

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

1N-65W-08 ENGLISH FARMS 15-8HZ PAD

ENGLISH FARMS 8-13HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.059521/-104.686695

Survey Program: MWD+IFR+MSA

Standard Planning Report

09 October, 2017

Project: WELD-NAD83-UTMFT13N
Site: 1N-65W-08 ENGLISH FARMS 15-8HZ PAD
Well: ENGLISH FARMS 8-13HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS			WELL DETAILS: ENGLISH FARMS 8-13HZ GL = 4945' RKB = 177' @ 4962.00usft (Drilling Rig)
TVD	MD	Size	
1500.00 7168.00	1508.79 7558.97	9-5/8 5-1/2	

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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	783.33	8.00	48.50	781.60	24.63	27.84	1.50	48.50	-24.75	
4	3533.33	8.00	48.50	3504.84	278.23	314.49	0.00	0.00	-279.60	
5	3933.33	0.00	0.00	3903.54	296.71	335.37	2.00	180.00	-298.17	
6	6561.17	0.00	0.00	6531.38	296.71	335.37	0.00	0.00	-298.17	
7	7558.97	89.80	180.25	7168.00	-337.71	332.62	9.00	180.25	336.25	
8	20288.36	89.80	180.25	7212.00	-13066.90	277.45	0.00	0.00	13065.57	ENGLISH FARMS 8-13HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
ENGLISH FARMS 8-13HZ_SHL	0.00	0.00	0.00	40.059521	-104.686695
ENGLISH FARMS 8-13HZ_BHL	7212.00	-13066.90	277.45	40.023637	-104.685704

