

# **EXTRACTION OIL & GAS**

**Adams County**

**Sec 25-T1S-R66W**

**ALMA 1S-66-2524-19NH**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**29 August, 2017**



Project: Adams County  
Site: Sec 25-T1S-R66W  
Well: ALMA 1S-66-2524-19NH  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL 1

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



Azimuths to True North  
Magnetic North: 8.13°  
Magnetic Field  
Strength: 52129.3snT  
Dip Angle: 66.48°  
Date: 8/17/2017  
Model: IGRF2015

WELL DETAILS: ALMA 1S-66-2524-19NH

+N/-S	+E/-W	Northing	Easting	5173.00	Latitude	Longitude	Slot
0.00	0.00	1218123.34	3218252.12		39° 55' 46.200 N	104° 43' 18.300 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1763.98	30.28	255.25	1694.48	-99.53	-377.94	2.00	255.25	44.68	
4	6008.00	30.28	255.25	5359.52	-644.51	-2447.31	0.00	0.00	289.35	
5	7521.98	0.00	0.00	6804.00	-744.04	-2825.25	2.00	180.00	334.03	
6	7621.98	0.00	0.00	6904.00	-744.04	-2825.25	0.00	0.00	334.03	
7	8522.05	90.00	0.12	7477.00	-171.04	-2824.08	10.00	0.12	867.40	ALMA 19NH LP
8	15891.29	90.00	0.12	7477.00	7198.18	-2809.23	0.00	0.00	7726.94	ALMA 19NH PBHL

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
1500.00	1543.51	Fox Hills aquifer base
7283.00	8036.10	Sharon Springs
7315.00	8080.32	Top Niobrara
7325.00	8094.86	Nio A Chalk
7346.00	8126.80	Nio A Marl
7467.00	8414.84	Nio B Chalk

