

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

ENGLISH FARMS 8-8HZ

Plan A

Plan: Permit Rev-2

SHL Lat/Long: 40.059680/-104.686865

Survey Program: MWD+IFR+MSA

Standard Planning Report

19 October, 2017

Project: WELD-NAD83-UTMFT13N
Site: 1N-65W-08 ENGLISH FARMS 15-8HZ PAD
Well: ENGLISH FARMS 8-8HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS		
TVD	MD	Size
1500.00	1521.54	9-5/8
7163.00	7651.91	5-1/2

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

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	1303.33	15.80	283.80	1290.03	34.42	-140.15	1.50	283.80	-33.98	
4	4003.33	15.80	283.80	3888.02	209.78	-854.09	0.00	0.00	-207.10	
5	4793.33	0.00	0.00	4668.05	235.60	-959.20	2.00	180.00	-232.59	
6	6651.66	0.00	0.00	6526.38	235.60	-959.20	0.00	0.00	-232.59	
7	7651.91	90.02	180.18	7163.00	-401.26	-961.24	9.00	180.18	404.28	
8	20366.72	90.02	180.18	7158.00	-13116.00	-1001.98	0.00	0.00	13119.08	ENGLISH FARMS 8-8HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
ENGLISH FARMS 8-8HZ_SHL	0.00	0.00	0.00	40.059680	-104.686865
ENGLISH FARMS 8-8HZ_BHL	7158.00	-13116.00	-1001.98	40.023661	-104.690444

