

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

4N-67W-21 WALTERS 14-21HZ PAD

WALTERS 21-8HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.293855/-104.897553

Survey Program: MWD+IFR+MSA

Standard Planning Report

07 March, 2018

Project: WELD-NAD83-UTMFT13N
 Site: 4N-67W-21 WALTERS 14-21HZ PAD
 Well: WALTERS 21-8HZ
 Wellbore: Plan A
 Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.46	9-5/8
7307.00	8000.98	5-1/2

WELL DETAILS: WALTERS 21-8HZ

GL = 4938'

RKB = 17' @ 4955.00usft (Drilling Rig)

SECTION DETAILS

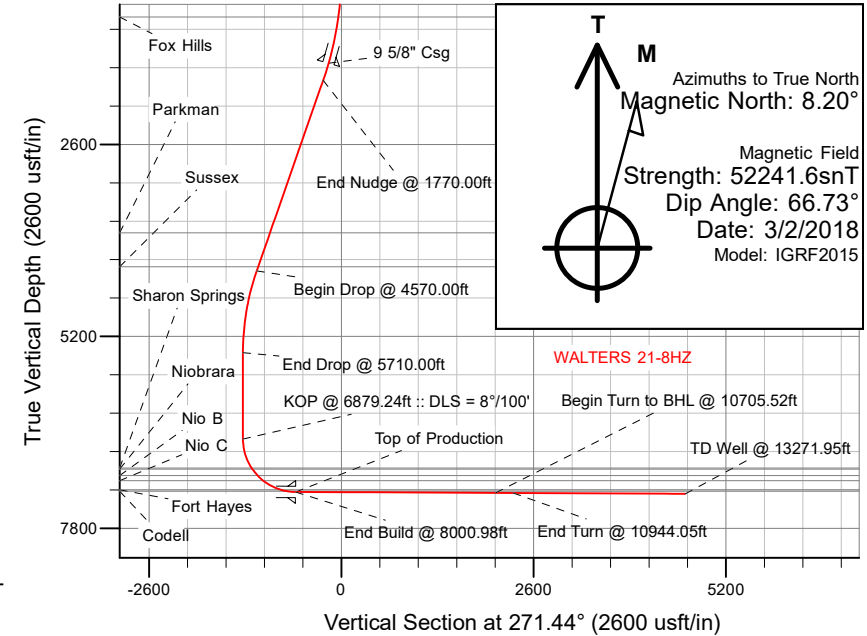
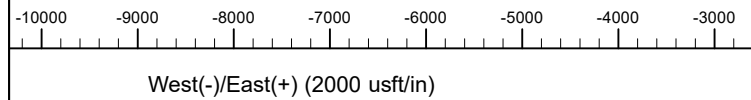
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1770.00	22.80	125.50	1730.20	-173.32	242.98	1.50	125.50	-247.26	
4	4570.00	22.80	125.50	4311.42	-803.41	1126.33	0.00	0.00	-1146.17	
5	5710.00	0.00	0.00	5421.57	-933.39	1308.57	2.00	-180.00	-1331.61	
6	6879.24	0.00	0.00	6590.81	-933.39	1308.57	0.00	0.00	-1331.61	
7	8000.98	89.74	272.91	7307.00	-897.25	596.55	8.00	272.91	-618.91	
8	10705.52	89.74	272.91	7319.32	-760.14	-2104.49	0.00	0.00	2084.72	WALTERS 21-8HZ_tgt
9	10944.05	89.74	269.33	7320.41	-755.49	-2342.93	1.50	-90.00	2323.20	
10	13271.95	89.74	269.33	7331.00	-782.79	-4670.64	0.00	0.00	4649.49	WALTERS 21-8HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
WALTERS 21-8HZ_SHL	0.00	0.00	0.00	40.293855	-104.897553
WALTERS 21-8HZ_BHL	7331.00	-782.79	-4670.64	40.291704	-104.914302