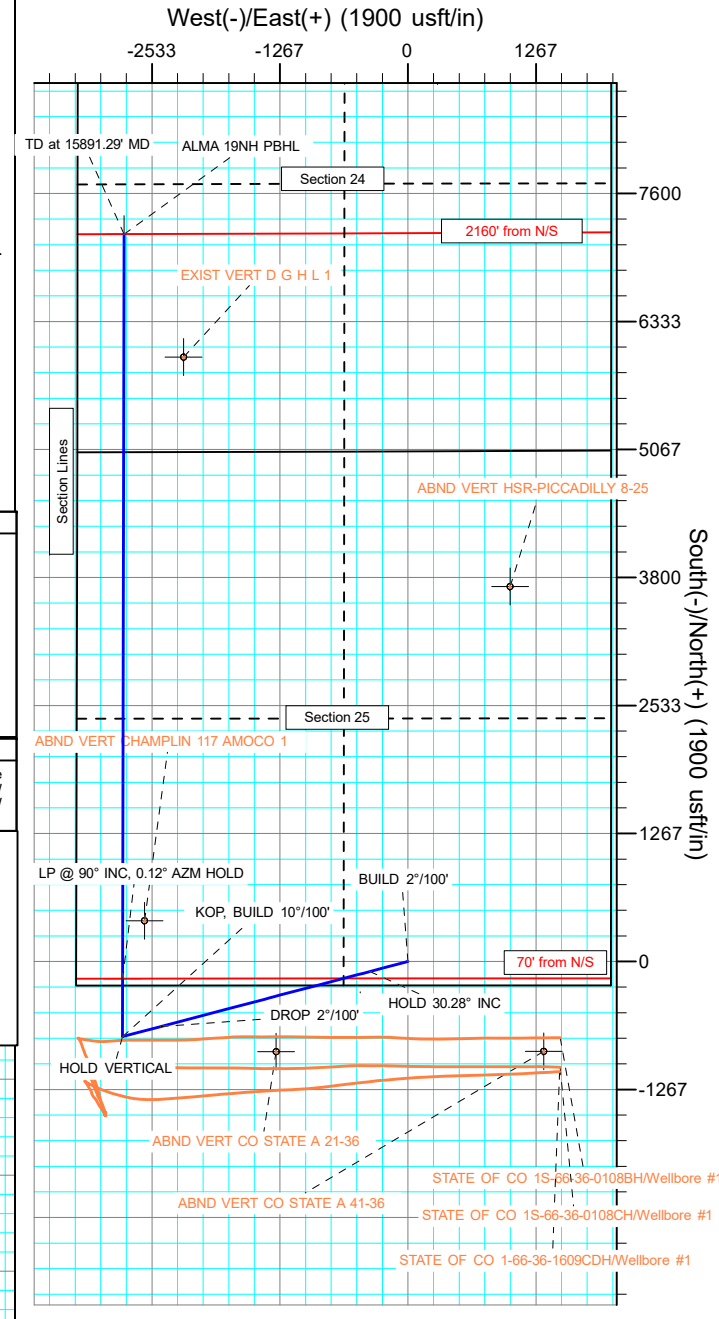
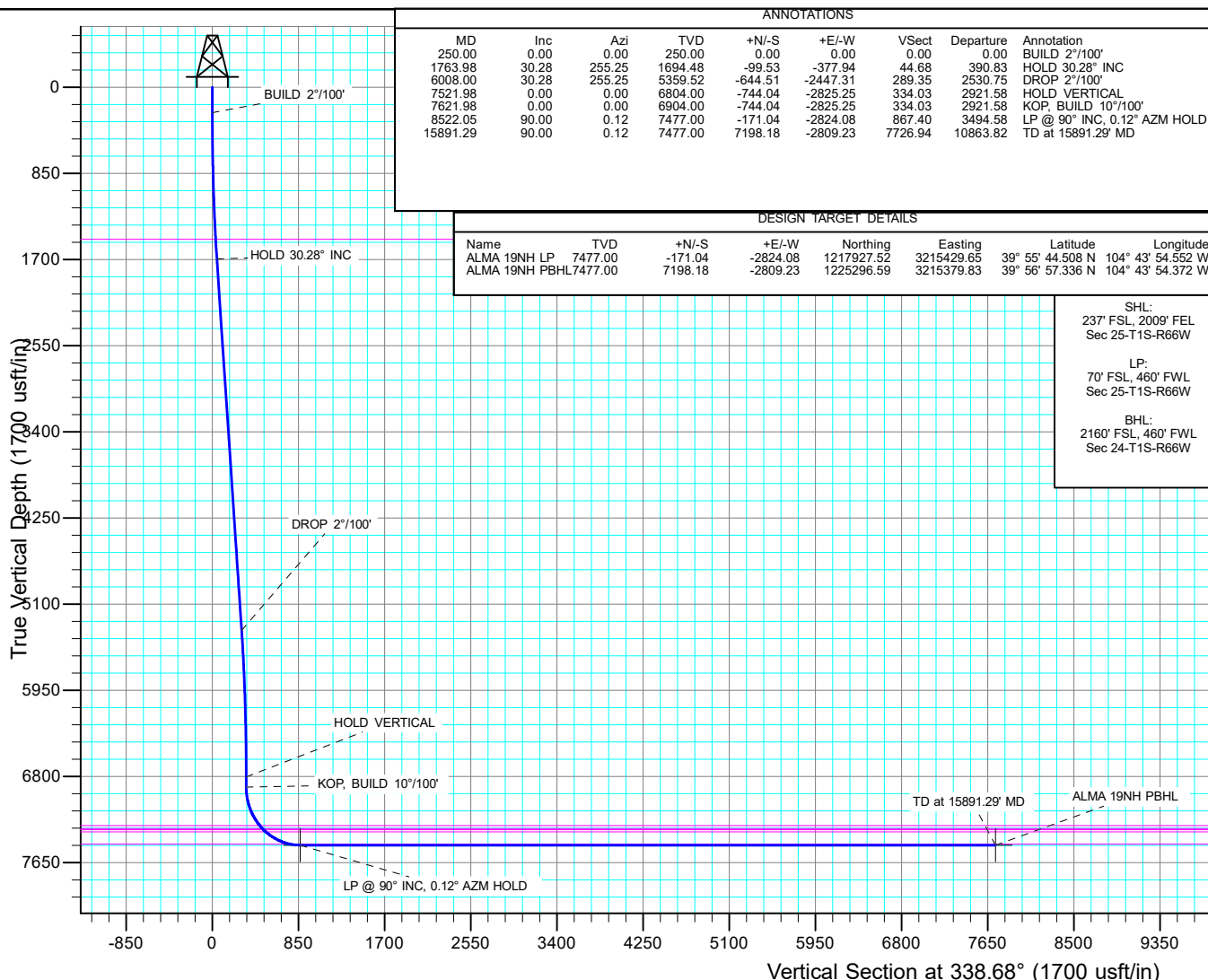
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	BUILD 2°/100'
1763.98	30.28	255.25	1694.48	-99.53	-377.94	44.68	390.83	HOLD 30.28° INC
6008.00	30.28	255.25	5359.52	-644.51	-2447.31	289.35	2530.75	DROP 2°/100'
7521.98	0.00	0.00	6804.00	-744.04	-2825.25	334.03	2921.58	HOLD VERTICAL
7621.98	0.00	0.00	6904.00	-744.04	-2825.25	334.03	2921.58	KOP, BUILD 10°/100'
8522.05	90.00	0.12	7477.00	-171.04	-2824.08	867.40	3494.58	LP @ 90° INC, 0.12° AZM HOLD
15891.29	90.00	0.12	7477.00	7198.18	-2809.23	7726.94	10863.82	TD at 15891.29' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
ALMA 19NH LP	7477.00	-171.04	-2824.08	1217927.52	3215429.65	39° 55' 44.508 N	104° 43' 54.552 W
ALMA 19NH PBHL	7477.00	7198.18	-2809.23	1225296.59	3215379.83	39° 56' 57.336 N	104° 43' 54.372 W