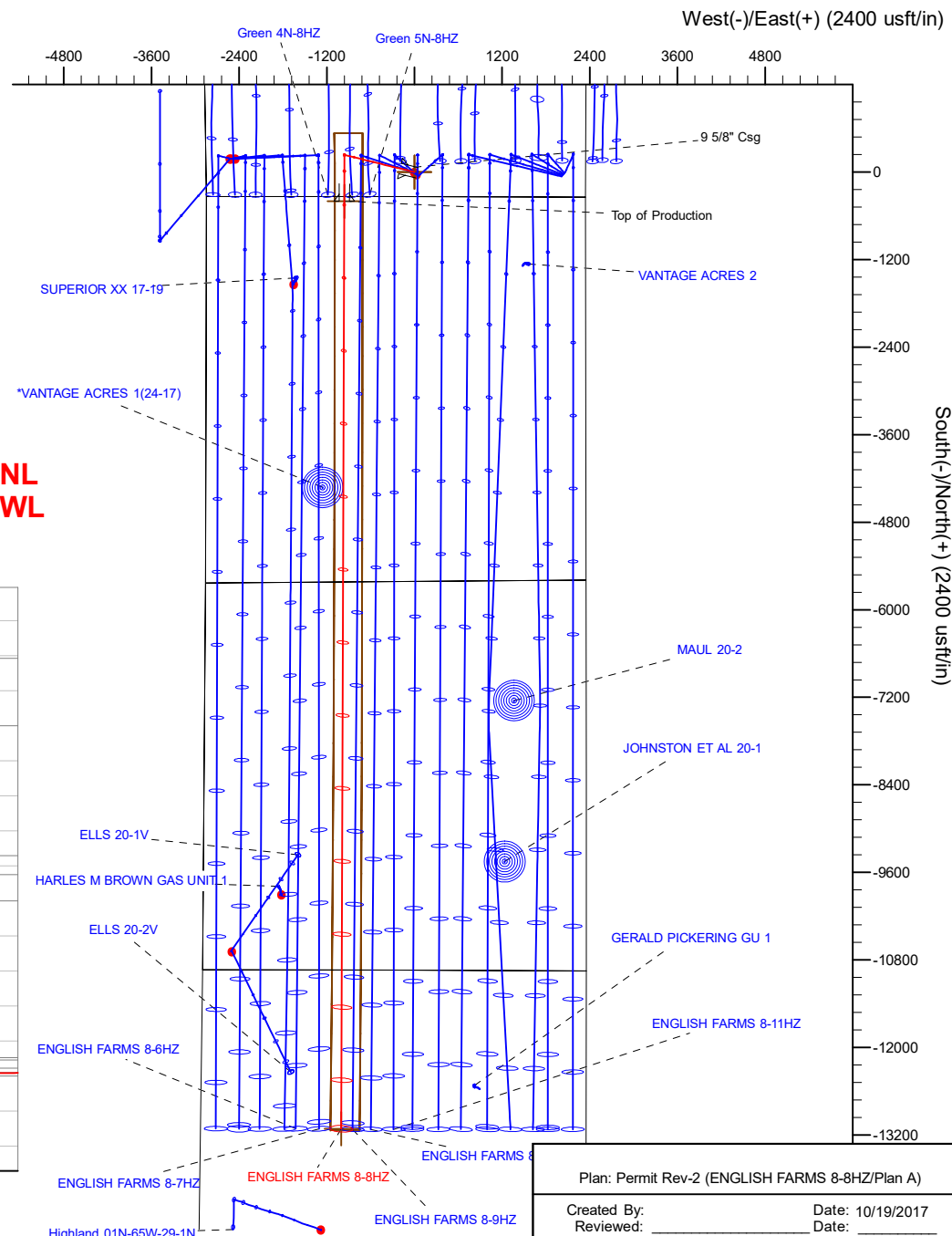
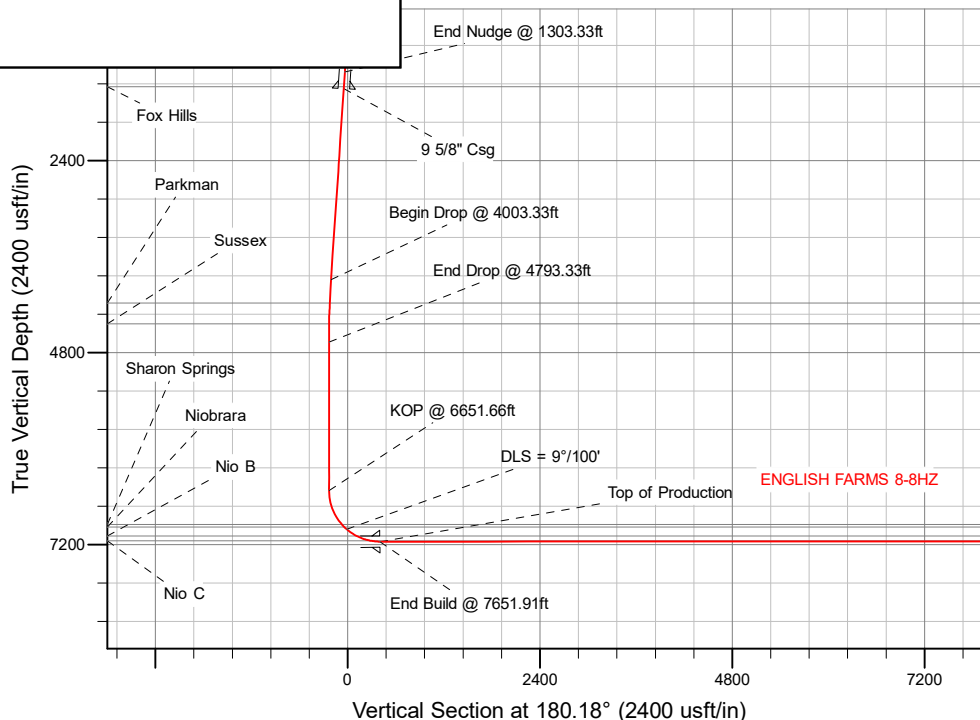
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1473.00	1493.48	Fox Hills
4180.00	4302.89	Parkman
4439.00	4564.04	Sussex
6947.00	7111.15	Sharon Springs
6981.00	7158.01	Niobrara
7091.00	7345.96	Nio B
7152.00	7533.16	Nio C

SHL
338' FSL
2345' FEL

HEEL
50' FNL
1915' FWL

TOE
2177' FNL
1929' FWL



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-8HZ
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 8-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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 8-8HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,548,619.57 usft	Latitude:	40.059680
	+E/-W	0.00 usft	Easting:	1,728,034.10 usft	Longitude:	-104.686865
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	10/6/2017	7.94	66.57	52,295.77226504

Design	Permit Rev-2			
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	180.18

Plan Survey Tool Program	Date	10/19/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination
2	1,500.00	20,366.72	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-8HZ
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 8-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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	
1,303.33	15.80	283.80	1,290.03	34.42	-140.15	1.50	1.50	0.00	283.80	
4,003.33	15.80	283.80	3,888.02	209.78	-854.09	0.00	0.00	0.00	0.00	
4,793.33	0.00	0.00	4,668.05	235.60	-959.20	2.00	-2.00	0.00	180.00	
6,651.66	0.00	0.00	6,526.38	235.60	-959.20	0.00	0.00	0.00	0.00	
7,651.91	90.02	180.18	7,163.00	-401.26	-961.24	9.00	9.00	-17.98	180.18	
20,366.72	90.02	180.18	7,158.00	-13,116.00	-1,001.98	0.00	0.00	0.00	0.00	ENGLISH FARMS 8-8

