

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

NW SW SEC. 32 T9N R60W 6th P.M.

CANVASBACK 32-5HN

ORIGINAL WELLBORE

25 October, 2018

Plan: PROPOSAL #2





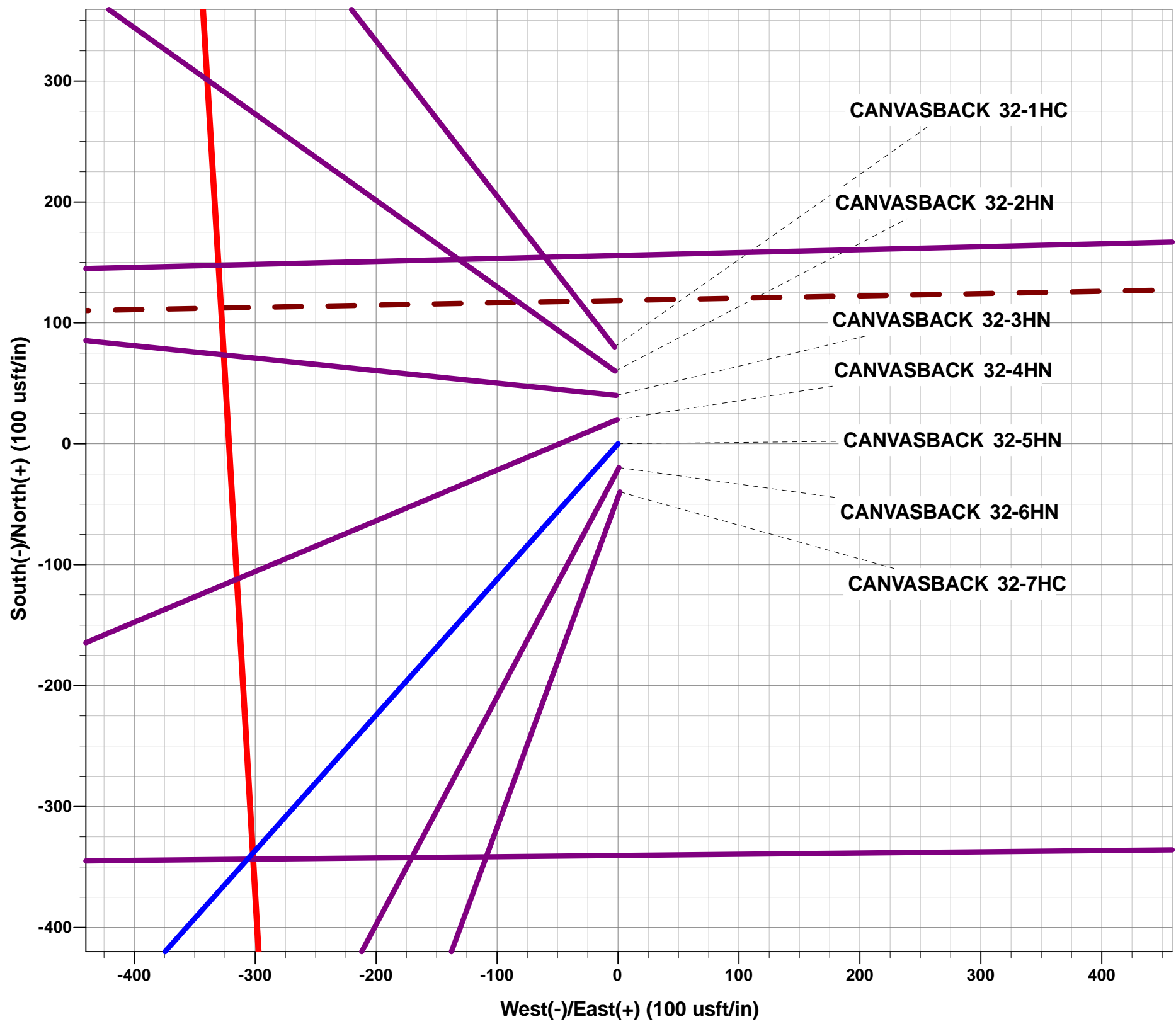
Project: WELD COUNTY, COLORADO (NAD 83)
Site: NW SW SEC. 32 T9N R60W 6th P.M.
Well: CANVASBACK 32-5HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

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: 2461ft FSL & 628ft FWL of Sec 32
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1058.29	1067.44	15.35	221.72	-76.27	-67.99	-51.49	102.18	EOB TO 15.35° INC
4945.75	5098.68	15.35	221.72	-872.77	-778.05	-589.16	1169.22	END OF TANGENT
5704.04	5866.12	0.00	0.00	-949.04	-846.04	-640.65	1271.40	EOD TO VERTICAL
5804.04	5966.12	0.00	0.00	-949.04	-846.04	-640.65	1271.40	KOP (10°/100ft BUR)
6377.00	6866.12	90.00	89.42	-943.24	-273.11	-80.29	1844.36	HZ LP: 1520ft FSL & 301ft FWL of Sec 32
6377.00	11557.47	90.00	89.41	-895.48	4418.00	4507.84	6535.72	BHL: 1520ft FSL & 300ft FEL of Sec 32

