

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

NW SW SEC. 6 T7N R60W 6th P.M.

SHELDUCK 6-5-11HC

ORIGINAL WELLBORE

29 December, 2017

Plan: PROPOSAL #1





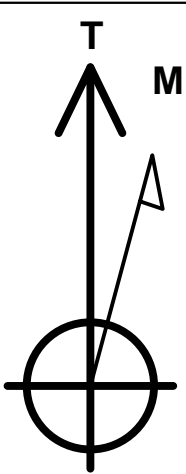
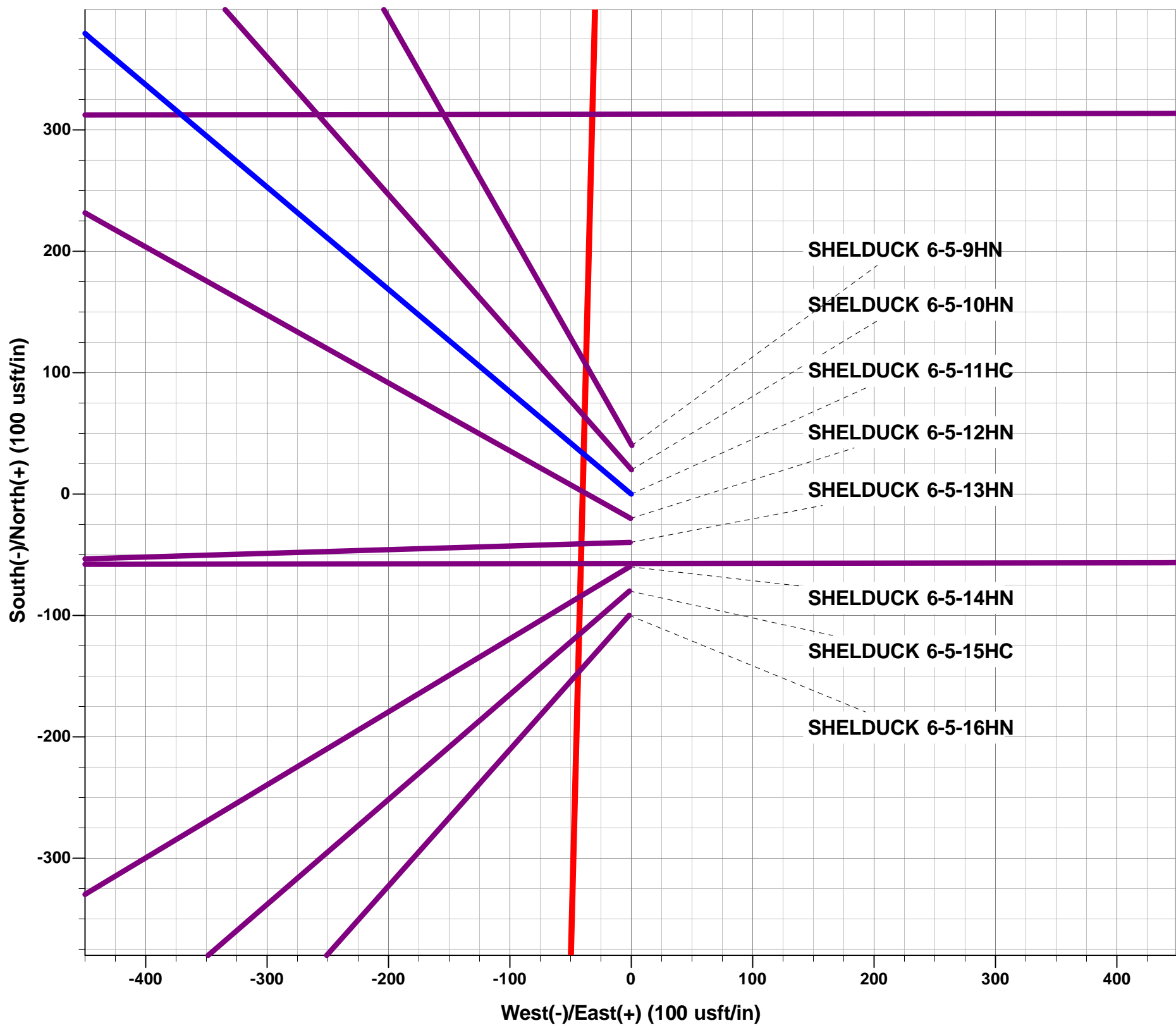
Project: WELD COUNTY, COLORADO (NAD 83)
Site: NW SW SEC. 6 T7N R60W 6th P.M.
Well: SHELDUCK 6-5-11HC
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1402ft FSL & 629ft FWL of Sec 6
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
895.62	900.00	12.00	310.14	40.36	-47.86	-43.19	62.60	EOB TO 12° INC
3931.84	4004.05	12.00	310.14	456.41	-541.21	-488.49	707.97	END OF TANGENT
4527.47	4604.05	0.00	0.00	496.77	-589.07	-531.68	770.57	EOD TO VERTICAL
5962.04	6038.62	0.00	0.00	496.77	-589.07	-531.68	770.57	KOP (10°/100ft BUR)
6535.00	6938.63	90.00	89.91	497.67	-16.11	37.99	1343.54	HZ LP: 1900ft FSL & 600ft FWL of Sec 6
6535.00	11577.95	90.00	89.92	504.67	4623.20	4650.67	5982.85	BHL: 1900ft FSL & 0ft FEL of Sec 6

