

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

ENGLISH FARMS 8-9HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.059649/-104.686831

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 8-9HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS		
TVD	MD	Size
1500.00	1517.70	9-5/8
7324.00	7766.66	5-1/2

WELL DETAILS: ENGLISH FARMS 8-9HZ
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	1116.67	13.00	288.00	1109.25	30.25	-93.11	1.50	288.00	-29.44	
4	3816.67	13.00	288.00	3740.05	217.94	-670.75	0.00	0.00	-212.08	
5	4466.67	0.00	0.00	4384.49	240.63	-740.58	2.00	180.00	-234.16	
6	6769.57	0.00	0.00	6687.39	240.63	-740.58	0.00	0.00	-234.16	
7	7766.66	89.74	180.50	7324.00	-393.06	-746.08	9.00	180.50	399.56	
8	20485.60	89.74	180.50	7382.00	-13111.39	-856.48	0.00	0.00	13118.37	ENGLISH FARMS 8-9HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
ENGLISH FARMS 8-9HZ_SHL	0.00	0.00	0.00	40.059649	-104.686831
ENGLISH FARMS 8-9HZ_BHL	7382.00	-13111.39	-856.48	40.023643	-104.689890

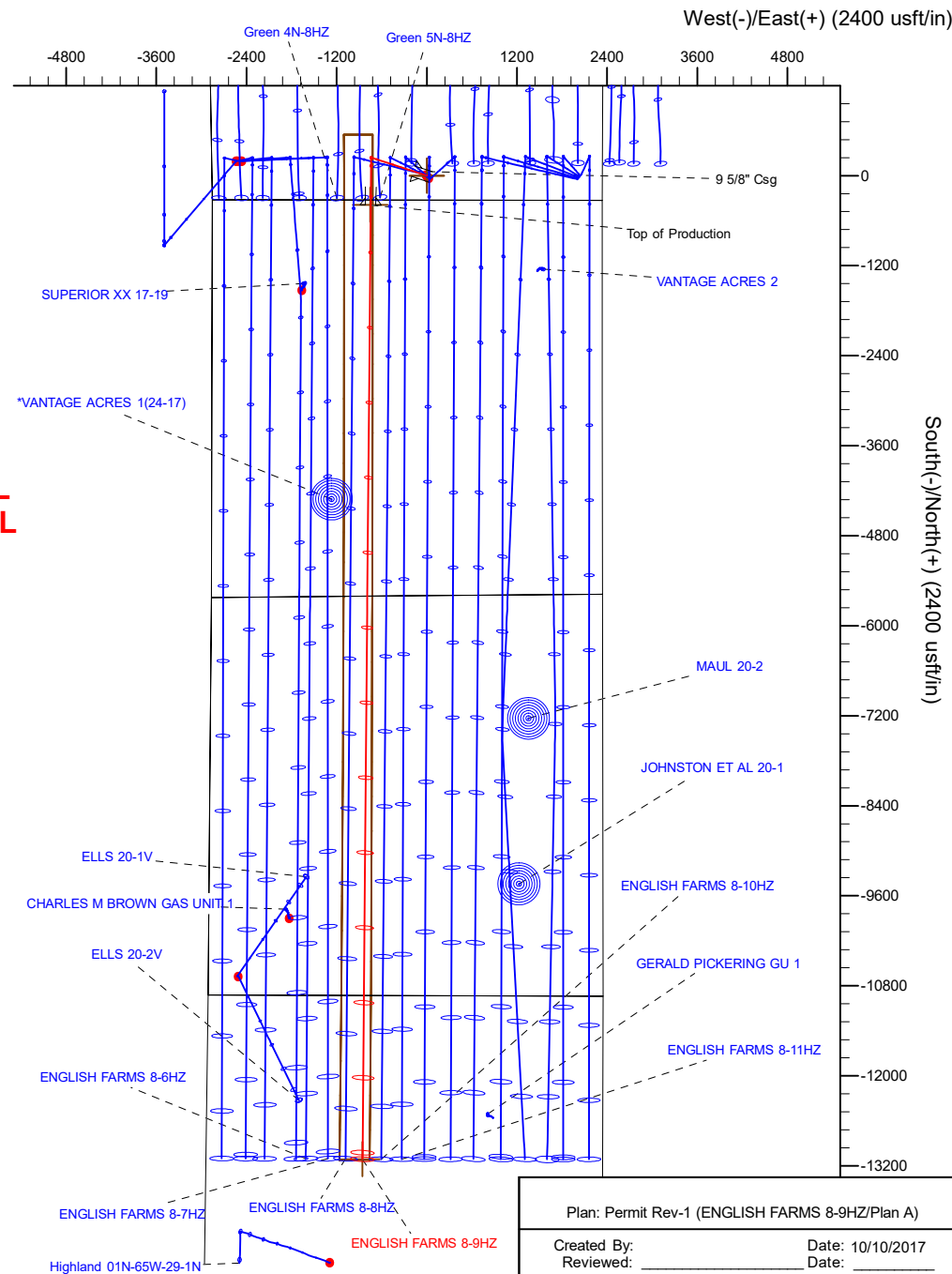
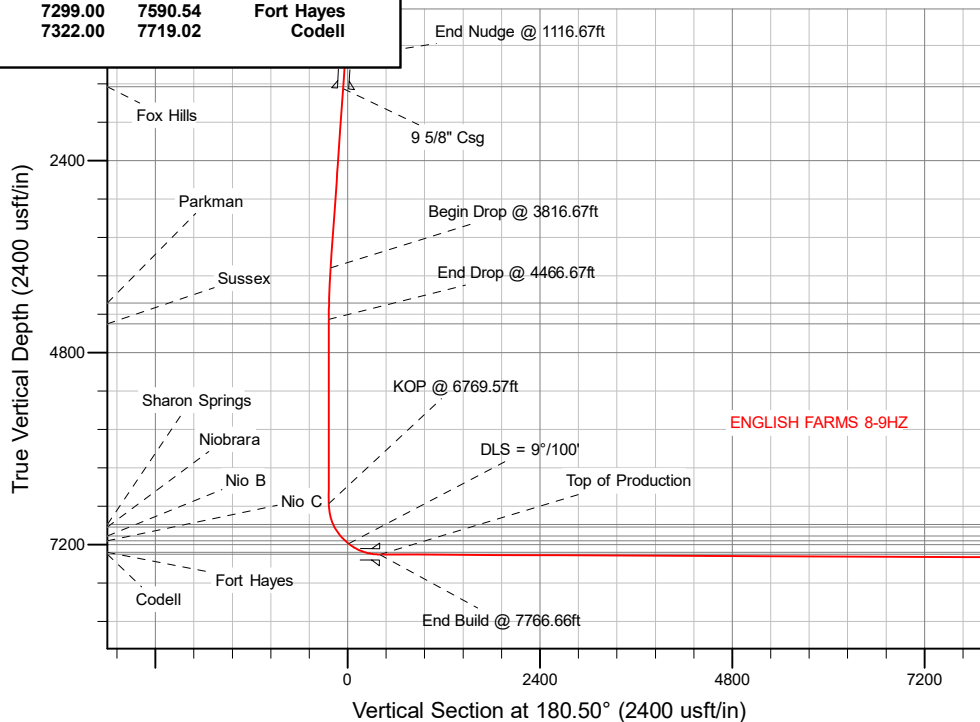
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1473.00	1489.99	Fox Hills
4180.00	4262.01	Parkman
4439.00	4521.18	Sussex
6947.00	7036.97	Sharon Springs
6981.00	7074.73	Niobrara
7091.00	7206.74	Nio B
7152.00	7290.35	Nio C
7299.00	7590.54	Fort Hayes
7322.00	7719.02	Codell