SHL:  
237' FSL, 2009' FEL  
Sec 25-T1S-R66W  
LP:  
70' FSL, 460' FWL  
Sec 25-T1S-R66W  
BHL:  
2160' FSL, 460' FWL  
Sec 24-T1S-R66W



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	Adams County		
<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		

Site		Sec 25-T1S-R66W			
Site Position:		Northing:	1,217,904.28 usft	Latitude:	39° 55' 43.860 N
From:	Lat/Long	Easting:	3,220,262.11 usft	Longitude:	104° 42' 52.524 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.51 °

Well	ALMA 1S-66-2524-19NH					
Well Position	+N/-S	236.85 usft	Northing:	1,218,123.34 usft	Latitude:	39° 55' 46.200 N
	+E/-W	-2,007.97 usft	Easting:	3,218,252.12 usft	Longitude:	104° 43' 18.300 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,173.00 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	8/17/2017	8.13	66.48	52,129.34942616

<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>
	0.00	0.00	0.00	338.68

<b>Plan Survey Tool Program</b>	<b>Date</b>	8/29/2017		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	15,891.29	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,763.98	30.28	255.25	1,694.48	-99.53	-377.94	2.00	2.00	0.00	255.25	
6,008.00	30.28	255.25	5,359.52	-644.51	-2,447.31	0.00	0.00	0.00	0.00	
7,521.98	0.00	0.00	6,804.00	-744.04	-2,825.25	2.00	-2.00	0.00	180.00	
7,621.98	0.00	0.00	6,904.00	-744.04	-2,825.25	0.00	0.00	0.00	0.00	
8,522.05	90.00	0.12	7,477.00	-171.04	-2,824.08	10.00	10.00	0.01	0.12	ALMA 19NH LP
15,891.29	90.00	0.12	7,477.00	7,198.18	-2,809.23	0.00	0.00	0.00	0.00	ALMA 19NH PBHL