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CANVASBACK 32-5HN (P2)	5804.04	-949.04	-846.04	40.702815	-104.126721
HZ LP - CANVASBACK 32-5HN (P2)	6377.00	-943.24	-273.11	40.702831	-104.124655
BHL - CANVASBACK 32-5HN (P2)	6377.00	-895.48	4418.00	40.702961	-104.107736

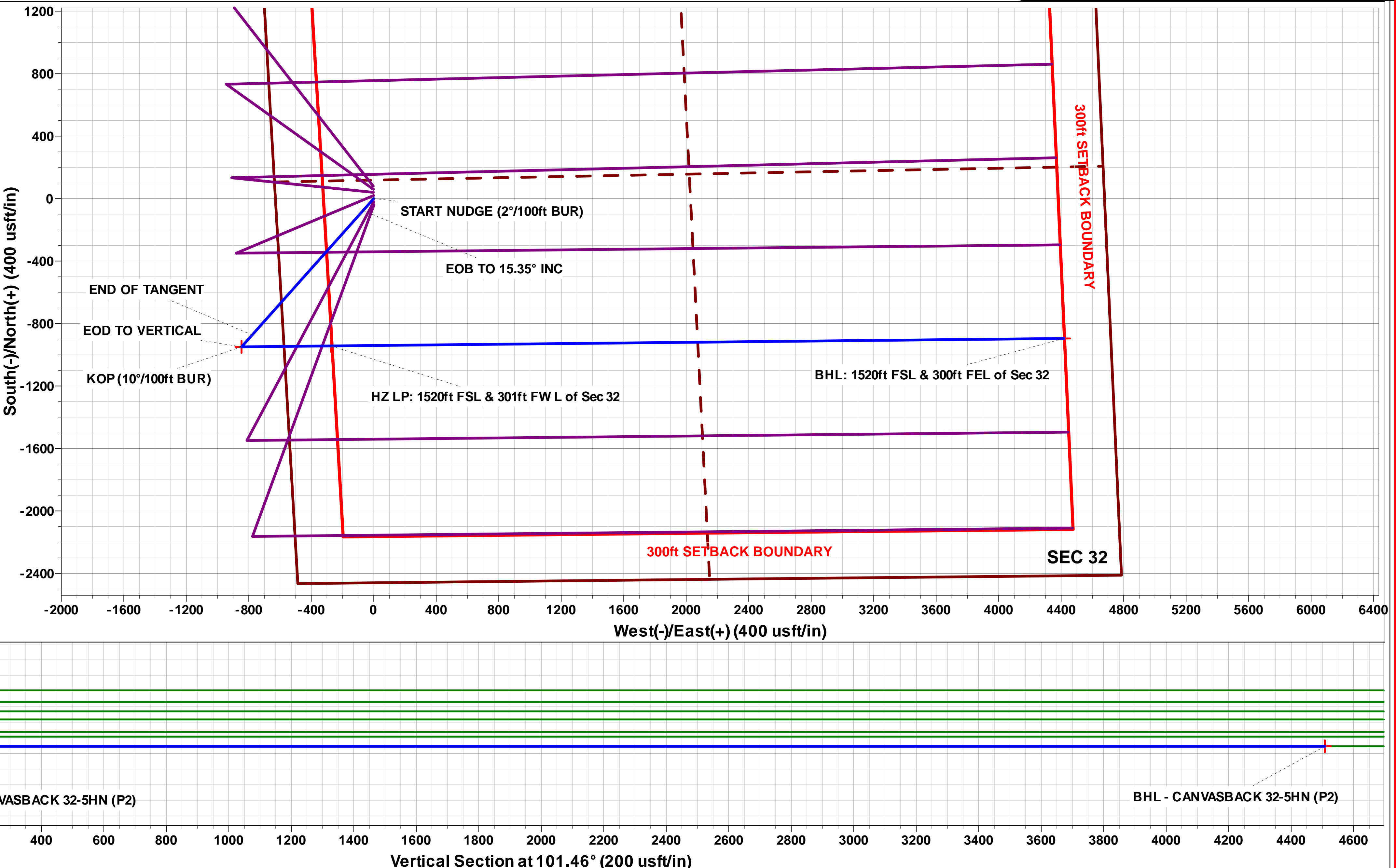
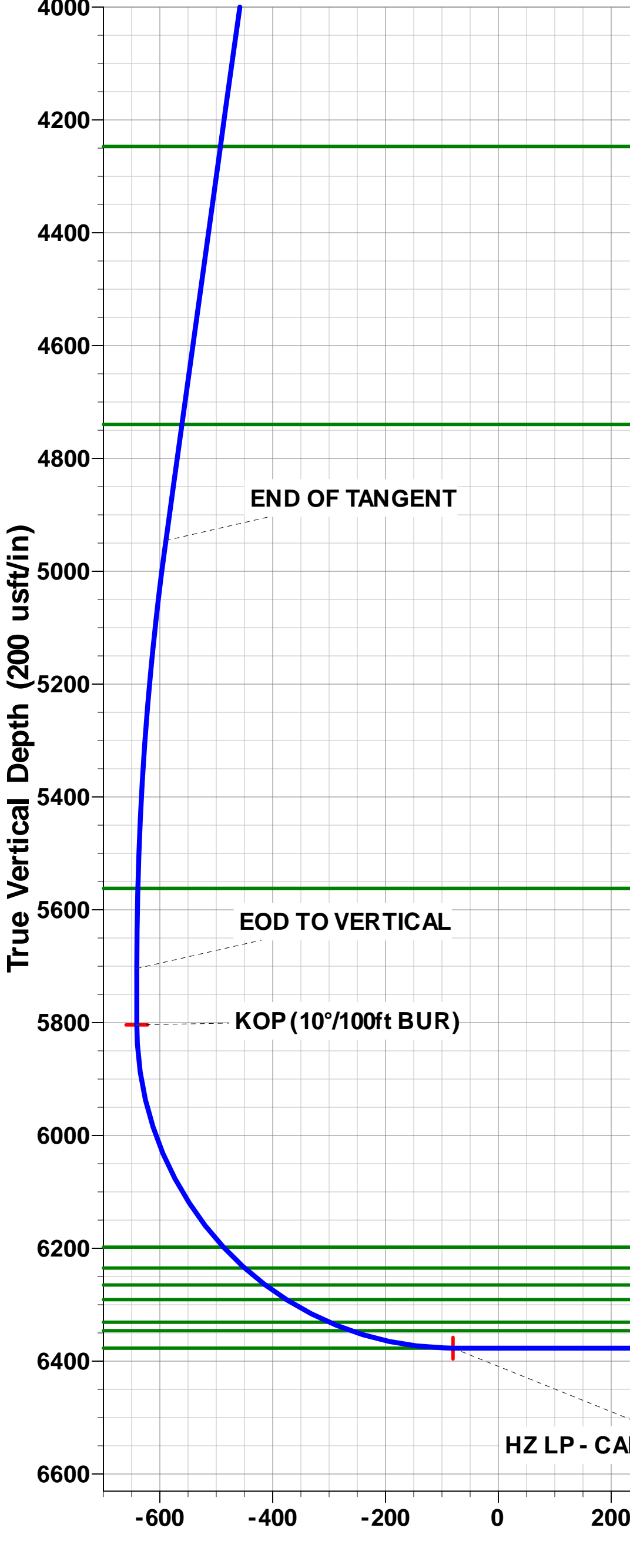
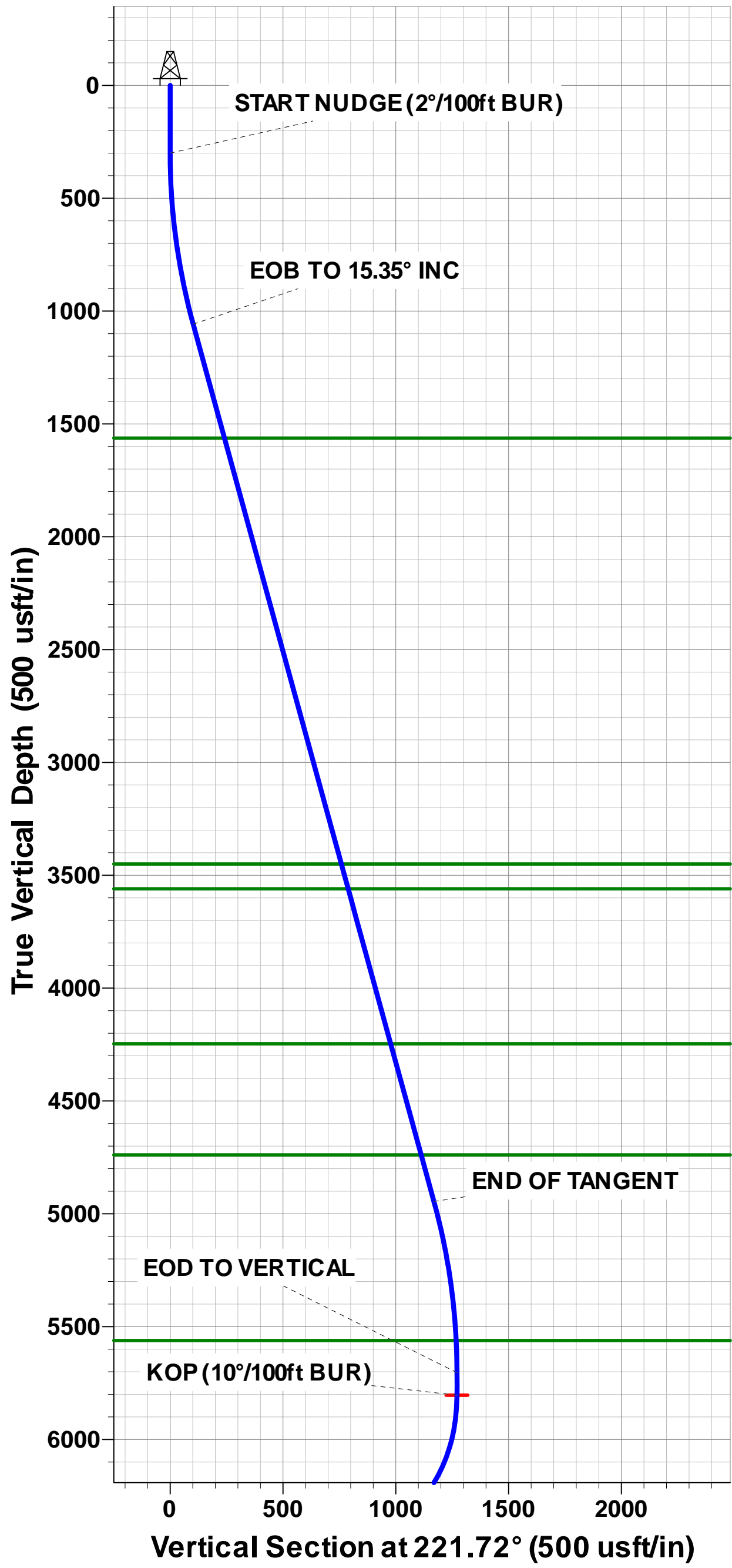


FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1563.00	1590.81	Pierre Shale Top
3450.00	3547.61	Richard Sandstone
3560.00	3661.68	Parkman Sandstone
4247.00	4374.09	Sussex Sandstone
4740.00	4885.32	Shannon Sandstone
5562.00	5724.02	TeePee Buttes
6198.00	6400.51	Sharon Springs
6235.00	6453.90	Niobrara Top
6265.00	6501.76	Niobrara A Chalk
6291.00	6548.13	Niobrara A Chalk Base
6331.00	6634.96	Niobrara B1 Chalk Top
6346.00	6676.78	Niobrara B1 Chalk Base
6377.00	6866.12	Niobrara B2 Chalk Top (Target)

PROPOSED LOCAL COORDINATES:

SHL: 2461ft FSL & 628ft FWL of Sec 32
HZ LP: 1520ft FSL & 301ft FWL of Sec 32
BHL: 1520ft FSL & 300ft FEL of Sec 32



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK 32-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4965.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4965.00usft
Site:	NW SW SEC. 32 T9N R60W 6th P.M.	North Reference:	True
Well:	CANVASBACK 32-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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. 32 T9N R60W 6th P.M.				
Site Position:		Northing:	1,503,686.24 usft	Latitude:	40.707883
From:	Lat/Long	Easting:	3,381,532.92 usft	Longitude:	-104.123789
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.89 °

Well	CANVASBACK 32-5HN					
Well Position	+N/-S	-897.35 usft	Northing:	1,502,789.51 usft	Latitude:	40.705420
	+E/-W	32.99 usft	Easting:	3,381,579.84 usft	Longitude:	-104.123670
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,945.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	02/05/2018	7.80	67.17	52,514

Design	PROPOSAL #2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	6,377.00	0.00	0.00	101.46

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	-4,965.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-4,665.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,067.44	15.35	221.72	1,058.29	-3,906.71	-76.27	-67.99	2.00	2.00	0.00	221.72	
5,098.68	15.35	221.72	4,945.75	-19.25	-872.77	-778.05	0.00	0.00	0.00	0.00	
5,866.12	0.00	0.00	5,704.04	739.04	-949.04	-846.04	2.00	-2.00	0.00	180.00	
5,966.12	0.00	0.00	5,804.04	839.04	-949.04	-846.04	0.00	0.00	0.00	0.00	KOP - CANVASBA
6,866.12	90.00	89.42	6,377.00	1,412.00	-943.24	-273.11	10.00	10.00	9.94	89.42	HZ LP - CANVASB
11,557.47	90.00	89.41	6,377.00	1,412.00	-895.48	4,418.00	0.00	0.00	0.00	-88.23	BHL - CANVASBA