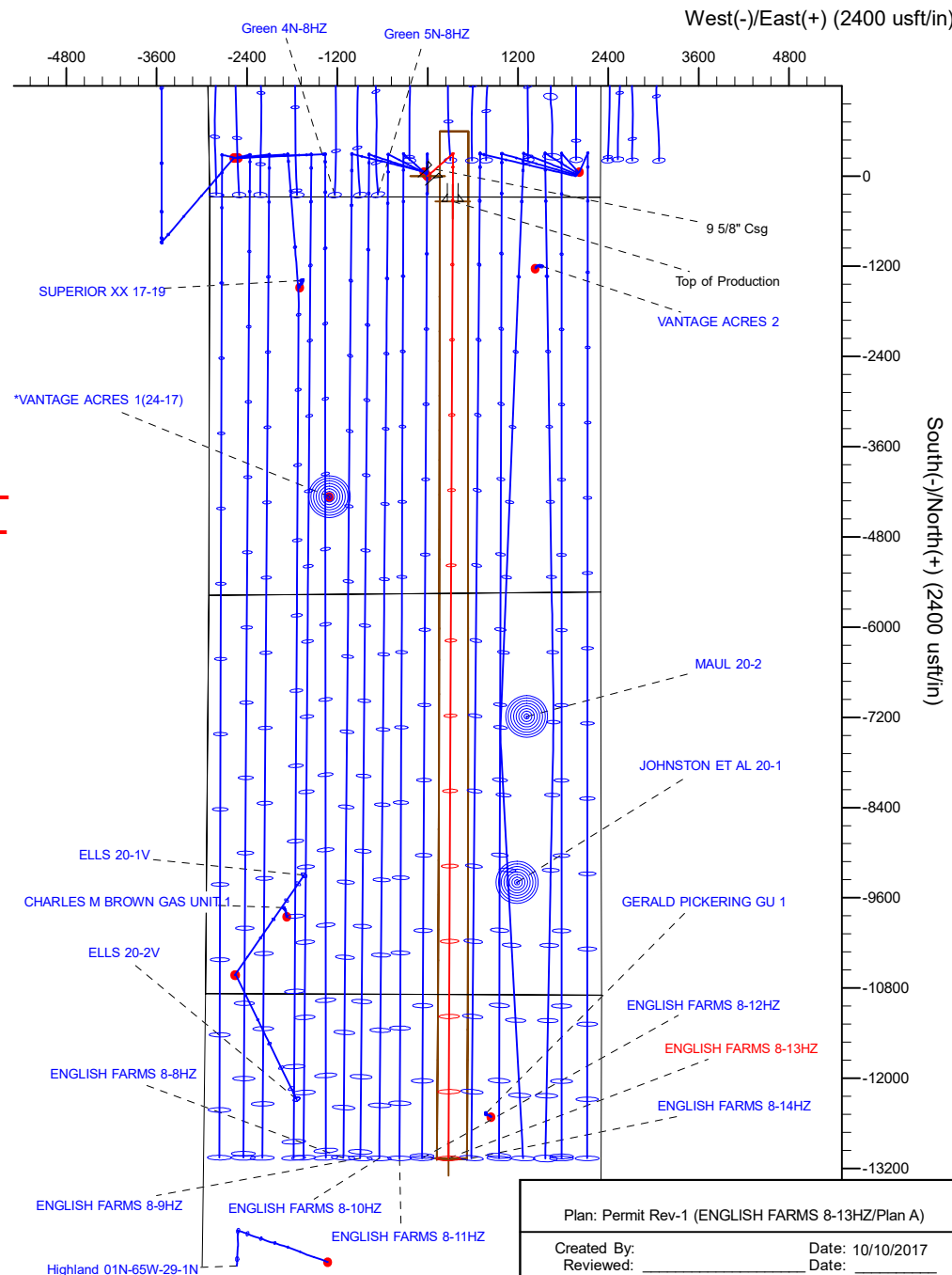
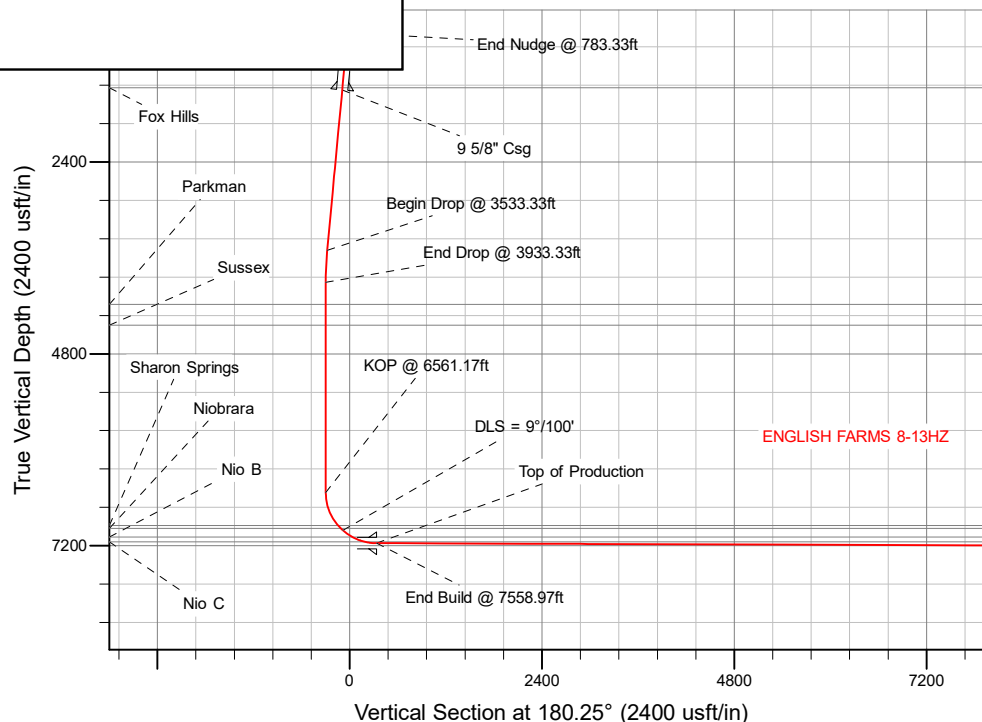
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1473.00	1481.53	Fox Hills
4180.00	4209.79	Parkman
4439.00	4468.79	Sussex
6947.00	7014.03	Sharon Springs
6981.00	7060.41	Niobrara
7091.00	7244.81	Nio B
7152.00	7418.14	Nio C

SHL
280' FSL
2297' FEL

HEEL
50' FNL
2010' FEL

TOE
2181' FNL
2025' FEL



Plan: Permit Rev-1 (ENGLISH FARMS 8-13HZ/Plan A)

Created By: _____ Date: 10/10/2017
Reviewed: _____ Date: _____

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		1N-65W-08 ENGLISH FARMS 15-8HZ PAD			
Site Position:		Northing:	14,548,619.57 usft	Latitude:	40.059680
From:	Lat/Long	Easting:	1,728,034.10 usft	Longitude:	-104.686865
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	ENGLISH FARMS 8-13HZ					
Well Position	+N/-S	-57.90 usft	Northing:	14,548,561.84 usft	Latitude:	40.059521
	+E/-W	47.57 usft	Easting:	1,728,081.87 usft	Longitude:	-104.686695
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,945.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/8/2017	7.94	66.57	52,295.13019617

