

EXTRACTION OIL & GAS

ADAMS COUNTY

Sec 12-T1S-R66W

DUCK CLUB 12W-20-9N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

12 June, 2018



Project: ADAMS COUNTY
Site: Sec 12-T1S-R66W
Well: DUCK CLUB 12W-20-9N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



Azimuths to True North
Magnetic North: 8.12°
Magnetic Field
Strength: 52138.5nT
Dip Angle: 66.51°
Date: 10/10/2017
Model: IGRF2015

WELL DETAILS: DUCK CLUB 12W-20-9N

+N/-S	+E/-W	Northing	Easting	5037.00	Latitude	Longitude	Slot
0.00	0.00	1236073.33	3215513.46	39° 58' 43.824 N	104° 43' 51.456 W		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
3	1805.44	24.11	108.96	1770.18	-81.19	236.33	2.00	108.96	-227.75	
4	5910.12	24.11	108.96	5516.82	-625.96	1822.01	0.00	0.00	-1755.84	
5	7115.56	0.00	0.00	6687.00	-707.15	2058.34	2.00	180.00	-1983.59	
6	7145.56	0.00	0.00	6717.00	-707.15	2058.34	0.00	0.00	-1983.59	
7	8045.65	90.00	270.05	7290.00	-706.64	1485.32	10.00	270.05	-1413.10	DC 9N - LP
8	10445.65	90.00	270.05	7289.90	-704.51	-914.68	0.00	0.00	976.28	
9	10843.11	90.00	274.00	7289.90	-697.53	-1111.98	2.00	90.03	1172.07	
10	10843.11	90.00	274.00	7289.90	-683.58	-1311.49	0.00	0.00	1369.42	
11	11079.30	90.00	269.28	7289.90	-676.83	-1547.52	2.00	-90.00	1603.30	DC 9N - PBHL
12	17662.33	90.00	269.28	7290.00	-760.00	-8130.03	0.00	0.00	8165.47	DC 9N - PBHL

