



US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-66W-24 GRACIE 15-24HZ PAD
GRACIE 24-15HZ**

PLan A

Plan: Permit Rev-2

Standard Planning Report

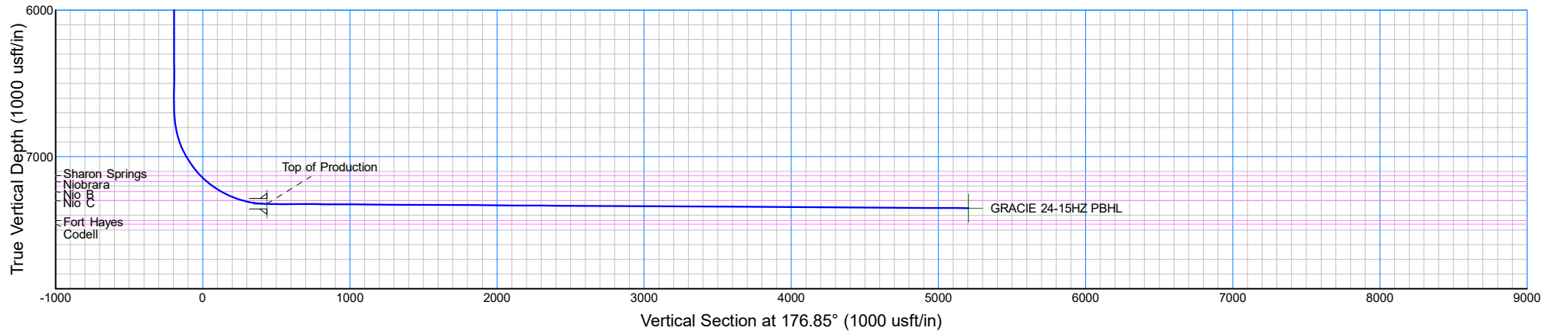
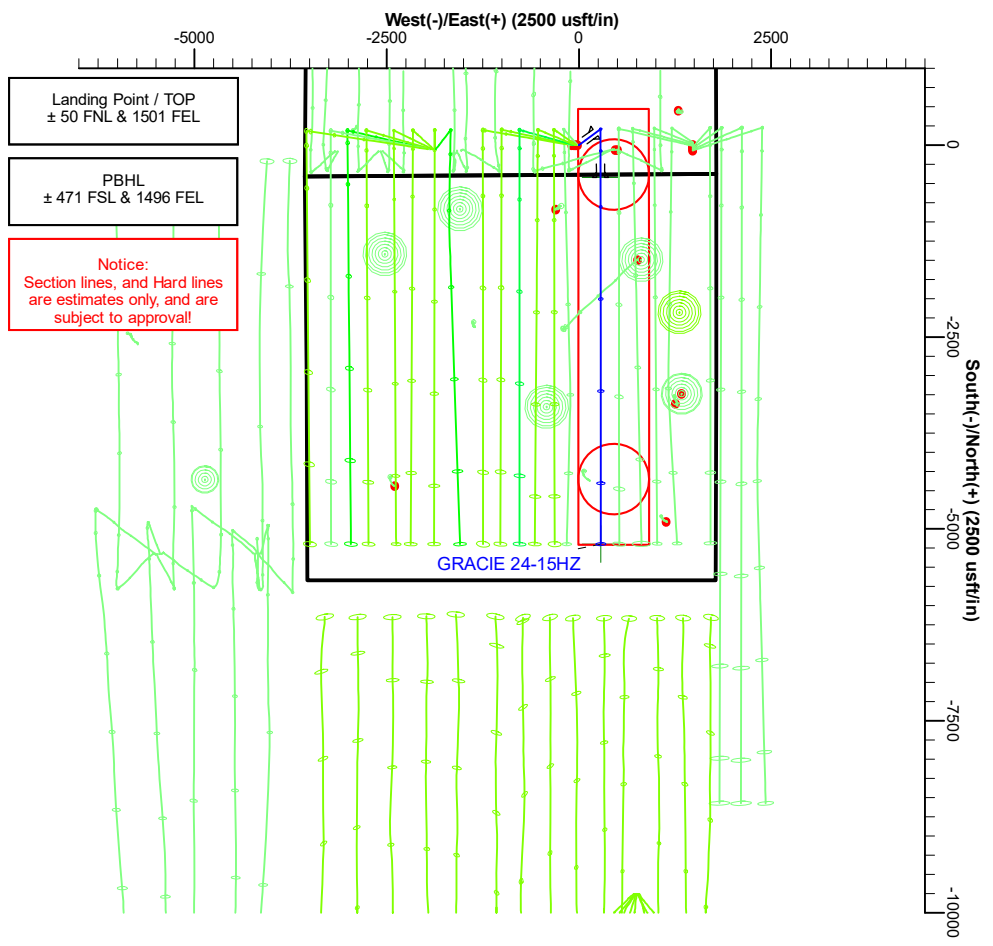
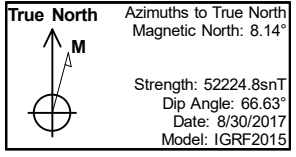
12 September, 2017