FORMATION TOP DETAILS

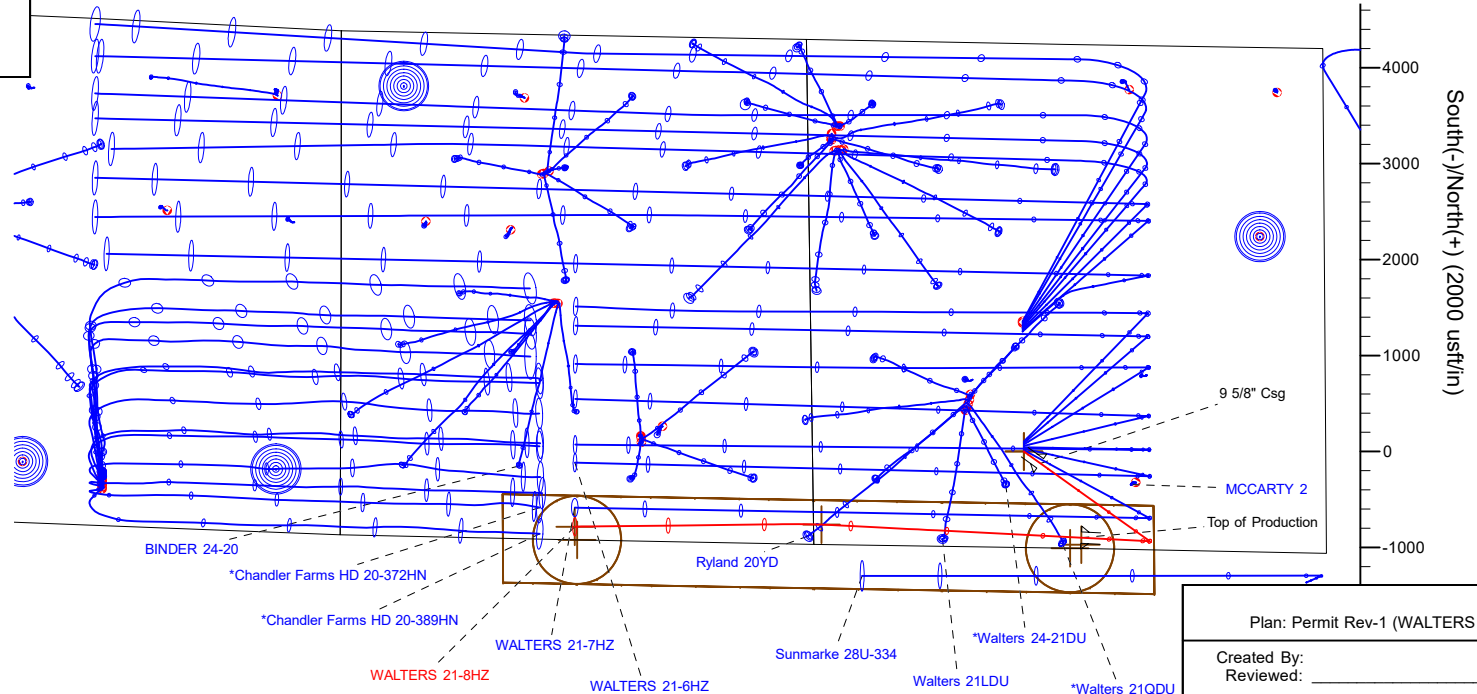
TVDPath	MDPath	Formation
874.00	876.81	Fox Hills
3795.00	4009.81	Parkman
4255.00	4508.80	Sussex
6983.00	7294.27	Sharon Springs
6998.00	7312.35	Niobrara
7083.00	7421.88	Nio B
7154.00	7527.33	Nio C
7276.00	7792.73	Fort Hayes
7297.00	7884.39	Codell



SHL
1001' FSL
2200' FWL

HEEL
112' FSL
2550' FEL

TOE
137' FSL
2441' FWL



Plan: Permit Rev-1 (WALTERS 21-8HZ/Plan A)

Created By: _____ Date: 3/7/2018
 Reviewed: _____ Date: _____

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well WALTERS 21-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Site:	4N-67W-21 WALTERS 14-21HZ PAD	North Reference:	True
Well:	WALTERS 21-8HZ	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	4N-67W-21 WALTERS 14-21HZ PAD			
Site Position:		Northing:	14,633,862.07 usft	Latitude: 40.294143
From:	Lat/Long	Easting:	1,668,984.40 usft	Longitude: -104.897550
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.07 °