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
3900.00	4138.79	PARKMAN
4755.00	5075.50	SUSSEX
7080.00	7513.29	SHARON SPRINGS
7086.00	7546.48	NIOBRARA
7280.00	7938.42	NIO B

PROJECT DETAILS: ADAMS COUNTY

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

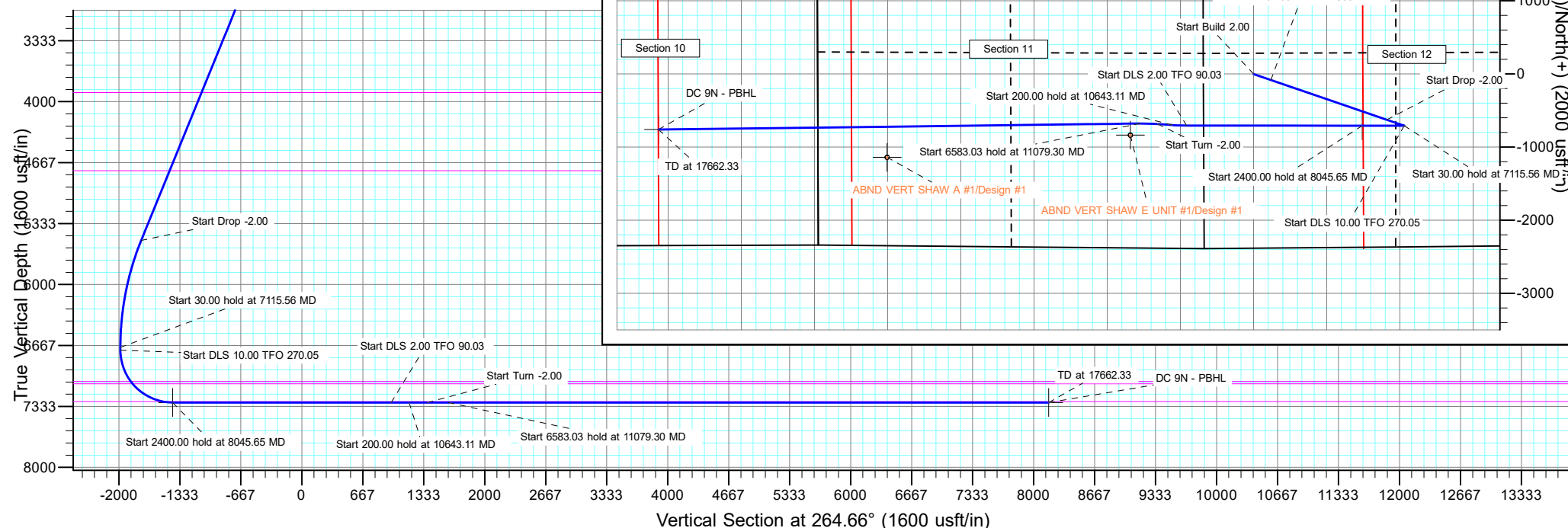
SHL:
2380' FSL, 684' FWL
Sec 12-T1S-R66W
LP:
1660' FSL, 2167' FWL
Sec 12-T1S-R66W
BHL:
1587' FSL, 2177' FEL
Sec 10-T1S-R66W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	Start Build 2.00
1805.44	24.11	108.96	1770.18	-81.19	236.33	-227.75	249.89	Start 4104.69 hold at 1805.44 MD
5910.12	24.11	108.96	5516.82	-625.96	1822.01	-1755.84	1926.53	Start Drop -2.00
7115.56	0.00	0.00	6687.00	-707.15	2058.34	-1983.59	2176.42	Start 30.00 hold at 7115.56 MD
7145.56	0.00	0.00	6717.00	-707.15	2058.34	-1983.59	2176.42	Start DLS 10.00 TFO 270.05
8045.65	90.00	270.05	7290.00	-706.64	1485.32	-1413.10	2749.45	Start 2400.00 hold at 8045.65 MD
10445.65	90.00	270.05	7289.90	-704.51	-914.68	976.28	5149.45	Start DLS 2.00 TFO 90.03
10843.11	90.00	274.00	7289.90	-697.53	-1111.98	1172.07	5346.90	Start 200.00 hold at 10643.11 MD
11079.30	90.00	274.00	7289.90	-683.58	-1311.49	1369.42	5546.90	Start Turn -2.00
17662.33	90.00	269.28	7290.00	-676.83	-1547.52	1603.80	5783.10	Start 6583.03 hold at 11079.30 MD
				-760.00	-8130.03	8165.47	12366.13	TD at 17662.33

