

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

ENGLISH FARMS 8-12HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.059553/-104.686729

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 8-12HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS		
TVD	MD	Size
1500.00	1508.79	9-5/8
7329.00	7707.85	5-1/2

WELL DETAILS: ENGLISH FARMS 8-12HZ
GL = 4945'
RKB = 17' @ 4962.00usft (Drilling Rig)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	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	1.00	781.60	37.17	0.65	1.50	1.00	-37.17	
4	2323.33	8.00	1.00	2306.61	251.46	4.39	0.00	0.00	-251.48	
5	2723.33	0.00	0.00	2705.32	279.34	4.88	2.00	180.00	-279.36	
6	6710.40	0.00	0.00	6692.39	279.34	4.88	0.00	0.00	-279.36	
7	7707.85	89.77	180.30	7329.00	-354.72	1.51	9.00	180.30	354.71	
8	20428.72	89.77	180.30	7380.00	-13075.31	-66.03	0.00	0.0013075.48		ENGLISH FARMS 8-12HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
ENGLISH FARMS 8-12HZ_SHL	0.00	0.00	0.00	40.059553	-104.686729
ENGLISH FARMS 8-12HZ_BHL	7380.00	-13075.31	-66.03	40.023646	-104.686965

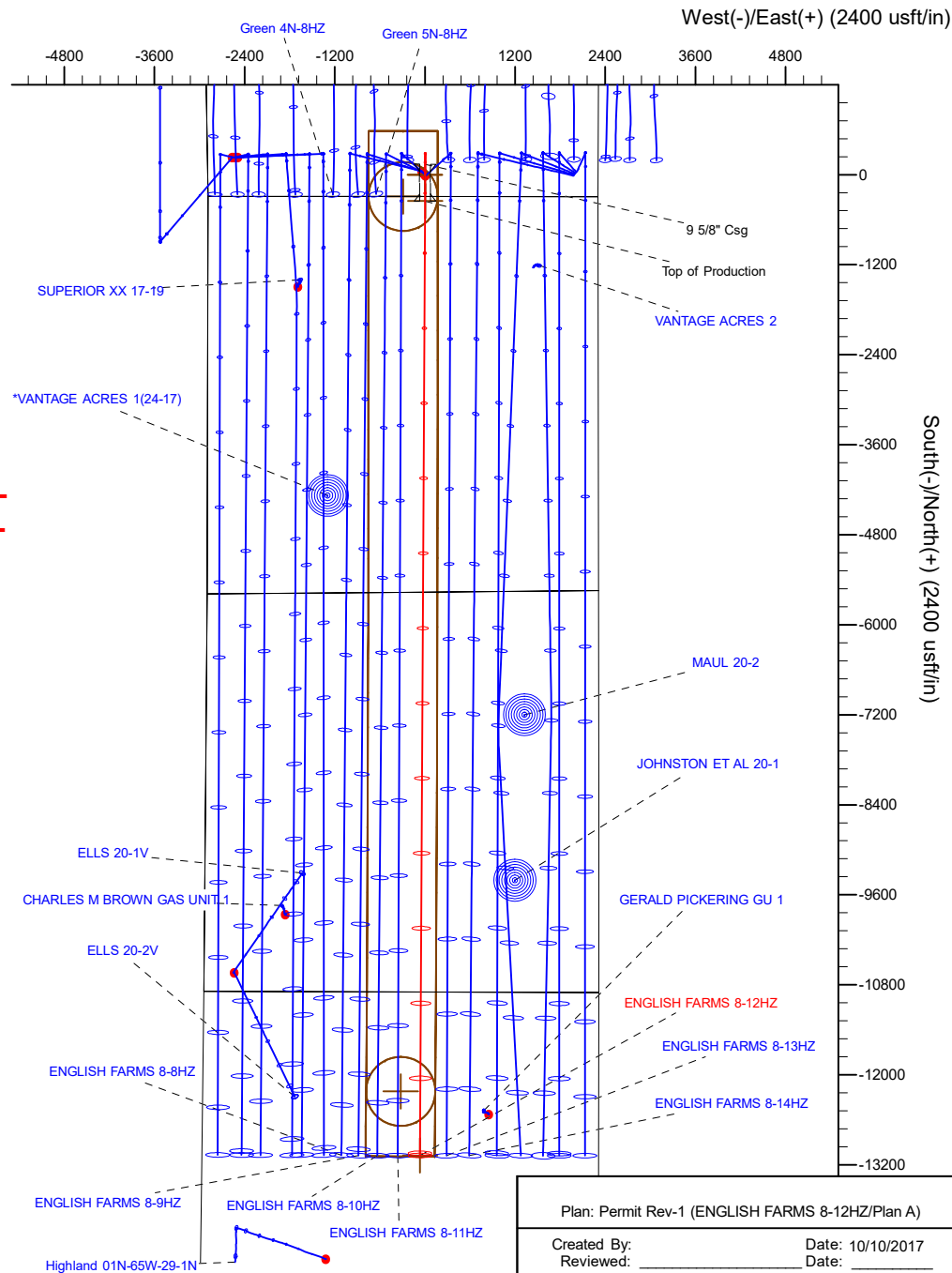
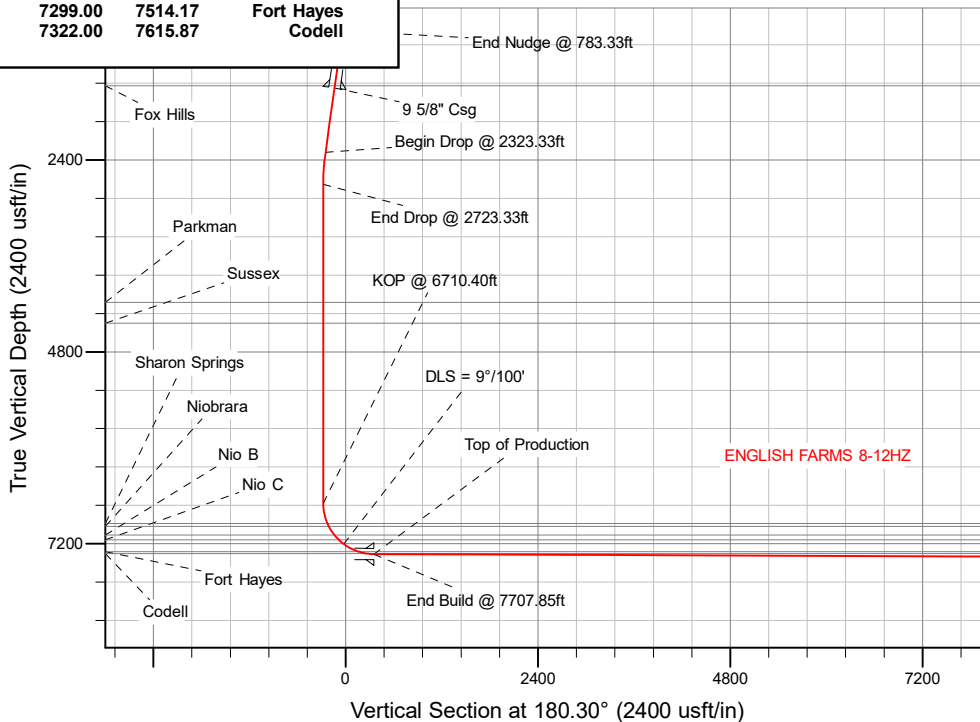
FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
1473.00	1481.53	Fox Hills
4180.00	4198.02	Parkman
4439.00	4457.02	Sussex
6947.00	6972.35	Sharon Springs
6981.00	7009.95	Niobrara
7091.00	7141.14	Nio B
7152.00	7223.92	Nio C
7299.00	7514.17	Fort Hayes
7322.00	7615.87	Codell

SHL
292' FSL
2306' FEL

HEEL
50' FNL
2348' FEL

TOE
2179' FNL
2378' FEL



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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 8-12HZ			
Well Position	+N/-S	-46.25 usft	Northing:	14,548,573.46 usft
	+E/-W	38.05 usft	Easting:	1,728,072.32 usft
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	52,295.14357651

