

EXTRACTION OIL & GAS

Adams County

Sec 12-T1S-R66W

DUCK CLUB 12W-20-9N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

13 April, 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	-228.52	
4	5910.12	24.11	108.96	5516.82	-625.96	1822.01	0.00	0.00	-1761.78	
5	7115.56	0.00	0.00	6687.00	-707.15	2058.34	2.00	180.00	-1990.30	
6	7145.56	0.00	0.00	6717.00	-707.15	2058.34	0.00	0.00	-1990.30	
7	8045.65	90.00	270.05	7290.00	-706.64	1485.32	10.00	270.05	-1419.42	DC 9N - LP
8	10445.65	90.00	270.05	7289.90	-704.51	-914.68	0.00	0.00	971.60	
9	10843.11	90.00	274.00	7289.90	-697.53	-1111.98	2.00	90.03	1167.57	
10	10843.11	90.00	274.00	7289.90	-683.58	-1311.49	0.00	0.00	1365.16	
11	11052.40	90.00	269.81	7289.90	-676.62	-1520.62	2.00	-90.00	1572.93	DC 9N - PBHL
12	17661.82	90.00	269.81	7290.00	-698.07	-8130.01	0.00	0.00	8159.92	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

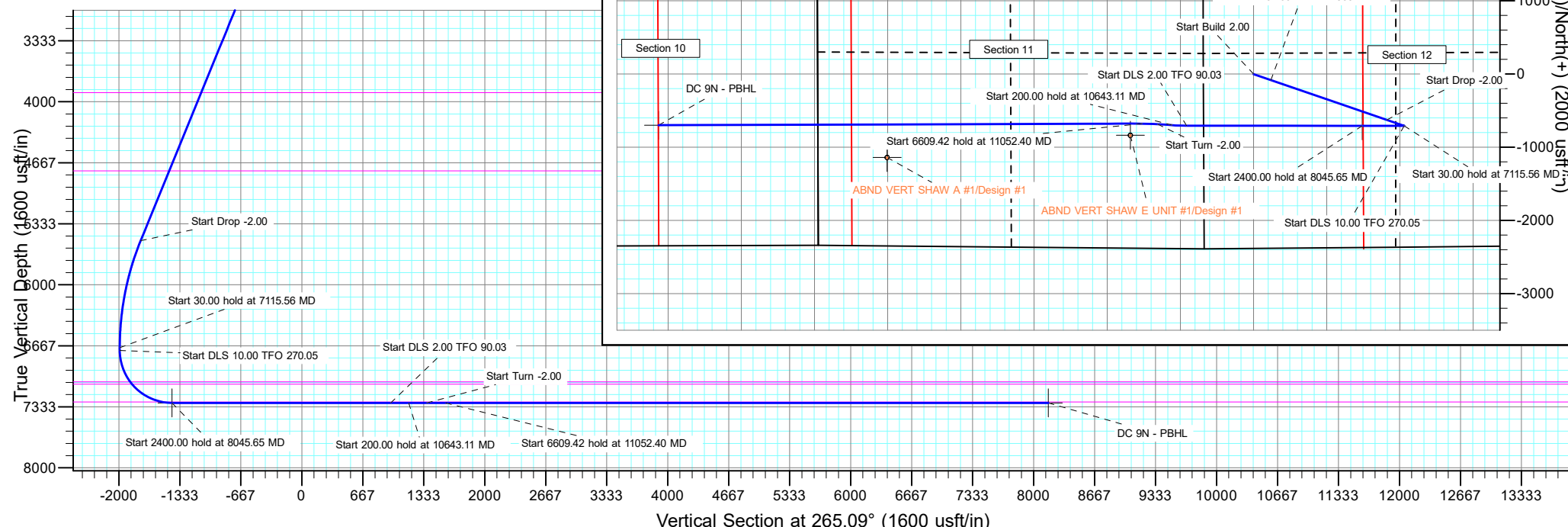
BHL:
1648' FSL, 2177' FEL
Sec 10-T1S-R66W

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	-228.52	249.89	Start 4104.69 hold at 1805.44 MD
5910.12	24.11	108.96	5516.82	-625.96	1822.01	-1761.78	1926.53	Start Drop -2.00
7115.56	0.00	0.00	6687.00	-707.15	2058.34	-1990.30	2176.42	Start 30.00 hold at 7115.56 MD
7145.56	0.00	0.00	6717.00	-707.15	2058.34	-1990.30	2176.42	Start DLS 10.00 TFO 270.05
8045.65	90.00	270.05	7290.00	-706.64	1485.32	-1419.42	2749.45	Start 2400.00 hold at 8045.65 MD
10445.65	90.00	270.05	7289.90	-704.51	-914.68	971.60	5149.45	Start DLS 2.00 TFO 90.03
10843.11	90.00	274.00	7289.90	-697.53	-1111.98	1167.57	5346.90	Start 200.00 hold at 10643.11 MD
10843.11	90.00	274.00	7289.90	-683.58	-1311.49	1365.16	5546.90	Start Turn -2.00
11052.40	90.00	269.81	7289.90	-676.62	-1520.62	1572.93	5756.20	Start 6609.42 hold at 11052.40 MD
17661.82	90.00	269.81	7290.00	-698.07	-8130.01	8159.92	12365.62	TD at 17661.82

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	-698.07	-8130.01	1235304.78	3207389.92	39° 58' 36.912 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	265.09	

Plan Survey Tool Program	Date	4/13/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,661.14	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	
11,052.40	90.00	269.81	7,289.90	-676.62	-1,520.62	2.00	0.00	-2.00	-90.00	DC 9N - PBHL
17,661.82	90.00	269.81	7,290.00	-698.07	-8,130.01	0.00	0.00	0.00	0.00	DC 9N - PBHL