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - SHELDUCK 6-5-11HC	5962.04	496.77	-589.07	40.602148	-104.145090
HZ LP - SHELDUCK 6-5-11HC	6535.00	497.67	-16.11	40.602151	-104.143027
BHL - SHELDUCK 6-5-11HC	6535.00	504.67	4623.20	40.602169	-104.126320



Azimuths to True North
Magnetic North: 7.83°

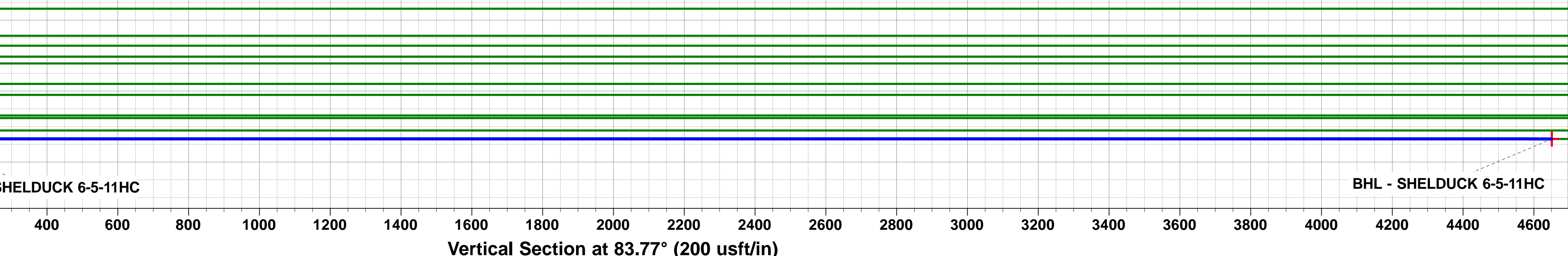
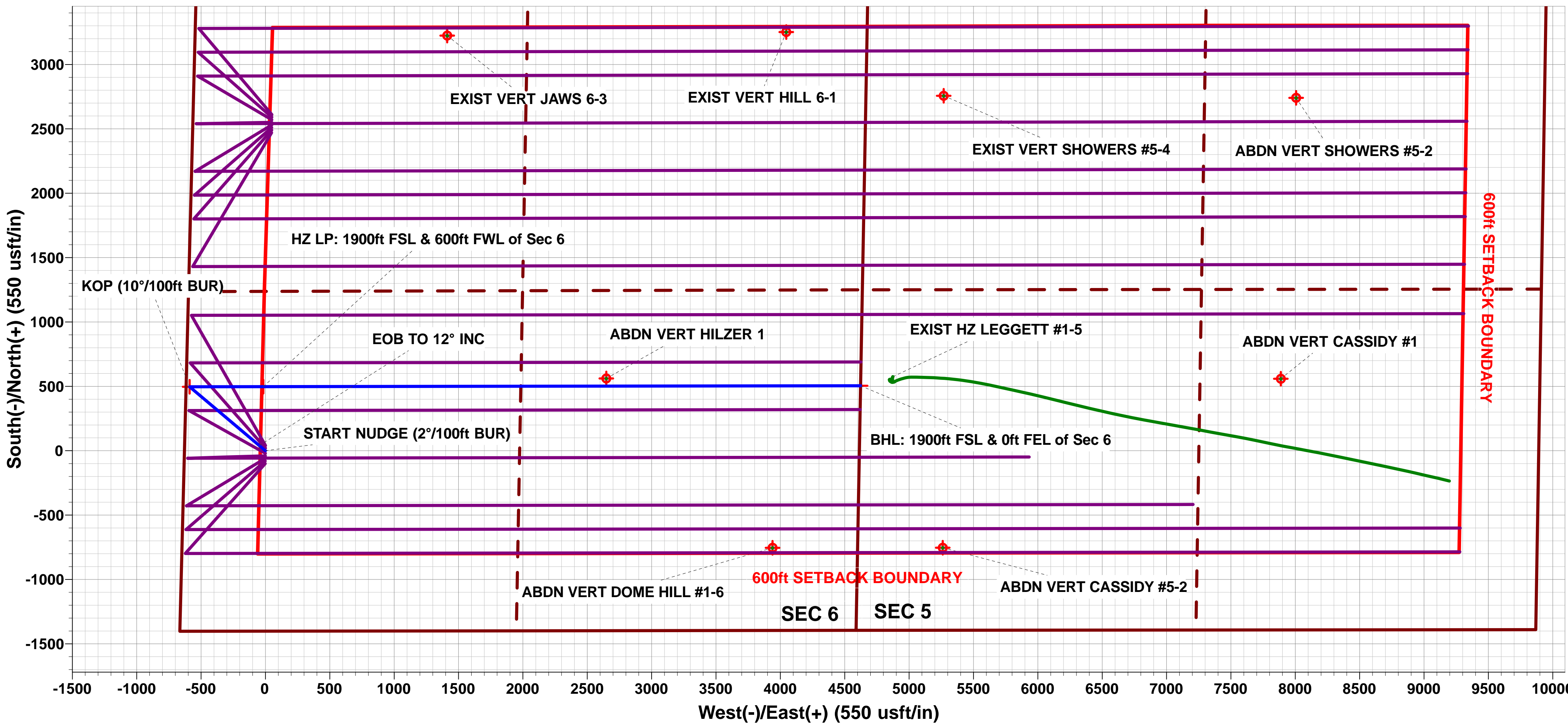
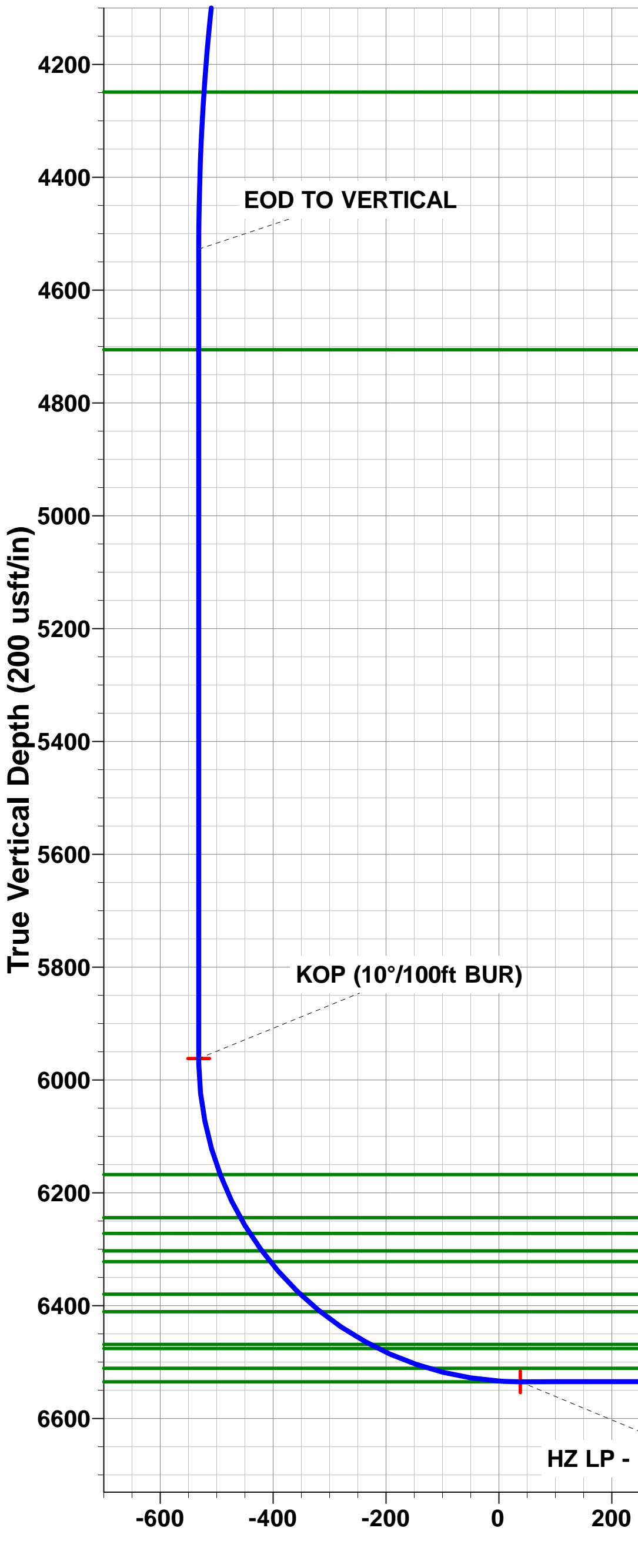
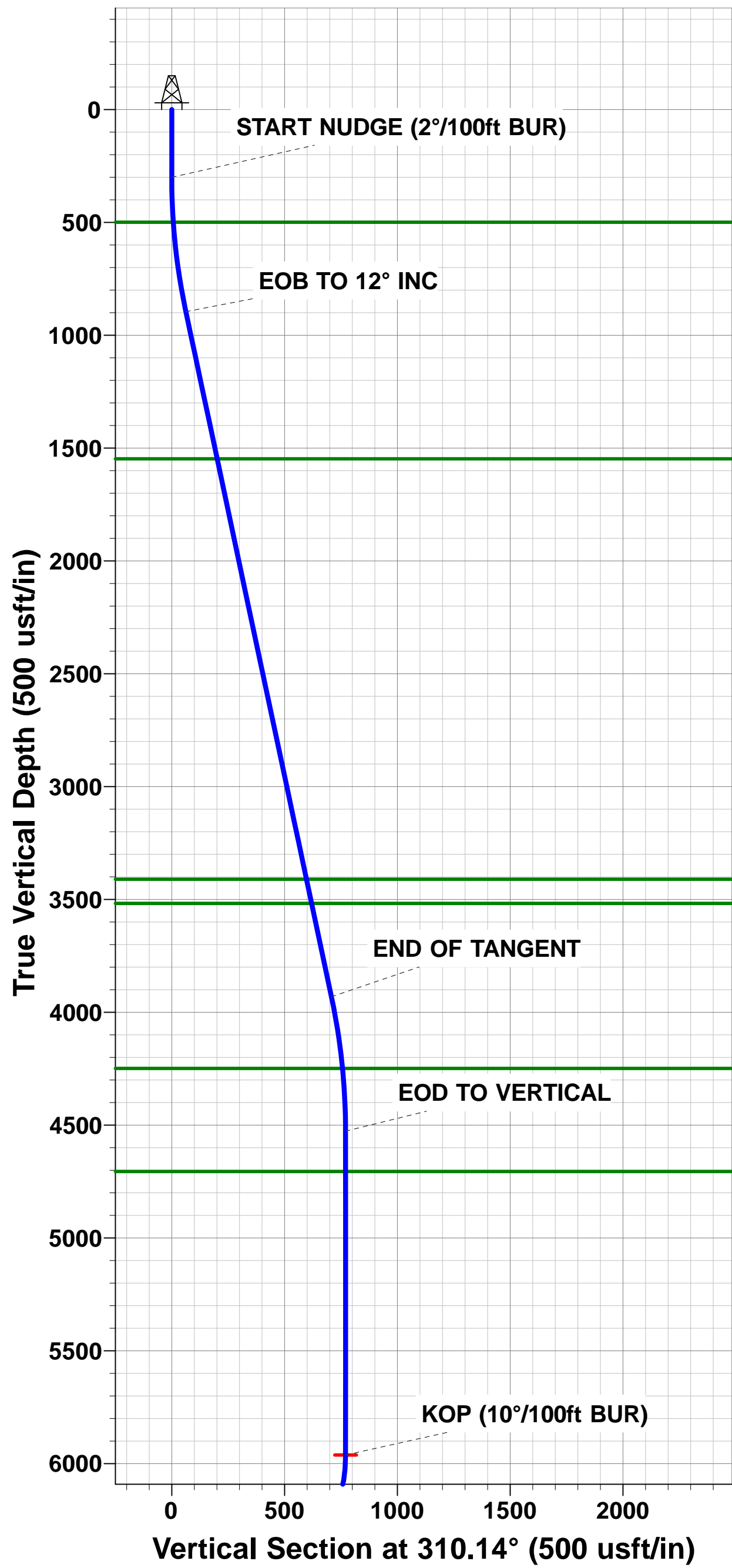
Magnetic Field
Strength: 52497.7snT
Dip Angle: 67.09°
Date: 29/12/2017
Model: IGRF2015