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
DC 9N - LP	7290.00	-706.64	1485.32	1235379.60	3217004.85	39° 58' 36.840 N	104° 43' 32.376 W	Point
- plan hits target center								
DC 9N - PBHL	7290.00	-760.00	-8130.03	1235242.86	3207390.34	39° 58' 36.300 N	104° 45' 35.892 W	Point
- plan hits target center								



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUCK CLUB 12W-20-9N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5062.00usft
Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Project	ADAMS COUNTY		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 12-T1S-R66W			
Site Position:		Northing:	1,239,018.46 usft	Latitude:	39° 59' 12.990 N
From:	Lat/Long	Easting:	3,214,796.41 usft	Longitude:	104° 44' 0.340 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	DUCK CLUB 12W-20-9N					
Well Position	+N/-S	-2,951.22 usft	Northing:	1,236,073.33 usft	Latitude:	39° 58' 43.824 N
	+E/-W	691.57 usft	Easting:	3,215,513.47 usft	Longitude:	104° 43' 51.456 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,037.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/10/2017	8.12	66.51	52,138.53974976

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 (°)	
	0.00	0.00	0.00	264.66	

Plan Survey Tool Program	Date	6/12/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,662.33	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG	
			OWSG MWD - Standard		

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Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,805.44	24.11	108.96	1,770.18	-81.19	236.33	2.00	2.00	0.00	108.96	
5,910.12	24.11	108.96	5,516.82	-625.96	1,822.01	0.00	0.00	0.00	0.00	
7,115.56	0.00	0.00	6,687.00	-707.15	2,058.34	2.00	-2.00	0.00	180.00	
7,145.56	0.00	0.00	6,717.00	-707.15	2,058.34	0.00	0.00	0.00	0.00	
8,045.65	90.00	270.05	7,290.00	-706.64	1,485.32	10.00	10.00	-9.99	270.05	DC 9N - LP
10,445.65	90.00	270.05	7,289.90	-704.51	-914.68	0.00	0.00	0.00	0.00	
10,643.11	90.00	274.00	7,289.90	-697.53	-1,111.98	2.00	0.00	2.00	90.03	
10,843.11	90.00	274.00	7,289.90	-683.58	-1,311.49	0.00	0.00	0.00	0.00	
11,079.30	90.00	269.28	7,289.90	-676.83	-1,547.52	2.00	0.00	-2.00	-90.00	DC 9N - PBHL
17,662.33	90.00	269.28	7,290.00	-760.00	-8,130.03	0.00	0.00	0.00	0.00	DC 9N - PBHL

