

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-67W-05 Schlagel 10-5HZ Pad

SCHLAGEL 5-4HZ

PLAN A

Plan: PERMIT REV 0

Standard Planning Report

22 May, 2020

Project: WELD-NAD83-UTMFT13N
 Site: 3N-67W-05 Schlagel 10-5HZ Pad
 Well: SCHLAGEL 5-4HZ
 Wellbore: PLAN A
 Design: PERMIT REV 0

US ROCKIES WATTENBERG PLANNING

SURFACE HOLE LOCATION: SCHLAGEL 5-4HZ

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14619182.22	1664725.82	40.253844	-104.912874

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Schlagel 5-4HZ Heel	7068.00	-321.53	782.10	40.252961	-104.910071
Schlagel 5-4HZ Toe	7202.86	-614.12	18219.63	40.252139	-104.847575

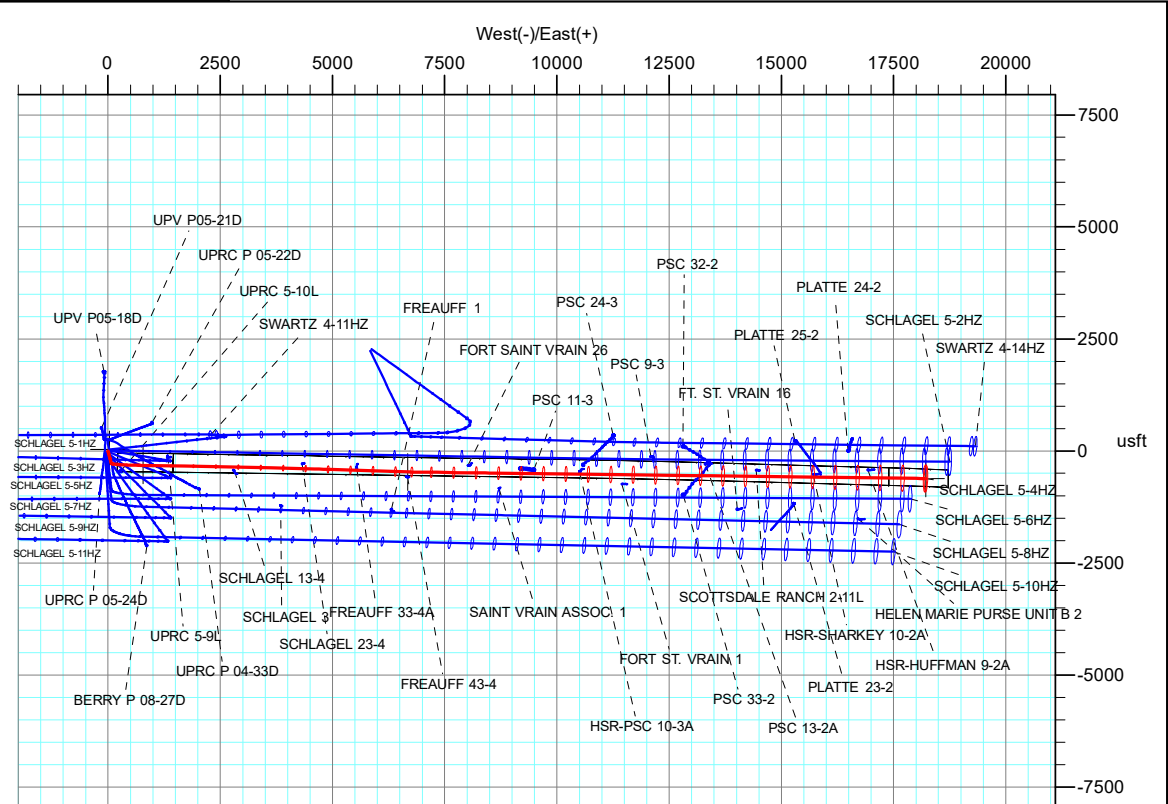
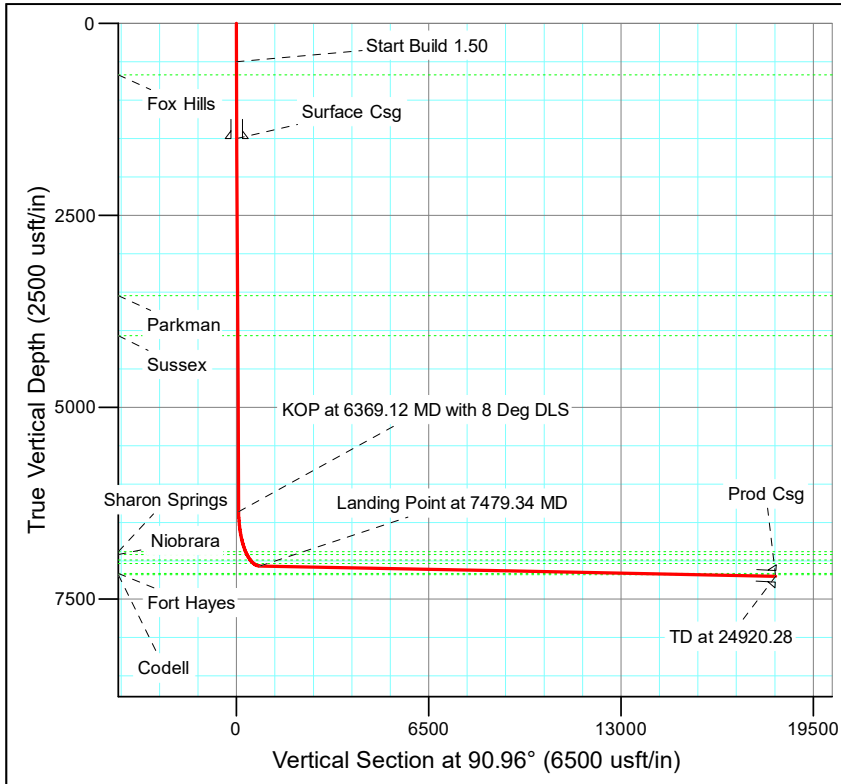
SECTION DETAILS