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
500.00	500.16	Fox Hills Base
1548.00	1566.95	Pierre Shale Top
3411.00	3471.57	Richard Sandstone
3518.00	3580.96	Parkman Sandstone
4249.00	4325.14	Sussex Sandstone
4706.00	4782.58	Shannon Sandstone
6168.00	6249.30	Sharon Springs
6244.00	6333.42	Niobrara A Chalk
6272.00	6366.13	Niobrara A Chalk Base
6303.00	6403.81	Niobrara B1 Chalk Top
6322.00	6427.83	Niobrara B1 Chalk Base
6380.00	6507.05	Niobrara B2 Chalk Base
6411.00	6554.52	Niobrara C Chalk Top
6469.00	6660.91	Niobrara C Chalk Base
6476.00	6676.33	Niobrara D Chalk Top
6511.00	6772.21	Ft. Hays
6535.00	6938.63	Codell (Target)

PROPOSED LOCAL COORDINATES:

SHL: 1402ft FSL & 629ft FWL of Sec 6
HZ LP: 1900ft FSL & 600ft FWL of Sec 6
BHL: 1900ft FSL & 0ft FEL of Sec 6



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHELDUCK 6-5-11HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Site:	NW SW SEC. 6 T7N R60W 6th P.M.	North Reference:	True
Well:	SHELDUCK 6-5-11HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	WELD COUNTY, COLORADO (NAD 83)		
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	NW SW SEC. 6 T7N R60W 6th P.M.		
Site Position:		Northing:	1,464,630.90 usft
From:	Lat/Long	Easting:	3,376,813.02 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000 ft
		Latitude:	40.600895
		Longitude:	-104.142967
		Grid Convergence:	0.88 °

Well	SHELDUCK 6-5-11HC		
Well Position	+N-S	-40.08 usft	Northing:
	+E-W	-0.56 usft	Easting:
Position Uncertainty		0.00 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	29/12/2017	7.83	67.09	52,498

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 (°)
	6,535.00	0.00	0.00	83.77

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,974.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-4,674.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	12.00	310.14	895.62	-4,078.38	40.36	-47.86	2.00	2.00	0.00	310.14	
4,004.05	12.00	310.14	3,931.84	-1,042.16	456.41	-541.21	0.00	0.00	0.00	0.00	
4,604.05	0.00	0.00	4,527.47	-446.53	496.77	-589.07	2.00	-2.00	0.00	180.00	
6,038.62	0.00	0.00	5,962.04	988.04	496.77	-589.07	0.00	0.00	0.00	0.00	KOP - SHELDUCK
6,938.63	90.00	89.91	6,535.00	1,561.00	497.67	-16.11	10.00	10.00	9.99	89.91	HZ LP - SHELDUCI
11,577.95	90.00	89.92	6,535.00	1,561.00	504.67	4,623.20	0.00	0.00	0.00	96.75	BHL - SHELDUCK