Well: GRACIE 24-15HZ	Plan: Permit Rev-2	Field: WELD-NAD83-UTMFT13N	Site: 2N-66W-24 GRACIE 15-24HZ PAD
Borehole: PPlan A	Plan Date: 7:04, September 12 2017	Datum: UTM (US Survey Ft)	RKB: 5071ft
Grid Conv: 0.18	VSec: 176.85deg	Zone: Zone 13N (108 W to 102 W)	GL: 5054.00ft
Latitude: 40.117615		Longitude: -104.722246	
Northing / Y: 14569683.56		Easting / X: 1718068.37	
Model: IGRF2015		Date: 30-Aug-17	DEC: 8.14°
DIP: 66.63°		FS: 52224.78146128nT North Ref: True	

Critical Points										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	Build 1.5°/100 DLS
3	1366.67	16.00	53.50	1352.86	88.02	118.94	1.50	53.50	-81.34	Hold Inc
4	1710.41	16.00	53.50	1683.29	144.38	195.10	0.00	0.00	-133.43	Drop 2°/100 DLS
5	2510.41	0.00	0.00	2472.93	210.40	284.31	2.00	180.00	-194.44	Vertical Point
6	6722.87	0.00	0.00	6685.39	210.40	284.31	0.00	0.00	-194.44	KOP, Build 10°/100 DLS
7	7719.01	89.65	179.98	7322.00	-422.35	284.55	9.00	179.98	437.37	Landing Target
8	12493.01	89.65	179.98	7351.00	-5196.27	286.39	0.00	0.00	5204.16	PBHL/TD

Target Details									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
GRACIE 24-15HZ HEEL	7322.00	-422.36	284.55	14569262.10	1718354.24	40.116426	-104.721212		
GRACIE 24-15HZ PBHL	7351.00	-5196.27	286.39	14564488.21	1718370.99	40.103345	-104.721222		

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
1484.00	1503.09	Fox Hills
4201.00	4238.48	Parkman
4689.00	4726.48	Sussex
7129.00	7213.68	Sharon Springs
7169.00	7272.13	Niobrara
7238.00	7392.11	Nio B
7298.00	7547.48	Nio C



Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-15HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	KB @ 5071.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
Site:	2N-66W-24 GRACIE 15-24HZ PAD	North Reference:	True
Well:	GRACIE 24-15HZ	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	2N-66W-24 GRACIE 15-24HZ PAD				
Site Position:		Northing:	14,569,684.01 usft	Latitude:	40.117617
From:	Lat/Long	Easting:	1,717,978.34 usft	Longitude:	-104.722568
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well	GRACIE 24-15HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,569,683.56 usft	Latitude:	40.117615
	+E/-W	90.02 usft	Easting:	1,718,068.37 usft	Longitude:	-104.722246
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,054.00 usft

Wellbore	PLan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/30/2017	8.14	66.63	52,224.78146129

Design	Permit Rev-2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	176.85

Plan Survey Tool Program	Date	9/12/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,828.46 Permit Rev-2 (PLan A)	APC_ISCWSA REV 2 MWD+II	Fixed:v2:crustal field declinatio
2	1,828.46	12,493.01 Permit Rev-2 (PLan A)	APC_ISCWSA REV 2 MWD+II	Fixed:v2:Rockies, crustal dec +

Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-15HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	KB @ 5071.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
Site:	2N-66W-24 GRACIE 15-24HZ PAD	North Reference:	True
Well:	GRACIE 24-15HZ	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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,366.67	16.00	53.50	1,352.86	88.02	118.94	1.50	1.50	0.00	53.50	
1,710.41	16.00	53.50	1,683.29	144.38	195.10	0.00	0.00	0.00	0.00	
2,510.41	0.00	0.00	2,472.93	210.40	284.31	2.00	-2.00	0.00	180.00	
6,722.87	0.00	0.00	6,685.39	210.40	284.31	0.00	0.00	0.00	0.00	
7,719.01	89.65	179.98	7,322.00	-422.35	284.55	9.00	9.00	18.07	179.98	
12,493.01	89.65	179.98	7,351.00	-5,196.27	286.39	0.00	0.00	0.00	0.00	GRACIE 24-15HZ PB

Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-15HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	KB @ 5071.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
Site:	2N-66W-24 GRACIE 15-24HZ PAD	North Reference:	True
Well:	GRACIE 24-15HZ	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	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
Build 1.5°/100 DLS										
400.00	1.50	53.50	399.99	0.78	1.05	-0.72	1.50	1.50	0.00	
500.00	3.00	53.50	499.91	3.11	4.21	-2.88	1.50	1.50	0.00	
600.00	4.50	53.50	599.69	7.00	9.47	-6.47	1.50	1.50	0.00	
700.00	6.00	53.50	699.27	12.45	16.82	-11.50	1.50	1.50	0.00	
800.00	7.50	53.50	798.57	19.44	26.27	-17.96	1.50	1.50	0.00	
900.00	9.00	53.50	897.54	27.97	37.80	-25.85	1.50	1.50	0.00	
1,000.00	10.50	53.50	996.09	38.05	51.41	-35.16	1.50	1.50	0.00	
1,100.00	12.00	53.50	1,094.16	49.65	67.10	-45.89	1.50	1.50	0.00	
1,200.00	13.50	53.50	1,191.70	62.78	84.84	-58.02	1.50	1.50	0.00	
1,300.00	15.00	53.50	1,288.62	77.42	104.62	-71.55	1.50	1.50	0.00	
1,366.67	16.00	53.50	1,352.86	88.02	118.94	-81.34	1.50	1.50	0.00	
Hold Inc										
1,400.00	16.00	53.50	1,384.90	93.49	126.33	-86.39	0.00	0.00	0.00	
1,500.00	16.00	53.50	1,481.03	109.88	148.48	-101.55	0.00	0.00	0.00	
1,503.09	16.00	53.50	1,484.00	110.39	149.17	-102.01	0.00	0.00	0.00	
Fox Hills										
1,600.00	16.00	53.50	1,577.15	126.28	170.64	-116.70	0.00	0.00	0.00	
1,700.00	16.00	53.50	1,673.28	142.68	192.80	-131.85	0.00	0.00	0.00	
1,710.41	16.00	53.50	1,683.29	144.38	195.10	-133.43	0.00	0.00	0.00	
Drop 2°/100 DLS										
1,800.00	14.21	53.50	1,769.78	158.27	213.87	-146.26	2.00	-2.00	0.00	
1,831.14	13.59	53.50	1,800.00	162.72	219.88	-150.37	2.00	-2.00	0.00	
Surface Csg										
1,900.00	12.21	53.50	1,867.13	171.86	232.23	-158.82	2.00	-2.00	0.00	
2,000.00	10.21	53.50	1,965.21	183.42	247.86	-169.51	2.00	-2.00	0.00	
2,100.00	8.21	53.50	2,063.92	192.94	260.72	-178.30	2.00	-2.00	0.00	
2,200.00	6.21	53.50	2,163.12	200.41	270.81	-185.20	2.00	-2.00	0.00	
2,300.00	4.21	53.50	2,262.71	205.81	278.10	-190.19	2.00	-2.00	0.00	
2,400.00	2.21	53.50	2,362.54	209.13	282.60	-193.27	2.00	-2.00	0.00	
2,500.00	0.21	53.50	2,462.52	210.39	284.29	-194.42	2.00	-2.00	0.00	
2,510.41	0.00	0.00	2,472.93	210.40	284.31	-194.44	2.00	-2.00	0.00	
Vertical Point										
2,600.00	0.00	0.00	2,562.52	210.40	284.31	-194.44	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,662.52	210.40	284.31	-194.44	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,762.52	210.40	284.31	-194.44	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,862.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,000.00	0.00	0.00	2,962.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,062.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,162.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,262.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,362.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,462.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,600.00	0.00	0.00	3,562.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,662.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,762.52	210.40	284.31	-194.44	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,862.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,000.00	0.00	0.00	3,962.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,062.52	210.40	284.31	-194.44	0.00	0.00	0.00	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
