.00
9,100.00	90.00	181.06	6,217.00	-1,229.00	-3,578.25	-802.41	3,660.14	0.00	0.00	0.00
9,200.00	90.00	181.06	6,217.00	-1,229.00	-3,678.24	-804.26	3,759.16	0.00	0.00	0.00
9,300.00	90.00	181.06	6,217.00	-1,229.00	-3,778.22	-806.11	3,858.18	0.00	0.00	0.00
9,400.00	90.00	181.06	6,217.00	-1,229.00	-3,878.20	-807.96	3,957.19	0.00	0.00	0.00
9,500.00	90.00	181.06	6,217.00	-1,229.00	-3,978.19	-809.81	4,056.21	0.00	0.00	0.00
9,600.00	90.00	181.06	6,217.00	-1,229.00	-4,078.17	-811.65	4,155.22	0.00	0.00	0.00
9,700.00	90.00	181.06	6,217.00	-1,229.00	-4,178.15	-813.50	4,254.24	0.00	0.00	0.00
9,800.00	90.00	181.06	6,217.00	-1,229.00	-4,278.13	-815.35	4,353.25	0.00	0.00	0.00
9,900.00	90.00	181.06	6,217.00	-1,229.00	-4,378.12	-817.20	4,452.27	0.00	0.00	0.00
10,000.00	90.00	181.06	6,217.00	-1,229.00	-4,478.10	-819.05	4,551.28	0.00	0.00	0.00
10,100.00	90.00	181.06	6,217.00	-1,229.00	-4,578.08	-820.89	4,650.30	0.00	0.00	0.00
10,200.00	90.00	181.06	6,217.00	-1,229.00	-4,678.07	-822.74	4,749.32	0.00	0.00	0.00
10,300.00	90.00	181.06	6,217.00	-1,229.00	-4,778.05	-824.59	4,848.33	0.00	0.00	0.00
10,400.00	90.00	181.06	6,217.00	-1,229.00	-4,878.03	-826.44	4,947.35	0.00	0.00	0.00
10,500.00	90.00	181.06	6,217.00	-1,229.00	-4,978.02	-828.29	5,046.36	0.00	0.00	0.00
10,600.00	90.00	181.06	6,217.00	-1,229.00	-5,078.00	-830.13	5,145.38	0.00	0.00	0.00
10,700.00	90.00	181.06	6,217.00	-1,229.00	-5,177.98	-831.98	5,244.39	0.00	0.00	0.00
<b>BHL: 600ft FSL &amp; 605ft FWL of Sec 6</b>										
<b>10,715.44</b>	<b>90.00</b>	<b>181.06</b>	<b>6,217.00</b>	<b>-1,229.00</b>	<b>-5,193.42</b>	<b>-832.27</b>	<b>5,259.68</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well MOTTLED SOUTH 6-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4988.00usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 31 T8N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	MOTTLED SOUTH 6-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
479.38	479.00	Fox Hills Base				
1,519.24	1,518.00	Pierre Shale Top				
3,306.71	3,267.00	Richard Sandstone				
3,419.24	3,376.00	Parkman Sandstone				
4,216.17	4,148.00	Sussex Sandstone				
4,760.76	4,676.00	Shannon Sandstone				
5,536.08	5,427.00	TeePee Buttes				
6,218.75	6,052.00	Sharon Springs				
6,287.40	6,097.00	Niobrara Top				
6,334.16	6,124.00	Niobrara A Chalk				
6,381.28	6,148.00	Niobrara A Chalk Base				
6,426.86	6,168.00	Niobrara B1 Chalk Top				
6,485.89	6,189.00	Niobrara B1 Chalk Base				
6,666.38	6,217.00	Niobrara B2 Chalk Top (Target)				

Plan Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
0.00	0.00	0.00	0.00	SHL: 550ft FSL & 1339ft FWL of Sec 31	
100.00	100.00	0.00	0.00	START NUDGE #1 (2°/100ft BUR)	
250.00	249.93	3.93	0.00	EOB TO 3° INC	
1,055.40	1,054.23	46.08	0.00	END OF TANGENT	
1,205.40	1,204.16	50.00	0.00	EOD TO VERTICAL	
1,601.24	1,600.00	50.00	0.00	START NUDGE #2 (2°/100ft BUR)	
2,320.74	2,311.96	5.06	-77.84	EOB TO 14.39° INC	
4,125.74	4,060.33	-219.23	-466.32	END OF TANGENT	
4,512.64	4,435.66	-285.62	-530.98	EOT TO 208.49° AZ	
5,893.80	5,773.50	-587.27	-694.71	KOP (10°/100ft DGLG)	
6,666.38	6,217.00	-1,145.05	-757.44	HZ LP: 600ft FNL & 605ft FWL of Sec 6	
10,715.44	6,217.00	-5,193.42	-832.27	BHL: 600ft FSL & 605ft FWL of Sec 6	