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Site:	NW SW SEC. 6 T7N R60W 6th P.M.	North Reference:	True
Well:	SHELDUCK 6-5-11HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
SHL: 1402ft FSL & 629ft FWL of Sec 6										
0.00	0.00	0.00	0.00	4,974.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,874.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,774.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
300.00	0.00	0.00	300.00	4,674.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	310.14	399.98	4,574.02	1.13	-1.33	-1.20	2.00	2.00	0.00
500.00	4.00	310.14	499.84	4,474.16	4.50	-5.33	-4.82	2.00	2.00	0.00
Fox Hills Base										
500.16	4.00	310.14	500.00	4,474.00	4.51	-5.34	-4.82	0.00	0.00	0.00
600.00	6.00	310.14	599.45	4,374.55	10.12	-12.00	-10.83	2.00	2.00	0.00
700.00	8.00	310.14	698.70	4,275.30	17.97	-21.31	-19.24	2.00	2.00	0.00
800.00	10.00	310.14	797.47	4,176.53	28.06	-33.27	-30.03	2.00	2.00	0.00
EOB TO 12° INC										
900.00	12.00	310.14	895.62	4,078.38	40.36	-47.86	-43.19	2.00	2.00	0.00
1,000.00	12.00	310.14	993.44	3,980.56	53.76	-63.75	-57.54	0.00	0.00	0.00
1,100.00	12.00	310.14	1,091.25	3,882.75	67.17	-79.64	-71.89	0.00	0.00	0.00
1,200.00	12.00	310.14	1,189.07	3,784.93	80.57	-95.54	-86.23	0.00	0.00	0.00
1,300.00	12.00	310.14	1,286.88	3,687.12	93.97	-111.43	-100.58	0.00	0.00	0.00
1,400.00	12.00	310.14	1,384.70	3,589.30	107.38	-127.33	-114.92	0.00	0.00	0.00
1,500.00	12.00	310.14	1,482.51	3,491.49	120.78	-143.22	-129.27	0.00	0.00	0.00
Pierre Shale Top										
1,566.95	12.00	310.14	1,548.00	3,426.00	129.75	-153.86	-138.87	0.00	0.00	0.00
1,600.00	12.00	310.14	1,580.33	3,393.67	134.18	-159.11	-143.61	0.00	0.00	0.00
1,700.00	12.00	310.14	1,678.14	3,295.86	147.59	-175.01	-157.96	0.00	0.00	0.00
1,800.00	12.00	310.14	1,775.96	3,198.04	160.99	-190.90	-172.31	0.00	0.00	0.00
1,900.00	12.00	310.14	1,873.77	3,100.23	174.39	-206.80	-186.65	0.00	0.00	0.00
2,000.00	12.00	310.14	1,971.59	3,002.41	187.80	-222.69	-201.00	0.00	0.00	0.00
2,100.00	12.00	310.14	2,069.40	2,904.60	201.20	-238.58	-215.34	0.00	0.00	0.00
2,200.00	12.00	310.14	2,167.22	2,806.78	214.60	-254.48	-229.69	0.00	0.00	0.00
2,300.00	12.00	310.14	2,265.03	2,708.97	228.01	-270.37	-244.03	0.00	0.00	0.00
2,400.00	12.00	310.14	2,362.84	2,611.16	241.41	-286.27	-258.38	0.00	0.00	0.00
2,500.00	12.00	310.14	2,460.66	2,513.34	254.82	-302.16	-272.72	0.00	0.00	0.00
2,600.00	12.00	310.14	2,558.47	2,415.53	268.22	-318.05	-287.07	0.00	0.00	0.00
2,700.00	12.00	310.14	2,656.29	2,317.71	281.62	-333.95	-301.42	0.00	0.00	0.00
2,800.00	12.00	310.14	2,754.10	2,219.90	295.03	-349.84	-315.76	0.00	0.00	0.00
2,900.00	12.00	310.14	2,851.92	2,122.08	308.43	-365.74	-330.11	0.00	0.00	0.00
3,000.00	12.00	310.14	2,949.73	2,024.27	321.83	-381.63	-344.45	0.00	0.00	0.00
3,100.00	12.00	310.14	3,047.55	1,926.45	335.24	-397.52	-358.80	0.00	0.00	0.00
3,200.00	12.00	310.14	3,145.36	1,828.64	348.64	-413.42	-373.14	0.00	0.00	0.00
3,300.00	12.00	310.14	3,243.18	1,730.82	362.04	-429.31	-387.49	0.00	0.00	0.00
3,400.00	12.00	310.14	3,340.99	1,633.01	375.45	-445.21	-401.83	0.00	0.00	0.00
Richard Sandstone										
3,471.57	12.00	310.14	3,411.00	1,563.00	385.04	-456.58	-412.10	0.00	0.00	0.00
3,500.00	12.00	310.14	3,438.81	1,535.19	388.85	-461.10	-416.18	0.00	0.00	0.00
Parkman Sandstone										
3,580.96	12.00	310.14	3,518.00	1,456.00	399.70	-473.97	-427.79	0.00	0.00	0.00
3,600.00	12.00	310.14	3,536.62	1,437.38	402.25	-476.99	-430.53	0.00	0.00	0.00
3,700.00	12.00	310.14	3,634.44	1,339.56	415.66	-492.89	-444.87	0.00	0.00	0.00
3,800.00	12.00	310.14	3,732.25	1,241.75	429.06	-508.78	-459.22	0.00	0.00	0.00
3,900.00	12.00	310.14	3,830.07	1,143.93	442.47	-524.68	-473.56	0.00	0.00	0.00
4,000.00	12.00	310.14	3,927.88	1,046.12	455.87	-540.57	-487.91	0.00	0.00	0.00
END OF TANGENT										