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Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
700.00	2.00	108.96	699.98	-0.57	1.65	-1.59	2.00	2.00	0.00
800.00	4.00	108.96	799.84	-2.27	6.60	-6.36	2.00	2.00	0.00
900.00	6.00	108.96	899.45	-5.10	14.84	-14.30	2.00	2.00	0.00
1,000.00	8.00	108.96	998.70	-9.06	26.37	-25.41	2.00	2.00	0.00
1,100.00	10.00	108.96	1,097.47	-14.14	41.16	-39.67	2.00	2.00	0.00
1,200.00	12.00	108.96	1,195.62	-20.34	59.21	-57.06	2.00	2.00	0.00
1,300.00	14.00	108.96	1,293.06	-27.65	80.48	-77.56	2.00	2.00	0.00
1,400.00	16.00	108.96	1,389.64	-36.06	104.96	-101.14	2.00	2.00	0.00
1,500.00	18.00	108.96	1,485.27	-45.56	132.61	-127.79	2.00	2.00	0.00
1,600.00	20.00	108.96	1,579.82	-56.13	163.39	-157.46	2.00	2.00	0.00
1,700.00	22.00	108.96	1,673.17	-67.78	197.29	-190.12	2.00	2.00	0.00
1,805.44	24.11	108.96	1,770.18	-81.19	236.33	-227.75	2.00	2.00	0.00
Start 4104.69 hold at 1805.44 MD									
1,900.00	24.11	108.96	1,856.49	-93.74	272.86	-262.95	0.00	0.00	0.00
2,000.00	24.11	108.96	1,947.77	-107.01	311.49	-300.18	0.00	0.00	0.00
2,100.00	24.11	108.96	2,039.05	-120.29	350.12	-337.41	0.00	0.00	0.00
2,200.00	24.11	108.96	2,130.33	-133.56	388.76	-374.64	0.00	0.00	0.00
2,300.00	24.11	108.96	2,221.60	-146.83	427.39	-411.87	0.00	0.00	0.00
2,400.00	24.11	108.96	2,312.88	-160.10	466.02	-449.09	0.00	0.00	0.00
2,500.00	24.11	108.96	2,404.16	-173.37	504.65	-486.32	0.00	0.00	0.00
2,600.00	24.11	108.96	2,495.43	-186.65	543.28	-523.55	0.00	0.00	0.00
2,700.00	24.11	108.96	2,586.71	-199.92	581.91	-560.78	0.00	0.00	0.00
2,800.00	24.11	108.96	2,677.99	-213.19	620.54	-598.00	0.00	0.00	0.00
2,900.00	24.11	108.96	2,769.27	-226.46	659.17	-635.23	0.00	0.00	0.00
3,000.00	24.11	108.96	2,860.54	-239.73	697.80	-672.46	0.00	0.00	0.00
3,100.00	24.11	108.96	2,951.82	-253.00	736.43	-709.69	0.00	0.00	0.00
3,200.00	24.11	108.96	3,043.10	-266.28	775.06	-746.92	0.00	0.00	0.00
3,300.00	24.11	108.96	3,134.37	-279.55	813.69	-784.14	0.00	0.00	0.00
3,400.00	24.11	108.96	3,225.65	-292.82	852.33	-821.37	0.00	0.00	0.00
3,500.00	24.11	108.96	3,316.93	-306.09	890.96	-858.60	0.00	0.00	0.00
3,600.00	24.11	108.96	3,408.21	-319.36	929.59	-895.83	0.00	0.00	0.00
3,700.00	24.11	108.96	3,499.48	-332.63	968.22	-933.06	0.00	0.00	0.00
3,800.00	24.11	108.96	3,590.76	-345.91	1,006.85	-970.28	0.00	0.00	0.00
3,900.00	24.11	108.96	3,682.04	-359.18	1,045.48	-1,007.51	0.00	0.00	0.00
4,000.00	24.11	108.96	3,773.31	-372.45	1,084.11	-1,044.74	0.00	0.00	0.00
4,100.00	24.11	108.96	3,864.59	-385.72	1,122.74	-1,081.97	0.00	0.00	0.00
4,138.79	24.11	108.96	3,900.00	-390.87	1,137.73	-1,096.41	0.00	0.00	0.00
PARKMAN									
4,200.00	24.11	108.96	3,955.87	-398.99	1,161.37	-1,119.19	0.00	0.00	0.00
4,300.00	24.11	108.96	4,047.15	-412.27	1,200.00	-1,156.42	0.00	0.00	0.00
4,400.00	24.11	108.96	4,138.42	-425.54	1,238.63	-1,193.65	0.00	0.00	0.00
4,500.00	24.11	108.96	4,229.70	-438.81	1,277.26	-1,230.88	0.00	0.00	0.00
4,600.00	24.11	108.96	4,320.98	-452.08	1,315.90	-1,268.11	0.00	0.00	0.00
4,700.00	24.11	108.96	4,412.25	-465.35	1,354.53	-1,305.33	0.00	0.00	0.00
4,800.00	24.11	108.96	4,503.53	-478.62	1,393.16	-1,342.56	0.00	0.00	0.00