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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	690.03	2.85	165.50	689.95	-4.58	1.18	1.50	165.50	1.26	
4	6369.12	2.85	165.50	6362.02	-277.99	71.89	0.00	0.00	76.53	
5	7479.34	89.57	90.80	7068.00	-321.53	782.10	8.00	-74.74	787.38	Schlagel 5-4HZ Heel
6	13376.23	89.56	92.06	7113.00	-468.45	6676.86	0.02	90.54	6683.78	SCHLAGEL 5-4HZ Int Targ 1
7	13465.60	89.55	90.72	7113.69	-470.61	6766.20	1.50	-90.13	6773.14	
8	24920.28	89.55	90.72	7202.86	-614.12	18219.63	0.00	0.00	18227.37	Schlagel 5-4HZ Toe

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
672.00	672.06	Fox Hills
3548.00	3551.62	Parkman
4070.00	4074.27	Sussex
6883.00	6957.84	Sharon Springs
6920.00	7015.68	Niobrara
6988.00	7142.75	Nio B
7035.00	7266.29	Nio C
7166.00	20185.10	Fort Hayes
7184.00	22497.45	Codell

SHL Heel Toe
2249' FSL 1937' FSL 1950' FSL
2231' FEL 1450' FEL 370' FWL



T
M

Azimuths to True North
 Magnetic North: 7.97°

Magnetic Field
 Strength: 51969.5snT
 Dip Angle: 66.64°
 Date: 5/13/2020
 Model: IGRF2015

CASING DETAILS

TVD	MD	Name	Size
1500.00	1501.08	Surface Csg	9-5/8
7202.86	24920.28	Prod Csg	5-1/2

ELEVATION

GROUND ELEVATION; 4870.00
 RKB = 17' @ 4887ft

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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	3N-67W-05 Schlagel 10-5HZ Pad				
Site Position:		Northing:	14,619,213.65 usft	Latitude:	40.253930
From:	Lat/Long	Easting:	1,664,758.13 usft	Longitude:	-104.912758
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	SCHLAGEL 5-4HZ					
Well Position	+N/-S	-31.40 usft	Northing:	14,619,182.22 usft	Latitude:	40.253844
	+E/-W	-32.34 usft	Easting:	1,664,725.82 usft	Longitude:	-104.912874
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,870.00 usft

Wellbore	PLAN A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/13/2020	7.97	66.64	51,969.46242548

Design	PERMIT REV 0			
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	90.96

Plan Survey Tool Program		Date	5/21/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,000.00	PERMIT REV 0 (PLAN A)	APC_ISCWSA REV 2 MWD Fixed:v2:standard declination	
2	2,000.00	24,920.28	PERMIT REV 0 (PLAN A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
690.03	2.85	165.50	689.95	-4.58	1.18	1.50	1.50	0.00	165.50	
6,369.12	2.85	165.50	6,362.02	-277.99	71.89	0.00	0.00	0.00	0.00	
7,479.34	89.57	90.80	7,068.00	-321.53	782.10	8.00	7.81	-6.73	-74.74	Schlagel 5-4HZ Heel
13,376.23	89.56	92.06	7,113.00	-468.45	6,676.86	0.02	0.00	0.02	90.54	SCHLAGEL 5-4HZ Int
13,465.60	89.55	90.72	7,113.69	-470.61	6,766.20	1.50	0.00	-1.50	-90.13	
24,920.28	89.55	90.72	7,202.86	-614.12	18,219.63	0.00	0.00	0.00	0.00	Schlagel 5-4HZ Toe