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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)
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	-1.60	2.00	2.00	0.00
800.00	4.00	108.96	799.84	-2.27	6.60	-6.38	2.00	2.00	0.00
900.00	6.00	108.96	899.45	-5.10	14.84	-14.35	2.00	2.00	0.00
1,000.00	8.00	108.96	998.70	-9.06	26.37	-25.50	2.00	2.00	0.00
1,100.00	10.00	108.96	1,097.47	-14.14	41.16	-39.80	2.00	2.00	0.00
1,200.00	12.00	108.96	1,195.62	-20.34	59.21	-57.25	2.00	2.00	0.00
1,300.00	14.00	108.96	1,293.06	-27.65	80.48	-77.82	2.00	2.00	0.00
1,400.00	16.00	108.96	1,389.64	-36.06	104.96	-101.49	2.00	2.00	0.00
1,500.00	18.00	108.96	1,485.27	-45.56	132.61	-128.22	2.00	2.00	0.00
1,600.00	20.00	108.96	1,579.82	-56.13	163.39	-157.99	2.00	2.00	0.00
1,700.00	22.00	108.96	1,673.17	-67.78	197.29	-190.76	2.00	2.00	0.00
1,805.44	24.11	108.96	1,770.18	-81.19	236.33	-228.52	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	-263.84	0.00	0.00	0.00
2,000.00	24.11	108.96	1,947.77	-107.01	311.49	-301.20	0.00	0.00	0.00
2,100.00	24.11	108.96	2,039.05	-120.29	350.12	-338.55	0.00	0.00	0.00
2,200.00	24.11	108.96	2,130.33	-133.56	388.76	-375.90	0.00	0.00	0.00
2,300.00	24.11	108.96	2,221.60	-146.83	427.39	-413.26	0.00	0.00	0.00
2,400.00	24.11	108.96	2,312.88	-160.10	466.02	-450.61	0.00	0.00	0.00
2,500.00	24.11	108.96	2,404.16	-173.37	504.65	-487.97	0.00	0.00	0.00
2,600.00	24.11	108.96	2,495.43	-186.65	543.28	-525.32	0.00	0.00	0.00
2,700.00	24.11	108.96	2,586.71	-199.92	581.91	-562.67	0.00	0.00	0.00
2,800.00	24.11	108.96	2,677.99	-213.19	620.54	-600.03	0.00	0.00	0.00
2,900.00	24.11	108.96	2,769.27	-226.46	659.17	-637.38	0.00	0.00	0.00
3,000.00	24.11	108.96	2,860.54	-239.73	697.80	-674.74	0.00	0.00	0.00
3,100.00	24.11	108.96	2,951.82	-253.00	736.43	-712.09	0.00	0.00	0.00
3,200.00	24.11	108.96	3,043.10	-266.28	775.06	-749.44	0.00	0.00	0.00
3,300.00	24.11	108.96	3,134.37	-279.55	813.69	-786.80	0.00	0.00	0.00
3,400.00	24.11	108.96	3,225.65	-292.82	852.33	-824.15	0.00	0.00	0.00
3,500.00	24.11	108.96	3,316.93	-306.09	890.96	-861.50	0.00	0.00	0.00
3,600.00	24.11	108.96	3,408.21	-319.36	929.59	-898.86	0.00	0.00	0.00
3,700.00	24.11	108.96	3,499.48	-332.63	968.22	-936.21	0.00	0.00	0.00
3,800.00	24.11	108.96	3,590.76	-345.91	1,006.85	-973.57	0.00	0.00	0.00
3,900.00	24.11	108.96	3,682.04	-359.18	1,045.48	-1,010.92	0.00	0.00	0.00
4,000.00	24.11	108.96	3,773.31	-372.45	1,084.11	-1,048.27	0.00	0.00	0.00