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-8HZ
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 8-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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	283.80	300.00	0.08	-0.32	-0.08	1.50	1.50	0.00
400.00	2.25	283.80	399.96	0.70	-2.86	-0.69	1.50	1.50	0.00
500.00	3.75	283.80	499.82	1.95	-7.94	-1.93	1.50	1.50	0.00
600.00	5.25	283.80	599.51	3.82	-15.56	-3.77	1.50	1.50	0.00
700.00	6.75	283.80	698.96	6.32	-25.71	-6.23	1.50	1.50	0.00
800.00	8.25	283.80	798.10	9.43	-38.39	-9.31	1.50	1.50	0.00
900.00	9.75	283.80	896.87	13.16	-53.58	-12.99	1.50	1.50	0.00
1,000.00	11.25	283.80	995.19	17.51	-71.28	-17.28	1.50	1.50	0.00
1,100.00	12.75	283.80	1,093.00	22.47	-91.47	-22.18	1.50	1.50	0.00
1,200.00	14.25	283.80	1,190.24	28.03	-114.14	-27.68	1.50	1.50	0.00
1,300.00	15.75	283.80	1,286.83	34.21	-139.27	-33.77	1.50	1.50	0.00
1,303.33	15.80	283.80	1,290.03	34.42	-140.15	-33.98	1.50	1.50	0.00
End Nudge @ 1303.33ft									
1,400.00	15.80	283.80	1,383.05	40.70	-165.71	-40.18	0.00	0.00	0.00
1,493.48	15.80	283.80	1,473.00	46.77	-190.43	-46.18	0.00	0.00	0.00
Fox Hills									
1,500.00	15.80	283.80	1,479.27	47.20	-192.15	-46.59	0.00	0.00	0.00
1,521.54	15.80	283.80	1,500.00	48.60	-197.85	-47.97	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	15.80	283.80	1,575.49	53.69	-218.60	-53.01	0.00	0.00	0.00
1,700.00	15.80	283.80	1,671.71	60.19	-245.04	-59.42	0.00	0.00	0.00
1,800.00	15.80	283.80	1,767.94	66.68	-271.48	-65.83	0.00	0.00	0.00
1,900.00	15.80	283.80	1,864.16	73.18	-297.92	-72.24	0.00	0.00	0.00
2,000.00	15.80	283.80	1,960.38	79.67	-324.36	-78.65	0.00	0.00	0.00
2,100.00	15.80	283.80	2,056.60	86.17	-350.81	-85.06	0.00	0.00	0.00
2,200.00	15.80	283.80	2,152.82	92.66	-377.25	-91.48	0.00	0.00	0.00
2,300.00	15.80	283.80	2,249.04	99.16	-403.69	-97.89	0.00	0.00	0.00
2,400.00	15.80	283.80	2,345.27	105.65	-430.13	-104.30	0.00	0.00	0.00
2,500.00	15.80	283.80	2,441.49	112.15	-456.57	-110.71	0.00	0.00	0.00
2,600.00	15.80	283.80	2,537.71	118.64	-483.02	-117.12	0.00	0.00	0.00
2,700.00	15.80	283.80	2,633.93	125.13	-509.46	-123.53	0.00	0.00	0.00
2,800.00	15.80	283.80	2,730.15	131.63	-535.90	-129.95	0.00	0.00	0.00
2,900.00	15.80	283.80	2,826.38	138.12	-562.34	-136.36	0.00	0.00	0.00
3,000.00	15.80	283.80	2,922.60	144.62	-588.78	-142.77	0.00	0.00	0.00
3,100.00	15.80	283.80	3,018.82	151.11	-615.23	-149.18	0.00	0.00	0.00
3,200.00	15.80	283.80	3,115.04	157.61	-641.67	-155.59	0.00	0.00	0.00
3,300.00	15.80	283.80	3,211.26	164.10	-668.11	-162.00	0.00	0.00	0.00
3,400.00	15.80	283.80	3,307.48	170.60	-694.55	-168.42	0.00	0.00	0.00
3,500.00	15.80	283.80	3,403.71	177.09	-720.99	-174.83	0.00	0.00	0.00
3,600.00	15.80	283.80	3,499.93	183.59	-747.44	-181.24	0.00	0.00	0.00
3,700.00	15.80	283.80	3,596.15	190.08	-773.88	-187.65	0.00	0.00	0.00
3,800.00	15.80	283.80	3,692.37	196.58	-800.32	-194.06	0.00	0.00	0.00
3,900.00	15.80	283.80	3,788.59	203.07	-826.76	-200.47	0.00	0.00	0.00
4,000.00	15.80	283.80	3,884.82	209.57	-853.21	-206.89	0.00	0.00	0.00
4,003.33	15.80	283.80	3,888.02	209.78	-854.09	-207.10	0.00	0.00	0.00
Begin Drop @ 4003.33ft									
4,100.00	13.87	283.80	3,981.46	215.69	-878.12	-212.93	2.00	-2.00	0.00
4,200.00	11.87	283.80	4,078.95	221.00	-899.74	-218.17	2.00	-2.00	0.00
4,300.00	9.87	283.80	4,177.15	225.49	-918.05	-222.61	2.00	-2.00	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 8-8HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference: Well ENGLISH FARMS 8-8HZ