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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	0.00
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.50										
600.00	1.50	165.50	599.99	-1.27	0.33	0.35	1.50	1.50	0.00	0.00
672.06	2.58	165.50	672.00	-3.75	0.97	1.03	1.50	1.50	0.00	0.00
Fox Hills										
690.03	2.85	165.50	689.95	-4.58	1.18	1.26	1.50	1.50	0.00	0.00
700.00	2.85	165.50	699.91	-5.06	1.31	1.39	0.00	0.00	0.00	0.00
800.00	2.85	165.50	799.79	-9.87	2.55	2.72	0.00	0.00	0.00	0.00
900.00	2.85	165.50	899.66	-14.68	3.80	4.04	0.00	0.00	0.00	0.00
1,000.00	2.85	165.50	999.54	-19.50	5.04	5.37	0.00	0.00	0.00	0.00
1,100.00	2.85	165.50	1,099.41	-24.31	6.29	6.69	0.00	0.00	0.00	0.00
1,200.00	2.85	165.50	1,199.29	-29.13	7.53	8.02	0.00	0.00	0.00	0.00
1,300.00	2.85	165.50	1,299.17	-33.94	8.78	9.34	0.00	0.00	0.00	0.00
1,400.00	2.85	165.50	1,399.04	-38.76	10.02	10.67	0.00	0.00	0.00	0.00
1,500.00	2.85	165.50	1,498.92	-43.57	11.27	12.00	0.00	0.00	0.00	0.00
1,501.08	2.85	165.50	1,500.00	-43.62	11.28	12.01	0.00	0.00	0.00	0.00
Surface Csg										
1,600.00	2.85	165.50	1,598.80	-48.39	12.51	13.32	0.00	0.00	0.00	0.00
1,700.00	2.85	165.50	1,698.67	-53.20	13.76	14.65	0.00	0.00	0.00	0.00
1,800.00	2.85	165.50	1,798.55	-58.01	15.00	15.97	0.00	0.00	0.00	0.00
1,900.00	2.85	165.50	1,898.42	-62.83	16.25	17.30	0.00	0.00	0.00	0.00
2,000.00	2.85	165.50	1,998.30	-67.64	17.49	18.62	0.00	0.00	0.00	0.00
2,100.00	2.85	165.50	2,098.18	-72.46	18.74	19.95	0.00	0.00	0.00	0.00
2,200.00	2.85	165.50	2,198.05	-77.27	19.98	21.27	0.00	0.00	0.00	0.00
2,300.00	2.85	165.50	2,297.93	-82.09	21.23	22.60	0.00	0.00	0.00	0.00
2,400.00	2.85	165.50	2,397.81	-86.90	22.47	23.92	0.00	0.00	0.00	0.00
2,500.00	2.85	165.50	2,497.68	-91.72	23.72	25.25	0.00	0.00	0.00	0.00
2,600.00	2.85	165.50	2,597.56	-96.53	24.96	26.58	0.00	0.00	0.00	0.00
2,700.00	2.85	165.50	2,697.43	-101.35	26.21	27.90	0.00	0.00	0.00	0.00
2,800.00	2.85	165.50	2,797.31	-106.16	27.45	29.23	0.00	0.00	0.00	0.00
2,900.00	2.85	165.50	2,897.19	-110.97	28.70	30.55	0.00	0.00	0.00	0.00
3,000.00	2.85	165.50	2,997.06	-115.79	29.94	31.88	0.00	0.00	0.00	0.00
3,100.00	2.85	165.50	3,096.94	-120.60	31.19	33.20	0.00	0.00	0.00	0.00
3,200.00	2.85	165.50	3,196.82	-125.42	32.43	34.53	0.00	0.00	0.00	0.00
3,300.00	2.85	165.50	3,296.69	-130.23	33.68	35.85	0.00	0.00	0.00	0.00
3,400.00	2.85	165.50	3,396.57	-135.05	34.92	37.18	0.00	0.00	0.00	0.00
3,500.00	2.85	165.50	3,496.45	-139.86	36.17	38.50	0.00	0.00	0.00	0.00
3,551.62	2.85	165.50	3,548.00	-142.35	36.81	39.19	0.00	0.00	0.00	0.00
Parkman										
3,600.00	2.85	165.50	3,596.32	-144.68	37.41	39.83	0.00	0.00	0.00	0.00
3,700.00	2.85	165.50	3,696.20	-149.49	38.66	41.16	0.00	0.00	0.00	0.00
3,800.00	2.85	165.50	3,796.07	-154.30	39.90	42.48	0.00	0.00	0.00	0.00
3,900.00	2.85	165.50	3,895.95	-159.12	41.15	43.81	0.00	0.00	0.00	0.00
4,000.00	2.85	165.50	3,995.83	-163.93	42.39	45.13	0.00	0.00	0.00	0.00
4,074.27	2.85	165.50	4,070.00	-167.51	43.32	46.12	0.00	0.00	0.00	0.00
Sussex										
4,100.00	2.85	165.50	4,095.70	-168.75	43.64	46.46	0.00	0.00	0.00	0.00
4,200.00	2.85	165.50	4,195.58	-173.56	44.88	47.78	0.00	0.00	0.00	0.00
4,300.00	2.85	165.50	4,295.46	-178.38	46.13	49.11	0.00	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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)