Site:	2N-66W-24 GRACIE 15-24HZ PAD	North Reference:	True
Well:	GRACIE 24-15HZ	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)	
4,200.00	0.00	0.00	4,162.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,238.48	0.00	0.00	4,201.00	210.40	284.31	-194.44	0.00	0.00	0.00	
Parkman										
4,300.00	0.00	0.00	4,262.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,362.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,462.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,562.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,662.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,726.48	0.00	0.00	4,689.00	210.40	284.31	-194.44	0.00	0.00	0.00	
Sussex										
4,800.00	0.00	0.00	4,762.52	210.40	284.31	-194.44	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,862.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,962.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,062.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,162.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,262.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,362.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,462.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,562.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,662.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,762.52	210.40	284.31	-194.44	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,862.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,962.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,062.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,162.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,262.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,362.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,462.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,562.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,662.52	210.40	284.31	-194.44	0.00	0.00	0.00	
6,722.87	0.00	0.00	6,685.39	210.40	284.31	-194.44	0.00	0.00	0.00	
KOP, Build 10°/100 DLS										
6,800.00	6.94	179.98	6,762.33	205.73	284.31	-189.78	9.00	9.00	0.00	
6,900.00	15.94	179.98	6,860.24	185.92	284.32	-169.99	9.00	9.00	0.00	
7,000.00	24.94	179.98	6,953.85	151.03	284.33	-135.15	9.00	9.00	0.00	
7,100.00	33.94	179.98	7,040.84	101.93	284.35	-86.12	9.00	9.00	0.00	
7,200.00	42.94	179.98	7,119.09	39.82	284.38	-24.11	9.00	9.00	0.00	
7,213.68	44.17	179.98	7,129.00	30.39	284.38	-14.70	9.00	9.00	0.00	
Sharon Springs										
7,272.14	49.43	179.98	7,169.00	-12.21	284.40	27.84	9.00	9.00	0.00	
Niobrara										
7,300.00	51.94	179.98	7,186.65	-33.77	284.40	49.36	9.00	9.00	0.00	
7,392.11	60.23	179.98	7,238.00	-110.14	284.43	125.62	9.00	9.00	0.00	
Nio B										
7,400.00	60.94	179.98	7,241.87	-117.01	284.44	132.49	9.00	9.00	0.00	
7,500.00	69.94	179.98	7,283.39	-207.87	284.47	223.21	9.00	9.00	0.00	
7,547.48	74.21	179.98	7,298.00	-253.03	284.49	268.31	9.00	9.00	0.00	
Nio C										
7,600.00	78.94	179.98	7,310.19	-304.11	284.51	319.30	9.00	9.00	0.00	
7,700.00	87.94	179.98	7,321.60	-403.35	284.55	418.40	9.00	9.00	0.00	
7,719.01	89.65	179.98	7,322.00	-422.36	284.55	437.38	9.00	9.00	0.00	
Landing Target - Top of Production										
7,800.00	89.65	179.98	7,322.49	-503.35	284.58	518.24	0.00	0.00	0.00	