Planning Report

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Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,900.00	24.11	108.96	4,594.81	-491.90	1,431.79	-1,379.79	0.00	0.00	0.00
5,000.00	24.11	108.96	4,686.09	-505.17	1,470.42	-1,417.02	0.00	0.00	0.00
5,075.50	24.11	108.96	4,755.00	-515.19	1,499.59	-1,445.13	0.00	0.00	0.00
SUSSEX									
5,100.00	24.11	108.96	4,777.36	-518.44	1,509.05	-1,454.25	0.00	0.00	0.00
5,200.00	24.11	108.96	4,868.64	-531.71	1,547.68	-1,491.47	0.00	0.00	0.00
5,300.00	24.11	108.96	4,959.92	-544.98	1,586.31	-1,528.70	0.00	0.00	0.00
5,400.00	24.11	108.96	5,051.19	-558.25	1,624.94	-1,565.93	0.00	0.00	0.00
5,500.00	24.11	108.96	5,142.47	-571.53	1,663.57	-1,603.16	0.00	0.00	0.00
5,600.00	24.11	108.96	5,233.75	-584.80	1,702.20	-1,640.39	0.00	0.00	0.00
5,700.00	24.11	108.96	5,325.03	-598.07	1,740.83	-1,677.61	0.00	0.00	0.00
5,800.00	24.11	108.96	5,416.30	-611.34	1,779.47	-1,714.84	0.00	0.00	0.00
5,900.00	24.11	108.96	5,507.58	-624.61	1,818.10	-1,752.07	0.00	0.00	0.00
5,910.12	24.11	108.96	5,516.82	-625.96	1,822.01	-1,755.84	0.00	0.00	0.00
Start Drop -2.00									
6,000.00	22.31	108.96	5,599.42	-637.47	1,855.50	-1,788.12	2.00	-2.00	0.00
6,100.00	20.31	108.96	5,692.58	-649.27	1,889.87	-1,821.24	2.00	-2.00	0.00
6,200.00	18.31	108.96	5,786.95	-660.02	1,921.15	-1,851.38	2.00	-2.00	0.00
6,300.00	16.31	108.96	5,882.41	-669.69	1,949.29	-1,878.50	2.00	-2.00	0.00
6,400.00	14.31	108.96	5,978.86	-678.26	1,974.26	-1,902.56	2.00	-2.00	0.00
6,500.00	12.31	108.96	6,076.17	-685.74	1,996.04	-1,923.55	2.00	-2.00	0.00
6,600.00	10.31	108.96	6,174.22	-692.12	2,014.58	-1,941.42	2.00	-2.00	0.00
6,700.00	8.31	108.96	6,272.90	-697.37	2,029.88	-1,956.17	2.00	-2.00	0.00
6,800.00	6.31	108.96	6,372.08	-701.51	2,041.92	-1,967.76	2.00	-2.00	0.00
6,900.00	4.31	108.96	6,471.64	-704.52	2,050.67	-1,976.20	2.00	-2.00	0.00
7,000.00	2.31	108.96	6,571.47	-706.39	2,056.14	-1,981.46	2.00	-2.00	0.00
7,100.00	0.31	108.96	6,671.44	-707.14	2,058.30	-1,983.55	2.00	-2.00	0.00
7,115.56	0.00	0.00	6,687.00	-707.15	2,058.34	-1,983.59	2.00	-2.00	0.00
Start 30.00 hold at 7115.56 MD									
7,145.56	0.00	0.00	6,717.00	-707.15	2,058.34	-1,983.59	0.00	0.00	0.00
Start DLS 10.00 TFO 270.05									
7,150.00	0.44	270.05	6,721.44	-707.15	2,058.32	-1,983.57	10.00	10.00	0.00
7,200.00	5.44	270.05	6,771.36	-707.15	2,055.76	-1,981.01	10.00	10.00	0.00
7,250.00	10.44	270.05	6,820.86	-707.14	2,048.85	-1,974.14	10.00	10.00	0.00
7,300.00	15.44	270.05	6,869.58	-707.13	2,037.65	-1,962.99	10.00	10.00	0.00
7,350.00	20.44	270.05	6,917.13	-707.12	2,022.25	-1,947.66	10.00	10.00	0.00
7,400.00	25.44	270.05	6,963.16	-707.10	2,002.77	-1,928.26	10.00	10.00	0.00
7,450.00	30.44	270.05	7,007.32	-707.08	1,979.35	-1,904.95	10.00	10.00	0.00
7,500.00	35.44	270.05	7,049.26	-707.06	1,952.17	-1,877.89	10.00	10.00	0.00
7,513.29	36.77	270.05	7,060.00	-707.05	1,944.34	-1,870.09	10.00	10.00	0.00
SHARON SPRINGS									
7,546.48	40.09	270.05	7,086.00	-707.03	1,923.71	-1,849.55	10.00	10.00	0.00
NIOBRARA									
7,550.00	40.44	270.05	7,088.68	-707.03	1,921.44	-1,847.29	10.00	10.00	0.00
7,600.00	45.44	270.05	7,125.28	-707.00	1,887.38	-1,813.39	10.00	10.00	0.00
7,650.00	50.44	270.05	7,158.76	-706.97	1,850.27	-1,776.44	10.00	10.00	0.00
7,700.00	55.44	270.05	7,188.88	-706.93	1,810.39	-1,736.73	10.00	10.00	0.00
7,750.00	60.44	270.05	7,215.42	-706.89	1,768.03	-1,694.56	10.00	10.00	0.00
7,800.00	65.44	270.05	7,238.16	-706.85	1,723.51	-1,650.24	10.00	10.00	0.00
7,850.00	70.44	270.05	7,256.93	-706.81	1,677.19	-1,604.12	10.00	10.00	0.00
7,900.00	75.44	270.05	7,271.59	-706.77	1,629.40	-1,556.55	10.00	10.00	0.00
7,938.42	79.28	270.05	7,280.00	-706.74	1,591.92	-1,519.23	10.00	10.00	0.00
NIO B									