Well	WALTERS 21-8HZ					
Well Position	+N/-S	-104.88 usft	Northing:	14,633,757.19 usft	Latitude:	40.293855
	+E/-W	-0.84 usft	Easting:	1,668,983.68 usft	Longitude:	-104.897553
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,938.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/2/2018	8.20	66.73	52,241.64936376

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	271.44

Plan Survey Tool Program	Date	3/6/2018		
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+I Fixed:v2:crustal field declinatio
2	1,500.00	13,271.95	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +

Corporate
Planning Report

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Well:	WALTERS 21-8HZ	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	
1,770.00	22.80	125.50	1,730.20	-173.32	242.98	1.50	1.50	0.00	125.50	
4,570.00	22.80	125.50	4,311.42	-803.41	1,126.33	0.00	0.00	0.00	0.00	
5,710.00	0.00	0.00	5,421.57	-933.39	1,308.57	2.00	-2.00	-11.01	-180.00	
6,879.24	0.00	0.00	6,590.81	-933.39	1,308.57	0.00	0.00	0.00	0.00	
8,000.98	89.74	272.91	7,307.00	-897.25	596.55	8.00	8.00	-7.76	272.91	
10,705.52	89.74	272.91	7,319.32	-760.14	-2,104.49	0.00	0.00	0.00	0.00	WALTERS 21-8HZ_tg
10,944.05	89.74	269.33	7,320.41	-755.49	-2,342.93	1.50	0.00	-1.50	-90.00	
13,271.95	89.74	269.33	7,331.00	-782.79	-4,670.64	0.00	0.00	0.00	0.00	WALTERS 21-8HZ_B