4,100.00	24.11	108.96	3,864.59	-385.72	1,122.74	-1,085.63	0.00	0.00	0.00
4,138.79	24.11	108.96	3,900.00	-390.87	1,137.73	-1,100.12	0.00	0.00	0.00
PARKMAN									
4,200.00	24.11	108.96	3,955.87	-398.99	1,161.37	-1,122.98	0.00	0.00	0.00
4,300.00	24.11	108.96	4,047.15	-412.27	1,200.00	-1,160.34	0.00	0.00	0.00
4,400.00	24.11	108.96	4,138.42	-425.54	1,238.63	-1,197.69	0.00	0.00	0.00
4,500.00	24.11	108.96	4,229.70	-438.81	1,277.26	-1,235.04	0.00	0.00	0.00
4,600.00	24.11	108.96	4,320.98	-452.08	1,315.90	-1,272.40	0.00	0.00	0.00
4,700.00	24.11	108.96	4,412.25	-465.35	1,354.53	-1,309.75	0.00	0.00	0.00
4,800.00	24.11	108.96	4,503.53	-478.62	1,393.16	-1,347.10	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	-1,384.46	0.00	0.00	0.00
5,000.00	24.11	108.96	4,686.09	-505.17	1,470.42	-1,421.81	0.00	0.00	0.00
5,075.50	24.11	108.96	4,755.00	-515.19	1,499.59	-1,450.01	0.00	0.00	0.00
SUSSEX									
5,100.00	24.11	108.96	4,777.36	-518.44	1,509.05	-1,459.17	0.00	0.00	0.00
5,200.00	24.11	108.96	4,868.64	-531.71	1,547.68	-1,496.52	0.00	0.00	0.00
5,300.00	24.11	108.96	4,959.92	-544.98	1,586.31	-1,533.87	0.00	0.00	0.00
5,400.00	24.11	108.96	5,051.19	-558.25	1,624.94	-1,571.23	0.00	0.00	0.00
5,500.00	24.11	108.96	5,142.47	-571.53	1,663.57	-1,608.58	0.00	0.00	0.00
5,600.00	24.11	108.96	5,233.75	-584.80	1,702.20	-1,645.94	0.00	0.00	0.00
5,700.00	24.11	108.96	5,325.03	-598.07	1,740.83	-1,683.29	0.00	0.00	0.00
5,800.00	24.11	108.96	5,416.30	-611.34	1,779.47	-1,720.64	0.00	0.00	0.00
5,900.00	24.11	108.96	5,507.58	-624.61	1,818.10	-1,758.00	0.00	0.00	0.00
5,910.12	24.11	108.96	5,516.82	-625.96	1,822.01	-1,761.78	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	-1,794.17	2.00	-2.00	0.00
6,100.00	20.31	108.96	5,692.58	-649.27	1,889.87	-1,827.40	2.00	-2.00	0.00
6,200.00	18.31	108.96	5,786.95	-660.02	1,921.15	-1,857.64	2.00	-2.00	0.00
6,300.00	16.31	108.96	5,882.41	-669.69	1,949.29	-1,884.85	2.00	-2.00	0.00
6,400.00	14.31	108.96	5,978.86	-678.26	1,974.26	-1,909.00	2.00	-2.00	0.00
6,500.00	12.31	108.96	6,076.17	-685.74	1,996.04	-1,930.05	2.00	-2.00	0.00
6,600.00	10.31	108.96	6,174.22	-692.12	2,014.58	-1,947.99	2.00	-2.00	0.00
6,700.00	8.31	108.96	6,272.90	-697.37	2,029.88	-1,962.78	2.00	-2.00	0.00
6,800.00	6.31	108.96	6,372.08	-701.51	2,041.92	-1,974.42	2.00	-2.00	0.00
6,900.00	4.31	108.96	6,471.64	-704.52	2,050.67	-1,982.89	2.00	-2.00	0.00
7,000.00	2.31	108.96	6,571.47	-706.39	2,056.14	-1,988.17	2.00	-2.00	0.00