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	180.25

Plan Survey Tool Program	Date	10/9/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio
2	1,500.00	20,288.36	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
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	
783.33	8.00	48.50	781.60	24.63	27.84	1.50	1.50	0.00	48.50	
3,533.33	8.00	48.50	3,504.84	278.23	314.49	0.00	0.00	0.00	0.00	
3,933.33	0.00	0.00	3,903.54	296.71	335.37	2.00	-2.00	0.00	180.00	
6,561.17	0.00	0.00	6,531.38	296.71	335.37	0.00	0.00	0.00	0.00	
7,558.97	89.80	180.25	7,168.00	-337.71	332.62	9.00	9.00	-18.01	180.25	
20,288.36	89.80	180.25	7,212.00	-13,066.90	277.45	0.00	0.00	0.00	0.00	ENGLISH FARMS 8-1

Corporate
Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
Begin Nudge @ 250.00ft									
300.00	0.75	48.50	300.00	0.22	0.25	-0.22	1.50	1.50	0.00
400.00	2.25	48.50	399.96	1.95	2.21	-1.96	1.50	1.50	0.00
500.00	3.75	48.50	499.82	5.42	6.13	-5.45	1.50	1.50	0.00
600.00	5.25	48.50	599.51	10.62	12.00	-10.67	1.50	1.50	0.00
700.00	6.75	48.50	698.96	17.54	19.83	-17.63	1.50	1.50	0.00
783.33	8.00	48.50	781.60	24.63	27.84	-24.75	1.50	1.50	0.00
End Nudge @ 783.33ft									
800.00	8.00	48.50	798.11	26.17	29.58	-26.30	0.00	0.00	0.00
900.00	8.00	48.50	897.13	35.39	40.00	-35.56	0.00	0.00	0.00
1,000.00	8.00	48.50	996.16	44.61	50.43	-44.83	0.00	0.00	0.00
1,100.00	8.00	48.50	1,095.19	53.83	60.85	-54.10	0.00	0.00	0.00
1,200.00	8.00	48.50	1,194.21	63.06	71.27	-63.37	0.00	0.00	0.00
1,300.00	8.00	48.50	1,293.24	72.28	81.70	-72.63	0.00	0.00	0.00
1,400.00	8.00	48.50	1,392.27	81.50	92.12	-81.90	0.00	0.00	0.00
1,481.53	8.00	48.50	1,473.00	89.02	100.62	-89.46	0.00	0.00	0.00
Fox Hills									
1,500.00	8.00	48.50	1,491.29	90.72	102.54	-91.17	0.00	0.00	0.00
1,508.79	8.00	48.50	1,500.00	91.53	103.46	-91.98	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	8.00	48.50	1,590.32	99.94	112.97	-100.44	0.00	0.00	0.00
1,700.00	8.00	48.50	1,689.35	109.17	123.39	-109.70	0.00	0.00	0.00
1,800.00	8.00	48.50	1,788.37	118.39	133.81	-118.97	0.00	0.00	0.00
1,900.00	8.00	48.50	1,887.40	127.61	144.24	-128.24	0.00	0.00	0.00
2,000.00	8.00	48.50	1,986.43	136.83	154.66	-137.50	0.00	0.00	0.00
2,100.00	8.00	48.50	2,085.46	146.05	165.08	-146.77	0.00	0.00	0.00
2,200.00	8.00	48.50	2,184.48	155.28	175.51	-156.04	0.00	0.00	0.00
2,300.00	8.00	48.50	2,283.51	164.50	185.93	-165.31	0.00	0.00	0.00
2,400.00	8.00	48.50	2,382.54	173.72	196.35	-174.57	0.00	0.00	0.00
2,500.00	8.00	48.50	2,481.56	182.94	206.78	-183.84	0.00	0.00	0.00
2,600.00	8.00	48.50	2,580.59	192.16	217.20	-193.11	0.00	0.00	0.00
2,700.00	8.00	48.50	2,679.62	201.38	227.62	-202.38	0.00	0.00	0.00
2,800.00	8.00	48.50	2,778.64	210.61	238.05	-211.64	0.00	0.00	0.00
2,900.00	8.00	48.50	2,877.67	219.83	248.47	-220.91	0.00	0.00	0.00
3,000.00	8.00	48.50	2,976.70	229.05	258.89	-230.18	0.00	0.00	0.00
3,100.00	8.00	48.50	3,075.72	238.27	269.32	-239.45	0.00	0.00	0.00
3,200.00	8.00	48.50	3,174.75	247.49	279.74	-248.71	0.00	0.00	0.00
3,300.00	8.00	48.50	3,273.78	256.72	290.16	-257.98	0.00	0.00	0.00
3,400.00	8.00	48.50	3,372.80	265.94	300.59	-267.25	0.00	0.00	0.00
3,500.00	8.00	48.50	3,471.83	275.16	311.01	-276.51	0.00	0.00	0.00
3,533.33	8.00	48.50	3,504.84	278.23	314.49	-279.60	0.00	0.00	0.00
Begin Drop @ 3533.33ft									
3,600.00	6.67	48.50	3,570.96	283.87	320.86	-285.27	2.00	-2.00	0.00
3,700.00	4.67	48.50	3,670.47	290.41	328.25	-291.84	2.00	-2.00	0.00
3,800.00	2.67	48.50	3,770.26	294.65	333.04	-296.10	2.00	-2.00	0.00
3,900.00	0.67	48.50	3,870.21	296.58	335.22	-298.04	2.00	-2.00	0.00
3,933.33	0.00	0.00	3,903.54	296.71	335.37	-298.17	2.00	-2.00	0.00
End Drop @ 3933.33ft									
4,000.00	0.00	0.00	3,970.21	296.71	335.37	-298.17	0.00	0.00	0.00