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	180.30

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 declination
2	1,500.00	20,428.72	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 = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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	1.00	781.60	37.17	0.65	1.50	1.50	0.00	1.00	
2,323.33	8.00	1.00	2,306.61	251.46	4.39	0.00	0.00	0.00	0.00	
2,723.33	0.00	0.00	2,705.32	279.34	4.88	2.00	-2.00	0.00	180.00	
6,710.40	0.00	0.00	6,692.39	279.34	4.88	0.00	0.00	0.00	0.00	
7,707.85	89.77	180.30	7,329.00	-354.72	1.51	9.00	9.00	-18.02	180.30	
20,428.72	89.77	180.30	7,380.00	-13,075.31	-66.03	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 = 17' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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	1.00	300.00	0.33	0.01	-0.33	1.50	1.50	0.00
400.00	2.25	1.00	399.96	2.94	0.05	-2.94	1.50	1.50	0.00
500.00	3.75	1.00	499.82	8.18	0.14	-8.18	1.50	1.50	0.00
600.00	5.25	1.00	599.51	16.02	0.28	-16.02	1.50	1.50	0.00
700.00	6.75	1.00	698.96	26.47	0.46	-26.47	1.50	1.50	0.00
783.33	8.00	1.00	781.60	37.17	0.65	-37.17	1.50	1.50	0.00
End Nudge @ 783.33ft									
800.00	8.00	1.00	798.11	39.49	0.69	-39.49	0.00	0.00	0.00
900.00	8.00	1.00	897.13	53.40	0.93	-53.41	0.00	0.00	0.00
1,000.00	8.00	1.00	996.16	67.32	1.18	-67.32	0.00	0.00	0.00
1,100.00	8.00	1.00	1,095.19	81.23	1.42	-81.24	0.00	0.00	0.00
1,200.00	8.00	1.00	1,194.21	95.15	1.66	-95.15	0.00	0.00	0.00
1,300.00	8.00	1.00	1,293.24	109.06	1.90	-109.07	0.00	0.00	0.00
1,400.00	8.00	1.00	1,392.27	122.98	2.15	-122.99	0.00	0.00	0.00
1,481.53	8.00	1.00	1,473.00	134.32	2.34	-134.33	0.00	0.00	0.00
Fox Hills									
1,500.00	8.00	1.00	1,491.29	136.89	2.39	-136.90	0.00	0.00	0.00
1,508.79	8.00	1.00	1,500.00	138.12	2.41	-138.13	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	8.00	1.00	1,590.32	150.81	2.63	-150.82	0.00	0.00	0.00
1,700.00	8.00	1.00	1,689.35	164.72	2.88	-164.74	0.00	0.00	0.00
1,800.00	8.00	1.00	1,788.37	178.64	3.12	-178.65	0.00	0.00	0.00
1,900.00	8.00	1.00	1,887.40	192.55	3.36	-192.57	0.00	0.00	0.00
2,000.00	8.00	1.00	1,986.43	206.47	3.60	-206.49	0.00	0.00	0.00
2,100.00	8.00	1.00	2,085.46	220.38	3.85	-220.40	0.00	0.00	0.00
2,200.00	8.00	1.00	2,184.48	234.30	4.09	-234.32	0.00	0.00	0.00
2,300.00	8.00	1.00	2,283.51	248.21	4.33	-248.23	0.00	0.00	0.00
2,323.33	8.00	1.00	2,306.61	251.46	4.39	-251.48	0.00	0.00	0.00
Begin Drop @ 2323.33ft									
2,400.00	6.47	1.00	2,382.67	261.11	4.56	-261.13	2.00	-2.00	0.00
2,500.00	4.47	1.00	2,482.21	270.64	4.72	-270.66	2.00	-2.00	0.00
2,600.00	2.47	1.00	2,582.02	276.68	4.83	-276.70	2.00	-2.00	0.00
2,700.00	0.47	1.00	2,681.98	279.24	4.87	-279.26	2.00	-2.00	0.00
2,723.33	0.00	0.00	2,705.32	279.34	4.88	-279.36	2.00	-2.00	0.00
End Drop @ 2723.33ft									
2,800.00	0.00	0.00	2,781.98	279.34	4.88	-279.36	0.00	0.00	0.00
2,900.00	0.00	0.00	2,881.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,000.00	0.00	0.00	2,981.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,100.00	0.00	0.00	3,081.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,200.00	0.00	0.00	3,181.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,300.00	0.00	0.00	3,281.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,400.00	0.00	0.00	3,381.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,500.00	0.00	0.00	3,481.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,600.00	0.00	0.00	3,581.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,700.00	0.00	0.00	3,681.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,800.00	0.00	0.00	3,781.98	279.34	4.88	-279.36	0.00	0.00	0.00
3,900.00	0.00	0.00	3,881.98	279.34	4.88	-279.36	0.00	0.00	0.00
4,000.00	0.00	0.00	3,981.98	279.34	4.88	-279.36	0.00	0.00	0.00