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Wellbore:	ORIGINAL WELLBORE		
Design:	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)
4,004.05	12.00	310.14	3,931.84	1,042.16	456.41	-541.21	-488.49	0.00	0.00	0.00
4,100.00	10.08	310.14	4,026.01	947.99	468.26	-555.26	-501.17	2.00	-2.00	0.00
4,200.00	8.08	310.14	4,124.75	849.25	478.43	-567.32	-512.06	2.00	-2.00	0.00
4,300.00	6.08	310.14	4,223.99	750.01	486.38	-576.75	-520.56	2.00	-2.00	0.00
Sussex Sandstone										
4,325.14	5.58	310.14	4,249.00	725.00	488.02	-578.70	-522.32	2.00	-2.00	0.00
4,400.00	4.08	310.14	4,323.59	650.41	492.09	-583.52	-526.67	2.00	-2.00	0.00
4,500.00	2.08	310.14	4,423.44	550.56	495.55	-587.63	-530.38	2.00	-2.00	0.00
4,600.00	0.08	310.14	4,523.42	450.58	496.77	-589.07	-531.68	2.00	-2.00	0.00
EOD TO VERTICAL										
4,604.05	0.00	0.00	4,527.47	446.53	496.77	-589.07	-531.68	2.00	-2.00	0.00
4,700.00	0.00	0.00	4,623.42	350.58	496.77	-589.07	-531.68	0.00	0.00	0.00
Shannon Sandstone										
4,782.58	0.00	0.00	4,706.00	268.00	496.77	-589.07	-531.68	0.00	0.00	0.00
4,800.00	0.00	0.00	4,723.42	250.58	496.77	-589.07	-531.68	0.00	0.00	0.00
4,900.00	0.00	0.00	4,823.42	150.58	496.77	-589.07	-531.68	0.00	0.00	0.00
5,000.00	0.00	0.00	4,923.42	50.58	496.77	-589.07	-531.68	0.00	0.00	0.00
5,100.00	0.00	0.00	5,023.42	-49.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,200.00	0.00	0.00	5,123.42	-149.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,300.00	0.00	0.00	5,223.42	-249.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,400.00	0.00	0.00	5,323.42	-349.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,500.00	0.00	0.00	5,423.42	-449.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,600.00	0.00	0.00	5,523.42	-549.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,700.00	0.00	0.00	5,623.42	-649.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,800.00	0.00	0.00	5,723.42	-749.42	496.77	-589.07	-531.68	0.00	0.00	0.00
5,900.00	0.00	0.00	5,823.42	-849.42	496.77	-589.07	-531.68	0.00	0.00	0.00
6,000.00	0.00	0.00	5,923.42	-949.42	496.77	-589.07	-531.68	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,038.62	0.00	0.00	5,962.04	-988.04	496.77	-589.07	-531.68	0.00	0.00	0.00
6,100.00	6.14	89.91	6,023.30	-1,049.30	496.78	-585.79	-528.42	10.00	10.00	0.00
6,200.00	16.14	89.91	6,121.29	-1,147.29	496.81	-566.49	-509.24	10.00	10.00	0.00
Sharon Springs										
6,249.30	21.07	89.91	6,168.00	-1,194.00	496.83	-550.77	-493.61	10.00	10.00	0.00
6,300.00	26.14	89.91	6,214.44	-1,240.44	496.86	-530.48	-473.43	10.00	10.00	0.00
Niobrara A Chalk										
6,333.42	29.48	89.91	6,244.00	-1,270.00	496.89	-514.89	-457.93	10.00	10.00	0.00
Niobrara A Chalk Base										
6,366.13	32.75	89.91	6,272.00	-1,298.00	496.91	-497.99	-441.13	10.00	10.00	0.00
6,400.00	36.14	89.91	6,299.93	-1,325.93	496.94	-478.84	-422.08	10.00	10.00	0.00
Niobrara B1 Chalk Top										
6,403.81	36.52	89.91	6,303.00	-1,329.00	496.95	-476.58	-419.84	10.00	10.00	0.00
Niobrara B1 Chalk Base										
6,427.83	38.92	89.91	6,322.00	-1,348.00	496.97	-461.88	-405.23	10.00	10.00	0.00
6,500.00	46.14	89.91	6,375.15	-1,401.15	497.05	-413.13	-356.76	10.00	10.00	0.00
Niobrara B2 Chalk Base										