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Site:	4N-67W-21 WALTERS 14-21HZ PAD	North Reference:	True
Well:	WALTERS 21-8HZ	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	125.50	300.00	-0.19	0.27	-0.27	1.50	1.50	0.00
400.00	2.25	125.50	399.96	-1.71	2.40	-2.44	1.50	1.50	0.00
500.00	3.75	125.50	499.82	-4.75	6.66	-6.78	1.50	1.50	0.00
600.00	5.25	125.50	599.51	-9.31	13.05	-13.28	1.50	1.50	0.00
700.00	6.75	125.50	698.96	-15.38	21.55	-21.93	1.50	1.50	0.00
800.00	8.25	125.50	798.10	-22.95	32.18	-32.75	1.50	1.50	0.00
876.81	9.40	125.50	874.00	-29.80	41.78	-42.51	1.50	1.50	0.00
Fox Hills									
900.00	9.75	125.50	896.87	-32.04	44.92	-45.71	1.50	1.50	0.00
1,000.00	11.25	125.50	995.19	-42.62	59.75	-60.80	1.50	1.50	0.00
1,100.00	12.75	125.50	1,093.00	-54.69	76.68	-78.03	1.50	1.50	0.00
1,200.00	14.25	125.50	1,190.24	-68.25	95.68	-97.37	1.50	1.50	0.00
1,300.00	15.75	125.50	1,286.83	-83.28	116.75	-118.81	1.50	1.50	0.00
1,400.00	17.25	125.50	1,382.71	-99.77	139.87	-142.34	1.50	1.50	0.00
1,500.00	18.75	125.50	1,477.81	-117.72	165.03	-167.94	1.50	1.50	0.00
1,523.46	19.10	125.50	1,500.00	-122.13	171.23	-174.24	1.50	1.50	0.00
9 5/8" Csg									
1,600.00	20.25	125.50	1,572.07	-137.10	192.21	-195.59	1.50	1.50	0.00
1,700.00	21.75	125.50	1,665.43	-157.91	221.38	-225.28	1.50	1.50	0.00
1,770.00	22.80	125.50	1,730.20	-173.32	242.98	-247.26	1.50	1.50	0.00
End Nudge @ 1770.00ft									
1,800.00	22.80	125.50	1,757.86	-180.07	252.45	-256.89	0.00	0.00	0.00
1,900.00	22.80	125.50	1,850.04	-202.57	283.99	-289.00	0.00	0.00	0.00
2,000.00	22.80	125.50	1,942.23	-225.07	315.54	-321.10	0.00	0.00	0.00
2,100.00	22.80	125.50	2,034.42	-247.58	347.09	-353.20	0.00	0.00	0.00
2,200.00	22.80	125.50	2,126.60	-270.08	378.64	-385.31	0.00	0.00	0.00
2,300.00	22.80	125.50	2,218.79	-292.58	410.19	-417.41	0.00	0.00	0.00
2,400.00	22.80	125.50	2,310.97	-315.09	441.74	-449.51	0.00	0.00	0.00
2,500.00	22.80	125.50	2,403.16	-337.59	473.28	-481.62	0.00	0.00	0.00
2,600.00	22.80	125.50	2,495.35	-360.09	504.83	-513.72	0.00	0.00	0.00
2,700.00	22.80	125.50	2,587.53	-382.60	536.38	-545.83	0.00	0.00	0.00
2,800.00	22.80	125.50	2,679.72	-405.10	567.93	-577.93	0.00	0.00	0.00
2,900.00	22.80	125.50	2,771.91	-427.60	599.48	-610.03	0.00	0.00	0.00
3,000.00	22.80	125.50	2,864.09	-450.11	631.02	-642.14	0.00	0.00	0.00
3,100.00	22.80	125.50	2,956.28	-472.61	662.57	-674.24	0.00	0.00	0.00
3,200.00	22.80	125.50	3,048.46	-495.11	694.12	-706.34	0.00	0.00	0.00
3,300.00	22.80	125.50	3,140.65	-517.62	725.67	-738.45	0.00	0.00	0.00
3,400.00	22.80	125.50	3,232.84	-540.12	757.22	-770.55	0.00	0.00	0.00
3,500.00	22.80	125.50	3,325.02	-562.62	788.77	-802.66	0.00	0.00	0.00
3,600.00	22.80	125.50	3,417.21	-585.12	820.31	-834.76	0.00	0.00	0.00
3,700.00	22.80	125.50	3,509.40	-607.63	851.86	-866.86	0.00	0.00	0.00
3,800.00	22.80	125.50	3,601.58	-630.13	883.41	-898.97	0.00	0.00	0.00
3,900.00	22.80	125.50	3,693.77	-652.63	914.96	-931.07	0.00	0.00	0.00
4,000.00	22.80	125.50	3,785.96	-675.14	946.51	-963.17	0.00	0.00	0.00
4,009.81	22.80	125.50	3,795.00	-677.35	949.60	-966.32	0.00	0.00	0.00
Parkman									
4,100.00	22.80	125.50	3,878.14	-697.64	978.06	-995.28	0.00	0.00	0.00
4,200.00	22.80	125.50	3,970.33	-720.14	1,009.60	-1,027.38	0.00	0.00	0.00
4,300.00	22.80	125.50	4,062.51	-742.65	1,041.15	-1,059.49	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well WALTERS 21-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Site:	4N-67W-21 WALTERS 14-21HZ PAD	North Reference:	True
Well:	WALTERS 21-8HZ	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)
4,400.00	22.80	125.50	4,154.70	-765.15	1,072.70	-1,091.59	0.00	0.00	0.00
4,500.00	22.80	125.50	4,246.89	-787.65	1,104.25	-1,123.69	0.00	0.00	0.00
4,508.80	22.80	125.50	4,255.00	-789.63	1,107.03	-1,126.52	0.00	0.00	0.00
Sussex									
4,570.00	22.80	125.50	4,311.42	-803.41	1,126.33	-1,146.17	0.00	0.00	0.00
Begin Drop @ 4570.00ft									
4,600.00	22.20	125.50	4,339.13	-810.07	1,135.68	-1,155.68	2.00	-2.00	0.00
4,700.00	20.20	125.50	4,432.36	-831.07	1,165.12	-1,185.63	2.00	-2.00	0.00