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)
4,302.89	9.81	283.80	4,180.00	225.61	-918.53	-222.73	2.00	-2.00	0.00
Parkman									
4,400.00	7.87	283.80	4,275.95	229.17	-933.02	-226.24	2.00	-2.00	0.00
4,500.00	5.87	283.80	4,375.23	232.02	-944.63	-229.05	2.00	-2.00	0.00
4,564.04	4.59	283.80	4,439.00	233.41	-950.29	-230.43	2.00	-2.00	0.00
Sussex									
4,600.00	3.87	283.80	4,474.86	234.05	-952.87	-231.05	2.00	-2.00	0.00
4,700.00	1.87	283.80	4,574.73	235.24	-957.72	-232.23	2.00	-2.00	0.00
4,793.33	0.00	0.00	4,668.05	235.60	-959.20	-232.59	2.00	-2.00	0.00
End Drop @ 4793.33ft									
4,800.00	0.00	0.00	4,674.71	235.60	-959.20	-232.59	0.00	0.00	0.00
4,900.00	0.00	0.00	4,774.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,000.00	0.00	0.00	4,874.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,100.00	0.00	0.00	4,974.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,200.00	0.00	0.00	5,074.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,300.00	0.00	0.00	5,174.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,400.00	0.00	0.00	5,274.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,500.00	0.00	0.00	5,374.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,600.00	0.00	0.00	5,474.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,700.00	0.00	0.00	5,574.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,800.00	0.00	0.00	5,674.71	235.60	-959.20	-232.59	0.00	0.00	0.00
5,900.00	0.00	0.00	5,774.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,000.00	0.00	0.00	5,874.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,100.00	0.00	0.00	5,974.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,200.00	0.00	0.00	6,074.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,300.00	0.00	0.00	6,174.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,400.00	0.00	0.00	6,274.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,500.00	0.00	0.00	6,374.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,600.00	0.00	0.00	6,474.71	235.60	-959.20	-232.59	0.00	0.00	0.00
6,651.66	0.00	0.00	6,526.38	235.60	-959.20	-232.59	0.00	0.00	0.00
KOP @ 6651.66ft									
6,700.00	4.35	180.18	6,574.67	233.77	-959.21	-230.75	9.00	9.00	0.00
6,800.00	13.35	180.18	6,673.38	218.40	-959.25	-215.38	9.00	9.00	0.00
6,900.00	22.35	180.18	6,768.46	187.78	-959.35	-184.76	9.00	9.00	0.00
7,000.00	31.35	180.18	6,857.59	142.66	-959.50	-139.64	9.00	9.00	0.00
7,100.00	40.35	180.18	6,938.56	84.15	-959.69	-81.14	9.00	9.00	0.00
7,111.15	41.35	180.18	6,947.00	76.86	-959.71	-73.84	9.00	9.00	0.00
Sharon Springs									
7,158.01	45.57	180.18	6,981.00	44.63	-959.81	-41.62	9.00	9.00	0.00
Niobrara									
7,200.00	49.35	180.18	7,009.39	13.70	-959.91	-10.68	9.00	9.00	0.00
DLS = 9°/100'									
7,300.00	58.35	180.18	7,068.31	-66.97	-960.17	69.98	9.00	9.00	0.00
7,345.96	62.49	180.18	7,091.00	-106.93	-960.30	109.95	9.00	9.00	0.00
Nio B									
7,400.00	67.35	180.18	7,113.90	-155.86	-960.45	158.87	9.00	9.00	0.00
7,500.00	76.35	180.18	7,145.02	-250.78	-960.76	253.80	9.00	9.00	0.00
7,533.16	79.33	180.18	7,152.00	-283.19	-960.86	286.21	9.00	9.00	0.00
Nio C									
7,600.00	85.35	180.18	7,160.90	-349.41	-961.07	352.43	9.00	9.00	0.00
7,651.91	90.02	180.18	7,163.00	-401.26	-961.24	404.28	9.00	9.00	0.00
End Build @ 7651.91ft - Top of Production									