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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	4,081.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,198.02	0.00	0.00	4,180.00	279.34	4.88	-279.36	0.00	0.00	0.00	
Parkman										
4,200.00	0.00	0.00	4,181.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,281.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,381.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,457.02	0.00	0.00	4,439.00	279.34	4.88	-279.36	0.00	0.00	0.00	
Sussex										
4,500.00	0.00	0.00	4,481.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,581.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,681.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,781.98	279.34	4.88	-279.36	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,881.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,981.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,081.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,181.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,281.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,381.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,481.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,581.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,681.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,781.98	279.34	4.88	-279.36	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,881.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,981.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,081.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,181.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,281.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,381.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,481.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,581.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,681.98	279.34	4.88	-279.36	0.00	0.00	0.00	
6,710.40	0.00	0.00	6,692.39	279.34	4.88	-279.36	0.00	0.00	0.00	
KOP @ 6710.40ft										
6,800.00	8.06	180.30	6,781.69	273.04	4.84	-273.06	9.00	9.00	0.00	
6,900.00	17.06	180.30	6,879.19	251.31	4.73	-251.33	9.00	9.00	0.00	
6,972.35	23.57	180.30	6,947.00	226.20	4.59	-226.23	9.00	9.00	0.00	
Sharon Springs										
7,000.00	26.06	180.30	6,972.10	214.60	4.53	-214.62	9.00	9.00	0.00	
7,009.95	26.96	180.30	6,981.00	210.16	4.51	-210.18	9.00	9.00	0.00	
Niobrara										
7,100.00	35.06	180.30	7,058.12	163.80	4.26	-163.82	9.00	9.00	0.00	
7,141.14	38.77	180.30	7,091.00	139.10	4.13	-139.12	9.00	9.00	0.00	
Nio B										
7,200.00	44.06	180.30	7,135.13	100.17	3.92	-100.19	9.00	9.00	0.00	
7,223.92	46.22	180.30	7,152.00	83.22	3.83	-83.24	9.00	9.00	0.00	
Nio C										
7,300.00	53.06	180.30	7,201.24	25.28	3.53	-25.30	9.00	9.00	0.00	
DLS = 9°/100'										
7,400.00	62.06	180.30	7,254.82	-59.03	3.08	59.01	9.00	9.00	0.00	
7,500.00	71.06	180.30	7,294.55	-150.68	2.59	150.67	9.00	9.00	0.00	
7,514.17	72.34	180.30	7,299.00	-164.13	2.52	164.12	9.00	9.00	0.00	
Fort Hayes										
7,600.00	80.06	180.30	7,319.46	-247.42	2.08	247.41	9.00	9.00	0.00	