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>BUILD 2°/100'</b>									
300.00	1.00	255.25	300.00	-0.11	-0.42	0.05	2.00	2.00	0.00
400.00	3.00	255.25	399.93	-1.00	-3.80	0.45	2.00	2.00	0.00
500.00	5.00	255.25	499.68	-2.78	-10.54	1.25	2.00	2.00	0.00
600.00	7.00	255.25	599.13	-5.44	-20.65	2.44	2.00	2.00	0.00
700.00	9.00	255.25	698.15	-8.98	-34.11	4.03	2.00	2.00	0.00
800.00	11.00	255.25	796.63	-13.40	-50.90	6.02	2.00	2.00	0.00
900.00	13.00	255.25	894.44	-18.70	-71.00	8.39	2.00	2.00	0.00
1,000.00	15.00	255.25	991.46	-24.86	-94.40	11.16	2.00	2.00	0.00
1,100.00	17.00	255.25	1,087.58	-31.88	-121.05	14.31	2.00	2.00	0.00
1,200.00	19.00	255.25	1,182.68	-39.75	-150.93	17.84	2.00	2.00	0.00
1,300.00	21.00	255.25	1,276.65	-48.46	-184.00	21.75	2.00	2.00	0.00
1,400.00	23.00	255.25	1,369.36	-58.00	-220.23	26.04	2.00	2.00	0.00
1,500.00	25.00	255.25	1,460.71	-68.36	-259.56	30.69	2.00	2.00	0.00
1,543.51	25.87	255.25	1,500.00	-73.11	-277.63	32.82	2.00	2.00	0.00
<b>Fox Hills aquifer base</b>									
1,600.00	27.00	255.25	1,550.59	-79.52	-301.95	35.70	2.00	2.00	0.00
1,700.00	29.00	255.25	1,638.88	-91.47	-347.35	41.07	2.00	2.00	0.00
1,763.98	30.28	255.25	1,694.48	-99.53	-377.94	44.68	2.00	2.00	0.00
<b>HOLD 30.28° INC</b>									
1,800.00	30.28	255.25	1,725.59	-104.16	-395.51	46.76	0.00	0.00	0.00
1,900.00	30.28	255.25	1,811.95	-117.00	-444.27	52.53	0.00	0.00	0.00
2,000.00	30.28	255.25	1,898.31	-129.84	-493.02	58.29	0.00	0.00	0.00
2,100.00	30.28	255.25	1,984.66	-142.68	-541.78	64.06	0.00	0.00	0.00
2,200.00	30.28	255.25	2,071.02	-155.52	-590.54	69.82	0.00	0.00	0.00
2,300.00	30.28	255.25	2,157.38	-168.36	-639.30	75.59	0.00	0.00	0.00
2,400.00	30.28	255.25	2,243.74	-181.20	-688.06	81.35	0.00	0.00	0.00
2,500.00	30.28	255.25	2,330.09	-194.04	-736.82	87.11	0.00	0.00	0.00
2,600.00	30.28	255.25	2,416.45	-206.89	-785.58	92.88	0.00	0.00	0.00
2,700.00	30.28	255.25	2,502.81	-219.73	-834.34	98.64	0.00	0.00	0.00
2,800.00	30.28	255.25	2,589.17	-232.57	-883.10	104.41	0.00	0.00	0.00
2,900.00	30.28	255.25	2,675.52	-245.41	-931.86	110.17	0.00	0.00	0.00
3,000.00	30.28	255.25	2,761.88	-258.25	-980.62	115.94	0.00	0.00	0.00
3,100.00	30.28	255.25	2,848.24	-271.09	-1,029.38	121.70	0.00	0.00	0.00
3,200.00	30.28	255.25	2,934.60	-283.93	-1,078.14	127.47	0.00	0.00	0.00
3,300.00	30.28	255.25	3,020.95	-296.77	-1,126.90	133.23	0.00	0.00	0.00
3,400.00	30.28	255.25	3,107.31	-309.61	-1,175.66	139.00	0.00	0.00	0.00
3,500.00	30.28	255.25	3,193.67	-322.45	-1,224.42	144.76	0.00	0.00	0.00
3,600.00	30.28	255.25	3,280.03	-335.30	-1,273.18	150.53	0.00	0.00	0.00
3,700.00	30.28	255.25	3,366.38	-348.14	-1,321.94	156.29	0.00	0.00	0.00
3,800.00	30.28	255.25	3,452.74	-360.98	-1,370.70	162.06	0.00	0.00	0.00
3,900.00	30.28	255.25	3,539.10	-373.82	-1,419.46	167.82	0.00	0.00	0.00
4,000.00	30.28	255.25	3,625.46	-386.66	-1,468.22	173.59	0.00	0.00	0.00
4,100.00	30.28	255.25	3,711.81	-399.50	-1,516.97	179.35	0.00	0.00	0.00
4,200.00	30.28	255.25	3,798.17	-412.34	-1,565.73	185.12	0.00	0.00	0.00
4,300.00	30.28	255.25	3,884.53	-425.18	-1,614.49	190.88	0.00	0.00	0.00
4,400.00	30.28	255.25	3,970.89	-438.02	-1,663.25	196.65	0.00	0.00	0.00
4,500.00	30.28	255.25	4,057.24	-450.86	-1,712.01	202.41	0.00	0.00	0.00
4,600.00	30.28	255.25	4,143.60	-463.71	-1,760.77	208.18	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
4,700.00	30.28	255.25	4,229.96	-476.55	-1,809.53	213.94	0.00	0.00	0.00	
4,800.00	30.28	255.25	4,316.32	-489.39	-1,858.29	219.71	0.00	0.00	0.00	