4,800.00	18.20	125.50	4,526.79	-850.17	1,191.89	-1,212.88	2.00	-2.00	0.00
4,900.00	16.20	125.50	4,622.32	-867.34	1,215.96	-1,237.38	2.00	-2.00	0.00
5,000.00	14.20	125.50	4,718.81	-882.56	1,237.31	-1,259.10	2.00	-2.00	0.00
5,100.00	12.20	125.50	4,816.17	-895.82	1,255.90	-1,278.01	2.00	-2.00	0.00
5,200.00	10.20	125.50	4,914.26	-907.10	1,271.71	-1,294.10	2.00	-2.00	0.00
5,300.00	8.20	125.50	5,012.97	-916.38	1,284.72	-1,307.35	2.00	-2.00	0.00
5,400.00	6.20	125.50	5,112.17	-923.66	1,294.93	-1,317.73	2.00	-2.00	0.00
5,500.00	4.20	125.50	5,211.76	-928.93	1,302.31	-1,325.24	2.00	-2.00	0.00
5,600.00	2.20	125.50	5,311.59	-932.17	1,306.85	-1,329.86	2.00	-2.00	0.00
5,700.00	0.20	125.50	5,411.57	-933.38	1,308.55	-1,331.60	2.00	-2.00	0.00
5,710.00	0.00	0.00	5,421.57	-933.39	1,308.57	-1,331.61	2.00	-2.00	-1,254.99
End Drop @ 5710.00ft									
5,800.00	0.00	0.00	5,511.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
5,900.00	0.00	0.00	5,611.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,000.00	0.00	0.00	5,711.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,100.00	0.00	0.00	5,811.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,200.00	0.00	0.00	5,911.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,300.00	0.00	0.00	6,011.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,400.00	0.00	0.00	6,111.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,500.00	0.00	0.00	6,211.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,600.00	0.00	0.00	6,311.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,700.00	0.00	0.00	6,411.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,800.00	0.00	0.00	6,511.57	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
6,879.24	0.00	0.00	6,590.81	-933.39	1,308.57	-1,331.61	0.00	0.00	0.00
KOP @ 6879.24ft :: DLS = 8°/100'									
6,900.00	1.66	272.91	6,611.56	-933.38	1,308.27	-1,331.31	8.00	8.00	-419.53
7,000.00	9.66	272.91	6,711.00	-932.88	1,298.42	-1,321.46	8.00	8.00	0.00
7,100.00	17.66	272.91	6,808.09	-931.68	1,274.86	-1,297.87	8.00	8.00	0.00
7,200.00	25.66	272.91	6,900.95	-929.81	1,238.02	-1,261.00	8.00	8.00	0.00
7,294.27	33.20	272.91	6,983.00	-927.47	1,191.79	-1,214.72	8.00	8.00	0.00
Sharon Springs									
7,300.00	33.66	272.91	6,987.78	-927.31	1,188.64	-1,211.57	8.00	8.00	0.00
7,312.35	34.65	272.91	6,998.00	-926.95	1,181.71	-1,204.64	8.00	8.00	0.00
Niobrara									
7,400.00	41.66	272.91	7,066.88	-924.21	1,127.67	-1,150.54	8.00	8.00	0.00
7,421.88	43.41	272.91	7,083.00	-923.46	1,112.90	-1,135.75	8.00	8.00	0.00
Nio B									
7,500.00	49.66	272.91	7,136.71	-920.59	1,056.30	-1,079.10	8.00	8.00	0.00
7,527.33	51.85	272.91	7,154.00	-919.51	1,035.16	-1,057.94	8.00	8.00	0.00
Nio C									
7,600.00	57.66	272.91	7,195.92	-916.51	975.92	-998.64	8.00	8.00	0.00
7,700.00	65.66	272.91	7,243.35	-912.05	888.08	-910.72	8.00	8.00	0.00
7,792.73	73.08	272.91	7,276.00	-907.65	801.47	-824.03	8.00	8.00	0.00
Fort Hayes									
7,800.00	73.66	272.91	7,278.08	-907.30	794.52	-817.07	8.00	8.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well WALTERS 21-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Site:	4N-67W-21 WALTERS 14-21HZ PAD	North Reference:	True
Well:	WALTERS 21-8HZ	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)
7,884.39	80.41	272.91	7,297.00	-903.13	712.43	-734.90	8.00	8.00	0.00
Codell									
7,900.00	81.66	272.91	7,299.43	-902.35	697.03	-719.49	8.00	8.00	0.00
8,000.00	89.66	272.91	7,306.99	-897.30	597.53	-619.89	8.00	8.00	0.00
8,000.98	89.74	272.91	7,307.00	-897.25	596.55	-618.91	7.97	7.97	0.00
End Build @ 8000.98ft - Top of Production									
8,100.00	89.74	272.91	7,307.45	-892.23	497.66	-519.92	0.00	0.00	0.00
8,200.00	89.74	272.91	7,307.90	-887.16	397.79	-419.95	0.00	0.00	0.00
8,300.00	89.74	272.91	7,308.36	-882.09	297.92	-319.99	0.00	0.00	0.00
8,400.00	89.74	272.91	7,308.82	-877.02	198.05	-220.02	0.00	0.00	0.00
8,500.00	89.74	272.91	7,309.27	-871.95	98.17	-120.06	0.00	0.00	0.00
8,600.00	89.74	272.91	7,309.73	-866.88	-1.70	-20.09	0.00	0.00	0.00