SHL
326' FSL
2335' FEL

HEEL
50' FNL
2111' FWL

TOE
2183' FNL
2084' FWL



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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 8-9HZ			
Well Position	+N/-S	-11.29 usft	Northing:	14,548,608.32 usft
	+E/-W	9.51 usft	Easting:	1,728,043.66 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	52,295.18371744

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	180.50

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	20,485.60	Permit Rev-1 (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 8-9HZ
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 8-9HZ	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	
1,116.67	13.00	288.00	1,109.25	30.25	-93.11	1.50	1.50	0.00	288.00	
3,816.67	13.00	288.00	3,740.05	217.94	-670.75	0.00	0.00	0.00	0.00	
4,466.67	0.00	0.00	4,384.49	240.63	-740.58	2.00	-2.00	0.00	180.00	
6,769.57	0.00	0.00	6,687.39	240.63	-740.58	0.00	0.00	0.00	0.00	
7,766.66	89.74	180.50	7,324.00	-393.06	-746.08	9.00	9.00	-18.00	180.50	
20,485.60	89.74	180.50	7,382.00	-13,111.39	-856.48	0.00	0.00	0.00	0.00	ENGLISH FARMS 8-9

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 8-9HZ
Wellbore: Plan A
Design: Permit Rev-1

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

Well ENGLISH FARMS 8-9HZ
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)
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	288.00	300.00	0.10	-0.31	-0.10	1.50	1.50	0.00
400.00	2.25	288.00	399.96	0.91	-2.80	-0.89	1.50	1.50	0.00
500.00	3.75	288.00	499.82	2.53	-7.78	-2.46	1.50	1.50	0.00
600.00	5.25	288.00	599.51	4.95	-15.24	-4.82	1.50	1.50	0.00
700.00	6.75	288.00	698.96	8.18	-25.18	-7.96	1.50	1.50	0.00
800.00	8.25	288.00	798.10	12.22	-37.59	-11.89	1.50	1.50	0.00
900.00	9.75	288.00	896.87	17.05	-52.47	-16.59	1.50	1.50	0.00
1,000.00	11.25	288.00	995.19	22.68	-69.80	-22.07	1.50	1.50	0.00
1,100.00	12.75	288.00	1,093.00	29.10	-89.58	-28.32	1.50	1.50	0.00
1,116.67	13.00	288.00	1,109.25	30.25	-93.11	-29.44	1.50	1.50	0.00
End Nudge @ 1116.67ft									
1,200.00	13.00	288.00	1,190.45	36.05	-110.94	-35.08	0.00	0.00	0.00
1,300.00	13.00	288.00	1,287.88	43.00	-132.33	-41.84	0.00	0.00	0.00
1,400.00	13.00	288.00	1,385.32	49.95	-153.72	-48.60	0.00	0.00	0.00
1,489.99	13.00	288.00	1,473.00	56.20	-172.98	-54.69	0.00	0.00	0.00
Fox Hills									
1,500.00	13.00	288.00	1,482.76	56.90	-175.12	-55.37	0.00	0.00	0.00
1,517.70	13.00	288.00	1,500.00	58.13	-178.90	-56.57	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	13.00	288.00	1,580.20	63.85	-196.51	-62.13	0.00	0.00	0.00
1,700.00	13.00	288.00	1,677.63	70.80	-217.91	-68.90	0.00	0.00	0.00
1,800.00	13.00	288.00	1,775.07	77.75	-239.30	-75.66	0.00	0.00	0.00
1,900.00	13.00	288.00	1,872.51	84.70	-260.69	-82.43	0.00	0.00	0.00
2,000.00	13.00	288.00	1,969.94	91.66	-282.09	-89.19	0.00	0.00	0.00
2,100.00	13.00	288.00	2,067.38	98.61	-303.48	-95.96	0.00	0.00	0.00
2,200.00	13.00	288.00	2,164.82	105.56	-324.88	-102.72	0.00	0.00	0.00
2,300.00	13.00	288.00	2,262.25	112.51	-346.27	-109.48	0.00	0.00	0.00
2,400.00	13.00	288.00	2,359.69	119.46	-367.67	-116.25	0.00	0.00	0.00
2,500.00	13.00	288.00	2,457.13	126.41	-389.06	-123.01	0.00	0.00	0.00
2,600.00	13.00	288.00	2,554.57	133.36	-410.45	-129.78	0.00	0.00	0.00
2,700.00	13.00	288.00	2,652.00	140.32	-431.85	-136.54	0.00	0.00	0.00
2,800.00	13.00	288.00	2,749.44	147.27	-453.24	-143.31	0.00	0.00	0.00
2,900.00	13.00	288.00	2,846.88	154.22	-474.64	-150.07	0.00	0.00	0.00
3,000.00	13.00	288.00	2,944.31	161.17	-496.03	-156.84	0.00	0.00	0.00
3,100.00	13.00	288.00	3,041.75	168.12	-517.42	-163.60	0.00	0.00	0.00
3,200.00	13.00	288.00	3,139.19	175.07	-538.82	-170.36	0.00	0.00	0.00
3,300.00	13.00	288.00	3,236.62	182.02	-560.21	-177.13	0.00	0.00	0.00
3,400.00	13.00	288.00	3,334.06	188.98	-581.61	-183.89	0.00	0.00	0.00
3,500.00	13.00	288.00	3,431.50	195.93	-603.00	-190.66	0.00	0.00	0.00
3,600.00	13.00	288.00	3,528.94	202.88	-624.39	-197.42	0.00	0.00	0.00
3,700.00	13.00	288.00	3,626.37	209.83	-645.79	-204.19	0.00	0.00	0.00
3,800.00	13.00	288.00	3,723.81	216.78	-667.18	-210.95	0.00	0.00	0.00
3,816.67	13.00	288.00	3,740.05	217.94	-670.75	-212.08	0.00	0.00	0.00
Begin Drop @ 3816.67ft									
3,900.00	11.33	288.00	3,821.51	223.37	-687.45	-217.36	2.00	-2.00	0.00
4,000.00	9.33	288.00	3,919.88	228.91	-704.51	-222.75	2.00	-2.00	0.00
4,100.00	7.33	288.00	4,018.82	233.39	-718.29	-227.11	2.00	-2.00	0.00
4,200.00	5.33	288.00	4,118.20	236.80	-728.78	-230.43	2.00	-2.00	0.00
4,262.01	4.09	288.00	4,180.00	238.37	-733.63	-231.96	2.00	-2.00	0.00