6,507.05	46.84	89.91	6,380.00	-1,406.00	497.06	-408.02	-351.67	10.00	10.00	0.00
Niobrara C Chalk Top										
6,554.52	51.59	89.91	6,411.00	-1,437.00	497.11	-372.09	-315.94	10.00	10.00	0.00
6,600.00	56.14	89.91	6,437.81	-1,463.81	497.17	-335.37	-279.44	10.00	10.00	0.00
Niobrara C Chalk Base										
6,660.91	62.23	89.91	6,469.00	-1,495.00	497.25	-283.08	-227.45	10.00	10.00	0.00
Niobrara D Chalk Top										
6,676.33	63.77	89.91	6,476.00	-1,502.00	497.27	-269.35	-213.79	10.00	10.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHELDUCK 6-5-11HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Site:	NW SW SEC. 6 T7N R60W 6th P.M.	North Reference:	True
Well:	SHELDUCK 6-5-11HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
6,700.00	66.14	89.91	6,486.02	-1,512.02	497.31	-247.90	-192.47	10.00	10.00	0.00
Ft. Hays										
6,772.21	73.36	89.91	6,511.00	-1,537.00	497.42	-180.20	-125.16	10.00	10.00	0.00
6,800.00	76.14	89.91	6,518.31	-1,544.31	497.46	-153.39	-98.50	10.00	10.00	0.00
6,900.00	86.14	89.91	6,533.70	-1,559.70	497.61	-54.71	-0.39	10.00	10.00	0.00
HZ LP: 1900ft FSL & 600ft FWL of Sec 6 - Codell (Target)										
6,938.63	90.00	89.91	6,535.00	-1,561.00	497.67	-16.11	37.99	10.00	10.00	0.00
7,000.00	90.00	89.91	6,535.00	-1,561.00	497.77	45.26	99.01	0.00	0.00	0.00
7,100.00	90.00	89.91	6,535.00	-1,561.00	497.93	145.26	198.44	0.00	0.00	0.00
7,200.00	90.00	89.91	6,535.00	-1,561.00	498.09	245.26	297.86	0.00	0.00	0.00
7,300.00	90.00	89.91	6,535.00	-1,561.00	498.24	345.26	397.29	0.00	0.00	0.00
7,400.00	90.00	89.91	6,535.00	-1,561.00	498.40	445.26	496.71	0.00	0.00	0.00
7,500.00	90.00	89.91	6,535.00	-1,561.00	498.56	545.26	596.14	0.00	0.00	0.00
7,600.00	90.00	89.91	6,535.00	-1,561.00	498.71	645.26	695.57	0.00	0.00	0.00
7,700.00	90.00	89.91	6,534.99	-1,560.99	498.87	745.26	794.99	0.00	0.00	0.00
7,800.00	90.00	89.91	6,534.99	-1,560.99	499.02	845.26	894.42	0.00	0.00	0.00
7,900.00	90.00	89.91	6,534.99	-1,560.99	499.18	945.26	993.85	0.00	0.00	0.00
8,000.00	90.00	89.91	6,534.99	-1,560.99	499.33	1,045.26	1,093.27	0.00	0.00	0.00
8,100.00	90.00	89.91	6,534.99	-1,560.99	499.49	1,145.26	1,192.70	0.00	0.00	0.00
8,200.00	90.00	89.91	6,534.99	-1,560.99	499.64	1,245.26	1,292.12	0.00	0.00	0.00
8,300.00	90.00	89.91	6,534.99	-1,560.99	499.80	1,345.26	1,391.55	0.00	0.00	0.00
8,400.00	90.00	89.91	6,534.99	-1,560.99	499.95	1,445.26	1,490.98	0.00	0.00	0.00
8,500.00	90.00	89.91	6,534.99	-1,560.99	500.10	1,545.26	1,590.40	0.00	0.00	0.00
8,600.00	90.00	89.91	6,534.99	-1,560.99	500.26	1,645.26	1,689.83	0.00	0.00	0.00
8,700.00	90.00	89.91	6,534.99	-1,560.99	500.41	1,745.26	1,789.25	0.00	0.00	0.00
8,800.00	90.00	89.91	6,534.99	-1,560.99	500.56	1,845.26	1,888.68	0.00	0.00	0.00
8,900.00	90.00	89.91	6,534.99	-1,560.99	500.71	1,945.26	1,988.11	0.00	0.00	0.00
9,000.00	90.00	89.91	6,534.99	-1,560.99	500.86	2,045.26	2,087.53	0.00	0.00	0.00
9,100.00	90.00	89.91	6,534.99	-1,560.99	501.02	2,145.26	2,186.96	0.00	0.00	0.00
9,200.00	90.00	89.91	6,534.99	-1,560.99	501.17	2,245.26	2,286.38	0.00	0.00	0.00
9,300.00	90.00	89.91	6,534.99	-1,560.99	501.32	2,345.26	2,385.81	0.00	0.00	0.00
9,400.00	90.00	89.91	6,534.99	-1,560.99	501.47	2,445.26	2,485.24	0.00	0.00	0.00
9,500.00	90.00	89.91	6,534.99	-1,560.99	501.62	2,545.26	2,584.66	0.00	0.00	0.00