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 8-8HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well ENGLISH FARMS 8-8HZ
RKB = 17' @ 4962.00usft (Drilling Rig)
RKB = 17' @ 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)
7,700.00	90.02	180.18	7,162.98	-449.35	-961.39	452.37	0.00	0.00	0.00
7,800.00	90.02	180.18	7,162.94	-549.35	-961.71	552.37	0.00	0.00	0.00
7,900.00	90.02	180.18	7,162.90	-649.35	-962.04	652.37	0.00	0.00	0.00
8,000.00	90.02	180.18	7,162.86	-749.35	-962.36	752.37	0.00	0.00	0.00
8,100.00	90.02	180.18	7,162.82	-849.35	-962.68	852.37	0.00	0.00	0.00
8,200.00	90.02	180.18	7,162.78	-949.35	-963.00	952.37	0.00	0.00	0.00
8,300.00	90.02	180.18	7,162.74	-1,049.35	-963.32	1,052.37	0.00	0.00	0.00
8,400.00	90.02	180.18	7,162.70	-1,149.35	-963.64	1,152.37	0.00	0.00	0.00
8,500.00	90.02	180.18	7,162.66	-1,249.35	-963.96	1,252.37	0.00	0.00	0.00
8,600.00	90.02	180.18	7,162.63	-1,349.35	-964.28	1,352.37	0.00	0.00	0.00
8,700.00	90.02	180.18	7,162.59	-1,449.35	-964.60	1,452.37	0.00	0.00	0.00
8,800.00	90.02	180.18	7,162.55	-1,549.35	-964.92	1,552.37	0.00	0.00	0.00
8,900.00	90.02	180.18	7,162.51	-1,649.34	-965.24	1,652.37	0.00	0.00	0.00
9,000.00	90.02	180.18	7,162.47	-1,749.34	-965.56	1,752.37	0.00	0.00	0.00
9,100.00	90.02	180.18	7,162.43	-1,849.34	-965.88	1,852.37	0.00	0.00	0.00
9,200.00	90.02	180.18	7,162.39	-1,949.34	-966.20	1,952.37	0.00	0.00	0.00
9,300.00	90.02	180.18	7,162.35	-2,049.34	-966.52	2,052.37	0.00	0.00	0.00
9,400.00	90.02	180.18	7,162.31	-2,149.34	-966.84	2,152.37	0.00	0.00	0.00
9,500.00	90.02	180.18	7,162.27	-2,249.34	-967.16	2,252.37	0.00	0.00	0.00
9,600.00	90.02	180.18	7,162.23	-2,349.34	-967.48	2,352.37	0.00	0.00	0.00
9,700.00	90.02	180.18	7,162.19	-2,449.34	-967.80	2,452.37	0.00	0.00	0.00
9,800.00	90.02	180.18	7,162.15	-2,549.34	-968.12	2,552.37	0.00	0.00	0.00
9,900.00	90.02	180.18	7,162.11	-2,649.34	-968.44	2,652.37	0.00	0.00	0.00
10,000.00	90.02	180.18	7,162.07	-2,749.34	-968.76	2,752.37	0.00	0.00	0.00
10,100.00	90.02	180.18	7,162.04	-2,849.34	-969.08	2,852.37	0.00	0.00	0.00
10,200.00	90.02	180.18	7,162.00	-2,949.34	-969.40	2,952.37	0.00	0.00	0.00
10,300.00	90.02	180.18	7,161.96	-3,049.34	-969.73	3,052.37	0.00	0.00	0.00
10,400.00	90.02	180.18	7,161.92	-3,149.34	-970.05	3,152.37	0.00	0.00	0.00
10,500.00	90.02	180.18	7,161.88	-3,249.34	-970.37	3,252.37	0.00	0.00	0.00
10,600.00	90.02	180.18	7,161.84	-3,349.34	-970.69	3,352.37	0.00	0.00	0.00
10,700.00	90.02	180.18	7,161.80	-3,449.34	-971.01	3,452.37	0.00	0.00	0.00
10,800.00	90.02	180.18	7,161.76	-3,549.33	-971.33	3,552.37	0.00	0.00	0.00
10,900.00	90.02	180.18	7,161.72	-3,649.33	-971.65	3,652.37	0.00	0.00	0.00
11,000.00	90.02	180.18	7,161.68	-3,749.33	-971.97	3,752.37	0.00	0.00	0.00
11,100.00	90.02	180.18	7,161.64	-3,849.33	-972.29	3,852.37	0.00	0.00	0.00