4,400.00	2.85	165.50	4,395.33	-183.19	47.37	50.43	0.00	0.00	0.00
4,500.00	2.85	165.50	4,495.21	-188.01	48.62	51.76	0.00	0.00	0.00
4,600.00	2.85	165.50	4,595.08	-192.82	49.86	53.08	0.00	0.00	0.00
4,700.00	2.85	165.50	4,694.96	-197.63	51.11	54.41	0.00	0.00	0.00
4,800.00	2.85	165.50	4,794.84	-202.45	52.35	55.74	0.00	0.00	0.00
4,900.00	2.85	165.50	4,894.71	-207.26	53.60	57.06	0.00	0.00	0.00
5,000.00	2.85	165.50	4,994.59	-212.08	54.84	58.39	0.00	0.00	0.00
5,100.00	2.85	165.50	5,094.47	-216.89	56.09	59.71	0.00	0.00	0.00
5,200.00	2.85	165.50	5,194.34	-221.71	57.33	61.04	0.00	0.00	0.00
5,300.00	2.85	165.50	5,294.22	-226.52	58.58	62.36	0.00	0.00	0.00
5,400.00	2.85	165.50	5,394.09	-231.34	59.82	63.69	0.00	0.00	0.00
5,500.00	2.85	165.50	5,493.97	-236.15	61.07	65.01	0.00	0.00	0.00
5,600.00	2.85	165.50	5,593.85	-240.96	62.31	66.34	0.00	0.00	0.00
5,700.00	2.85	165.50	5,693.72	-245.78	63.56	67.66	0.00	0.00	0.00
5,800.00	2.85	165.50	5,793.60	-250.59	64.80	68.99	0.00	0.00	0.00
5,900.00	2.85	165.50	5,893.48	-255.41	66.05	70.32	0.00	0.00	0.00
6,000.00	2.85	165.50	5,993.35	-260.22	67.29	71.64	0.00	0.00	0.00
6,100.00	2.85	165.50	6,093.23	-265.04	68.54	72.97	0.00	0.00	0.00
6,200.00	2.85	165.50	6,193.10	-269.85	69.78	74.29	0.00	0.00	0.00
6,300.00	2.85	165.50	6,292.98	-274.67	71.03	75.62	0.00	0.00	0.00
6,369.12	2.85	165.50	6,362.02	-277.99	71.89	76.53	0.00	0.00	0.00
KOP at 6369.12 MD with 8 Deg DLS									
6,400.00	4.23	131.23	6,392.84	-279.49	72.94	77.61	8.00	4.48	-110.99
6,450.00	7.72	111.52	6,442.56	-281.94	77.45	82.16	8.00	6.98	-39.42
6,500.00	11.55	104.37	6,491.85	-284.41	85.43	90.18	8.00	7.65	-14.29
6,550.00	15.46	100.78	6,540.46	-286.90	96.83	101.62	8.00	7.83	-7.19
6,600.00	19.41	98.61	6,588.15	-289.39	111.60	116.43	8.00	7.90	-4.33
6,650.00	23.37	97.16	6,634.70	-291.88	129.66	134.53	8.00	7.93	-2.91
6,700.00	27.35	96.10	6,679.87	-294.33	150.93	155.84	8.00	7.95	-2.10
6,750.00	31.33	95.30	6,723.45	-296.76	175.30	180.25	8.00	7.96	-1.61
6,800.00	35.31	94.66	6,765.22	-299.13	202.66	207.64	8.00	7.97	-1.28
6,850.00	39.30	94.14	6,804.98	-301.45	232.87	237.89	8.00	7.97	-1.05
6,900.00	43.29	93.70	6,842.54	-303.70	265.78	270.83	8.00	7.98	-0.88
6,950.00	47.28	93.32	6,877.71	-305.87	301.24	306.32	8.00	7.98	-0.76
6,957.84	47.91	93.26	6,883.00	-306.21	307.02	312.11	8.00	7.98	-0.70
Sharon Springs									
7,000.00	51.27	92.98	6,910.33	-307.95	339.07	344.18	8.00	7.98	-0.66
7,015.68	52.53	92.89	6,920.00	-308.58	351.39	356.51	8.00	7.99	-0.62
Niobrara									
7,050.00	55.27	92.68	6,940.22	-309.93	379.09	384.23	8.00	7.99	-0.59
7,100.00	59.26	92.41	6,967.26	-311.80	421.09	426.26	8.00	7.99	-0.54
7,142.75	62.67	92.20	6,988.00	-313.30	458.44	463.62	8.00	7.99	-0.50
Nio B									
7,150.00	63.25	92.16	6,991.30	-313.55	464.89	470.08	8.00	7.99	-0.48
7,200.00	67.25	91.93	7,012.22	-315.17	510.26	515.47	8.00	7.99	-0.47
7,250.00	71.24	91.71	7,029.94	-316.65	556.98	562.21	8.00	7.99	-0.44
7,266.29	72.54	91.64	7,035.00	-317.10	572.46	577.69	8.00	7.99	-0.42
Nio C									
7,300.00	75.24	91.50	7,044.35	-317.99	604.83	610.07	8.00	7.99	-0.42
7,350.00	79.23	91.30	7,055.40	-319.18	653.57	658.83	8.00	7.99	-0.40
7,400.00	83.23	91.10	7,063.02	-320.22	702.96	708.23	8.00	7.99	-0.39
7,450.00	87.22	90.91	7,067.18	-321.09	752.77	758.05	8.00	7.99	-0.39
7,479.34	89.57	90.80	7,068.00	-321.53	782.10	787.37	8.00	7.99	-0.38