7,100.00	0.31	108.96	6,671.44	-707.14	2,058.30	-1,990.26	2.00	-2.00	0.00
7,115.56	0.00	0.00	6,687.00	-707.15	2,058.34	-1,990.30	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	-1,990.30	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	-1,990.28	10.00	10.00	0.00
7,200.00	5.44	270.05	6,771.36	-707.15	2,055.76	-1,987.72	10.00	10.00	0.00
7,250.00	10.44	270.05	6,820.86	-707.14	2,048.85	-1,980.84	10.00	10.00	0.00
7,300.00	15.44	270.05	6,869.58	-707.13	2,037.65	-1,969.69	10.00	10.00	0.00
7,350.00	20.44	270.05	6,917.13	-707.12	2,022.25	-1,954.35	10.00	10.00	0.00
7,400.00	25.44	270.05	6,963.16	-707.10	2,002.77	-1,934.94	10.00	10.00	0.00
7,450.00	30.44	270.05	7,007.32	-707.08	1,979.35	-1,911.60	10.00	10.00	0.00
7,500.00	35.44	270.05	7,049.26	-707.06	1,952.17	-1,884.52	10.00	10.00	0.00
7,513.29	36.77	270.05	7,060.00	-707.05	1,944.34	-1,876.72	10.00	10.00	0.00
SHARON SPRINGS									
7,546.48	40.09	270.05	7,086.00	-707.03	1,923.71	-1,856.17	10.00	10.00	0.00
NIOBRARA									
7,550.00	40.44	270.05	7,088.68	-707.03	1,921.44	-1,853.91	10.00	10.00	0.00
7,600.00	45.44	270.05	7,125.28	-707.00	1,887.38	-1,819.98	10.00	10.00	0.00
7,650.00	50.44	270.05	7,158.76	-706.97	1,850.27	-1,783.01	10.00	10.00	0.00
7,700.00	55.44	270.05	7,188.88	-706.93	1,810.39	-1,743.27	10.00	10.00	0.00
7,750.00	60.44	270.05	7,215.42	-706.89	1,768.03	-1,701.07	10.00	10.00	0.00
7,800.00	65.44	270.05	7,238.16	-706.85	1,723.51	-1,656.72	10.00	10.00	0.00
7,850.00	70.44	270.05	7,256.93	-706.81	1,677.19	-1,610.57	10.00	10.00	0.00
7,900.00	75.44	270.05	7,271.59	-706.77	1,629.40	-1,562.97	10.00	10.00	0.00
7,938.42	79.28	270.05	7,280.00	-706.74	1,591.92	-1,525.63	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	-1,514.27	10.00	10.00	0.00
8,000.00	85.44	270.05	7,288.18	-706.68	1,530.92	-1,464.85	10.00	10.00	0.00
8,045.65	90.00	270.05	7,290.00	-706.64	1,485.32	-1,419.42	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	-1,365.27	0.00	0.00	0.00
8,200.00	90.00	270.05	7,289.99	-706.50	1,330.97	-1,265.65	0.00	0.00	0.00
8,300.00	90.00	270.05	7,289.99	-706.42	1,230.97	-1,166.02	0.00	0.00	0.00
8,400.00	90.00	270.05	7,289.99	-706.33	1,130.97	-1,066.40	0.00	0.00	0.00
8,500.00	90.00	270.05	7,289.98	-706.24	1,030.97	-966.77	0.00	0.00	0.00
8,600.00	90.00	270.05	7,289.98	-706.15	930.97	-867.14	0.00	0.00	0.00
8,700.00	90.00	270.05	7,289.97	-706.06	830.97	-767.52	0.00	0.00	0.00
8,800.00	90.00	270.05	7,289.97	-705.97	730.97	-667.89	0.00	0.00	0.00