11,200.00	90.02	180.18	7,161.60	-3,949.33	-972.61	3,952.37	0.00	0.00	0.00
11,300.00	90.02	180.18	7,161.56	-4,049.33	-972.93	4,052.37	0.00	0.00	0.00
11,400.00	90.02	180.18	7,161.52	-4,149.33	-973.25	4,152.37	0.00	0.00	0.00
11,500.00	90.02	180.18	7,161.49	-4,249.33	-973.57	4,252.37	0.00	0.00	0.00
11,600.00	90.02	180.18	7,161.45	-4,349.33	-973.89	4,352.37	0.00	0.00	0.00
11,700.00	90.02	180.18	7,161.41	-4,449.33	-974.21	4,452.37	0.00	0.00	0.00
11,800.00	90.02	180.18	7,161.37	-4,549.33	-974.53	4,552.37	0.00	0.00	0.00
11,900.00	90.02	180.18	7,161.33	-4,649.33	-974.85	4,652.37	0.00	0.00	0.00
12,000.00	90.02	180.18	7,161.29	-4,749.33	-975.17	4,752.37	0.00	0.00	0.00
12,100.00	90.02	180.18	7,161.25	-4,849.33	-975.49	4,852.37	0.00	0.00	0.00
12,200.00	90.02	180.18	7,161.21	-4,949.33	-975.81	4,952.37	0.00	0.00	0.00
12,300.00	90.02	180.18	7,161.17	-5,049.33	-976.13	5,052.37	0.00	0.00	0.00
12,400.00	90.02	180.18	7,161.13	-5,149.33	-976.45	5,152.37	0.00	0.00	0.00
12,500.00	90.02	180.18	7,161.09	-5,249.33	-976.77	5,252.37	0.00	0.00	0.00
12,600.00	90.02	180.18	7,161.05	-5,349.33	-977.09	5,352.37	0.00	0.00	0.00
12,700.00	90.02	180.18	7,161.01	-5,449.32	-977.42	5,452.37	0.00	0.00	0.00
12,800.00	90.02	180.18	7,160.97	-5,549.32	-977.74	5,552.37	0.00	0.00	0.00
12,900.00	90.02	180.18	7,160.94	-5,649.32	-978.06	5,652.37	0.00	0.00	0.00
13,000.00	90.02	180.18	7,160.90	-5,749.32	-978.38	5,752.37	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 8-8HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Well ENGLISH FARMS 8-8HZ
RKB = 17' @ 4962.00usft (Drilling Rig)
RKB = 17' @ 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	90.02	180.18	7,160.86	-5,849.32	-978.70	5,852.37	0.00	0.00	0.00
13,200.00	90.02	180.18	7,160.82	-5,949.32	-979.02	5,952.37	0.00	0.00	0.00
13,300.00	90.02	180.18	7,160.78	-6,049.32	-979.34	6,052.37	0.00	0.00	0.00
13,400.00	90.02	180.18	7,160.74	-6,149.32	-979.66	6,152.37	0.00	0.00	0.00
13,500.00	90.02	180.18	7,160.70	-6,249.32	-979.98	6,252.37	0.00	0.00	0.00
13,600.00	90.02	180.18	7,160.66	-6,349.32	-980.30	6,352.37	0.00	0.00	0.00
13,700.00	90.02	180.18	7,160.62	-6,449.32	-980.62	6,452.37	0.00	0.00	0.00
13,800.00	90.02	180.18	7,160.58	-6,549.32	-980.94	6,552.37	0.00	0.00	0.00
13,900.00	90.02	180.18	7,160.54	-6,649.32	-981.26	6,652.37	0.00	0.00	0.00
14,000.00	90.02	180.18	7,160.50	-6,749.32	-981.58	6,752.37	0.00	0.00	0.00
14,100.00	90.02	180.18	7,160.46	-6,849.32	-981.90	6,852.37	0.00	0.00	0.00
14,200.00	90.02	180.18	7,160.42	-6,949.32	-982.22	6,952.37	0.00	0.00	0.00
14,300.00	90.02	180.18	7,160.38	-7,049.32	-982.54	7,052.37	0.00	0.00	0.00
14,400.00	90.02	180.18	7,160.35	-7,149.32	-982.86	7,152.37	0.00	0.00	0.00
14,500.00	90.02	180.18	7,160.31	-7,249.32	-983.18	7,252.37	0.00	0.00	0.00
14,600.00	90.02	180.18	7,160.27	-7,349.32	-983.50	7,352.37	0.00	0.00	0.00