Corporate
Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.00	0.00	0.00	4,070.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,200.00	0.00	0.00	4,170.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,209.79	0.00	0.00	4,180.00	296.71	335.37	-298.17	0.00	0.00	0.00
Parkman									
4,300.00	0.00	0.00	4,270.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,400.00	0.00	0.00	4,370.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,468.79	0.00	0.00	4,439.00	296.71	335.37	-298.17	0.00	0.00	0.00
Sussex									
4,500.00	0.00	0.00	4,470.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,600.00	0.00	0.00	4,570.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,700.00	0.00	0.00	4,670.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,800.00	0.00	0.00	4,770.21	296.71	335.37	-298.17	0.00	0.00	0.00
4,900.00	0.00	0.00	4,870.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,000.00	0.00	0.00	4,970.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,100.00	0.00	0.00	5,070.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,200.00	0.00	0.00	5,170.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,300.00	0.00	0.00	5,270.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,400.00	0.00	0.00	5,370.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,500.00	0.00	0.00	5,470.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,600.00	0.00	0.00	5,570.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,700.00	0.00	0.00	5,670.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,800.00	0.00	0.00	5,770.21	296.71	335.37	-298.17	0.00	0.00	0.00
5,900.00	0.00	0.00	5,870.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,000.00	0.00	0.00	5,970.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,100.00	0.00	0.00	6,070.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,200.00	0.00	0.00	6,170.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,300.00	0.00	0.00	6,270.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,400.00	0.00	0.00	6,370.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,500.00	0.00	0.00	6,470.21	296.71	335.37	-298.17	0.00	0.00	0.00
6,561.17	0.00	0.00	6,531.38	296.71	335.37	-298.17	0.00	0.00	0.00
KOP @ 6561.17ft									
6,600.00	3.49	180.25	6,570.18	295.52	335.36	-296.98	9.00	9.00	0.00
6,700.00	12.49	180.25	6,669.11	281.63	335.30	-283.09	9.00	9.00	0.00
6,800.00	21.49	180.25	6,764.65	252.43	335.17	-253.89	9.00	9.00	0.00
6,900.00	30.49	180.25	6,854.44	208.65	334.99	-210.11	9.00	9.00	0.00
7,000.00	39.49	180.25	6,936.27	151.36	334.74	-152.82	9.00	9.00	0.00
7,014.03	40.76	180.25	6,947.00	142.32	334.70	-143.78	9.00	9.00	0.00
Sharon Springs									
7,060.41	44.93	180.25	6,981.00	110.79	334.56	-112.24	9.00	9.00	0.00
Niobrara									
7,100.00	48.49	180.25	7,008.14	81.97	334.44	-83.43	9.00	9.00	0.00
DLS = 9°/100'									
7,200.00	57.49	180.25	7,068.27	2.20	334.09	-3.66	9.00	9.00	0.00
7,244.81	61.53	180.25	7,091.00	-36.41	333.92	34.95	9.00	9.00	0.00
Nio B									
7,300.00	66.49	180.25	7,115.17	-86.00	333.71	84.54	9.00	9.00	0.00
7,400.00	75.49	180.25	7,147.71	-180.45	333.30	178.99	9.00	9.00	0.00
7,418.14	77.13	180.25	7,152.00	-198.07	333.22	196.62	9.00	9.00	0.00
Nio C									
7,500.00	84.49	180.25	7,165.06	-278.83	332.87	277.37	9.00	9.00	0.00
7,558.97	89.80	180.25	7,168.00	-337.70	332.62	336.25	9.00	9.00	0.00
End Build @ 7558.97ft - Top of Production									
7,600.00	89.80	180.25	7,168.14	-378.73	332.44	377.28	0.00	0.00	0.00