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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)
Landing Point at 7479.34 MD									
7,500.00	89.57	90.80	7,068.16	-321.82	802.75	808.03	0.02	0.00	0.02
7,600.00	89.57	90.82	7,068.91	-323.24	902.74	908.03	0.02	0.00	0.02
7,700.00	89.57	90.84	7,069.66	-324.69	1,002.73	1,008.03	0.02	0.00	0.02
7,800.00	89.57	90.87	7,070.42	-326.18	1,102.71	1,108.02	0.02	0.00	0.02
7,900.00	89.57	90.89	7,071.17	-327.71	1,202.70	1,208.02	0.02	0.00	0.02
8,000.00	89.57	90.91	7,071.92	-329.28	1,302.68	1,308.02	0.02	0.00	0.02
8,100.00	89.57	90.93	7,072.68	-330.88	1,402.67	1,408.01	0.02	0.00	0.02
8,200.00	89.57	90.95	7,073.43	-332.52	1,502.65	1,508.01	0.02	0.00	0.02
8,300.00	89.57	90.97	7,074.19	-334.20	1,602.63	1,608.01	0.02	0.00	0.02
8,400.00	89.57	90.99	7,074.95	-335.92	1,702.62	1,708.01	0.02	0.00	0.02
8,500.00	89.57	91.02	7,075.70	-337.67	1,802.60	1,808.00	0.02	0.00	0.02
8,600.00	89.57	91.04	7,076.46	-339.46	1,902.58	1,908.00	0.02	0.00	0.02
8,700.00	89.57	91.06	7,077.21	-341.29	2,002.56	2,008.00	0.02	0.00	0.02
8,800.00	89.57	91.08	7,077.97	-343.16	2,102.54	2,107.99	0.02	0.00	0.02
8,900.00	89.57	91.10	7,078.73	-345.06	2,202.52	2,207.99	0.02	0.00	0.02
9,000.00	89.57	91.12	7,079.49	-347.00	2,302.50	2,307.99	0.02	0.00	0.02
9,100.00	89.57	91.14	7,080.25	-348.98	2,402.47	2,407.98	0.02	0.00	0.02
9,200.00	89.57	91.17	7,081.00	-350.99	2,502.45	2,507.98	0.02	0.00	0.02
9,300.00	89.57	91.19	7,081.76	-353.04	2,602.43	2,607.98	0.02	0.00	0.02
9,400.00	89.56	91.21	7,082.52	-355.13	2,702.40	2,707.97	0.02	0.00	0.02
9,500.00	89.56	91.23	7,083.28	-357.26	2,802.38	2,807.97	0.02	0.00	0.02
9,600.00	89.56	91.25	7,084.04	-359.42	2,902.35	2,907.97	0.02	0.00	0.02
9,700.00	89.56	91.27	7,084.80	-361.62	3,002.32	3,007.96	0.02	0.00	0.02
9,800.00	89.56	91.29	7,085.56	-363.86	3,102.30	3,107.96	0.02	0.00	0.02
9,900.00	89.56	91.31	7,086.32	-366.14	3,202.27	3,207.95	0.02	0.00	0.02
10,000.00	89.56	91.34	7,087.09	-368.45	3,302.24	3,307.95	0.02	0.00	0.02
10,100.00	89.56	91.36	7,087.85	-370.80	3,402.21	3,407.94	0.02	0.00	0.02
10,200.00	89.56	91.38	7,088.61	-373.19	3,502.18	3,507.94	0.02	0.00	0.02
10,300.00	89.56	91.40	7,089.37	-375.61	3,602.14	3,607.93	0.02	0.00	0.02
10,400.00	89.56	91.42	7,090.14	-378.08	3,702.11	3,707.92	0.02	0.00	0.02
10,500.00	89.56	91.44	7,090.90	-380.58	3,802.08	3,807.92	0.02	0.00	0.02
10,600.00	89.56	91.46	7,091.66	-383.11	3,902.04	3,907.91	0.02	0.00	0.02
10,700.00	89.56	91.49	7,092.43	-385.69	4,002.00	4,007.91	0.02	0.00	0.02
10,800.00	89.56	91.51	7,093.19	-388.30	4,101.97	4,107.90	0.02	0.00	0.02
10,900.00	89.56	91.53	7,093.95	-390.95	4,201.93	4,207.89	0.02	0.00	0.02
11,000.00	89.56	91.55	7,094.72	-393.64	4,301.89	4,307.88	0.02	0.00	0.02
11,100.00	89.56	91.57	7,095.48	-396.36	4,401.85	4,407.87	0.02	0.00	0.02
11,200.00	89.56	91.59	7,096.25	-399.12	4,501.81	4,507.86	0.02	0.00	0.02
11,300.00	89.56	91.61	7,097.02	-401.92	4,601.77	4,607.86	0.02	0.00	0.02
11,400.00	89.56	91.64	7,097.78	-404.75	4,701.72	4,707.85	0.02	0.00	0.02
11,500.00	89.56	91.66	7,098.55	-407.63	4,801.68	4,807.84	0.02	0.00	0.02
11,600.00	89.56	91.68	7,099.32	-410.54	4,901.63	4,907.83	0.02	0.00	0.02
11,700.00	89.56	91.70	7,100.08	-413.49	5,001.59	5,007.81	0.02	0.00	0.02
11,800.00	89.56	91.72	7,100.85	-416.47	5,101.54	5,107.80	0.02	0.00	0.02
11,900.00	89.56	91.74	7,101.62	-419.49	5,201.49	5,207.79	0.02	0.00	0.02
12,000.00	89.56	91.76	7,102.39	-422.55	5,301.44	5,307.78	0.02	0.00	0.02
12,100.00	89.56	91.79	7,103.16	-425.65	5,401.39	5,407.76	0.02	0.00	0.02
12,200.00	89.56	91.81	7,103.93	-428.78	5,501.34	5,507.75	0.02	0.00	0.02
12,300.00	89.56	91.83	7,104.70	-431.96	5,601.29	5,607.74	0.02	0.00	0.02
12,400.00	89.56	91.85	7,105.47	-435.16	5,701.23	5,707.72	0.02	0.00	0.02
12,500.00	89.56	91.87	7,106.24	-438.41	5,801.18	5,807.71	0.02	0.00	0.02
12,600.00	89.56	91.89	7,107.01	-441.69	5,901.12	5,907.69	0.02	0.00	0.02
12,700.00	89.56	91.91	7,107.78	-445.01	6,001.06	6,007.67	0.02	0.00	0.02