Corporate Planning Report

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Project: WELD-NAD83-UTMFT13N
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Well: ENGLISH FARMS 8-12HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well ENGLISH FARMS 8-12HZ
TVD Reference: RKB = 17' @ 4962.00usft (Drilling Rig)
MD Reference: RKB = 17' @ 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)
7,615.87	81.49	180.30	7,322.00	-263.09	2.00	263.07	9.00	9.00	0.00
Codell									
7,700.00	89.06	180.30	7,328.92	-346.87	1.55	346.86	9.00	9.00	0.00
7,707.85	89.77	180.30	7,329.00	-354.72	1.51	354.71	9.00	9.00	0.00
End Build @ 7707.85ft - Top of Production									
7,800.00	89.77	180.30	7,329.37	-446.87	1.02	446.86	0.00	0.00	0.00
7,900.00	89.77	180.30	7,329.77	-546.87	0.49	546.86	0.00	0.00	0.00
8,000.00	89.77	180.30	7,330.17	-646.86	-0.04	646.86	0.00	0.00	0.00
8,100.00	89.77	180.30	7,330.57	-746.86	-0.57	746.85	0.00	0.00	0.00
8,200.00	89.77	180.30	7,330.97	-846.86	-1.10	846.85	0.00	0.00	0.00
8,300.00	89.77	180.30	7,331.38	-946.86	-1.63	946.85	0.00	0.00	0.00
8,400.00	89.77	180.30	7,331.78	-1,046.86	-2.17	1,046.85	0.00	0.00	0.00
8,500.00	89.77	180.30	7,332.18	-1,146.85	-2.70	1,146.85	0.00	0.00	0.00
8,600.00	89.77	180.30	7,332.58	-1,246.85	-3.23	1,246.85	0.00	0.00	0.00
8,700.00	89.77	180.30	7,332.98	-1,346.85	-3.76	1,346.85	0.00	0.00	0.00
8,800.00	89.77	180.30	7,333.38	-1,446.85	-4.29	1,446.85	0.00	0.00	0.00
8,900.00	89.77	180.30	7,333.78	-1,546.84	-4.82	1,546.85	0.00	0.00	0.00
9,000.00	89.77	180.30	7,334.18	-1,646.84	-5.35	1,646.85	0.00	0.00	0.00
9,100.00	89.77	180.30	7,334.58	-1,746.84	-5.88	1,746.85	0.00	0.00	0.00
9,200.00	89.77	180.30	7,334.98	-1,846.84	-6.41	1,846.85	0.00	0.00	0.00
9,300.00	89.77	180.30	7,335.38	-1,946.84	-6.94	1,946.84	0.00	0.00	0.00
9,400.00	89.77	180.30	7,335.79	-2,046.83	-7.47	2,046.84	0.00	0.00	0.00
9,500.00	89.77	180.30	7,336.19	-2,146.83	-8.01	2,146.84	0.00	0.00	0.00
9,600.00	89.77	180.30	7,336.59	-2,246.83	-8.54	2,246.84	0.00	0.00	0.00
9,700.00	89.77	180.30	7,336.99	-2,346.83	-9.07	2,346.84	0.00	0.00	0.00
9,800.00	89.77	180.30	7,337.39	-2,446.82	-9.60	2,446.84	0.00	0.00	0.00
9,900.00	89.77	180.30	7,337.79	-2,546.82	-10.13	2,546.84	0.00	0.00	0.00
10,000.00	89.77	180.30	7,338.19	-2,646.82	-10.66	2,646.84	0.00	0.00	0.00
10,100.00	89.77	180.30	7,338.59	-2,746.82	-11.19	2,746.84	0.00	0.00	0.00
10,200.00	89.77	180.30	7,338.99	-2,846.82	-11.72	2,846.84	0.00	0.00	0.00
10,300.00	89.77	180.30	7,339.39	-2,946.81	-12.25	2,946.84	0.00	0.00	0.00
10,400.00	89.77	180.30	7,339.79	-3,046.81	-12.78	3,046.84	0.00	0.00	0.00
10,500.00	89.77	180.30	7,340.20	-3,146.81	-13.31	3,146.84	0.00	0.00	0.00
10,600.00	89.77	180.30	7,340.60	-3,246.81	-13.85	3,246.83	0.00	0.00	0.00
10,700.00	89.77	180.30	7,341.00	-3,346.80	-14.38	3,346.83	0.00	0.00	0.00
10,800.00	89.77	180.30	7,341.40	-3,446.80	-14.91	3,446.83	0.00	0.00	0.00