Planning Report



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Site:	NW SW SEC. 32 T9N R60W 6th P.M.	North Reference:	True
Well:	CANVASBACK 32-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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: 2461ft FSL & 628ft FWL of Sec 32										
0.00	0.00	0.00	0.00	4,965.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,865.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,765.00	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	4,665.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	221.72	399.98	4,565.02	-1.30	-1.16	-0.88	2.00	2.00	0.00
500.00	4.00	221.72	499.84	4,465.16	-5.21	-4.64	-3.52	2.00	2.00	0.00
600.00	6.00	221.72	599.45	4,365.55	-11.71	-10.44	-7.91	2.00	2.00	0.00
700.00	8.00	221.72	698.70	4,266.30	-20.81	-18.55	-14.05	2.00	2.00	0.00
800.00	10.00	221.72	797.47	4,167.53	-32.49	-28.96	-21.93	2.00	2.00	0.00
900.00	12.00	221.72	895.62	4,069.38	-46.73	-41.66	-31.55	2.00	2.00	0.00
1,000.00	14.00	221.72	993.06	3,971.94	-63.52	-56.63	-42.88	2.00	2.00	0.00
EOB TO 15.35° INC										
1,067.44	15.35	221.72	1,058.29	3,906.71	-76.27	-67.99	-51.49	2.00	2.00	0.00
1,100.00	15.35	221.72	1,089.69	3,875.31	-82.71	-73.73	-55.83	0.00	0.00	0.00
1,200.00	15.35	221.72	1,186.13	3,778.87	-102.46	-91.34	-69.17	0.00	0.00	0.00
1,300.00	15.35	221.72	1,282.56	3,682.44	-122.22	-108.96	-82.51	0.00	0.00	0.00
1,400.00	15.35	221.72	1,378.99	3,586.01	-141.98	-126.57	-95.84	0.00	0.00	0.00
1,500.00	15.35	221.72	1,475.43	3,489.57	-161.74	-144.18	-109.18	0.00	0.00	0.00
Pierre Shale Top										
1,590.81	15.35	221.72	1,563.00	3,402.00	-179.68	-160.18	-121.29	0.00	0.00	0.00
1,600.00	15.35	221.72	1,571.86	3,393.14	-181.50	-161.80	-122.52	0.00	0.00	0.00
1,700.00	15.35	221.72	1,668.29	3,296.71	-201.25	-179.41	-135.86	0.00	0.00	0.00
1,800.00	15.35	221.72	1,764.73	3,200.27	-221.01	-197.03	-149.20	0.00	0.00	0.00
1,900.00	15.35	221.72	1,861.16	3,103.84	-240.77	-214.64	-162.53	0.00	0.00	0.00
2,000.00	15.35	221.72	1,957.59	3,007.41	-260.53	-232.25	-175.87	0.00	0.00	0.00
2,100.00	15.35	221.72	2,054.03	2,910.97	-280.29	-249.87	-189.21	0.00	0.00	0.00
2,200.00	15.35	221.72	2,150.46	2,814.54	-300.04	-267.48	-202.55	0.00	0.00	0.00
2,300.00	15.35	221.72	2,246.89	2,718.11	-319.80	-285.09	-215.88	0.00	0.00	0.00
2,400.00	15.35	221.72	2,343.33	2,621.67	-339.56	-302.71	-229.22	0.00	0.00	0.00
2,500.00	15.35	221.72	2,439.76	2,525.24	-359.32	-320.32	-242.56	0.00	0.00	0.00
2,600.00	15.35	221.72	2,536.19	2,428.81	-379.08	-337.94	-255.90	0.00	0.00	0.00
2,700.00	15.35	221.72	2,632.62	2,332.38	-398.84	-355.55	-269.23	0.00	0.00	0.00
2,800.00	15.35	221.72	2,729.06	2,235.94	-418.59	-373.16	-282.57	0.00	0.00	0.00
2,900.00	15.35	221.72	2,825.49	2,139.51	-438.35	-390.78	-295.91	0.00	0.00	0.00
3,000.00	15.35	221.72	2,921.92	2,043.08	-458.11	-408.39	-309.25	0.00	0.00	0.00
3,100.00	15.35	221.72	3,018.36	1,946.64	-477.87	-426.00	-322.59	0.00	0.00	0.00
3,200.00	15.35	221.72	3,114.79	1,850.21	-497.63	-443.62	-335.92	0.00	0.00	0.00
3,300.00	15.35	221.72	3,211.22	1,753.78	-517.38	-461.23	-349.26	0.00	0.00	0.00
3,400.00	15.35	221.72	3,307.66	1,657.34	-537.14	-478.85	-362.60	0.00	0.00	0.00
3,500.00	15.35	221.72	3,404.09	1,560.91	-556.90	-496.46	-375.94	0.00	0.00	0.00
Richard Sandstone										
3,547.61	15.35	221.72	3,450.00	1,515.00	-566.31	-504.84	-382.29	0.00	0.00	0.00
3,600.00	15.35	221.72	3,500.52	1,464.48	-576.66	-514.07	-389.27	0.00	0.00	0.00
Parkman Sandstone										
3,661.68	15.35	221.72	3,560.00	1,405.00	-588.84	-524.94	-397.50	0.00	0.00	0.00
3,700.00	15.35	221.72	3,596.96	1,368.04	-596.42	-531.69	-402.61	0.00	0.00	0.00
3,800.00	15.35	221.72	3,693.39	1,271.61	-616.17	-549.30	-415.95	0.00	0.00	0.00
3,900.00	15.35	221.72	3,789.82	1,175.18	-635.93	-566.91	-429.29	0.00	0.00	0.00
4,000.00	15.35	221.72	3,886.26	1,078.74	-655.69	-584.53	-442.63	0.00	0.00	0.00
4,100.00	15.35	221.72	3,982.69	982.31	-675.45	-602.14	-455.96	0.00	0.00	0.00
4,200.00	15.35	221.72	4,079.12	885.88	-695.21	-619.76	-469.30	0.00	0.00	0.00