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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)
Parkman									
4,300.00	3.33	288.00	4,217.91	239.13	-735.97	-232.70	2.00	-2.00	0.00
4,400.00	1.33	288.00	4,317.83	240.39	-739.84	-233.92	2.00	-2.00	0.00
4,466.67	0.00	0.00	4,384.49	240.63	-740.58	-234.16	2.00	-2.00	0.00
End Drop @ 4466.67ft									
4,500.00	0.00	0.00	4,417.82	240.63	-740.58	-234.16	0.00	0.00	0.00
4,521.18	0.00	0.00	4,439.00	240.63	-740.58	-234.16	0.00	0.00	0.00
Sussex									
4,600.00	0.00	0.00	4,517.82	240.63	-740.58	-234.16	0.00	0.00	0.00
4,700.00	0.00	0.00	4,617.82	240.63	-740.58	-234.16	0.00	0.00	0.00
4,800.00	0.00	0.00	4,717.82	240.63	-740.58	-234.16	0.00	0.00	0.00
4,900.00	0.00	0.00	4,817.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,000.00	0.00	0.00	4,917.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,100.00	0.00	0.00	5,017.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,200.00	0.00	0.00	5,117.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,300.00	0.00	0.00	5,217.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,400.00	0.00	0.00	5,317.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,500.00	0.00	0.00	5,417.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,600.00	0.00	0.00	5,517.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,700.00	0.00	0.00	5,617.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,800.00	0.00	0.00	5,717.82	240.63	-740.58	-234.16	0.00	0.00	0.00
5,900.00	0.00	0.00	5,817.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,000.00	0.00	0.00	5,917.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,100.00	0.00	0.00	6,017.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,200.00	0.00	0.00	6,117.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,300.00	0.00	0.00	6,217.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,400.00	0.00	0.00	6,317.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,500.00	0.00	0.00	6,417.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,600.00	0.00	0.00	6,517.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,700.00	0.00	0.00	6,617.82	240.63	-740.58	-234.16	0.00	0.00	0.00
6,769.57	0.00	0.00	6,687.39	240.63	-740.58	-234.16	0.00	0.00	0.00
KOP @ 6769.57ft									
6,800.00	2.74	180.50	6,717.81	239.90	-740.59	-233.43	9.00	9.00	0.00
6,900.00	11.74	180.50	6,816.91	227.31	-740.70	-220.84	9.00	9.00	0.00
7,000.00	20.74	180.50	6,912.82	199.38	-740.94	-192.91	9.00	9.00	0.00
7,036.97	24.07	180.50	6,947.00	185.29	-741.06	-178.82	9.00	9.00	0.00
Sharon Springs									
7,074.73	27.47	180.50	6,981.00	168.88	-741.20	-162.41	9.00	9.00	0.00
Niobrara									
7,100.00	29.74	180.50	7,003.18	156.79	-741.31	-150.31	9.00	9.00	0.00
7,200.00	38.74	180.50	7,085.77	100.58	-741.80	-94.10	9.00	9.00	0.00
7,206.74	39.35	180.50	7,091.00	96.34	-741.83	-89.86	9.00	9.00	0.00
Nio B									
7,290.35	46.87	180.50	7,152.00	39.24	-742.33	-32.76	9.00	9.00	0.00
Nio C									
7,300.00	47.74	180.50	7,158.54	32.15	-742.39	-25.67	9.00	9.00	0.00
7,350.00	52.24	180.50	7,190.68	-6.14	-742.72	12.62	9.00	9.00	0.00
DLS = 9°/100'									
7,400.00	56.74	180.50	7,219.72	-46.82	-743.07	53.31	9.00	9.00	0.00
7,500.00	65.74	180.50	7,267.78	-134.39	-743.83	140.88	9.00	9.00	0.00
7,590.54	73.89	180.50	7,299.00	-219.30	-744.57	225.79	9.00	9.00	0.00
Fort Hayes									