4,900.00	30.28	255.25	4,402.67	-502.23	-1,907.05	225.47	0.00	0.00	0.00	
5,000.00	30.28	255.25	4,489.03	-515.07	-1,955.81	231.24	0.00	0.00	0.00	
5,100.00	30.28	255.25	4,575.39	-527.91	-2,004.57	237.00	0.00	0.00	0.00	
5,200.00	30.28	255.25	4,661.75	-540.75	-2,053.33	242.77	0.00	0.00	0.00	
5,300.00	30.28	255.25	4,748.10	-553.59	-2,102.09	248.53	0.00	0.00	0.00	
5,400.00	30.28	255.25	4,834.46	-566.43	-2,150.85	254.30	0.00	0.00	0.00	
5,500.00	30.28	255.25	4,920.82	-579.27	-2,199.61	260.06	0.00	0.00	0.00	
5,600.00	30.28	255.25	5,007.18	-592.12	-2,248.37	265.83	0.00	0.00	0.00	
5,700.00	30.28	255.25	5,093.53	-604.96	-2,297.13	271.59	0.00	0.00	0.00	
5,800.00	30.28	255.25	5,179.89	-617.80	-2,345.89	277.36	0.00	0.00	0.00	
5,900.00	30.28	255.25	5,266.25	-630.64	-2,394.65	283.12	0.00	0.00	0.00	
6,008.00	30.28	255.25	5,359.52	-644.51	-2,447.31	289.35	0.00	0.00	0.00	
<b>DROP 2°/100'</b>										
6,100.00	28.44	255.25	5,439.69	-655.99	-2,490.92	294.50	2.00	-2.00	0.00	
6,200.00	26.44	255.25	5,528.44	-667.73	-2,535.48	299.77	2.00	-2.00	0.00	
6,300.00	24.44	255.25	5,618.74	-678.67	-2,577.02	304.68	2.00	-2.00	0.00	
6,400.00	22.44	255.25	5,710.48	-688.80	-2,615.49	309.23	2.00	-2.00	0.00	
6,500.00	20.44	255.25	5,803.56	-698.11	-2,650.83	313.41	2.00	-2.00	0.00	
6,600.00	18.44	255.25	5,897.85	-706.58	-2,683.01	317.21	2.00	-2.00	0.00	
6,700.00	16.44	255.25	5,993.25	-714.21	-2,711.99	320.64	2.00	-2.00	0.00	
6,800.00	14.44	255.25	6,089.64	-720.99	-2,737.74	323.68	2.00	-2.00	0.00	
6,900.00	12.44	255.25	6,186.89	-726.91	-2,760.21	326.34	2.00	-2.00	0.00	
7,000.00	10.44	255.25	6,284.90	-731.96	-2,779.39	328.61	2.00	-2.00	0.00	
7,100.00	8.44	255.25	6,383.54	-736.14	-2,795.25	330.48	2.00	-2.00	0.00	
7,200.00	6.44	255.25	6,482.70	-739.44	-2,807.77	331.96	2.00	-2.00	0.00	
7,300.00	4.44	255.25	6,582.24	-741.85	-2,816.94	333.05	2.00	-2.00	0.00	
7,400.00	2.44	255.25	6,682.05	-743.38	-2,822.74	333.73	2.00	-2.00	0.00	
7,500.00	0.44	255.25	6,782.02	-744.02	-2,825.17	334.02	2.00	-2.00	0.00	
7,521.98	0.00	0.00	6,804.00	-744.04	-2,825.25	334.03	2.00	-2.00	0.00	
<b>HOLD VERTICAL</b>										
7,600.00	0.00	0.00	6,882.02	-744.04	-2,825.25	334.03	0.00	0.00	0.00	
7,621.98	0.00	0.00	6,904.00	-744.04	-2,825.25	334.03	0.00	0.00	0.00	
<b>KOP, BUILD 10°/100'</b>										
7,650.00	2.80	0.12	6,932.01	-743.36	-2,825.25	334.67	10.00	10.00	0.00	
7,700.00	7.80	0.12	6,981.78	-738.74	-2,825.24	338.97	10.00	10.00	0.00	
7,750.00	12.80	0.12	7,030.96	-729.80	-2,825.22	347.29	10.00	10.00	0.00	
7,800.00	17.80	0.12	7,079.17	-716.61	-2,825.19	359.56	10.00	10.00	0.00	
7,850.00	22.80	0.12	7,126.05	-699.27	-2,825.16	375.71	10.00	10.00	0.00	
7,900.00	27.80	0.12	7,171.24	-677.91	-2,825.12	395.59	10.00	10.00	0.00	
7,950.00	32.80	0.12	7,214.39	-652.69	-2,825.06	419.06	10.00	10.00	0.00	
8,000.00	37.80	0.12	7,255.19	-623.81	-2,825.01	445.95	10.00	10.00	0.00	
8,036.10	41.41	0.12	7,283.00	-600.79	-2,824.96	467.37	10.00	10.00	0.00	
<b>Sharon Springs</b>										
8,050.00	42.80	0.12	7,293.31	-591.48	-2,824.94	476.04	10.00	10.00	0.00	
8,080.32	45.83	0.12	7,315.00	-570.30	-2,824.90	495.75	10.00	10.00	0.00	
<b>Top Niobrara</b>										
8,094.86	47.28	0.12	7,325.00	-559.74	-2,824.87	505.58	10.00	10.00	0.00	
<b>Nio A Chalk</b>										
8,100.00	47.80	0.12	7,328.47	-555.95	-2,824.87	509.11	10.00	10.00	0.00	
8,126.80	50.48	0.12	7,346.00	-535.68	-2,824.83	527.97	10.00	10.00	0.00	
<b>Nio A Marl</b>										