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUCK CLUB 12W-20-9N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5062.00usft
Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,950.00	80.44	270.05	7,282.04	-706.73	1,580.52	-1,507.89	10.00	10.00	0.00	
8,000.00	85.44	270.05	7,288.18	-706.68	1,530.92	-1,458.50	10.00	10.00	0.00	
8,045.65	90.00	270.05	7,290.00	-706.64	1,485.32	-1,413.10	10.00	10.00	0.00	
Start 2400.00 hold at 8045.65 MD										
8,100.00	90.00	270.05	7,290.00	-706.59	1,430.97	-1,358.99	0.00	0.00	0.00	
8,200.00	90.00	270.05	7,289.99	-706.50	1,330.97	-1,259.43	0.00	0.00	0.00	
8,300.00	90.00	270.05	7,289.99	-706.42	1,230.97	-1,159.87	0.00	0.00	0.00	
8,400.00	90.00	270.05	7,289.99	-706.33	1,130.97	-1,060.32	0.00	0.00	0.00	
8,500.00	90.00	270.05	7,289.98	-706.24	1,030.97	-960.76	0.00	0.00	0.00	
8,600.00	90.00	270.05	7,289.98	-706.15	930.97	-861.20	0.00	0.00	0.00	
8,700.00	90.00	270.05	7,289.97	-706.06	830.97	-761.64	0.00	0.00	0.00	
8,800.00	90.00	270.05	7,289.97	-705.97	730.97	-662.09	0.00	0.00	0.00	
8,900.00	90.00	270.05	7,289.97	-705.88	630.97	-562.53	0.00	0.00	0.00	
9,000.00	90.00	270.05	7,289.96	-705.79	530.97	-462.97	0.00	0.00	0.00	
9,100.00	90.00	270.05	7,289.96	-705.71	430.97	-363.41	0.00	0.00	0.00	
9,200.00	90.00	270.05	7,289.95	-705.62	330.97	-263.86	0.00	0.00	0.00	
9,300.00	90.00	270.05	7,289.95	-705.53	230.97	-164.30	0.00	0.00	0.00	
9,400.00	90.00	270.05	7,289.95	-705.44	130.97	-64.74	0.00	0.00	0.00	
9,500.00	90.00	270.05	7,289.94	-705.35	30.97	34.82	0.00	0.00	0.00	
9,600.00	90.00	270.05	7,289.94	-705.26	-69.03	134.37	0.00	0.00	0.00	
9,700.00	90.00	270.05	7,289.93	-705.17	-169.03	233.93	0.00	0.00	0.00	
9,800.00	90.00	270.05	7,289.93	-705.08	-269.03	333.49	0.00	0.00	0.00	
9,900.00	90.00	270.05	7,289.92	-704.99	-369.03	433.05	0.00	0.00	0.00	
10,000.00	90.00	270.05	7,289.92	-704.91	-469.03	532.60	0.00	0.00	0.00	
10,100.00	90.00	270.05	7,289.92	-704.82	-569.03	632.16	0.00	0.00	0.00	
10,200.00	90.00	270.05	7,289.91	-704.73	-669.03	731.72	0.00	0.00	0.00	
10,300.00	90.00	270.05	7,289.91	-704.64	-769.03	831.28	0.00	0.00	0.00	
10,400.00	90.00	270.05	7,289.90	-704.55	-869.03	930.84	0.00	0.00	0.00	
10,445.65	90.00	270.05	7,289.90	-704.51	-914.68	976.28	0.00	0.00	0.00	
Start DLS 2.00 TFO 90.03										
10,500.00	90.00	271.14	7,289.90	-703.95	-969.03	1,030.34	2.00	0.00	2.00	
10,600.00	90.00	273.14	7,289.90	-700.22	-1,068.95	1,129.49	2.00	0.00	2.00	
10,643.11	90.00	274.00	7,289.90	-697.53	-1,111.98	1,172.07	2.00	0.00	2.00	
Start 200.00 hold at 10643.11 MD										
10,700.00	90.00	274.00	7,289.90	-693.56	-1,168.73	1,228.21	0.00	0.00	0.00	
10,800.00	90.00	274.00	7,289.90	-686.59	-1,268.49	1,326.88	0.00	0.00	0.00	
10,843.11	90.00	274.00	7,289.90	-683.58	-1,311.49	1,369.42	0.00	0.00	0.00	
Start Turn -2.00										
10,900.00	90.00	272.86	7,289.90	-680.18	-1,368.28	1,425.65	2.00	0.00	-2.00	
11,000.00	90.00	270.86	7,289.90	-676.93	-1,468.22	1,524.85	2.00	0.00	-2.00	
11,079.30	90.00	269.28	7,289.90	-676.83	-1,547.52	1,603.80	2.00	0.00	-2.00	
Start 6583.03 hold at 11079.30 MD										
11,100.00	90.00	269.28	7,289.90	-677.09	-1,568.22	1,624.43	0.00	0.00	0.00	
11,200.00	90.00	269.28	7,289.90	-678.36	-1,668.21	1,724.11	0.00	0.00	0.00	
11,300.00	90.00	269.28	7,289.90	-679.62	-1,768.20	1,823.78	0.00	0.00	0.00	