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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)
7,600.00	74.74	180.50	7,301.56	-228.40	-744.65	234.89	9.00	9.00	0.00
7,700.00	83.74	180.50	7,320.21	-326.54	-745.50	333.03	9.00	9.00	0.00
7,719.02	85.45	180.50	7,322.00	-345.47	-745.67	351.96	9.00	9.00	0.00
Codell									
7,766.66	89.74	180.50	7,324.00	-393.06	-746.08	399.56	9.00	9.00	0.00
End Build @ 7766.66ft - Top of Production									
7,800.00	89.74	180.50	7,324.15	-426.40	-746.37	432.90	0.00	0.00	0.00
7,900.00	89.74	180.50	7,324.61	-526.39	-747.24	532.89	0.00	0.00	0.00
8,000.00	89.74	180.50	7,325.06	-626.39	-748.11	632.89	0.00	0.00	0.00
8,100.00	89.74	180.50	7,325.52	-726.38	-748.97	732.89	0.00	0.00	0.00
8,200.00	89.74	180.50	7,325.98	-826.38	-749.84	832.89	0.00	0.00	0.00
8,300.00	89.74	180.50	7,326.43	-926.37	-750.71	932.89	0.00	0.00	0.00
8,400.00	89.74	180.50	7,326.89	-1,026.37	-751.58	1,032.89	0.00	0.00	0.00
8,500.00	89.74	180.50	7,327.34	-1,126.37	-752.45	1,132.89	0.00	0.00	0.00
8,600.00	89.74	180.50	7,327.80	-1,226.36	-753.31	1,232.89	0.00	0.00	0.00
8,700.00	89.74	180.50	7,328.26	-1,326.36	-754.18	1,332.89	0.00	0.00	0.00
8,800.00	89.74	180.50	7,328.71	-1,426.35	-755.05	1,432.89	0.00	0.00	0.00
8,900.00	89.74	180.50	7,329.17	-1,526.35	-755.92	1,532.88	0.00	0.00	0.00
9,000.00	89.74	180.50	7,329.62	-1,626.34	-756.79	1,632.88	0.00	0.00	0.00
9,100.00	89.74	180.50	7,330.08	-1,726.34	-757.65	1,732.88	0.00	0.00	0.00
9,200.00	89.74	180.50	7,330.54	-1,826.33	-758.52	1,832.88	0.00	0.00	0.00
9,300.00	89.74	180.50	7,330.99	-1,926.33	-759.39	1,932.88	0.00	0.00	0.00
9,400.00	89.74	180.50	7,331.45	-2,026.32	-760.26	2,032.88	0.00	0.00	0.00
9,500.00	89.74	180.50	7,331.90	-2,126.32	-761.13	2,132.88	0.00	0.00	0.00
9,600.00	89.74	180.50	7,332.36	-2,226.31	-761.99	2,232.88	0.00	0.00	0.00
9,700.00	89.74	180.50	7,332.82	-2,326.31	-762.86	2,332.88	0.00	0.00	0.00
9,800.00	89.74	180.50	7,333.27	-2,426.30	-763.73	2,432.88	0.00	0.00	0.00
9,900.00	89.74	180.50	7,333.73	-2,526.30	-764.60	2,532.87	0.00	0.00	0.00
10,000.00	89.74	180.50	7,334.18	-2,626.29	-765.47	2,632.87	0.00	0.00	0.00
10,100.00	89.74	180.50	7,334.64	-2,726.29	-766.33	2,732.87	0.00	0.00	0.00
10,200.00	89.74	180.50	7,335.10	-2,826.28	-767.20	2,832.87	0.00	0.00	0.00
10,300.00	89.74	180.50	7,335.55	-2,926.28	-768.07	2,932.87	0.00	0.00	0.00
10,400.00	89.74	180.50	7,336.01	-3,026.27	-768.94	3,032.87	0.00	0.00	0.00
10,500.00	89.74	180.50	7,336.46	-3,126.27	-769.80	3,132.87	0.00	0.00	0.00
10,600.00	89.74	180.50	7,336.92	-3,226.26	-770.67	3,232.87	0.00	0.00	0.00
10,700.00	89.74	180.50	7,337.38	-3,326.26	-771.54	3,332.87	0.00	0.00	0.00
10,800.00	89.74	180.50	7,337.83	-3,426.25	-772.41	3,432.86	0.00	0.00	0.00
10,900.00	89.74	180.50	7,338.29	-3,526.25	-773.28	3,532.86	0.00	0.00	0.00