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
8,150.00	52.80	0.12	7,360.40	-517.49	-2,824.79	544.91	10.00	10.00	0.00	
8,200.00	57.80	0.12	7,388.86	-476.40	-2,824.70	583.16	10.00	10.00	0.00	
8,250.00	62.80	0.12	7,413.62	-432.98	-2,824.62	623.57	10.00	10.00	0.00	
8,300.00	67.80	0.12	7,434.51	-387.57	-2,824.52	665.84	10.00	10.00	0.00	
8,350.00	72.80	0.12	7,451.36	-340.52	-2,824.43	709.64	10.00	10.00	0.00	
8,400.00	77.80	0.12	7,464.05	-292.17	-2,824.33	754.65	10.00	10.00	0.00	
8,414.84	79.28	0.12	7,467.00	-277.62	-2,824.30	768.18	10.00	10.00	0.00	
Nio B Chalk										
8,450.00	82.80	0.12	7,472.48	-242.90	-2,824.23	800.51	10.00	10.00	0.00	
8,500.00	87.80	0.12	7,476.58	-193.08	-2,824.13	846.88	10.00	10.00	0.00	
8,522.05	90.00	0.12	7,477.00	-171.04	-2,824.08	867.40	10.00	10.00	0.00	
LP @ 90° INC, 0.12° AZM HOLD										
8,600.00	90.00	0.12	7,477.00	-93.09	-2,823.92	939.95	0.00	0.00	0.00	
8,700.00	90.00	0.12	7,477.00	6.91	-2,823.72	1,033.04	0.00	0.00	0.00	
8,800.00	90.00	0.12	7,477.00	106.91	-2,823.52	1,126.12	0.00	0.00	0.00	
8,900.00	90.00	0.12	7,477.00	206.91	-2,823.31	1,219.20	0.00	0.00	0.00	
9,000.00	90.00	0.12	7,477.00	306.91	-2,823.11	1,312.28	0.00	0.00	0.00	
9,100.00	90.00	0.12	7,477.00	406.91	-2,822.90	1,405.37	0.00	0.00	0.00	
9,200.00	90.00	0.12	7,477.00	506.91	-2,822.70	1,498.45	0.00	0.00	0.00	
9,300.00	90.00	0.12	7,477.00	606.91	-2,822.50	1,591.53	0.00	0.00	0.00	
9,400.00	90.00	0.12	7,477.00	706.91	-2,822.29	1,684.62	0.00	0.00	0.00	
9,500.00	90.00	0.12	7,477.00	806.91	-2,822.09	1,777.70	0.00	0.00	0.00	
9,600.00	90.00	0.12	7,477.00	906.91	-2,821.89	1,870.78	0.00	0.00	0.00	
9,700.00	90.00	0.12	7,477.00	1,006.91	-2,821.68	1,963.86	0.00	0.00	0.00	
9,800.00	90.00	0.12	7,476.99	1,106.91	-2,821.48	2,056.95	0.00	0.00	0.00	
9,900.00	90.00	0.12	7,476.99	1,206.91	-2,821.27	2,150.03	0.00	0.00	0.00	
10,000.00	90.00	0.12	7,476.99	1,306.91	-2,821.07	2,243.11	0.00	0.00	0.00	
10,100.00	90.00	0.12	7,476.99	1,406.91	-2,820.87	2,336.19	0.00	0.00	0.00	
10,200.00	90.00	0.12	7,476.99	1,506.91	-2,820.66	2,429.28	0.00	0.00	0.00	
10,300.00	90.00	0.12	7,476.99	1,606.91	-2,820.46	2,522.36	0.00	0.00	0.00	
10,400.00	90.00	0.12	7,476.99	1,706.91	-2,820.26	2,615.44	0.00	0.00	0.00	
10,500.00	90.00	0.12	7,476.99	1,806.91	-2,820.05	2,708.53	0.00	0.00	0.00	
10,600.00	90.00	0.12	7,476.99	1,906.91	-2,819.85	2,801.61	0.00	0.00	0.00	
10,700.00	90.00	0.12	7,476.99	2,006.91	-2,819.64	2,894.69	0.00	0.00	0.00	
10,800.00	90.00	0.12	7,476.99	2,106.91	-2,819.44	2,987.77	0.00	0.00	0.00	
10,900.00	90.00	0.12	7,476.99	2,206.91	-2,819.24	3,080.86	0.00	0.00	0.00	
11,000.00	90.00	0.12	7,476.99	2,306.91	-2,819.03	3,173.94	0.00	0.00	0.00	
11,100.00	90.00	0.12	7,476.99	2,406.91	-2,818.83	3,267.02	0.00	0.00	0.00	
11,200.00	90.00	0.12	7,476.99	2,506.90	-2,818.63	3,360.10	0.00	0.00	0.00	
11,300.00	90.00	0.12	7,476.99	2,606.90	-2,818.42	3,453.19	0.00	0.00	0.00	
11,400.00	90.00	0.12	7,476.99	2,706.90	-2,818.22	3,546.27	0.00	0.00	0.00	
11,500.00	90.00	0.12	7,476.99	2,806.90	-2,818.01	3,639.35	0.00	0.00	0.00	
11,600.00	90.00	0.12	7,476.99	2,906.90	-2,817.81	3,732.44	0.00	0.00	0.00	
11,700.00	90.00	0.12	7,476.99	3,006.90	-2,817.61	3,825.52	0.00	0.00	0.00	
11,800.00	90.00	0.12	7,476.99	3,106.90	-2,817.40	3,918.60	0.00	0.00	0.00	
11,900.00	90.00	0.12	7,476.99	3,206.90	-2,817.20	4,011.68	0.00	0.00	0.00	
12,000.00	90.00	0.12	7,476.99	3,306.90	-2,817.00	4,104.77	0.00	0.00	0.00	
12,100.00	90.00	0.12	7,476.99	3,406.90	-2,816.79	4,197.85	0.00	0.00	0.00	
12,200.00	90.00	0.12	7,476.99	3,506.90	-2,816.59	4,290.93	0.00	0.00	0.00	
12,300.00	90.00	0.12	7,476.98	3,606.90	-2,816.38	4,384.01	0.00	0.00	0.00	
12,400.00	90.00	0.12	7,476.98	3,706.90	-2,816.18	4,477.10	0.00	0.00	0.00	
12,500.00	90.00	0.12	7,476.98	3,806.90	-2,815.98	4,570.18	0.00	0.00	0.00	
12,600.00	90.00	0.12	7,476.98	3,906.90	-2,815.77	4,663.26	0.00	0.00	0.00	
12,700.00	90.00	0.12	7,476.98	4,006.90	-2,815.57	4,756.34	0.00	0.00	0.00	