9,600.00	90.00	89.91	6,534.99	-1,560.99	501.77	2,645.26	2,684.09	0.00	0.00	0.00
9,700.00	90.00	89.91	6,534.99	-1,560.99	501.92	2,745.26	2,783.51	0.00	0.00	0.00
9,800.00	90.00	89.91	6,534.99	-1,560.99	502.07	2,845.26	2,882.94	0.00	0.00	0.00
9,900.00	90.00	89.91	6,534.99	-1,560.99	502.22	2,945.26	2,982.36	0.00	0.00	0.00
10,000.00	90.00	89.91	6,534.99	-1,560.99	502.36	3,045.26	3,081.79	0.00	0.00	0.00
10,100.00	90.00	89.92	6,534.99	-1,560.99	502.51	3,145.26	3,181.21	0.00	0.00	0.00
10,200.00	90.00	89.92	6,534.99	-1,560.99	502.66	3,245.26	3,280.64	0.00	0.00	0.00
10,300.00	90.00	89.92	6,534.99	-1,560.99	502.81	3,345.26	3,380.06	0.00	0.00	0.00
10,400.00	90.00	89.92	6,534.99	-1,560.99	502.95	3,445.26	3,479.49	0.00	0.00	0.00
10,500.00	90.00	89.92	6,534.99	-1,560.99	503.10	3,545.26	3,578.92	0.00	0.00	0.00
10,600.00	90.00	89.92	6,534.99	-1,560.99	503.25	3,645.26	3,678.34	0.00	0.00	0.00
10,700.00	90.00	89.92	6,534.99	-1,560.99	503.39	3,745.26	3,777.77	0.00	0.00	0.00
10,800.00	90.00	89.92	6,534.99	-1,560.99	503.54	3,845.26	3,877.19	0.00	0.00	0.00
10,900.00	90.00	89.92	6,535.00	-1,561.00	503.69	3,945.26	3,976.62	0.00	0.00	0.00
11,000.00	90.00	89.92	6,535.00	-1,561.00	503.83	4,045.26	4,076.04	0.00	0.00	0.00
11,100.00	90.00	89.92	6,535.00	-1,561.00	503.98	4,145.26	4,175.47	0.00	0.00	0.00
11,200.00	90.00	89.92	6,535.00	-1,561.00	504.12	4,245.26	4,274.89	0.00	0.00	0.00
11,300.00	90.00	89.92	6,535.00	-1,561.00	504.27	4,345.26	4,374.32	0.00	0.00	0.00
11,400.00	90.00	89.92	6,535.00	-1,561.00	504.41	4,445.26	4,473.74	0.00	0.00	0.00
11,500.00	90.00	89.92	6,535.00	-1,561.00	504.55	4,545.26	4,573.17	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHELDUCK 6-5-11HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4974.00usft (Original Well Elev)
Site:	NW SW SEC. 6 T7N R60W 6th P.M.	North Reference:	True
Well:	SHELDUCK 6-5-11HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
BHL: 1900ft FSL & 0ft FEL of Sec 6										
11,577.95	90.00	89.92	6,535.00	-1,561.00	504.67	4,623.20	4,650.67	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
500.16	500.00	Fox Hills Base				
1,566.95	1,548.00	Pierre Shale Top				
3,471.57	3,411.00	Richard Sandstone				
3,580.96	3,518.00	Parkman Sandstone				
4,325.14	4,249.00	Sussex Sandstone				
4,782.58	4,706.00	Shannon Sandstone				
6,249.30	6,168.00	Sharon Springs				
6,333.42	6,244.00	Niobrara A Chalk				
6,366.13	6,272.00	Niobrara A Chalk Base				
6,403.81	6,303.00	Niobrara B1 Chalk Top				
6,427.83	6,322.00	Niobrara B1 Chalk Base				
6,507.05	6,380.00	Niobrara B2 Chalk Base				
6,554.52	6,411.00	Niobrara C Chalk Top				
6,660.91	6,469.00	Niobrara C Chalk Base				
6,676.33	6,476.00	Niobrara D Chalk Top				
6,772.21	6,511.00	Ft. Hays				
6,938.63	6,535.00	Codell (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: 1402ft FSL & 629ft FWL of Sec 6
300.00	300.00	0.00	0.00	START NUDGE (2°/100ft BUR)
900.00	895.62	40.36	-47.86	EOB TO 12° INC
4,004.05	3,931.84	456.41	-541.21	END OF TANGENT
4,604.05	4,527.47	496.77	-589.07	EOD TO VERTICAL
6,038.62	5,962.04	496.77	-589.07	KOP (10°/100ft BUR)
6,938.63	6,535.00	497.67	-16.11	HZ LP: 1900ft FSL & 600ft FWL of Sec 6
11,577.95	6,535.00	504.67	4,623.20	BHL: 1900ft FSL & 0ft FEL of Sec 6