11,000.00	89.74	180.50	7,338.74	-3,626.25	-774.14	3,632.86	0.00	0.00	0.00
11,100.00	89.74	180.50	7,339.20	-3,726.24	-775.01	3,732.86	0.00	0.00	0.00
11,200.00	89.74	180.50	7,339.66	-3,826.24	-775.88	3,832.86	0.00	0.00	0.00
11,300.00	89.74	180.50	7,340.11	-3,926.23	-776.75	3,932.86	0.00	0.00	0.00
11,400.00	89.74	180.50	7,340.57	-4,026.23	-777.62	4,032.86	0.00	0.00	0.00
11,500.00	89.74	180.50	7,341.02	-4,126.22	-778.48	4,132.86	0.00	0.00	0.00
11,600.00	89.74	180.50	7,341.48	-4,226.22	-779.35	4,232.86	0.00	0.00	0.00
11,700.00	89.74	180.50	7,341.94	-4,326.21	-780.22	4,332.86	0.00	0.00	0.00
11,800.00	89.74	180.50	7,342.39	-4,426.21	-781.09	4,432.85	0.00	0.00	0.00
11,900.00	89.74	180.50	7,342.85	-4,526.20	-781.96	4,532.85	0.00	0.00	0.00
12,000.00	89.74	180.50	7,343.30	-4,626.20	-782.82	4,632.85	0.00	0.00	0.00
12,100.00	89.74	180.50	7,343.76	-4,726.19	-783.69	4,732.85	0.00	0.00	0.00
12,200.00	89.74	180.50	7,344.22	-4,826.19	-784.56	4,832.85	0.00	0.00	0.00
12,300.00	89.74	180.50	7,344.67	-4,926.18	-785.43	4,932.85	0.00	0.00	0.00
12,400.00	89.74	180.50	7,345.13	-5,026.18	-786.30	5,032.85	0.00	0.00	0.00
12,500.00	89.74	180.50	7,345.58	-5,126.17	-787.16	5,132.85	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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)
12,600.00	89.74	180.50	7,346.04	-5,226.17	-788.03	5,232.85	0.00	0.00	0.00
12,700.00	89.74	180.50	7,346.50	-5,326.16	-788.90	5,332.84	0.00	0.00	0.00
12,800.00	89.74	180.50	7,346.95	-5,426.16	-789.77	5,432.84	0.00	0.00	0.00
12,900.00	89.74	180.50	7,347.41	-5,526.15	-790.64	5,532.84	0.00	0.00	0.00
13,000.00	89.74	180.50	7,347.86	-5,626.15	-791.50	5,632.84	0.00	0.00	0.00
13,100.00	89.74	180.50	7,348.32	-5,726.14	-792.37	5,732.84	0.00	0.00	0.00
13,200.00	89.74	180.50	7,348.78	-5,826.14	-793.24	5,832.84	0.00	0.00	0.00
13,300.00	89.74	180.50	7,349.23	-5,926.13	-794.11	5,932.84	0.00	0.00	0.00
13,400.00	89.74	180.50	7,349.69	-6,026.13	-794.98	6,032.84	0.00	0.00	0.00
13,500.00	89.74	180.50	7,350.14	-6,126.12	-795.84	6,132.84	0.00	0.00	0.00
13,600.00	89.74	180.50	7,350.60	-6,226.12	-796.71	6,232.84	0.00	0.00	0.00
13,700.00	89.74	180.50	7,351.06	-6,326.12	-797.58	6,332.83	0.00	0.00	0.00
13,800.00	89.74	180.50	7,351.51	-6,426.11	-798.45	6,432.83	0.00	0.00	0.00
13,900.00	89.74	180.50	7,351.97	-6,526.11	-799.32	6,532.83	0.00	0.00	0.00
14,000.00	89.74	180.50	7,352.42	-6,626.10	-800.18	6,632.83	0.00	0.00	0.00
14,100.00	89.74	180.50	7,352.88	-6,726.10	-801.05	6,732.83	0.00	0.00	0.00
14,200.00	89.74	180.50	7,353.34	-6,826.09	-801.92	6,832.83	0.00	0.00	0.00
14,300.00	89.74	180.50	7,353.79	-6,926.09	-802.79	6,932.83	0.00	0.00	0.00
14,400.00	89.74	180.50	7,354.25	-7,026.08	-803.66	7,032.83	0.00	0.00	0.00
14,500.00	89.74	180.50	7,354.70	-7,126.08	-804.52	7,132.83	0.00	0.00	0.00
14,600.00	89.74	180.50	7,355.16	-7,226.07	-805.39	7,232.83	0.00	0.00	0.00