10,900.00	89.77	180.30	7,341.80	-3,546.80	-15.44	3,546.83	0.00	0.00	0.00
11,000.00	89.77	180.30	7,342.20	-3,646.80	-15.97	3,646.83	0.00	0.00	0.00
11,100.00	89.77	180.30	7,342.60	-3,746.80	-16.50	3,746.83	0.00	0.00	0.00
11,200.00	89.77	180.30	7,343.00	-3,846.79	-17.03	3,846.83	0.00	0.00	0.00
11,300.00	89.77	180.30	7,343.40	-3,946.79	-17.56	3,946.83	0.00	0.00	0.00
11,400.00	89.77	180.30	7,343.80	-4,046.79	-18.09	4,046.83	0.00	0.00	0.00
11,500.00	89.77	180.30	7,344.20	-4,146.79	-18.62	4,146.83	0.00	0.00	0.00
11,600.00	89.77	180.30	7,344.61	-4,246.78	-19.15	4,246.83	0.00	0.00	0.00
11,700.00	89.77	180.30	7,345.01	-4,346.78	-19.69	4,346.83	0.00	0.00	0.00
11,800.00	89.77	180.30	7,345.41	-4,446.78	-20.22	4,446.82	0.00	0.00	0.00
11,900.00	89.77	180.30	7,345.81	-4,546.78	-20.75	4,546.82	0.00	0.00	0.00
12,000.00	89.77	180.30	7,346.21	-4,646.78	-21.28	4,646.82	0.00	0.00	0.00
12,100.00	89.77	180.30	7,346.61	-4,746.77	-21.81	4,746.82	0.00	0.00	0.00
12,200.00	89.77	180.30	7,347.01	-4,846.77	-22.34	4,846.82	0.00	0.00	0.00
12,300.00	89.77	180.30	7,347.41	-4,946.77	-22.87	4,946.82	0.00	0.00	0.00
12,400.00	89.77	180.30	7,347.81	-5,046.77	-23.40	5,046.82	0.00	0.00	0.00
12,500.00	89.77	180.30	7,348.21	-5,146.76	-23.93	5,146.82	0.00	0.00	0.00
12,600.00	89.77	180.30	7,348.61	-5,246.76	-24.46	5,246.82	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 8-12HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well ENGLISH FARMS 8-12HZ
TVD Reference: RKB = 17' @ 4962.00usft (Drilling Rig)
MD Reference: RKB = 17' @ 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)
12,700.00	89.77	180.30	7,349.02	-5,346.76	-24.99	5,346.82	0.00	0.00	0.00
12,800.00	89.77	180.30	7,349.42	-5,446.76	-25.53	5,446.82	0.00	0.00	0.00
12,900.00	89.77	180.30	7,349.82	-5,546.76	-26.06	5,546.82	0.00	0.00	0.00
13,000.00	89.77	180.30	7,350.22	-5,646.75	-26.59	5,646.82	0.00	0.00	0.00
13,100.00	89.77	180.30	7,350.62	-5,746.75	-27.12	5,746.81	0.00	0.00	0.00
13,200.00	89.77	180.30	7,351.02	-5,846.75	-27.65	5,846.81	0.00	0.00	0.00
13,300.00	89.77	180.30	7,351.42	-5,946.75	-28.18	5,946.81	0.00	0.00	0.00
13,400.00	89.77	180.30	7,351.82	-6,046.74	-28.71	6,046.81	0.00	0.00	0.00
13,500.00	89.77	180.30	7,352.22	-6,146.74	-29.24	6,146.81	0.00	0.00	0.00
13,600.00	89.77	180.30	7,352.62	-6,246.74	-29.77	6,246.81	0.00	0.00	0.00
13,700.00	89.77	180.30	7,353.02	-6,346.74	-30.30	6,346.81	0.00	0.00	0.00
13,800.00	89.77	180.30	7,353.43	-6,446.74	-30.83	6,446.81	0.00	0.00	0.00
13,900.00	89.77	180.30	7,353.83	-6,546.73	-31.37	6,546.81	0.00	0.00	0.00
14,000.00	89.77	180.30	7,354.23	-6,646.73	-31.90	6,646.81	0.00	0.00	0.00
14,100.00	89.77	180.30	7,354.63	-6,746.73	-32.43	6,746.81	0.00	0.00	0.00
14,200.00	89.77	180.30	7,355.03	-6,846.73	-32.96	6,846.81	0.00	0.00	0.00
14,300.00	89.77	180.30	7,355.43	-6,946.72	-33.49	6,946.80	0.00	0.00	0.00