14,700.00	90.02	180.18	7,160.23	-7,449.31	-983.82	7,452.37	0.00	0.00	0.00
14,800.00	90.02	180.18	7,160.19	-7,549.31	-984.14	7,552.37	0.00	0.00	0.00
14,900.00	90.02	180.18	7,160.15	-7,649.31	-984.46	7,652.37	0.00	0.00	0.00
15,000.00	90.02	180.18	7,160.11	-7,749.31	-984.78	7,752.37	0.00	0.00	0.00
15,100.00	90.02	180.18	7,160.07	-7,849.31	-985.10	7,852.37	0.00	0.00	0.00
15,200.00	90.02	180.18	7,160.03	-7,949.31	-985.43	7,952.37	0.00	0.00	0.00
15,300.00	90.02	180.18	7,159.99	-8,049.31	-985.75	8,052.37	0.00	0.00	0.00
15,400.00	90.02	180.18	7,159.95	-8,149.31	-986.07	8,152.37	0.00	0.00	0.00
15,500.00	90.02	180.18	7,159.91	-8,249.31	-986.39	8,252.37	0.00	0.00	0.00
15,600.00	90.02	180.18	7,159.87	-8,349.31	-986.71	8,352.37	0.00	0.00	0.00
15,700.00	90.02	180.18	7,159.83	-8,449.31	-987.03	8,452.37	0.00	0.00	0.00
15,800.00	90.02	180.18	7,159.80	-8,549.31	-987.35	8,552.37	0.00	0.00	0.00
15,900.00	90.02	180.18	7,159.76	-8,649.31	-987.67	8,652.37	0.00	0.00	0.00
16,000.00	90.02	180.18	7,159.72	-8,749.31	-987.99	8,752.37	0.00	0.00	0.00
16,100.00	90.02	180.18	7,159.68	-8,849.31	-988.31	8,852.37	0.00	0.00	0.00
16,200.00	90.02	180.18	7,159.64	-8,949.31	-988.63	8,952.37	0.00	0.00	0.00
16,300.00	90.02	180.18	7,159.60	-9,049.31	-988.95	9,052.37	0.00	0.00	0.00
16,400.00	90.02	180.18	7,159.56	-9,149.31	-989.27	9,152.37	0.00	0.00	0.00
16,500.00	90.02	180.18	7,159.52	-9,249.31	-989.59	9,252.37	0.00	0.00	0.00
16,600.00	90.02	180.18	7,159.48	-9,349.30	-989.91	9,352.37	0.00	0.00	0.00
16,700.00	90.02	180.18	7,159.44	-9,449.30	-990.23	9,452.37	0.00	0.00	0.00
16,800.00	90.02	180.18	7,159.40	-9,549.30	-990.55	9,552.37	0.00	0.00	0.00
16,900.00	90.02	180.18	7,159.36	-9,649.30	-990.87	9,652.37	0.00	0.00	0.00
17,000.00	90.02	180.18	7,159.32	-9,749.30	-991.19	9,752.37	0.00	0.00	0.00
17,100.00	90.02	180.18	7,159.28	-9,849.30	-991.51	9,852.37	0.00	0.00	0.00
17,200.00	90.02	180.18	7,159.24	-9,949.30	-991.83	9,952.37	0.00	0.00	0.00
17,300.00	90.02	180.18	7,159.21	-10,049.30	-992.15	10,052.37	0.00	0.00	0.00
17,400.00	90.02	180.18	7,159.17	-10,149.30	-992.47	10,152.37	0.00	0.00	0.00
17,500.00	90.02	180.18	7,159.13	-10,249.30	-992.79	10,252.37	0.00	0.00	0.00
17,600.00	90.02	180.18	7,159.09	-10,349.30	-993.12	10,352.37	0.00	0.00	0.00
17,700.00	90.02	180.18	7,159.05	-10,449.30	-993.44	10,452.37	0.00	0.00	0.00
17,800.00	90.02	180.18	7,159.01	-10,549.30	-993.76	10,552.37	0.00	0.00	0.00
17,900.00	90.02	180.18	7,158.97	-10,649.30	-994.08	10,652.37	0.00	0.00	0.00
18,000.00	90.02	180.18	7,158.93	-10,749.30	-994.40	10,752.37	0.00	0.00	0.00
18,100.00	90.02	180.18	7,158.89	-10,849.30	-994.72	10,852.37	0.00	0.00	0.00
18,200.00	90.02	180.18	7,158.85	-10,949.30	-995.04	10,952.37	0.00	0.00	0.00
18,300.00	90.02	180.18	7,158.81	-11,049.30	-995.36	11,052.37	0.00	0.00	0.00