11,400.00	90.00	269.28	7,289.90	-680.88	-1,868.19	1,923.46	0.00	0.00	0.00	
11,500.00	90.00	269.28	7,289.90	-682.15	-1,968.19	2,023.13	0.00	0.00	0.00	
11,600.00	90.00	269.28	7,289.90	-683.41	-2,068.18	2,122.81	0.00	0.00	0.00	
11,700.00	90.00	269.28	7,289.90	-684.67	-2,168.17	2,222.48	0.00	0.00	0.00	
11,800.00	90.00	269.28	7,289.90	-685.94	-2,268.16	2,322.16	0.00	0.00	0.00	
11,900.00	90.00	269.28	7,289.90	-687.20	-2,368.15	2,421.83	0.00	0.00	0.00	
12,000.00	90.00	269.28	7,289.90	-688.46	-2,468.15	2,521.51	0.00	0.00	0.00	
12,100.00	90.00	269.28	7,289.90	-689.73	-2,568.14	2,621.19	0.00	0.00	0.00	
12,200.00	90.00	269.28	7,289.90	-690.99	-2,668.13	2,720.86	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUCK CLUB 12W-20-9N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5062.00usft
Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,300.00	90.00	269.28	7,289.90	-692.25	-2,768.12	2,820.54	0.00	0.00	0.00
12,400.00	90.00	269.28	7,289.90	-693.52	-2,868.11	2,920.21	0.00	0.00	0.00
12,500.00	90.00	269.28	7,289.90	-694.78	-2,968.11	3,019.89	0.00	0.00	0.00
12,600.00	90.00	269.28	7,289.90	-696.04	-3,068.10	3,119.56	0.00	0.00	0.00
12,700.00	90.00	269.28	7,289.90	-697.31	-3,168.09	3,219.24	0.00	0.00	0.00
12,800.00	90.00	269.28	7,289.90	-698.57	-3,268.08	3,318.91	0.00	0.00	0.00
12,900.00	90.00	269.28	7,289.90	-699.83	-3,368.07	3,418.59	0.00	0.00	0.00
13,000.00	90.00	269.28	7,289.90	-701.10	-3,468.07	3,518.27	0.00	0.00	0.00
13,100.00	90.00	269.28	7,289.90	-702.36	-3,568.06	3,617.94	0.00	0.00	0.00
13,200.00	90.00	269.28	7,289.90	-703.62	-3,668.05	3,717.62	0.00	0.00	0.00
13,300.00	90.00	269.28	7,289.90	-704.89	-3,768.04	3,817.29	0.00	0.00	0.00
13,400.00	90.00	269.28	7,289.90	-706.15	-3,868.03	3,916.97	0.00	0.00	0.00
13,500.00	90.00	269.28	7,289.90	-707.41	-3,968.03	4,016.64	0.00	0.00	0.00
13,600.00	90.00	269.28	7,289.90	-708.68	-4,068.02	4,116.32	0.00	0.00	0.00
13,700.00	90.00	269.28	7,289.90	-709.94	-4,168.01	4,215.99	0.00	0.00	0.00
13,800.00	90.00	269.28	7,289.90	-711.20	-4,268.00	4,315.67	0.00	0.00	0.00
13,900.00	90.00	269.28	7,289.90	-712.47	-4,367.99	4,415.35	0.00	0.00	0.00
14,000.00	90.00	269.28	7,289.90	-713.73	-4,467.99	4,515.02	0.00	0.00	0.00
14,100.00	90.00	269.28	7,289.90	-714.99	-4,567.98	4,614.70	0.00	0.00	0.00
14,200.00	90.00	269.28	7,289.90	-716.26	-4,667.97	4,714.37	0.00	0.00	0.00
14,300.00	90.00	269.28	7,289.90	-717.52	-4,767.96	4,814.05	0.00	0.00	0.00
14,400.00	90.00	269.28	7,289.90	-718.78	-4,867.95	4,913.72	0.00	0.00	0.00
14,500.00	90.00	269.28	7,289.90	-720.05	-4,967.95	5,013.40	0.00	0.00	0.00
14,600.00	90.00	269.28	7,289.90	-721.31	-5,067.94	5,113.07	0.00	0.00	0.00
14,700.00	90.00	269.28	7,289.90	-722.57	-5,167.93	5,212.75	0.00	0.00	0.00
14,800.00	90.00	269.28	7,289.90	-723.84	-5,267.92	5,312.43	0.00	0.00	0.00
14,900.00	90.00	269.28	7,289.90	-725.10	-5,367.91	5,412.10	0.00	0.00	0.00
15,000.00	90.00	269.28	7,289.90	-726.36	-5,467.91	5,511.78	0.00	0.00	0.00
15,100.00	90.00	269.28	7,289.90	-727.63	-5,567.90	5,611.45	0.00	0.00	0.00
15,200.00	90.00	269.28	7,289.90	-728.89	-5,667.89	5,711.13	0.00	0.00	0.00
15,300.00	90.00	269.28	7,289.90	-730.15	-5,767.88	5,810.80	0.00	0.00	0.00
15,400.00	90.00	269.28	7,289.90	-731.42	-5,867.87	5,910.48	0.00	0.00	0.00