Corporate
Planning Report

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Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-65W-08 ENGLISH FARMS 15-8HZ PAD
Well: ENGLISH FARMS 8-13HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well ENGLISH FARMS 8-13HZ
TVD Reference: RKB = 177' @ 4962.00usft (Drilling Rig)
MD Reference: RKB = 177' @ 4962.00usft (Drilling Rig)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,700.00	89.80	180.25	7,168.48	-478.73	332.01	477.28	0.00	0.00	0.00
7,800.00	89.80	180.25	7,168.83	-578.73	331.57	577.28	0.00	0.00	0.00
7,900.00	89.80	180.25	7,169.18	-678.73	331.14	677.28	0.00	0.00	0.00
8,000.00	89.80	180.25	7,169.52	-778.73	330.71	777.28	0.00	0.00	0.00
8,100.00	89.80	180.25	7,169.87	-878.72	330.27	877.28	0.00	0.00	0.00
8,200.00	89.80	180.25	7,170.21	-978.72	329.84	977.27	0.00	0.00	0.00
8,300.00	89.80	180.25	7,170.56	-1,078.72	329.41	1,077.27	0.00	0.00	0.00
8,400.00	89.80	180.25	7,170.90	-1,178.72	328.97	1,177.27	0.00	0.00	0.00
8,500.00	89.80	180.25	7,171.25	-1,278.72	328.54	1,277.27	0.00	0.00	0.00
8,600.00	89.80	180.25	7,171.60	-1,378.72	328.11	1,377.27	0.00	0.00	0.00
8,700.00	89.80	180.25	7,171.94	-1,478.72	327.67	1,477.27	0.00	0.00	0.00
8,800.00	89.80	180.25	7,172.29	-1,578.71	327.24	1,577.27	0.00	0.00	0.00
8,900.00	89.80	180.25	7,172.63	-1,678.71	326.81	1,677.27	0.00	0.00	0.00
9,000.00	89.80	180.25	7,172.98	-1,778.71	326.37	1,777.27	0.00	0.00	0.00
9,100.00	89.80	180.25	7,173.32	-1,878.71	325.94	1,877.27	0.00	0.00	0.00
9,200.00	89.80	180.25	7,173.67	-1,978.71	325.51	1,977.27	0.00	0.00	0.00
9,300.00	89.80	180.25	7,174.02	-2,078.71	325.07	2,077.27	0.00	0.00	0.00
9,400.00	89.80	180.25	7,174.36	-2,178.70	324.64	2,177.27	0.00	0.00	0.00
9,500.00	89.80	180.25	7,174.71	-2,278.70	324.21	2,277.27	0.00	0.00	0.00
9,600.00	89.80	180.25	7,175.05	-2,378.70	323.77	2,377.27	0.00	0.00	0.00
9,700.00	89.80	180.25	7,175.40	-2,478.70	323.34	2,477.27	0.00	0.00	0.00
9,800.00	89.80	180.25	7,175.74	-2,578.70	322.91	2,577.27	0.00	0.00	0.00
9,900.00	89.80	180.25	7,176.09	-2,678.70	322.47	2,677.26	0.00	0.00	0.00
10,000.00	89.80	180.25	7,176.44	-2,778.70	322.04	2,777.26	0.00	0.00	0.00
10,100.00	89.80	180.25	7,176.78	-2,878.69	321.61	2,877.26	0.00	0.00	0.00
10,200.00	89.80	180.25	7,177.13	-2,978.69	321.17	2,977.26	0.00	0.00	0.00
10,300.00	89.80	180.25	7,177.47	-3,078.69	320.74	3,077.26	0.00	0.00	0.00
10,400.00	89.80	180.25	7,177.82	-3,178.69	320.31	3,177.26	0.00	0.00	0.00
10,500.00	89.80	180.25	7,178.16	-3,278.69	319.87	3,277.26	0.00	0.00	0.00
10,600.00	89.80	180.25	7,178.51	-3,378.69	319.44	3,377.26	0.00	0.00	0.00
10,700.00	89.80	180.25	7,178.85	-3,478.68	319.01	3,477.26	0.00	0.00	0.00
10,800.00	89.80	180.25	7,179.20	-3,578.68	318.57	3,577.26	0.00	0.00	0.00