Planning Report



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Well:	CANVASBACK 32-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
4,300.00	15.35	221.72	4,175.56	789.44	-714.96	-637.37	-482.64	0.00	0.00	0.00
Sussex Sandstone										
4,374.09	15.35	221.72	4,247.00	718.00	-729.60	-650.42	-492.52	0.00	0.00	0.00
4,400.00	15.35	221.72	4,271.99	693.01	-734.72	-654.98	-495.98	0.00	0.00	0.00
4,500.00	15.35	221.72	4,368.42	596.58	-754.48	-672.60	-509.31	0.00	0.00	0.00
4,600.00	15.35	221.72	4,464.86	500.14	-774.24	-690.21	-522.65	0.00	0.00	0.00
4,700.00	15.35	221.72	4,561.29	403.71	-794.00	-707.82	-535.99	0.00	0.00	0.00
4,800.00	15.35	221.72	4,657.72	307.28	-813.75	-725.44	-549.33	0.00	0.00	0.00
Shannon Sandstone										
4,885.32	15.35	221.72	4,740.00	225.00	-830.61	-740.47	-560.71	0.00	0.00	0.00
4,900.00	15.35	221.72	4,754.16	210.84	-833.51	-743.05	-562.66	0.00	0.00	0.00
5,000.00	15.35	221.72	4,850.59	114.41	-853.27	-760.66	-576.00	0.00	0.00	0.00
END OF TANGENT										
5,098.68	15.35	221.72	4,945.75	19.25	-872.77	-778.05	-589.16	0.00	0.00	0.00
5,100.00	15.32	221.72	4,947.02	17.98	-873.03	-778.28	-589.34	2.00	-2.00	0.00
5,200.00	13.32	221.72	5,043.91	-78.91	-891.49	-794.74	-601.80	2.00	-2.00	0.00
5,300.00	11.32	221.72	5,141.60	-176.60	-907.42	-808.94	-612.56	2.00	-2.00	0.00
5,400.00	9.32	221.72	5,239.98	-274.98	-920.80	-820.86	-621.59	2.00	-2.00	0.00
5,500.00	7.32	221.72	5,338.92	-373.92	-931.60	-830.49	-628.88	2.00	-2.00	0.00
5,600.00	5.32	221.72	5,438.31	-473.31	-939.82	-837.82	-634.43	2.00	-2.00	0.00
5,700.00	3.32	221.72	5,538.02	-573.02	-945.45	-842.84	-638.23	2.00	-2.00	0.00
TeePee Buttes										
5,724.02	2.84	221.72	5,562.00	-597.00	-946.41	-843.70	-638.88	2.00	-2.00	0.00
5,800.00	1.32	221.72	5,637.93	-672.93	-948.47	-845.53	-640.27	2.00	-2.00	0.00
EOD TO VERTICAL										
5,866.12	0.00	0.00	5,704.04	-739.04	-949.04	-846.04	-640.65	2.00	-2.00	0.00
5,900.00	0.00	0.00	5,737.92	-772.92	-949.04	-846.04	-640.65	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,966.12	0.00	0.00	5,804.04	-839.04	-949.04	-846.04	-640.65	0.00	0.00	0.00
6,000.00	3.39	89.42	5,837.90	-872.90	-949.03	-845.04	-639.67	10.00	10.00	0.00
6,100.00	13.39	89.42	5,936.71	-971.71	-948.88	-830.47	-625.42	10.00	10.00	0.00
6,200.00	23.39	89.42	6,031.48	-1,066.48	-948.56	-798.97	-594.61	10.00	10.00	0.00
6,300.00	33.39	89.42	6,119.35	-1,154.35	-948.08	-751.48	-548.17	10.00	10.00	0.00
6,400.00	43.39	89.42	6,197.63	-1,232.63	-947.46	-689.47	-487.51	10.00	10.00	0.00
Sharon Springs										
6,400.51	43.44	89.42	6,198.00	-1,233.00	-947.45	-689.12	-487.17	10.00	10.00	0.00
Niobrara Top										
6,453.90	48.78	89.42	6,235.00	-1,270.00	-947.06	-650.66	-449.56	10.00	10.00	0.00
6,500.00	53.39	89.42	6,263.95	-1,298.95	-946.70	-614.80	-414.48	10.00	10.00	0.00
Niobrara A Chalk										
6,501.76	53.56	89.42	6,265.00	-1,300.00	-946.69	-613.38	-413.10	10.00	10.00	0.00
Niobrara A Chalk Base										
6,548.13	58.20	89.42	6,291.00	-1,326.00	-946.30	-575.01	-375.57	10.00	10.00	0.00
6,600.00	63.39	89.42	6,316.30	-1,351.30	-945.84	-529.75	-331.30	10.00	10.00	0.00