14,400.00	89.77	180.30	7,355.83	-7,046.72	-34.02	7,046.80	0.00	0.00	0.00
14,500.00	89.77	180.30	7,356.23	-7,146.72	-34.55	7,146.80	0.00	0.00	0.00
14,600.00	89.77	180.30	7,356.63	-7,246.72	-35.08	7,246.80	0.00	0.00	0.00
14,700.00	89.77	180.30	7,357.03	-7,346.72	-35.61	7,346.80	0.00	0.00	0.00
14,800.00	89.77	180.30	7,357.43	-7,446.71	-36.14	7,446.80	0.00	0.00	0.00
14,900.00	89.77	180.30	7,357.84	-7,546.71	-36.68	7,546.80	0.00	0.00	0.00
15,000.00	89.77	180.30	7,358.24	-7,646.71	-37.21	7,646.80	0.00	0.00	0.00
15,100.00	89.77	180.30	7,358.64	-7,746.71	-37.74	7,746.80	0.00	0.00	0.00
15,200.00	89.77	180.30	7,359.04	-7,846.70	-38.27	7,846.80	0.00	0.00	0.00
15,300.00	89.77	180.30	7,359.44	-7,946.70	-38.80	7,946.80	0.00	0.00	0.00
15,400.00	89.77	180.30	7,359.84	-8,046.70	-39.33	8,046.80	0.00	0.00	0.00
15,500.00	89.77	180.30	7,360.24	-8,146.70	-39.86	8,146.80	0.00	0.00	0.00
15,600.00	89.77	180.30	7,360.64	-8,246.70	-40.39	8,246.79	0.00	0.00	0.00
15,700.00	89.77	180.30	7,361.04	-8,346.69	-40.92	8,346.79	0.00	0.00	0.00
15,800.00	89.77	180.30	7,361.44	-8,446.69	-41.45	8,446.79	0.00	0.00	0.00
15,900.00	89.77	180.30	7,361.84	-8,546.69	-41.98	8,546.79	0.00	0.00	0.00
16,000.00	89.77	180.30	7,362.25	-8,646.69	-42.52	8,646.79	0.00	0.00	0.00
16,100.00	89.77	180.30	7,362.65	-8,746.68	-43.05	8,746.79	0.00	0.00	0.00
16,200.00	89.77	180.30	7,363.05	-8,846.68	-43.58	8,846.79	0.00	0.00	0.00
16,300.00	89.77	180.30	7,363.45	-8,946.68	-44.11	8,946.79	0.00	0.00	0.00
16,400.00	89.77	180.30	7,363.85	-9,046.68	-44.64	9,046.79	0.00	0.00	0.00
16,500.00	89.77	180.30	7,364.25	-9,146.68	-45.17	9,146.79	0.00	0.00	0.00
16,600.00	89.77	180.30	7,364.65	-9,246.67	-45.70	9,246.79	0.00	0.00	0.00
16,700.00	89.77	180.30	7,365.05	-9,346.67	-46.23	9,346.79	0.00	0.00	0.00
16,800.00	89.77	180.30	7,365.45	-9,446.67	-46.76	9,446.78	0.00	0.00	0.00
16,900.00	89.77	180.30	7,365.85	-9,546.67	-47.29	9,546.78	0.00	0.00	0.00
17,000.00	89.77	180.30	7,366.25	-9,646.66	-47.82	9,646.78	0.00	0.00	0.00
17,100.00	89.77	180.30	7,366.66	-9,746.66	-48.36	9,746.78	0.00	0.00	0.00
17,200.00	89.77	180.30	7,367.06	-9,846.66	-48.89	9,846.78	0.00	0.00	0.00
17,300.00	89.77	180.30	7,367.46	-9,946.66	-49.42	9,946.78	0.00	0.00	0.00
17,400.00	89.77	180.30	7,367.86	-10,046.66	-49.95	10,046.78	0.00	0.00	0.00
17,500.00	89.77	180.30	7,368.26	-10,146.65	-50.48	10,146.78	0.00	0.00	0.00
17,600.00	89.77	180.30	7,368.66	-10,246.65	-51.01	10,246.78	0.00	0.00	0.00
17,700.00	89.77	180.30	7,369.06	-10,346.65	-51.54	10,346.78	0.00	0.00	0.00
17,800.00	89.77	180.30	7,369.46	-10,446.65	-52.07	10,446.78	0.00	0.00	0.00
17,900.00	89.77	180.30	7,369.86	-10,546.64	-52.60	10,546.78	0.00	0.00	0.00
18,000.00	89.77	180.30	7,370.26	-10,646.64	-53.13	10,646.78	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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)	