10,900.00	89.80	180.25	7,179.55	-3,678.68	318.14	3,677.26	0.00	0.00	0.00
11,000.00	89.80	180.25	7,179.89	-3,778.68	317.71	3,777.26	0.00	0.00	0.00
11,100.00	89.80	180.25	7,180.24	-3,878.68	317.27	3,877.26	0.00	0.00	0.00
11,200.00	89.80	180.25	7,180.58	-3,978.68	316.84	3,977.26	0.00	0.00	0.00
11,300.00	89.80	180.25	7,180.93	-4,078.68	316.41	4,077.26	0.00	0.00	0.00
11,400.00	89.80	180.25	7,181.27	-4,178.67	315.97	4,177.26	0.00	0.00	0.00
11,500.00	89.80	180.25	7,181.62	-4,278.67	315.54	4,277.26	0.00	0.00	0.00
11,600.00	89.80	180.25	7,181.97	-4,378.67	315.11	4,377.25	0.00	0.00	0.00
11,700.00	89.80	180.25	7,182.31	-4,478.67	314.67	4,477.25	0.00	0.00	0.00
11,800.00	89.80	180.25	7,182.66	-4,578.67	314.24	4,577.25	0.00	0.00	0.00
11,900.00	89.80	180.25	7,183.00	-4,678.67	313.81	4,677.25	0.00	0.00	0.00
12,000.00	89.80	180.25	7,183.35	-4,778.66	313.37	4,777.25	0.00	0.00	0.00
12,100.00	89.80	180.25	7,183.69	-4,878.66	312.94	4,877.25	0.00	0.00	0.00
12,200.00	89.80	180.25	7,184.04	-4,978.66	312.51	4,977.25	0.00	0.00	0.00
12,300.00	89.80	180.25	7,184.39	-5,078.66	312.07	5,077.25	0.00	0.00	0.00
12,400.00	89.80	180.25	7,184.73	-5,178.66	311.64	5,177.25	0.00	0.00	0.00
12,500.00	89.80	180.25	7,185.08	-5,278.66	311.21	5,277.25	0.00	0.00	0.00
12,600.00	89.80	180.25	7,185.42	-5,378.66	310.77	5,377.25	0.00	0.00	0.00
12,700.00	89.80	180.25	7,185.77	-5,478.65	310.34	5,477.25	0.00	0.00	0.00
12,800.00	89.80	180.25	7,186.11	-5,578.65	309.91	5,577.25	0.00	0.00	0.00
12,900.00	89.80	180.25	7,186.46	-5,678.65	309.47	5,677.25	0.00	0.00	0.00
13,000.00	89.80	180.25	7,186.81	-5,778.65	309.04	5,777.25	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-65W-08 ENGLISH FARMS 15-8HZ PAD
Well: ENGLISH FARMS 8-13HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Well ENGLISH FARMS 8-13HZ
RKB = 177' @ 4962.00usft (Drilling Rig)
RKB = 177' @ 4962.00usft (Drilling Rig)
True
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,100.00	89.80	180.25	7,187.15	-5,878.65	308.61	5,877.25	0.00	0.00	0.00
13,200.00	89.80	180.25	7,187.50	-5,978.65	308.17	5,977.24	0.00	0.00	0.00
13,300.00	89.80	180.25	7,187.84	-6,078.64	307.74	6,077.24	0.00	0.00	0.00
13,400.00	89.80	180.25	7,188.19	-6,178.64	307.31	6,177.24	0.00	0.00	0.00
13,500.00	89.80	180.25	7,188.53	-6,278.64	306.87	6,277.24	0.00	0.00	0.00
13,600.00	89.80	180.25	7,188.88	-6,378.64	306.44	6,377.24	0.00	0.00	0.00
13,700.00	89.80	180.25	7,189.23	-6,478.64	306.01	6,477.24	0.00	0.00	0.00
13,800.00	89.80	180.25	7,189.57	-6,578.64	305.57	6,577.24	0.00	0.00	0.00
13,900.00	89.80	180.25	7,189.92	-6,678.64	305.14	6,677.24	0.00	0.00	0.00
14,000.00	89.80	180.25	7,190.26	-6,778.63	304.71	6,777.24	0.00	0.00	0.00
14,100.00	89.80	180.25	7,190.61	-6,878.63	304.27	6,877.24	0.00	0.00	0.00
14,200.00	89.80	180.25	7,190.95	-6,978.63	303.84	6,977.24	0.00	0.00	0.00