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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)	
12,800.00	89.56	91.94	7,108.55	-448.37	6,101.00	6,107.66	0.02	0.00	0.02	
12,900.00	89.56	91.96	7,109.32	-451.77	6,200.94	6,207.64	0.02	0.00	0.02	
13,000.00	89.56	91.98	7,110.09	-455.20	6,300.88	6,307.62	0.02	0.00	0.02	
13,100.00	89.56	92.00	7,110.86	-458.67	6,400.82	6,407.60	0.02	0.00	0.02	
13,200.00	89.56	92.02	7,111.64	-462.18	6,500.75	6,507.58	0.02	0.00	0.02	
13,300.00	89.56	92.04	7,112.41	-465.72	6,600.69	6,607.56	0.02	0.00	0.02	
13,376.23	89.56	92.06	7,113.00	-468.45	6,676.86	6,683.78	0.02	0.00	0.02	
13,400.00	89.56	91.70	7,113.18	-469.23	6,700.62	6,707.54	1.50	0.00	-1.50	
13,465.60	89.55	90.72	7,113.69	-470.61	6,766.20	6,773.14	1.50	0.00	-1.50	
13,500.00	89.55	90.72	7,113.96	-471.05	6,800.60	6,807.54	0.00	0.00	0.00	
13,600.00	89.55	90.72	7,114.74	-472.30	6,900.59	6,907.53	0.00	0.00	0.00	
13,700.00	89.55	90.72	7,115.52	-473.55	7,000.58	7,007.53	0.00	0.00	0.00	
13,800.00	89.55	90.72	7,116.30	-474.80	7,100.57	7,107.53	0.00	0.00	0.00	
13,900.00	89.55	90.72	7,117.08	-476.06	7,200.56	7,207.52	0.00	0.00	0.00	
14,000.00	89.55	90.72	7,117.85	-477.31	7,300.55	7,307.52	0.00	0.00	0.00	
14,100.00	89.55	90.72	7,118.63	-478.56	7,400.53	7,407.51	0.00	0.00	0.00	
14,200.00	89.55	90.72	7,119.41	-479.82	7,500.52	7,507.51	0.00	0.00	0.00	
14,300.00	89.55	90.72	7,120.19	-481.07	7,600.51	7,607.51	0.00	0.00	0.00	
14,400.00	89.55	90.72	7,120.97	-482.32	7,700.50	7,707.50	0.00	0.00	0.00	
14,500.00	89.55	90.72	7,121.75	-483.57	7,800.49	7,807.50	0.00	0.00	0.00	
14,600.00	89.55	90.72	7,122.52	-484.83	7,900.48	7,907.49	0.00	0.00	0.00	
14,700.00	89.55	90.72	7,123.30	-486.08	8,000.47	8,007.49	0.00	0.00	0.00	
14,800.00	89.55	90.72	7,124.08	-487.33	8,100.46	8,107.49	0.00	0.00	0.00	
14,900.00	89.55	90.72	7,124.86	-488.59	8,200.45	8,207.48	0.00	0.00	0.00	
15,000.00	89.55	90.72	7,125.64	-489.84	8,300.44	8,307.48	0.00	0.00	0.00	
15,100.00	89.55	90.72	7,126.42	-491.09	8,400.43	8,407.47	0.00	0.00	0.00	
15,200.00	89.55	90.72	7,127.19	-492.34	8,500.41	8,507.47	0.00	0.00	0.00	
15,300.00	89.55	90.72	7,127.97	-493.60	8,600.40	8,607.47	0.00	0.00	0.00	
15,400.00	89.55	90.72	7,128.75	-494.85	8,700.39	8,707.46	0.00	0.00	0.00	
15,500.00	89.55	90.72	7,129.53	-496.10	8,800.38	8,807.46	0.00	0.00	0.00	
15,600.00	89.55	90.72	7,130.31	-497.35	8,900.37	8,907.46	0.00	0.00	0.00	
15,700.00	89.55	90.72	7,131.09	-498.61	9,000.36	9,007.45	0.00	0.00	0.00	
15,800.00	89.55	90.72	7,131.87	-499.86	9,100.35	9,107.45	0.00	0.00	0.00	
15,900.00	89.55	90.72	7,132.64	-501.11	9,200.34	9,207.44	0.00	0.00	0.00	
16,000.00	89.55	90.72	7,133.42	-502.37	9,300.33	9,307.44	0.00	0.00	0.00	
16,100.00	89.55	90.72	7,134.20	-503.62	9,400.32	9,407.44	0.00	0.00	0.00	
16,200.00	89.55	90.72	7,134.98	-504.87	9,500.31	9,507.43	0.00	0.00	0.00	
16,300.00	89.55	90.72	7,135.76	-506.12	9,600.30	9,607.43	0.00	0.00	0.00	
16,400.00	89.55	90.72	7,136.54	-507.38	9,700.28	9,707.42	0.00	0.00	0.00	
16,500.00	89.55	90.72	7,137.31	-508.63	9,800.27	9,807.42	0.00	0.00	0.00	
16,600.00	89.55	90.72	7,138.09	-509.88	9,900.26	9,907.42	0.00	0.00	0.00	
16,700.00	89.55	90.72	7,138.87	-511.14	10,000.25	10,007.41	0.00	0.00	0.00	
16,800.00	89.55	90.72	7,139.65	-512.39	10,100.24	10,107.41	0.00	0.00	0.00	
16,900.00	89.55	90.72	7,140.43	-513.64	10,200.23	10,207.40	0.00	0.00	0.00	
17,000.00	89.55	90.72	7,141.21	-514.89	10,300.22	10,307.40	0.00	0.00	0.00	
17,100.00	89.55	90.72	7,141.98	-516.15	10,400.21	10,407.40	0.00	0.00	0.00	
17,200.00	89.55	90.72	7,142.76	-517.40	10,500.20	10,507.39	0.00	0.00	0.00	
17,300.00	89.55	90.72	7,143.54	-518.65	10,600.19	10,607.39	0.00	0.00	0.00	
17,400.00	89.55	90.72	7,144.32	-519.91	10,700.18	10,707.38	0.00	0.00	0.00	
17,500.00	89.55	90.72	7,145.10	-521.16	10,800.16	10,807.38	0.00	0.00	0.00	
17,600.00	89.55	90.72	7,145.88	-522.41	10,900.15	10,907.38	0.00	0.00	0.00	
17,700.00	89.55	90.72	7,146.66	-523.66	11,000.14	11,007.37	0.00	0.00	0.00	
17,800.00	89.55	90.72	7,147.43	-524.92	11,100.13	11,107.37	0.00	0.00	0.00	