18,100.00	89.77	180.30	7,370.66	-10,746.64	-53.66	10,746.77	0.00	0.00	0.00	
18,200.00	89.77	180.30	7,371.07	-10,846.64	-54.20	10,846.77	0.00	0.00	0.00	
18,300.00	89.77	180.30	7,371.47	-10,946.64	-54.73	10,946.77	0.00	0.00	0.00	
18,400.00	89.77	180.30	7,371.87	-11,046.63	-55.26	11,046.77	0.00	0.00	0.00	
18,500.00	89.77	180.30	7,372.27	-11,146.63	-55.79	11,146.77	0.00	0.00	0.00	
18,600.00	89.77	180.30	7,372.67	-11,246.63	-56.32	11,246.77	0.00	0.00	0.00	
18,700.00	89.77	180.30	7,373.07	-11,346.63	-56.85	11,346.77	0.00	0.00	0.00	
18,800.00	89.77	180.30	7,373.47	-11,446.63	-57.38	11,446.77	0.00	0.00	0.00	
18,900.00	89.77	180.30	7,373.87	-11,546.62	-57.91	11,546.77	0.00	0.00	0.00	
19,000.00	89.77	180.30	7,374.27	-11,646.62	-58.44	11,646.77	0.00	0.00	0.00	
19,100.00	89.77	180.30	7,374.67	-11,746.62	-58.97	11,746.77	0.00	0.00	0.00	
19,200.00	89.77	180.30	7,375.07	-11,846.62	-59.50	11,846.77	0.00	0.00	0.00	
19,300.00	89.77	180.30	7,375.48	-11,946.61	-60.04	11,946.76	0.00	0.00	0.00	
19,400.00	89.77	180.30	7,375.88	-12,046.61	-60.57	12,046.76	0.00	0.00	0.00	
19,500.00	89.77	180.30	7,376.28	-12,146.61	-61.10	12,146.76	0.00	0.00	0.00	
19,600.00	89.77	180.30	7,376.68	-12,246.61	-61.63	12,246.76	0.00	0.00	0.00	
19,700.00	89.77	180.30	7,377.08	-12,346.61	-62.16	12,346.76	0.00	0.00	0.00	
19,800.00	89.77	180.30	7,377.48	-12,446.60	-62.69	12,446.76	0.00	0.00	0.00	
19,900.00	89.77	180.30	7,377.88	-12,546.60	-63.22	12,546.76	0.00	0.00	0.00	
20,000.00	89.77	180.30	7,378.28	-12,646.60	-63.75	12,646.76	0.00	0.00	0.00	
20,100.00	89.77	180.30	7,378.68	-12,746.60	-64.28	12,746.76	0.00	0.00	0.00	
20,200.00	89.77	180.30	7,379.08	-12,846.59	-64.81	12,846.76	0.00	0.00	0.00	
20,300.00	89.77	180.30	7,379.48	-12,946.59	-65.34	12,946.76	0.00	0.00	0.00	
20,400.00	89.77	180.30	7,379.89	-13,046.59	-65.88	13,046.76	0.00	0.00	0.00	
20,428.72	89.77	180.30	7,380.00	-13,075.31	-66.03	13,075.48	0.00	0.00	0.00	
TD Well @ 20428.72ft										

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		
7,707.85	7,329.00	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				
4,198.02	4,180.00	Parkman				
4,457.02	4,439.00	Sussex				
6,972.35	6,947.00	Sharon Springs				
7,009.95	6,981.00	Niobrara				
7,141.14	7,091.00	Nio B				
7,223.92	7,152.00	Nio C				
7,514.17	7,299.00	Fort Hayes				
7,615.87	7,322.00	Codell				

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4962.00usft (Drilling Rig)
Site:	1N-65W-08 ENGLISH FARMS 15-8HZ PAD	North Reference:	True
Well:	ENGLISH FARMS 8-12HZ	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	37.17	0.65	End Nudge @ 783.33ft
2,323.33	2,306.61	251.46	4.39	Begin Drop @ 2323.33ft
2,723.33	2,705.32	279.34	4.88	End Drop @ 2723.33ft
6,710.40	6,692.39	279.34	4.88	KOP @ 6710.40ft
7,300.00	7,201.24	25.28	3.53	DLS = 9°/100'
7,707.85	7,329.00	-354.72	1.51	End Build @ 7707.85ft
20,428.72	7,380.00	-13,075.31	-66.03	TD Well @ 20428.72ft