18,400.00	90.02	180.18	7,158.77	-11,149.30	-995.68	11,152.37	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 8-8HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well ENGLISH FARMS 8-8HZ
 RKB = 17' @ 4962.00usft (Drilling Rig)
 RKB = 17' @ 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)
18,500.00	90.02	180.18	7,158.73	-11,249.29	-996.00	11,252.37	0.00	0.00	0.00
18,600.00	90.02	180.18	7,158.69	-11,349.29	-996.32	11,352.37	0.00	0.00	0.00
18,700.00	90.02	180.18	7,158.66	-11,449.29	-996.64	11,452.37	0.00	0.00	0.00
18,800.00	90.02	180.18	7,158.62	-11,549.29	-996.96	11,552.37	0.00	0.00	0.00
18,900.00	90.02	180.18	7,158.58	-11,649.29	-997.28	11,652.37	0.00	0.00	0.00
19,000.00	90.02	180.18	7,158.54	-11,749.29	-997.60	11,752.37	0.00	0.00	0.00
19,100.00	90.02	180.18	7,158.50	-11,849.29	-997.92	11,852.37	0.00	0.00	0.00
19,200.00	90.02	180.18	7,158.46	-11,949.29	-998.24	11,952.37	0.00	0.00	0.00
19,300.00	90.02	180.18	7,158.42	-12,049.29	-998.56	12,052.37	0.00	0.00	0.00
19,400.00	90.02	180.18	7,158.38	-12,149.29	-998.88	12,152.37	0.00	0.00	0.00
19,500.00	90.02	180.18	7,158.34	-12,249.29	-999.20	12,252.37	0.00	0.00	0.00
19,600.00	90.02	180.18	7,158.30	-12,349.29	-999.52	12,352.37	0.00	0.00	0.00
19,700.00	90.02	180.18	7,158.26	-12,449.29	-999.84	12,452.37	0.00	0.00	0.00
19,800.00	90.02	180.18	7,158.22	-12,549.29	-1,000.16	12,552.37	0.00	0.00	0.00
19,900.00	90.02	180.18	7,158.18	-12,649.29	-1,000.48	12,652.37	0.00	0.00	0.00
20,000.00	90.02	180.18	7,158.14	-12,749.29	-1,000.81	12,752.37	0.00	0.00	0.00
20,100.00	90.02	180.18	7,158.10	-12,849.29	-1,001.13	12,852.37	0.00	0.00	0.00
20,200.00	90.02	180.18	7,158.07	-12,949.29	-1,001.45	12,952.37	0.00	0.00	0.00
20,300.00	90.02	180.18	7,158.03	-13,049.29	-1,001.77	13,052.37	0.00	0.00	0.00
20,366.72	90.02	180.18	7,158.00	-13,116.00	-1,001.98	13,119.08	0.00	0.00	0.00
TD Well @ 20366.72ft									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,521.54	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,651.91	7,163.00	Top of Production	5-1/2	7-7/8

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,493.48	1,473.00	Fox Hills			
4,302.89	4,180.00	Parkman			
4,564.04	4,439.00	Sussex			
7,111.15	6,947.00	Sharon Springs			
7,158.01	6,981.00	Niobrara			
7,345.96	7,091.00	Nio B			
7,533.16	7,152.00	Nio C			

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-8HZ
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 8-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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
1,303.33	1,290.03	34.42	-140.15	End Nudge @ 1303.33ft
4,003.33	3,888.02	209.78	-854.09	Begin Drop @ 4003.33ft
4,793.33	4,668.05	235.60	-959.20	End Drop @ 4793.33ft
6,651.66	6,526.38	235.60	-959.20	KOP @ 6651.66ft
7,200.00	7,009.39	13.70	-959.91	DLS = 9°/100'
7,651.91	7,163.00	-401.26	-961.24	End Build @ 7651.91ft
20,366.72	7,158.00	-13,116.00	-1,001.98	TD Well @ 20366.72ft