8,900.00	90.00	270.05	7,289.97	-705.88	630.97	-568.27	0.00	0.00	0.00
9,000.00	90.00	270.05	7,289.96	-705.79	530.97	-468.64	0.00	0.00	0.00
9,100.00	90.00	270.05	7,289.96	-705.71	430.97	-369.02	0.00	0.00	0.00
9,200.00	90.00	270.05	7,289.95	-705.62	330.97	-269.39	0.00	0.00	0.00
9,300.00	90.00	270.05	7,289.95	-705.53	230.97	-169.76	0.00	0.00	0.00
9,400.00	90.00	270.05	7,289.95	-705.44	130.97	-70.14	0.00	0.00	0.00
9,500.00	90.00	270.05	7,289.94	-705.35	30.97	29.49	0.00	0.00	0.00
9,600.00	90.00	270.05	7,289.94	-705.26	-69.03	129.11	0.00	0.00	0.00
9,700.00	90.00	270.05	7,289.93	-705.17	-169.03	228.74	0.00	0.00	0.00
9,800.00	90.00	270.05	7,289.93	-705.08	-269.03	328.36	0.00	0.00	0.00
9,900.00	90.00	270.05	7,289.92	-704.99	-369.03	427.99	0.00	0.00	0.00
10,000.00	90.00	270.05	7,289.92	-704.91	-469.03	527.62	0.00	0.00	0.00
10,100.00	90.00	270.05	7,289.92	-704.82	-569.03	627.24	0.00	0.00	0.00
10,200.00	90.00	270.05	7,289.91	-704.73	-669.03	726.87	0.00	0.00	0.00
10,300.00	90.00	270.05	7,289.91	-704.64	-769.03	826.49	0.00	0.00	0.00
10,400.00	90.00	270.05	7,289.90	-704.55	-869.03	926.12	0.00	0.00	0.00
10,445.65	90.00	270.05	7,289.90	-704.51	-914.68	971.60	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	1,025.70	2.00	0.00	2.00
10,600.00	90.00	273.14	7,289.90	-700.22	-1,068.95	1,124.94	2.00	0.00	2.00
10,643.11	90.00	274.00	7,289.90	-697.53	-1,111.98	1,167.57	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	1,223.78	0.00	0.00	0.00
10,800.00	90.00	274.00	7,289.90	-686.59	-1,268.49	1,322.57	0.00	0.00	0.00
10,843.11	90.00	274.00	7,289.90	-683.58	-1,311.49	1,365.16	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	1,421.45	2.00	0.00	-2.00
11,000.00	90.00	270.86	7,289.90	-676.93	-1,468.22	1,520.75	2.00	0.00	-2.00
11,052.40	90.00	269.81	7,289.90	-676.62	-1,520.62	1,572.93	2.00	0.00	-2.00
Start 6609.42 hold at 11052.40 MD									
11,100.00	90.00	269.81	7,289.90	-676.77	-1,568.22	1,620.37	0.00	0.00	0.00
11,200.00	90.00	269.81	7,289.90	-677.10	-1,668.22	1,720.03	0.00	0.00	0.00
11,300.00	90.00	269.81	7,289.90	-677.42	-1,768.22	1,819.69	0.00	0.00	0.00
11,400.00	90.00	269.81	7,289.90	-677.75	-1,868.22	1,919.35	0.00	0.00	0.00
11,500.00	90.00	269.81	7,289.90	-678.07	-1,968.22	2,019.01	0.00	0.00	0.00
11,600.00	90.00	269.81	7,289.90	-678.40	-2,068.22	2,118.67	0.00	0.00	0.00
11,700.00	90.00	269.81	7,289.90	-678.72	-2,168.22	2,218.33	0.00	0.00	0.00