17,900.00	89.55	90.72	7,148.21	-526.17	11,200.12	11,207.36	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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	89.55	90.72	7,148.99	-527.42	11,300.11	11,307.36	0.00	0.00	0.00	
18,100.00	89.55	90.72	7,149.77	-528.68	11,400.10	11,407.36	0.00	0.00	0.00	
18,200.00	89.55	90.72	7,150.55	-529.93	11,500.09	11,507.35	0.00	0.00	0.00	
18,300.00	89.55	90.72	7,151.33	-531.18	11,600.08	11,607.35	0.00	0.00	0.00	
18,400.00	89.55	90.72	7,152.10	-532.43	11,700.07	11,707.35	0.00	0.00	0.00	
18,500.00	89.55	90.72	7,152.88	-533.69	11,800.06	11,807.34	0.00	0.00	0.00	
18,600.00	89.55	90.72	7,153.66	-534.94	11,900.05	11,907.34	0.00	0.00	0.00	
18,700.00	89.55	90.72	7,154.44	-536.19	12,000.03	12,007.33	0.00	0.00	0.00	
18,800.00	89.55	90.72	7,155.22	-537.44	12,100.02	12,107.33	0.00	0.00	0.00	
18,900.00	89.55	90.72	7,156.00	-538.70	12,200.01	12,207.33	0.00	0.00	0.00	
19,000.00	89.55	90.72	7,156.78	-539.95	12,300.00	12,307.32	0.00	0.00	0.00	
19,100.00	89.55	90.72	7,157.55	-541.20	12,399.99	12,407.32	0.00	0.00	0.00	
19,200.00	89.55	90.72	7,158.33	-542.46	12,499.98	12,507.31	0.00	0.00	0.00	
19,300.00	89.55	90.72	7,159.11	-543.71	12,599.97	12,607.31	0.00	0.00	0.00	
19,400.00	89.55	90.72	7,159.89	-544.96	12,699.96	12,707.31	0.00	0.00	0.00	
19,500.00	89.55	90.72	7,160.67	-546.21	12,799.95	12,807.30	0.00	0.00	0.00	
19,600.00	89.55	90.72	7,161.45	-547.47	12,899.94	12,907.30	0.00	0.00	0.00	
19,700.00	89.55	90.72	7,162.22	-548.72	12,999.93	13,007.29	0.00	0.00	0.00	
19,800.00	89.55	90.72	7,163.00	-549.97	13,099.91	13,107.29	0.00	0.00	0.00	
19,900.00	89.55	90.72	7,163.78	-551.23	13,199.90	13,207.29	0.00	0.00	0.00	
20,000.00	89.55	90.72	7,164.56	-552.48	13,299.89	13,307.28	0.00	0.00	0.00	
20,100.00	89.55	90.72	7,165.34	-553.73	13,399.88	13,407.28	0.00	0.00	0.00	
20,185.10	89.55	90.72	7,166.00	-554.80	13,484.97	13,492.37	0.00	0.00	0.00	
Fort Hayes										
20,200.00	89.55	90.72	7,166.12	-554.98	13,499.87	13,507.27	0.00	0.00	0.00	
20,300.00	89.55	90.72	7,166.89	-556.24	13,599.86	13,607.27	0.00	0.00	0.00	
20,400.00	89.55	90.72	7,167.67	-557.49	13,699.85	13,707.27	0.00	0.00	0.00	
20,500.00	89.55	90.72	7,168.45	-558.74	13,799.84	13,807.26	0.00	0.00	0.00	
20,600.00	89.55	90.72	7,169.23	-560.00	13,899.83	13,907.26	0.00	0.00	0.00	
20,700.00	89.55	90.72	7,170.01	-561.25	13,999.82	14,007.26	0.00	0.00	0.00	
20,800.00	89.55	90.72	7,170.79	-562.50	14,099.81	14,107.25	0.00	0.00	0.00	
20,900.00	89.55	90.72	7,171.57	-563.75	14,199.80	14,207.25	0.00	0.00	0.00	
21,000.00	89.55	90.72	7,172.34	-565.01	14,299.78	14,307.24	0.00	0.00	0.00	
21,100.00	89.55	90.72	7,173.12	-566.26	14,399.77	14,407.24	0.00	0.00	0.00	
21,200.00	89.55	90.72	7,173.90	-567.51	14,499.76	14,507.24	0.00	0.00	0.00	
21,300.00	89.55	90.72	7,174.68	-568.76	14,599.75	14,607.23	0.00	0.00	0.00	
21,400.00	89.55	90.72	7,175.46	-570.02	14,699.74	14,707.23	0.00	0.00	0.00	
21,500.00	89.55	90.72	7,176.24	-571.27	14,799.73	14,807.22	0.00	0.00	0.00	
21,600.00	89.55	90.72	7,177.01	-572.52	14,899.72	14,907.22	0.00	0.00	0.00	
21,700.00	89.55	90.72	7,177.79	-573.78	14,999.71	15,007.22	0.00	0.00	0.00	
21,800.00	89.55	90.72	7,178.57	-575.03	15,099.70	15,107.21	0.00	0.00	0.00	
21,900.00	89.55	90.72	7,179.35	-576.28	15,199.69	15,207.21	0.00	0.00	0.00	
22,000.00	89.55	90.72	7,180.13	-577.53	15,299.68	15,307.20	0.00	0.00	0.00	
22,100.00	89.55	90.72	7,180.91	-578.79	15,399.66	15,407.20	0.00	0.00	0.00	
22,200.00	89.55	90.72	7,181.68	-580.04	15,499.65	15,507.20	0.00	0.00	0.00	
22,300.00	89.55	90.72	7,182.46	-581.29	15,599.64	15,607.19	0.00	0.00	0.00	
22,400.00	89.55	90.72	7,183.24	-582.55	15,699.63	15,707.19	0.00	0.00	0.00	
22,497.45	89.55	90.72	7,184.00	-583.77	15,797.07	15,804.63	0.00	0.00	0.00	
Codell										
22,500.00	89.55	90.72	7,184.02	-583.80	15,799.62	15,807.18	0.00	0.00	0.00	
22,600.00	89.55	90.72	7,184.80	-585.05	15,899.61	15,907.18	0.00	0.00	0.00	
22,700.00	89.55	90.72	7,185.58	-586.30	15,999.60	16,007.18	0.00	0.00	0.00	
22,800.00	89.55	90.72	7,186.36	-587.56	16,099.59	16,107.17	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