14,300.00	89.80	180.25	7,191.30	-7,078.63	303.41	7,077.24	0.00	0.00	0.00
14,400.00	89.80	180.25	7,191.65	-7,178.63	302.97	7,177.24	0.00	0.00	0.00
14,500.00	89.80	180.25	7,191.99	-7,278.63	302.54	7,277.24	0.00	0.00	0.00
14,600.00	89.80	180.25	7,192.34	-7,378.62	302.11	7,377.24	0.00	0.00	0.00
14,700.00	89.80	180.25	7,192.68	-7,478.62	301.67	7,477.24	0.00	0.00	0.00
14,800.00	89.80	180.25	7,193.03	-7,578.62	301.24	7,577.24	0.00	0.00	0.00
14,900.00	89.80	180.25	7,193.37	-7,678.62	300.81	7,677.23	0.00	0.00	0.00
15,000.00	89.80	180.25	7,193.72	-7,778.62	300.37	7,777.23	0.00	0.00	0.00
15,100.00	89.80	180.25	7,194.06	-7,878.62	299.94	7,877.23	0.00	0.00	0.00
15,200.00	89.80	180.25	7,194.41	-7,978.62	299.51	7,977.23	0.00	0.00	0.00
15,300.00	89.80	180.25	7,194.76	-8,078.61	299.07	8,077.23	0.00	0.00	0.00
15,400.00	89.80	180.25	7,195.10	-8,178.61	298.64	8,177.23	0.00	0.00	0.00
15,500.00	89.80	180.25	7,195.45	-8,278.61	298.20	8,277.23	0.00	0.00	0.00
15,600.00	89.80	180.25	7,195.79	-8,378.61	297.77	8,377.23	0.00	0.00	0.00
15,700.00	89.80	180.25	7,196.14	-8,478.61	297.34	8,477.23	0.00	0.00	0.00
15,800.00	89.80	180.25	7,196.48	-8,578.61	296.90	8,577.23	0.00	0.00	0.00
15,900.00	89.80	180.25	7,196.83	-8,678.61	296.47	8,677.23	0.00	0.00	0.00
16,000.00	89.80	180.25	7,197.18	-8,778.60	296.04	8,777.23	0.00	0.00	0.00
16,100.00	89.80	180.25	7,197.52	-8,878.60	295.60	8,877.23	0.00	0.00	0.00
16,200.00	89.80	180.25	7,197.87	-8,978.60	295.17	8,977.23	0.00	0.00	0.00
16,300.00	89.80	180.25	7,198.21	-9,078.60	294.74	9,077.23	0.00	0.00	0.00
16,400.00	89.80	180.25	7,198.56	-9,178.60	294.30	9,177.23	0.00	0.00	0.00
16,500.00	89.80	180.25	7,198.90	-9,278.60	293.87	9,277.23	0.00	0.00	0.00
16,600.00	89.80	180.25	7,199.25	-9,378.59	293.44	9,377.22	0.00	0.00	0.00
16,700.00	89.80	180.25	7,199.60	-9,478.59	293.00	9,477.22	0.00	0.00	0.00
16,800.00	89.80	180.25	7,199.94	-9,578.59	292.57	9,577.22	0.00	0.00	0.00
16,900.00	89.80	180.25	7,200.29	-9,678.59	292.14	9,677.22	0.00	0.00	0.00
17,000.00	89.80	180.25	7,200.63	-9,778.59	291.70	9,777.22	0.00	0.00	0.00
17,100.00	89.80	180.25	7,200.98	-9,878.59	291.27	9,877.22	0.00	0.00	0.00
17,200.00	89.80	180.25	7,201.32	-9,978.59	290.84	9,977.22	0.00	0.00	0.00
17,300.00	89.80	180.25	7,201.67	-10,078.58	290.40	10,077.22	0.00	0.00	0.00
17,400.00	89.80	180.25	7,202.02	-10,178.58	289.97	10,177.22	0.00	0.00	0.00
17,500.00	89.80	180.25	7,202.36	-10,278.58	289.54	10,277.22	0.00	0.00	0.00
17,600.00	89.80	180.25	7,202.71	-10,378.58	289.10	10,377.22	0.00	0.00	0.00
17,700.00	89.80	180.25	7,203.05	-10,478.58	288.67	10,477.22	0.00	0.00	0.00
17,800.00	89.80	180.25	7,203.40	-10,578.58	288.24	10,577.22	0.00	0.00	0.00
17,900.00	89.80	180.25	7,203.74	-10,678.57	287.80	10,677.22	0.00	0.00	0.00