8,700.00	89.74	272.91	7,310.18	-861.81	-101.57	79.88	0.00	0.00	0.00
8,800.00	89.74	272.91	7,310.64	-856.74	-201.44	179.84	0.00	0.00	0.00
8,900.00	89.74	272.91	7,311.09	-851.67	-301.31	279.81	0.00	0.00	0.00
9,000.00	89.74	272.91	7,311.55	-846.60	-401.18	379.78	0.00	0.00	0.00
9,100.00	89.74	272.91	7,312.01	-841.53	-501.05	479.74	0.00	0.00	0.00
9,200.00	89.74	272.91	7,312.46	-836.46	-600.92	579.71	0.00	0.00	0.00
9,300.00	89.74	272.91	7,312.92	-831.39	-700.79	679.67	0.00	0.00	0.00
9,400.00	89.74	272.91	7,313.37	-826.32	-800.66	779.64	0.00	0.00	0.00
9,500.00	89.74	272.91	7,313.83	-821.26	-900.53	879.61	0.00	0.00	0.00
9,600.00	89.74	272.91	7,314.28	-816.19	-1,000.40	979.57	0.00	0.00	0.00
9,700.00	89.74	272.91	7,314.74	-811.12	-1,100.27	1,079.54	0.00	0.00	0.00
9,800.00	89.74	272.91	7,315.19	-806.05	-1,200.14	1,179.50	0.00	0.00	0.00
9,900.00	89.74	272.91	7,315.65	-800.98	-1,300.01	1,279.47	0.00	0.00	0.00
10,000.00	89.74	272.91	7,316.11	-795.91	-1,399.88	1,379.44	0.00	0.00	0.00
10,100.00	89.74	272.91	7,316.56	-790.84	-1,499.75	1,479.40	0.00	0.00	0.00
10,200.00	89.74	272.91	7,317.02	-785.77	-1,599.62	1,579.37	0.00	0.00	0.00
10,300.00	89.74	272.91	7,317.47	-780.70	-1,699.49	1,679.34	0.00	0.00	0.00
10,400.00	89.74	272.91	7,317.93	-775.63	-1,799.36	1,779.30	0.00	0.00	0.00
10,500.00	89.74	272.91	7,318.38	-770.56	-1,899.23	1,879.27	0.00	0.00	0.00
10,600.00	89.74	272.91	7,318.84	-765.49	-1,999.10	1,979.23	0.00	0.00	0.00
10,700.00	89.74	272.91	7,319.29	-760.42	-2,098.97	2,079.20	0.00	0.00	0.00
10,705.52	89.74	272.91	7,319.32	-760.14	-2,104.49	2,084.72	0.00	0.00	0.00
Begin Turn to BHL @ 10705.52ft									
10,800.00	89.74	271.49	7,319.75	-756.52	-2,198.89	2,179.19	1.50	0.00	-1.50
10,900.00	89.74	269.99	7,320.21	-755.23	-2,298.88	2,279.18	1.50	0.00	-1.50
10,944.05	89.74	269.33	7,320.41	-755.49	-2,342.93	2,323.20	1.50	0.00	-1.50
End Turn @ 10944.05ft									
11,000.00	89.74	269.33	7,320.66	-756.15	-2,398.88	2,379.12	0.00	0.00	0.00
11,100.00	89.74	269.33	7,321.12	-757.32	-2,498.87	2,479.05	0.00	0.00	0.00
11,200.00	89.74	269.33	7,321.57	-758.49	-2,598.86	2,578.98	0.00	0.00	0.00
11,300.00	89.74	269.33	7,322.03	-759.67	-2,698.85	2,678.91	0.00	0.00	0.00
11,400.00	89.74	269.33	7,322.48	-760.84	-2,798.84	2,778.84	0.00	0.00	0.00
11,500.00	89.74	269.33	7,322.94	-762.01	-2,898.84	2,878.77	0.00	0.00	0.00
11,600.00	89.74	269.33	7,323.39	-763.18	-2,998.83	2,978.70	0.00	0.00	0.00
11,700.00	89.74	269.33	7,323.85	-764.36	-3,098.82	3,078.63	0.00	0.00	0.00
11,800.00	89.74	269.33	7,324.30	-765.53	-3,198.81	3,178.56	0.00	0.00	0.00
11,900.00	89.74	269.33	7,324.76	-766.70	-3,298.80	3,278.49	0.00	0.00	0.00
12,000.00	89.74	269.33	7,325.21	-767.87	-3,398.80	3,378.43	0.00	0.00	0.00
12,100.00	89.74	269.33	7,325.67	-769.05	-3,498.79	3,478.36	0.00	0.00	0.00
12,200.00	89.74	269.33	7,326.12	-770.22	-3,598.78	3,578.29	0.00	0.00	0.00
12,300.00	89.74	269.33	7,326.58	-771.39	-3,698.77	3,678.22	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well WALTERS 21-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4955.00usft (Drilling Rig)
Site:	4N-67W-21 WALTERS 14-21HZ PAD	North Reference:	True
Well:	WALTERS 21-8HZ	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)	
12,400.00	89.74	269.33	7,327.03	-772.56	-3,798.76	3,778.15	0.00	0.00	0.00	
12,500.00	89.74	269.33	7,327.49	-773.74	-3,898.76	3,878.08	0.00	0.00	0.00	
12,600.00	89.74	269.33	7,327.94	-774.91	-3,998.75	3,978.01	0.00	0.00	0.00	
12,700.00	89.74	269.33	7,328.40	-776.08	-4,098.74	4,077.94	0.00	0.00	0.00	
12,800.00	89.74	269.33	7,328.85	-777.26	-4,198.73	4,177.87	0.00	0.00	0.00	
12,900.00	89.74	269.33	7,329.31	-778.43	-4,298.72	4,277.81	0.00	0.00	0.00	
13,000.00	89.74	269.33	7,329.76	-779.60	-4,398.72	4,377.74	0.00	0.00	0.00	
13,100.00	89.74	269.33	7,330.22	-780.77	-4,498.71	4,477.67	0.00	0.00	0.00	
13,200.00	89.74	269.33	7,330.67	-781.95	-4,598.70	4,577.60	0.00	0.00	0.00	
13,271.95	89.74	269.33	7,331.00	-782.79	-4,670.64	4,649.49	0.00	0.00	0.00	
TD Well @ 13271.95ft										