Niobrara B1 Chalk Top										
6,634.96	66.88	89.42	6,331.00	-1,366.00	-945.52	-498.03	-300.28	10.00	10.00	0.00
Niobrara B1 Chalk Base										
6,676.78	71.07	89.42	6,346.00	-1,381.00	-945.12	-459.01	-262.11	10.00	10.00	0.00
6,700.00	73.39	89.42	6,353.09	-1,388.09	-944.90	-436.90	-240.49	10.00	10.00	0.00
6,800.00	83.39	89.42	6,373.19	-1,408.19	-943.91	-339.08	-144.81	10.00	10.00	0.00
HZ LP: 1520ft FSL & 301ft FWL of Sec 32 - Niobrara B2 Chalk Top (Target)										
6,866.12	90.00	89.42	6,377.00	-1,412.00	-943.24	-273.11	-80.29	10.00	10.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK 32-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4965.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4965.00usft
Site:	NW SW SEC. 32 T9N R60W 6th P.M.	North Reference:	True
Well:	CANVASBACK 32-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
6,900.00	90.00	89.42	6,377.00	-1,412.00	-942.90	-239.23	-47.16	0.00	0.00	0.00
7,000.00	90.00	89.42	6,377.00	-1,412.00	-941.89	-139.24	50.65	0.00	0.00	0.00
7,100.00	90.00	89.42	6,377.00	-1,412.00	-940.87	-39.24	148.45	0.00	0.00	0.00
7,200.00	90.00	89.42	6,377.00	-1,412.00	-939.86	60.75	246.25	0.00	0.00	0.00
7,300.00	90.00	89.42	6,377.00	-1,412.00	-938.85	160.75	344.05	0.00	0.00	0.00
7,400.00	90.00	89.42	6,377.00	-1,412.00	-937.84	260.74	441.85	0.00	0.00	0.00
7,500.00	90.00	89.42	6,377.00	-1,412.00	-936.82	360.74	539.65	0.00	0.00	0.00
7,600.00	90.00	89.42	6,377.00	-1,412.00	-935.81	460.73	637.45	0.00	0.00	0.00
7,700.00	90.00	89.42	6,377.00	-1,412.00	-934.80	560.73	735.25	0.00	0.00	0.00
7,800.00	90.00	89.42	6,377.00	-1,412.00	-933.78	660.72	833.05	0.00	0.00	0.00
7,900.00	90.00	89.42	6,377.00	-1,412.00	-932.77	760.72	930.85	0.00	0.00	0.00
8,000.00	90.00	89.42	6,377.00	-1,412.00	-931.75	860.71	1,028.65	0.00	0.00	0.00
8,100.00	90.00	89.42	6,377.00	-1,412.00	-930.74	960.71	1,126.45	0.00	0.00	0.00
8,200.00	90.00	89.42	6,377.00	-1,412.00	-929.72	1,060.70	1,224.25	0.00	0.00	0.00
8,300.00	90.00	89.42	6,377.00	-1,412.00	-928.71	1,160.70	1,322.05	0.00	0.00	0.00
8,400.00	90.00	89.42	6,377.00	-1,412.00	-927.69	1,260.69	1,419.85	0.00	0.00	0.00
8,500.00	90.00	89.42	6,377.00	-1,412.00	-926.67	1,360.69	1,517.65	0.00	0.00	0.00
8,600.00	90.00	89.42	6,377.00	-1,412.00	-925.66	1,460.68	1,615.45	0.00	0.00	0.00
8,700.00	90.00	89.42	6,377.00	-1,412.00	-924.64	1,560.68	1,713.25	0.00	0.00	0.00
8,800.00	90.00	89.42	6,377.00	-1,412.00	-923.62	1,660.67	1,811.05	0.00	0.00	0.00
8,900.00	90.00	89.42	6,377.00	-1,412.00	-922.61	1,760.67	1,908.85	0.00	0.00	0.00
9,000.00	90.00	89.42	6,377.00	-1,412.00	-921.59	1,860.66	2,006.65	0.00	0.00	0.00
9,100.00	90.00	89.42	6,377.00	-1,412.00	-920.57	1,960.66	2,104.45	0.00	0.00	0.00
9,200.00	90.00	89.42	6,377.00	-1,412.00	-919.56	2,060.65	2,202.25	0.00	0.00	0.00
9,300.00	90.00	89.42	6,377.00	-1,412.00	-918.54	2,160.65	2,300.05	0.00	0.00	0.00
9,400.00	90.00	89.42	6,377.00	-1,412.00	-917.52	2,260.64	2,397.85	0.00	0.00	0.00
9,500.00	90.00	89.42	6,377.00	-1,412.00	-916.50	2,360.64	2,495.65	0.00	0.00	0.00