15,500.00	90.00	269.28	7,289.90	-732.68	-5,967.87	6,010.15	0.00	0.00	0.00
15,600.00	90.00	269.28	7,289.90	-733.94	-6,067.86	6,109.83	0.00	0.00	0.00
15,700.00	90.00	269.28	7,289.90	-735.21	-6,167.85	6,209.51	0.00	0.00	0.00
15,800.00	90.00	269.28	7,289.90	-736.47	-6,267.84	6,309.18	0.00	0.00	0.00
15,900.00	90.00	269.28	7,289.90	-737.73	-6,367.83	6,408.86	0.00	0.00	0.00
16,000.00	90.00	269.28	7,289.90	-739.00	-6,467.83	6,508.53	0.00	0.00	0.00
16,100.00	90.00	269.28	7,289.90	-740.26	-6,567.82	6,608.21	0.00	0.00	0.00
16,200.00	90.00	269.28	7,289.90	-741.52	-6,667.81	6,707.88	0.00	0.00	0.00
16,300.00	90.00	269.28	7,289.90	-742.79	-6,767.80	6,807.56	0.00	0.00	0.00
16,400.00	90.00	269.28	7,289.90	-744.05	-6,867.79	6,907.23	0.00	0.00	0.00
16,500.00	90.00	269.28	7,289.90	-745.31	-6,967.79	7,006.91	0.00	0.00	0.00
16,600.00	90.00	269.28	7,289.90	-746.58	-7,067.78	7,106.59	0.00	0.00	0.00
16,700.00	90.00	269.28	7,289.90	-747.84	-7,167.77	7,206.26	0.00	0.00	0.00
16,800.00	90.00	269.28	7,289.90	-749.10	-7,267.76	7,305.94	0.00	0.00	0.00
16,900.00	90.00	269.28	7,289.90	-750.37	-7,367.75	7,405.61	0.00	0.00	0.00
17,000.00	90.00	269.28	7,289.90	-751.63	-7,467.75	7,505.29	0.00	0.00	0.00
17,100.00	90.00	269.28	7,289.90	-752.89	-7,567.74	7,604.96	0.00	0.00	0.00
17,200.00	90.00	269.28	7,289.90	-754.16	-7,667.73	7,704.64	0.00	0.00	0.00
17,300.00	90.00	269.28	7,289.90	-755.42	-7,767.72	7,804.31	0.00	0.00	0.00
17,400.00	90.00	269.28	7,289.90	-756.68	-7,867.71	7,903.99	0.00	0.00	0.00
17,500.00	90.00	269.28	7,289.90	-757.95	-7,967.71	8,003.67	0.00	0.00	0.00
17,600.00	90.00	269.28	7,289.90	-759.21	-8,067.70	8,103.34	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well DUCK CLUB 12W-20-9N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5062.00usft
Project:	ADAMS COUNTY	MD Reference:	KB 25' @ 5062.00usft
Site:	Sec 12-T1S-R66W	North Reference:	True
Well:	DUCK CLUB 12W-20-9N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,662.33	90.00	269.28	7,290.00	-760.00	-8,130.03	8,165.47	0.00	0.00	0.00
TD at 17662.33									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
DC 9N - PBHL - plan hits target center - Point	0.00	0.00	7,290.00	-760.00	-8,130.03	1,235,242.86	3,207,390.34	39° 58' 36.300 N	104° 45' 35.892 W
DC 9N - LP - plan hits target center - Point	0.00	0.00	7,290.00	-706.64	1,485.32	1,235,379.60	3,217,004.86	39° 58' 36.840 N	104° 43' 32.376 W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,138.79	3,900.00	PARKMAN				
5,075.50	4,755.00	SUSSEX				
7,513.29	7,060.00	SHARON SPRINGS				
7,546.48	7,086.00	NIOBRARA				
7,938.42	7,280.00	NIO B				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
600.00	600.00	0.00	0.00	Start Build 2.00
1,805.44	1,770.18	-81.19	236.33	Start 4104.69 hold at 1805.44 MD
5,910.12	5,516.82	-625.96	1,822.01	Start Drop -2.00
7,115.56	6,687.00	-707.15	2,058.34	Start 30.00 hold at 7115.56 MD
7,145.56	6,717.00	-707.15	2,058.34	Start DLS 10.00 TFO 270.05
8,045.65	7,290.00	-706.64	1,485.32	Start 2400.00 hold at 8045.65 MD
10,445.65	7,289.90	-704.51	-914.68	Start DLS 2.00 TFO 90.03
10,643.11	7,289.90	-697.53	-1,111.98	Start 200.00 hold at 10643.11 MD
10,843.11	7,289.90	-683.58	-1,311.49	Start Turn -2.00
11,079.30	7,289.90	-676.83	-1,547.52	Start 6583.03 hold at 11079.30 MD
17,662.33	7,290.00	-760.00	-8,130.03	TD at 17662.33