11,800.00	90.00	269.81	7,289.90	-679.04	-2,268.22	2,317.99	0.00	0.00	0.00
11,900.00	90.00	269.81	7,289.90	-679.37	-2,368.22	2,417.65	0.00	0.00	0.00
12,000.00	90.00	269.81	7,289.90	-679.69	-2,468.21	2,517.31	0.00	0.00	0.00
12,100.00	90.00	269.81	7,289.90	-680.02	-2,568.21	2,616.97	0.00	0.00	0.00
12,200.00	90.00	269.81	7,289.90	-680.34	-2,668.21	2,716.63	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	269.81	7,289.90	-680.67	-2,768.21	2,816.30	0.00	0.00	0.00
12,400.00	90.00	269.81	7,289.90	-680.99	-2,868.21	2,915.96	0.00	0.00	0.00
12,500.00	90.00	269.81	7,289.90	-681.32	-2,968.21	3,015.62	0.00	0.00	0.00
12,600.00	90.00	269.81	7,289.90	-681.64	-3,068.21	3,115.28	0.00	0.00	0.00
12,700.00	90.00	269.81	7,289.90	-681.97	-3,168.21	3,214.94	0.00	0.00	0.00
12,800.00	90.00	269.81	7,289.90	-682.29	-3,268.21	3,314.60	0.00	0.00	0.00
12,900.00	90.00	269.81	7,289.90	-682.62	-3,368.21	3,414.26	0.00	0.00	0.00
13,000.00	90.00	269.81	7,289.90	-682.94	-3,468.21	3,513.92	0.00	0.00	0.00
13,100.00	90.00	269.81	7,289.90	-683.26	-3,568.21	3,613.58	0.00	0.00	0.00
13,200.00	90.00	269.81	7,289.90	-683.59	-3,668.21	3,713.24	0.00	0.00	0.00
13,300.00	90.00	269.81	7,289.90	-683.91	-3,768.21	3,812.90	0.00	0.00	0.00
13,400.00	90.00	269.81	7,289.90	-684.24	-3,868.21	3,912.56	0.00	0.00	0.00
13,500.00	90.00	269.81	7,289.90	-684.56	-3,968.21	4,012.22	0.00	0.00	0.00
13,600.00	90.00	269.81	7,289.90	-684.89	-4,068.21	4,111.88	0.00	0.00	0.00
13,700.00	90.00	269.81	7,289.90	-685.21	-4,168.21	4,211.54	0.00	0.00	0.00
13,800.00	90.00	269.81	7,289.90	-685.54	-4,268.21	4,311.20	0.00	0.00	0.00
13,900.00	90.00	269.81	7,289.90	-685.86	-4,368.20	4,410.87	0.00	0.00	0.00
14,000.00	90.00	269.81	7,289.90	-686.19	-4,468.20	4,510.53	0.00	0.00	0.00
14,100.00	90.00	269.81	7,289.90	-686.51	-4,568.20	4,610.19	0.00	0.00	0.00
14,200.00	90.00	269.81	7,289.90	-686.83	-4,668.20	4,709.85	0.00	0.00	0.00
14,300.00	90.00	269.81	7,289.90	-687.16	-4,768.20	4,809.51	0.00	0.00	0.00
14,400.00	90.00	269.81	7,289.90	-687.48	-4,868.20	4,909.17	0.00	0.00	0.00
14,500.00	90.00	269.81	7,289.90	-687.81	-4,968.20	5,008.83	0.00	0.00	0.00
14,600.00	90.00	269.81	7,289.90	-688.13	-5,068.20	5,108.49	0.00	0.00	0.00
14,700.00	90.00	269.81	7,289.90	-688.46	-5,168.20	5,208.15	0.00	0.00	0.00
14,800.00	90.00	269.81	7,289.90	-688.78	-5,268.20	5,307.81	0.00	0.00	0.00
14,900.00	90.00	269.81	7,289.90	-689.11	-5,368.20	5,407.47	0.00	0.00	0.00