9,600.00	90.00	89.42	6,377.00	-1,412.00	-915.48	2,460.63	2,593.45	0.00	0.00	0.00
9,700.00	90.00	89.42	6,377.00	-1,412.00	-914.46	2,560.63	2,691.25	0.00	0.00	0.00
9,800.00	90.00	89.42	6,377.00	-1,412.00	-913.44	2,660.62	2,789.05	0.00	0.00	0.00
9,900.00	90.00	89.42	6,377.00	-1,412.00	-912.42	2,760.62	2,886.85	0.00	0.00	0.00
10,000.00	90.00	89.42	6,377.00	-1,412.00	-911.40	2,860.61	2,984.65	0.00	0.00	0.00
10,100.00	90.00	89.42	6,377.00	-1,412.00	-910.38	2,960.60	3,082.45	0.00	0.00	0.00
10,200.00	90.00	89.42	6,377.00	-1,412.00	-909.36	3,060.60	3,180.25	0.00	0.00	0.00
10,300.00	90.00	89.42	6,377.00	-1,412.00	-908.34	3,160.59	3,278.05	0.00	0.00	0.00
10,400.00	90.00	89.41	6,377.00	-1,412.00	-907.32	3,260.59	3,375.85	0.00	0.00	0.00
10,500.00	90.00	89.41	6,377.00	-1,412.00	-906.30	3,360.58	3,473.65	0.00	0.00	0.00
10,600.00	90.00	89.41	6,377.00	-1,412.00	-905.28	3,460.58	3,571.44	0.00	0.00	0.00
10,700.00	90.00	89.41	6,377.00	-1,412.00	-904.26	3,560.57	3,669.24	0.00	0.00	0.00
10,800.00	90.00	89.41	6,377.00	-1,412.00	-903.23	3,660.57	3,767.04	0.00	0.00	0.00
10,900.00	90.00	89.41	6,377.00	-1,412.00	-902.21	3,760.56	3,864.84	0.00	0.00	0.00
11,000.00	90.00	89.41	6,377.00	-1,412.00	-901.19	3,860.56	3,962.64	0.00	0.00	0.00
11,100.00	90.00	89.41	6,377.00	-1,412.00	-900.17	3,960.55	4,060.44	0.00	0.00	0.00
11,200.00	90.00	89.41	6,377.00	-1,412.00	-899.14	4,060.55	4,158.24	0.00	0.00	0.00
11,300.00	90.00	89.41	6,377.00	-1,412.00	-898.12	4,160.54	4,256.04	0.00	0.00	0.00
11,400.00	90.00	89.41	6,377.00	-1,412.00	-897.10	4,260.54	4,353.83	0.00	0.00	0.00
11,500.00	90.00	89.41	6,377.00	-1,412.00	-896.07	4,360.53	4,451.63	0.00	0.00	0.00
BHL: 1520ft FSL & 300ft FEL of Sec 32										
11,557.47	90.00	89.41	6,377.00	-1,412.00	-895.48	4,418.00	4,507.84	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK 32-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4965.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4965.00usft
Site:	NW SW SEC. 32 T9N R60W 6th P.M.	North Reference:	True
Well:	CANVASBACK 32-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,590.81	1,563.00	Pierre Shale Top				
3,547.61	3,450.00	Richard Sandstone				
3,661.68	3,560.00	Parkman Sandstone				
4,374.09	4,247.00	Sussex Sandstone				
4,885.32	4,740.00	Shannon Sandstone				
5,724.02	5,562.00	TeePee Buttes				
6,400.51	6,198.00	Sharon Springs				
6,453.90	6,235.00	Niobrara Top				
6,501.76	6,265.00	Niobrara A Chalk				
6,548.13	6,291.00	Niobrara A Chalk Base				
6,634.96	6,331.00	Niobrara B1 Chalk Top				
6,676.78	6,346.00	Niobrara B1 Chalk Base				
6,866.12	6,377.00	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: 2461ft FSL & 628ft FWL of Sec 32
300.00	300.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,067.44	1,058.29	-76.27	-67.99	EOB TO 15.35° INC
5,098.68	4,945.75	-872.77	-778.05	END OF TANGENT
5,866.12	5,704.04	-949.04	-846.04	EOD TO VERTICAL
5,966.12	5,804.04	-949.04	-846.04	KOP (10°/100ft BUR)
6,866.12	6,377.00	-943.24	-273.11	HZ LP: 1520ft FSL & 301ft FWL of Sec 32
11,557.47	6,377.00	-895.48	4,418.00	BHL: 1520ft FSL & 300ft FEL of Sec 32