14,700.00	89.74	180.50	7,355.62	-7,326.07	-806.26	7,332.82	0.00	0.00	0.00
14,800.00	89.74	180.50	7,356.07	-7,426.06	-807.13	7,432.82	0.00	0.00	0.00
14,900.00	89.74	180.50	7,356.53	-7,526.06	-808.00	7,532.82	0.00	0.00	0.00
15,000.00	89.74	180.50	7,356.98	-7,626.05	-808.86	7,632.82	0.00	0.00	0.00
15,100.00	89.74	180.50	7,357.44	-7,726.05	-809.73	7,732.82	0.00	0.00	0.00
15,200.00	89.74	180.50	7,357.90	-7,826.04	-810.60	7,832.82	0.00	0.00	0.00
15,300.00	89.74	180.50	7,358.35	-7,926.04	-811.47	7,932.82	0.00	0.00	0.00
15,400.00	89.74	180.50	7,358.81	-8,026.03	-812.34	8,032.82	0.00	0.00	0.00
15,500.00	89.74	180.50	7,359.26	-8,126.03	-813.20	8,132.82	0.00	0.00	0.00
15,600.00	89.74	180.50	7,359.72	-8,226.02	-814.07	8,232.81	0.00	0.00	0.00
15,700.00	89.74	180.50	7,360.18	-8,326.02	-814.94	8,332.81	0.00	0.00	0.00
15,800.00	89.74	180.50	7,360.63	-8,426.01	-815.81	8,432.81	0.00	0.00	0.00
15,900.00	89.74	180.50	7,361.09	-8,526.01	-816.68	8,532.81	0.00	0.00	0.00
16,000.00	89.74	180.50	7,361.55	-8,626.00	-817.54	8,632.81	0.00	0.00	0.00
16,100.00	89.74	180.50	7,362.00	-8,726.00	-818.41	8,732.81	0.00	0.00	0.00
16,200.00	89.74	180.50	7,362.46	-8,826.00	-819.28	8,832.81	0.00	0.00	0.00
16,300.00	89.74	180.50	7,362.91	-8,925.99	-820.15	8,932.81	0.00	0.00	0.00
16,400.00	89.74	180.50	7,363.37	-9,025.99	-821.02	9,032.81	0.00	0.00	0.00
16,500.00	89.74	180.50	7,363.83	-9,125.98	-821.88	9,132.81	0.00	0.00	0.00
16,600.00	89.74	180.50	7,364.28	-9,225.98	-822.75	9,232.80	0.00	0.00	0.00
16,700.00	89.74	180.50	7,364.74	-9,325.97	-823.62	9,332.80	0.00	0.00	0.00
16,800.00	89.74	180.50	7,365.19	-9,425.97	-824.49	9,432.80	0.00	0.00	0.00
16,900.00	89.74	180.50	7,365.65	-9,525.96	-825.36	9,532.80	0.00	0.00	0.00
17,000.00	89.74	180.50	7,366.11	-9,625.96	-826.22	9,632.80	0.00	0.00	0.00
17,100.00	89.74	180.50	7,366.56	-9,725.95	-827.09	9,732.80	0.00	0.00	0.00
17,200.00	89.74	180.50	7,367.02	-9,825.95	-827.96	9,832.80	0.00	0.00	0.00
17,300.00	89.74	180.50	7,367.47	-9,925.94	-828.83	9,932.80	0.00	0.00	0.00
17,400.00	89.74	180.50	7,367.93	-10,025.94	-829.70	10,032.80	0.00	0.00	0.00
17,500.00	89.74	180.50	7,368.39	-10,125.93	-830.56	10,132.80	0.00	0.00	0.00
17,600.00	89.74	180.50	7,368.84	-10,225.93	-831.43	10,232.79	0.00	0.00	0.00
17,700.00	89.74	180.50	7,369.30	-10,325.92	-832.30	10,332.79	0.00	0.00	0.00
17,800.00	89.74	180.50	7,369.75	-10,425.92	-833.17	10,432.79	0.00	0.00	0.00
17,900.00	89.74	180.50	7,370.21	-10,525.91	-834.04	10,532.79	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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)	
18,000.00	89.74	180.50	7,370.67	-10,625.91	-834.90	10,632.79	0.00	0.00	0.00	
18,100.00	89.74	180.50	7,371.12	-10,725.90	-835.77	10,732.79	0.00	0.00	0.00	
18,200.00	89.74	180.50	7,371.58	-10,825.90	-836.64	10,832.79	0.00	0.00	0.00	