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
12,800.00	90.00	0.12	7,476.98	4,106.90	-2,815.37	4,849.43	0.00	0.00	0.00
12,900.00	90.00	0.12	7,476.98	4,206.90	-2,815.16	4,942.51	0.00	0.00	0.00
13,000.00	90.00	0.12	7,476.98	4,306.90	-2,814.96	5,035.59	0.00	0.00	0.00
13,100.00	90.00	0.12	7,476.98	4,406.90	-2,814.75	5,128.68	0.00	0.00	0.00
13,200.00	90.00	0.12	7,476.98	4,506.90	-2,814.55	5,221.76	0.00	0.00	0.00
13,300.00	90.00	0.12	7,476.98	4,606.90	-2,814.35	5,314.84	0.00	0.00	0.00
13,400.00	90.00	0.12	7,476.98	4,706.90	-2,814.14	5,407.92	0.00	0.00	0.00
13,500.00	90.00	0.12	7,476.98	4,806.90	-2,813.94	5,501.01	0.00	0.00	0.00
13,600.00	90.00	0.12	7,476.98	4,906.90	-2,813.74	5,594.09	0.00	0.00	0.00
13,700.00	90.00	0.12	7,476.98	5,006.90	-2,813.53	5,687.17	0.00	0.00	0.00
13,800.00	90.00	0.12	7,476.98	5,106.90	-2,813.33	5,780.25	0.00	0.00	0.00
13,900.00	90.00	0.12	7,476.98	5,206.90	-2,813.12	5,873.34	0.00	0.00	0.00
14,000.00	90.00	0.12	7,476.98	5,306.90	-2,812.92	5,966.42	0.00	0.00	0.00
14,100.00	90.00	0.12	7,476.98	5,406.90	-2,812.72	6,059.50	0.00	0.00	0.00
14,200.00	90.00	0.12	7,476.98	5,506.90	-2,812.51	6,152.59	0.00	0.00	0.00
14,300.00	90.00	0.12	7,476.98	5,606.90	-2,812.31	6,245.67	0.00	0.00	0.00
14,400.00	90.00	0.12	7,476.98	5,706.90	-2,812.11	6,338.75	0.00	0.00	0.00
14,500.00	90.00	0.12	7,476.98	5,806.90	-2,811.90	6,431.83	0.00	0.00	0.00
14,600.00	90.00	0.12	7,476.98	5,906.90	-2,811.70	6,524.92	0.00	0.00	0.00
14,700.00	90.00	0.12	7,476.97	6,006.90	-2,811.49	6,618.00	0.00	0.00	0.00
14,800.00	90.00	0.12	7,476.97	6,106.90	-2,811.29	6,711.08	0.00	0.00	0.00
14,900.00	90.00	0.12	7,476.97	6,206.90	-2,811.09	6,804.16	0.00	0.00	0.00
15,000.00	90.00	0.12	7,476.97	6,306.90	-2,810.88	6,897.25	0.00	0.00	0.00
15,100.00	90.00	0.12	7,476.97	6,406.90	-2,810.68	6,990.33	0.00	0.00	0.00
15,200.00	90.00	0.12	7,476.97	6,506.90	-2,810.48	7,083.41	0.00	0.00	0.00
15,300.00	90.00	0.12	7,476.97	6,606.90	-2,810.27	7,176.49	0.00	0.00	0.00
15,400.00	90.00	0.12	7,476.97	6,706.90	-2,810.07	7,269.58	0.00	0.00	0.00
15,500.00	90.00	0.12	7,476.97	6,806.90	-2,809.86	7,362.66	0.00	0.00	0.00
15,600.00	90.00	0.12	7,476.97	6,906.90	-2,809.66	7,455.74	0.00	0.00	0.00
15,700.00	90.00	0.12	7,476.97	7,006.90	-2,809.46	7,548.83	0.00	0.00	0.00
15,800.00	90.00	0.12	7,476.97	7,106.90	-2,809.25	7,641.91	0.00	0.00	0.00
15,891.29	90.00	0.12	7,477.00	7,198.18	-2,809.23	7,726.94	0.00	0.00	0.00
TD at 15891.29' MD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
ALMA 19NH LP	0.00	0.00	7,477.00	-171.04	-2,824.08	1,217,927.52	3,215,429.65	39° 55' 44.508 N	104° 43' 54.552 W
- plan hits target center									
- Point									
ALMA 19NH PBHL	0.00	0.00	7,477.00	7,198.18	-2,809.23	1,225,296.59	3,215,379.83	39° 56' 57.336 N	104° 43' 54.372 W
- plan hits target center									
- Point									