18,000.00	89.80	180.25	7,204.09	-10,778.57	287.37	10,777.22	0.00	0.00	0.00
18,100.00	89.80	180.25	7,204.44	-10,878.57	286.94	10,877.22	0.00	0.00	0.00
18,200.00	89.80	180.25	7,204.78	-10,978.57	286.50	10,977.22	0.00	0.00	0.00
18,300.00	89.80	180.25	7,205.13	-11,078.57	286.07	11,077.21	0.00	0.00	0.00
18,400.00	89.80	180.25	7,205.47	-11,178.57	285.64	11,177.21	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
18,500.00	89.80	180.25	7,205.82	-11,278.57	285.20	11,277.21	0.00	0.00	0.00
18,600.00	89.80	180.25	7,206.16	-11,378.56	284.77	11,377.21	0.00	0.00	0.00
18,700.00	89.80	180.25	7,206.51	-11,478.56	284.34	11,477.21	0.00	0.00	0.00
18,800.00	89.80	180.25	7,206.86	-11,578.56	283.90	11,577.21	0.00	0.00	0.00
18,900.00	89.80	180.25	7,207.20	-11,678.56	283.47	11,677.21	0.00	0.00	0.00
19,000.00	89.80	180.25	7,207.55	-11,778.56	283.04	11,777.21	0.00	0.00	0.00
19,100.00	89.80	180.25	7,207.89	-11,878.56	282.60	11,877.21	0.00	0.00	0.00
19,200.00	89.80	180.25	7,208.24	-11,978.55	282.17	11,977.21	0.00	0.00	0.00
19,300.00	89.80	180.25	7,208.58	-12,078.55	281.74	12,077.21	0.00	0.00	0.00
19,400.00	89.80	180.25	7,208.93	-12,178.55	281.30	12,177.21	0.00	0.00	0.00
19,500.00	89.80	180.25	7,209.27	-12,278.55	280.87	12,277.21	0.00	0.00	0.00
19,600.00	89.80	180.25	7,209.62	-12,378.55	280.44	12,377.21	0.00	0.00	0.00
19,700.00	89.80	180.25	7,209.97	-12,478.55	280.00	12,477.21	0.00	0.00	0.00
19,800.00	89.80	180.25	7,210.31	-12,578.55	279.57	12,577.21	0.00	0.00	0.00
19,900.00	89.80	180.25	7,210.66	-12,678.54	279.14	12,677.21	0.00	0.00	0.00
20,000.00	89.80	180.25	7,211.00	-12,778.54	278.70	12,777.20	0.00	0.00	0.00
20,100.00	89.80	180.25	7,211.35	-12,878.54	278.27	12,877.20	0.00	0.00	0.00
20,200.00	89.80	180.25	7,211.69	-12,978.54	277.84	12,977.20	0.00	0.00	0.00
20,288.36	89.80	180.25	7,212.00	-13,066.90	277.45	13,065.56	0.00	0.00	0.00
TD Well @ 20288.36ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,508.79	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,558.97	7,168.00	Top of Production	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,481.53	1,473.00	Fox Hills			
4,209.79	4,180.00	Parkman			
4,468.79	4,439.00	Sussex			
7,014.03	6,947.00	Sharon Springs			
7,060.41	6,981.00	Niobrara			
7,244.81	7,091.00	Nio B			
7,418.14	7,152.00	Nio C			

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 177' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
783.33	781.60	24.63	27.84	End Nudge @ 783.33ft
3,533.33	3,504.84	278.23	314.49	Begin Drop @ 3533.33ft
3,933.33	3,903.54	296.71	335.37	End Drop @ 3933.33ft
6,561.17	6,531.38	296.71	335.37	KOP @ 6561.17ft
7,100.00	7,008.14	81.97	334.44	DLS = 9°/100'
7,558.97	7,168.00	-337.70	332.62	End Build @ 7558.97ft
20,288.36	7,212.00	-13,066.90	277.45	TD Well @ 20288.36ft