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,523.46	1,500.00	9 5/8" Csg	9-5/8	13-1/2
8,000.98	7,307.00	Top of Production	5-1/2	7-7/8

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
876.81	874.00	Fox Hills				
4,009.81	3,795.00	Parkman				
4,508.80	4,255.00	Sussex				
7,294.27	6,983.00	Sharon Springs				
7,312.35	6,998.00	Niobrara				
7,421.88	7,083.00	Nio B				
7,527.33	7,154.00	Nio C				
7,792.73	7,276.00	Fort Hayes				
7,884.39	7,297.00	Codell				

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
1,770.00	1,730.20	-173.32	242.98	End Nudge @ 1770.00ft
4,570.00	4,311.42	-803.41	1,126.33	Begin Drop @ 4570.00ft
5,710.00	5,421.57	-933.39	1,308.57	End Drop @ 5710.00ft
6,879.24	6,590.81	-933.39	1,308.57	KOP @ 6879.24ft :: DLS = 8°/100'
8,000.98	7,307.00	-897.25	596.55	End Build @ 8000.98ft
10,705.52	7,319.32	-760.14	-2,104.49	Begin Turn to BHL @ 10705.52ft
10,944.05	7,320.41	-755.49	-2,342.93	End Turn @ 10944.05ft
13,271.95	7,331.00	-782.79	-4,670.64	TD Well @ 13271.95ft