15,000.00	90.00	269.81	7,289.90	-689.43	-5,468.20	5,507.13	0.00	0.00	0.00
15,100.00	90.00	269.81	7,289.90	-689.76	-5,568.20	5,606.79	0.00	0.00	0.00
15,200.00	90.00	269.81	7,289.90	-690.08	-5,668.20	5,706.45	0.00	0.00	0.00
15,300.00	90.00	269.81	7,289.90	-690.40	-5,768.20	5,806.11	0.00	0.00	0.00
15,400.00	90.00	269.81	7,289.90	-690.73	-5,868.20	5,905.77	0.00	0.00	0.00
15,500.00	90.00	269.81	7,289.90	-691.05	-5,968.20	6,005.44	0.00	0.00	0.00
15,600.00	90.00	269.81	7,289.90	-691.38	-6,068.20	6,105.10	0.00	0.00	0.00
15,700.00	90.00	269.81	7,289.90	-691.70	-6,168.20	6,204.76	0.00	0.00	0.00
15,800.00	90.00	269.81	7,289.90	-692.03	-6,268.19	6,304.42	0.00	0.00	0.00
15,900.00	90.00	269.81	7,289.90	-692.35	-6,368.19	6,404.08	0.00	0.00	0.00
16,000.00	90.00	269.81	7,289.90	-692.68	-6,468.19	6,503.74	0.00	0.00	0.00
16,100.00	90.00	269.81	7,289.90	-693.00	-6,568.19	6,603.40	0.00	0.00	0.00
16,200.00	90.00	269.81	7,289.90	-693.33	-6,668.19	6,703.06	0.00	0.00	0.00
16,300.00	90.00	269.81	7,289.90	-693.65	-6,768.19	6,802.72	0.00	0.00	0.00
16,400.00	90.00	269.81	7,289.90	-693.97	-6,868.19	6,902.38	0.00	0.00	0.00
16,500.00	90.00	269.81	7,289.90	-694.30	-6,968.19	7,002.04	0.00	0.00	0.00
16,600.00	90.00	269.81	7,289.90	-694.62	-7,068.19	7,101.70	0.00	0.00	0.00
16,700.00	90.00	269.81	7,289.90	-694.95	-7,168.19	7,201.36	0.00	0.00	0.00
16,800.00	90.00	269.81	7,289.90	-695.27	-7,268.19	7,301.02	0.00	0.00	0.00
16,900.00	90.00	269.81	7,289.90	-695.60	-7,368.19	7,400.68	0.00	0.00	0.00
17,000.00	90.00	269.81	7,289.90	-695.92	-7,468.19	7,500.35	0.00	0.00	0.00
17,100.00	90.00	269.81	7,289.90	-696.25	-7,568.19	7,600.01	0.00	0.00	0.00
17,200.00	90.00	269.81	7,289.90	-696.57	-7,668.19	7,699.67	0.00	0.00	0.00
17,300.00	90.00	269.81	7,289.90	-696.90	-7,768.19	7,799.33	0.00	0.00	0.00
17,400.00	90.00	269.81	7,289.90	-697.22	-7,868.19	7,898.99	0.00	0.00	0.00
17,500.00	90.00	269.81	7,289.90	-697.55	-7,968.19	7,998.65	0.00	0.00	0.00
17,600.00	90.00	269.81	7,289.90	-697.87	-8,068.19	8,098.31	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)
17,661.82	90.00	269.81	7,290.00	-698.07	-8,130.01	8,159.92	0.00	0.00	0.00
TD at 17661.82									

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	-698.07	-8,130.01	1,235,304.78	3,207,389.82	39° 58' 36.912 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
11,052.40	7,289.90	-676.62	-1,520.62	Start 6609.42 hold at 11052.40 MD
17,661.82	7,290.00	-698.07	-8,130.01	TD at 17661.82