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well ALMA 1S-66-2524-19NH
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5198.00usft
<b>Project:</b>	Adams County	<b>MD Reference:</b>	KB 25' @ 5198.00usft
<b>Site:</b>	Sec 25-T1S-R66W	<b>North Reference:</b>	True
<b>Well:</b>	ALMA 1S-66-2524-19NH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,543.51	1,500.00	Fox Hills aquifer base				
8,036.10	7,283.00	Sharon Springs				
8,080.32	7,315.00	Top Niobrara				
8,094.86	7,325.00	Nio A Chalk				
8,126.80	7,346.00	Nio A Marl				
8,414.84	7,467.00	Nio B Chalk				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
250.00	250.00	0.00	0.00	BUILD 2°/100'	
1,763.98	1,694.48	-99.53	-377.94	HOLD 30.28° INC	
6,008.00	5,359.52	-644.51	-2,447.31	DROP 2°/100'	
7,521.98	6,804.00	-744.04	-2,825.25	HOLD VERTICAL	
7,621.98	6,904.00	-744.04	-2,825.25	KOP, BUILD 10°/100'	
8,522.05	7,477.00	-171.04	-2,824.08	LP @ 90° INC, 0.12° AZM HOLD	
15,891.29	7,477.00	7,198.18	-2,809.23	TD at 15891.29' MD	