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)	
22,900.00	89.55	90.72	7,187.13	-588.81	16,199.58	16,207.17	0.00	0.00	0.00	
23,000.00	89.55	90.72	7,187.91	-590.06	16,299.57	16,307.16	0.00	0.00	0.00	
23,100.00	89.55	90.72	7,188.69	-591.32	16,399.56	16,407.16	0.00	0.00	0.00	
23,200.00	89.55	90.72	7,189.47	-592.57	16,499.54	16,507.16	0.00	0.00	0.00	
23,300.00	89.55	90.72	7,190.25	-593.82	16,599.53	16,607.15	0.00	0.00	0.00	
23,400.00	89.55	90.72	7,191.03	-595.07	16,699.52	16,707.15	0.00	0.00	0.00	
23,500.00	89.55	90.72	7,191.80	-596.33	16,799.51	16,807.15	0.00	0.00	0.00	
23,600.00	89.55	90.72	7,192.58	-597.58	16,899.50	16,907.14	0.00	0.00	0.00	
23,700.00	89.55	90.72	7,193.36	-598.83	16,999.49	17,007.14	0.00	0.00	0.00	
23,800.00	89.55	90.72	7,194.14	-600.09	17,099.48	17,107.13	0.00	0.00	0.00	
23,900.00	89.55	90.72	7,194.92	-601.34	17,199.47	17,207.13	0.00	0.00	0.00	
24,000.00	89.55	90.72	7,195.70	-602.59	17,299.46	17,307.13	0.00	0.00	0.00	
24,100.00	89.55	90.72	7,196.47	-603.84	17,399.45	17,407.12	0.00	0.00	0.00	
24,200.00	89.55	90.72	7,197.25	-605.10	17,499.44	17,507.12	0.00	0.00	0.00	
24,300.00	89.55	90.72	7,198.03	-606.35	17,599.43	17,607.11	0.00	0.00	0.00	
24,400.00	89.55	90.72	7,198.81	-607.60	17,699.41	17,707.11	0.00	0.00	0.00	
24,500.00	89.55	90.72	7,199.59	-608.85	17,799.40	17,807.11	0.00	0.00	0.00	
24,600.00	89.55	90.72	7,200.37	-610.11	17,899.39	17,907.10	0.00	0.00	0.00	
24,700.00	89.55	90.72	7,201.15	-611.36	17,999.38	18,007.10	0.00	0.00	0.00	
24,800.00	89.55	90.72	7,201.92	-612.61	18,099.37	18,107.09	0.00	0.00	0.00	
24,900.00	89.55	90.72	7,202.70	-613.87	18,199.36	18,207.09	0.00	0.00	0.00	
24,920.28	89.55	90.72	7,202.86	-614.12	18,219.63	18,227.37	0.00	0.00	0.00	
TD at 24920.28										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Schlagel 5-4HZ Heel - plan hits target center - Point	0.00	0.00	7,068.00	-321.53	782.10	14,618,861.46	1,665,508.23	40.252961	-104.910071	
SCHLAGEL 5-4HZ Int T ₂ - plan hits target center - Point	0.00	0.00	7,113.00	-468.45	6,676.86	14,618,720.33	1,671,403.14	40.252555	-104.888944	
Schlagel 5-4HZ Toe - plan hits target center - Point	0.00	0.00	7,202.86	-614.12	18,219.63	14,618,586.00	1,682,946.05	40.252139	-104.847575	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,501.08	1,500.00	Surface Csg	9-5/8	13-1/2	
24,920.28	7,202.86	Prod Csg	5-1/2	7-7/8	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SCHLAGEL 5-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4887.00usft
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4887.00usft
Site:	3N-67W-05 Schlagel 10-5HZ Pad	North Reference:	True
Well:	SCHLAGEL 5-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV 0		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
672.06	672.00	Fox Hills			
3,551.62	3,548.00	Parkman			
4,074.27	4,070.00	Sussex			
6,957.84	6,883.00	Sharon Springs			
7,015.68	6,920.00	Niobrara			
7,142.75	6,988.00	Nio B			
7,266.29	7,035.00	Nio C			
20,185.10	7,166.00	Fort Hayes			
22,497.45	7,184.00	Codell			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 1.50
6,369.12	6,362.02	-277.99	71.89	KOP at 6369.12 MD with 8 Deg DLS
7,479.34	7,068.00	-321.53	782.10	Landing Point at 7479.34 MD
24,920.28	7,202.86	-614.12	18,219.63	TD at 24920.28