18,300.00	89.74	180.50	7,372.03	-10,925.89	-837.51	10,932.79	0.00	0.00	0.00	
18,400.00	89.74	180.50	7,372.49	-11,025.89	-838.38	11,032.79	0.00	0.00	0.00	
18,500.00	89.74	180.50	7,372.95	-11,125.88	-839.24	11,132.78	0.00	0.00	0.00	
18,600.00	89.74	180.50	7,373.40	-11,225.88	-840.11	11,232.78	0.00	0.00	0.00	
18,700.00	89.74	180.50	7,373.86	-11,325.88	-840.98	11,332.78	0.00	0.00	0.00	
18,800.00	89.74	180.50	7,374.31	-11,425.87	-841.85	11,432.78	0.00	0.00	0.00	
18,900.00	89.74	180.50	7,374.77	-11,525.87	-842.72	11,532.78	0.00	0.00	0.00	
19,000.00	89.74	180.50	7,375.23	-11,625.86	-843.58	11,632.78	0.00	0.00	0.00	
19,100.00	89.74	180.50	7,375.68	-11,725.86	-844.45	11,732.78	0.00	0.00	0.00	
19,200.00	89.74	180.50	7,376.14	-11,825.85	-845.32	11,832.78	0.00	0.00	0.00	
19,300.00	89.74	180.50	7,376.59	-11,925.85	-846.19	11,932.78	0.00	0.00	0.00	
19,400.00	89.74	180.50	7,377.05	-12,025.84	-847.06	12,032.78	0.00	0.00	0.00	
19,500.00	89.74	180.50	7,377.51	-12,125.84	-847.92	12,132.77	0.00	0.00	0.00	
19,600.00	89.74	180.50	7,377.96	-12,225.83	-848.79	12,232.77	0.00	0.00	0.00	
19,700.00	89.74	180.50	7,378.42	-12,325.83	-849.66	12,332.77	0.00	0.00	0.00	
19,800.00	89.74	180.50	7,378.87	-12,425.82	-850.53	12,432.77	0.00	0.00	0.00	
19,900.00	89.74	180.50	7,379.33	-12,525.82	-851.40	12,532.77	0.00	0.00	0.00	
20,000.00	89.74	180.50	7,379.79	-12,625.81	-852.26	12,632.77	0.00	0.00	0.00	
20,100.00	89.74	180.50	7,380.24	-12,725.81	-853.13	12,732.77	0.00	0.00	0.00	
20,200.00	89.74	180.50	7,380.70	-12,825.80	-854.00	12,832.77	0.00	0.00	0.00	
20,300.00	89.74	180.50	7,381.15	-12,925.80	-854.87	12,932.77	0.00	0.00	0.00	
20,400.00	89.74	180.50	7,381.61	-13,025.79	-855.74	13,032.77	0.00	0.00	0.00	
20,485.60	89.74	180.50	7,382.00	-13,111.39	-856.48	13,118.36	0.00	0.00	0.00	
TD Well @ 20485.60ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,517.70	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,766.66	7,324.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,489.99	1,473.00	Fox Hills				
4,262.01	4,180.00	Parkman				
4,521.18	4,439.00	Sussex				
7,036.97	6,947.00	Sharon Springs				
7,074.73	6,981.00	Niobrara				
7,206.74	7,091.00	Nio B				
7,290.35	7,152.00	Nio C				
7,590.54	7,299.00	Fort Hayes				
7,719.02	7,322.00	Codell				

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well ENGLISH FARMS 8-9HZ
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 8-9HZ	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
1,116.67	1,109.25	30.25	-93.11	End Nudge @ 1116.67ft
3,816.67	3,740.05	217.94	-670.75	Begin Drop @ 3816.67ft
4,466.67	4,384.49	240.63	-740.58	End Drop @ 4466.67ft
6,769.57	6,687.39	240.63	-740.58	KOP @ 6769.57ft
7,350.00	7,190.68	-6.14	-742.72	DLS = 9°/100'
7,766.66	7,324.00	-393.06	-746.08	End Build @ 7766.66ft
20,485.60	7,382.00	-13,111.39	-856.48	TD Well @ 20485.60ft