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Well:	GRACIE 24-15HZ	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)	
7,900.00	89.65	179.98	7,323.10	-603.34	284.62	618.09	0.00	0.00	0.00	
8,000.00	89.65	179.98	7,323.71	-703.34	284.66	717.94	0.00	0.00	0.00	
8,100.00	89.65	179.98	7,324.31	-803.34	284.70	817.79	0.00	0.00	0.00	
8,200.00	89.65	179.98	7,324.92	-903.34	284.74	917.64	0.00	0.00	0.00	
8,300.00	89.65	179.98	7,325.53	-1,003.34	284.78	1,017.49	0.00	0.00	0.00	
8,400.00	89.65	179.98	7,326.14	-1,103.33	284.82	1,117.34	0.00	0.00	0.00	
8,500.00	89.65	179.98	7,326.74	-1,203.33	284.85	1,217.18	0.00	0.00	0.00	
8,600.00	89.65	179.98	7,327.35	-1,303.33	284.89	1,317.03	0.00	0.00	0.00	
8,700.00	89.65	179.98	7,327.96	-1,403.33	284.93	1,416.88	0.00	0.00	0.00	
8,800.00	89.65	179.98	7,328.57	-1,503.33	284.97	1,516.73	0.00	0.00	0.00	
8,900.00	89.65	179.98	7,329.17	-1,603.33	285.01	1,616.58	0.00	0.00	0.00	
9,000.00	89.65	179.98	7,329.78	-1,703.32	285.05	1,716.43	0.00	0.00	0.00	
9,100.00	89.65	179.98	7,330.39	-1,803.32	285.08	1,816.28	0.00	0.00	0.00	
9,200.00	89.65	179.98	7,331.00	-1,903.32	285.12	1,916.13	0.00	0.00	0.00	
9,300.00	89.65	179.98	7,331.60	-2,003.32	285.16	2,015.97	0.00	0.00	0.00	
9,400.00	89.65	179.98	7,332.21	-2,103.32	285.20	2,115.82	0.00	0.00	0.00	
9,500.00	89.65	179.98	7,332.82	-2,203.31	285.24	2,215.67	0.00	0.00	0.00	
9,600.00	89.65	179.98	7,333.43	-2,303.31	285.28	2,315.52	0.00	0.00	0.00	
9,700.00	89.65	179.98	7,334.03	-2,403.31	285.32	2,415.37	0.00	0.00	0.00	
9,800.00	89.65	179.98	7,334.64	-2,503.31	285.35	2,515.22	0.00	0.00	0.00	
9,900.00	89.65	179.98	7,335.25	-2,603.31	285.39	2,615.07	0.00	0.00	0.00	
10,000.00	89.65	179.98	7,335.86	-2,703.30	285.43	2,714.92	0.00	0.00	0.00	
10,100.00	89.65	179.98	7,336.46	-2,803.30	285.47	2,814.76	0.00	0.00	0.00	
10,200.00	89.65	179.98	7,337.07	-2,903.30	285.51	2,914.61	0.00	0.00	0.00	
10,300.00	89.65	179.98	7,337.68	-3,003.30	285.55	3,014.46	0.00	0.00	0.00	
10,400.00	89.65	179.98	7,338.29	-3,103.30	285.58	3,114.31	0.00	0.00	0.00	
10,500.00	89.65	179.98	7,338.89	-3,203.30	285.62	3,214.16	0.00	0.00	0.00	
10,600.00	89.65	179.98	7,339.50	-3,303.29	285.66	3,314.01	0.00	0.00	0.00	
10,700.00	89.65	179.98	7,340.11	-3,403.29	285.70	3,413.86	0.00	0.00	0.00	
10,800.00	89.65	179.98	7,340.72	-3,503.29	285.74	3,513.71	0.00	0.00	0.00	
10,900.00	89.65	179.98	7,341.32	-3,603.29	285.78	3,613.55	0.00	0.00	0.00	
11,000.00	89.65	179.98	7,341.93	-3,703.29	285.82	3,713.40	0.00	0.00	0.00	
11,100.00	89.65	179.98	7,342.54	-3,803.28	285.85	3,813.25	0.00	0.00	0.00	
11,200.00	89.65	179.98	7,343.15	-3,903.28	285.89	3,913.10	0.00	0.00	0.00	
11,300.00	89.65	179.98	7,343.75	-4,003.28	285.93	4,012.95	0.00	0.00	0.00	
11,400.00	89.65	179.98	7,344.36	-4,103.28	285.97	4,112.80	0.00	0.00	0.00	
11,500.00	89.65	179.98	7,344.97	-4,203.28	286.01	4,212.65	0.00	0.00	0.00	
11,600.00	89.65	179.98	7,345.58	-4,303.28	286.05	4,312.50	0.00	0.00	0.00	
11,700.00	89.65	179.98	7,346.18	-4,403.27	286.08	4,412.34	0.00	0.00	0.00	
11,800.00	89.65	179.98	7,346.79	-4,503.27	286.12	4,512.19	0.00	0.00	0.00	
11,900.00	89.65	179.98	7,347.40	-4,603.27	286.16	4,612.04	0.00	0.00	0.00	
12,000.00	89.65	179.98	7,348.01	-4,703.27	286.20	4,711.89	0.00	0.00	0.00	
12,100.00	89.65	179.98	7,348.61	-4,803.27	286.24	4,811.74	0.00	0.00	0.00	
12,200.00	89.65	179.98	7,349.22	-4,903.26	286.28	4,911.59	0.00	0.00	0.00	
12,300.00	89.65	179.98	7,349.83	-5,003.26	286.32	5,011.44	0.00	0.00	0.00	
12,400.00	89.65	179.98	7,350.44	-5,103.26	286.35	5,111.29	0.00	0.00	0.00	
12,493.01	89.65	179.98	7,351.00	-5,196.27	286.39	5,204.15	0.00	0.00	0.00	
PBHL/TD										

Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-15HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	KB @ 5071.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
Site:	2N-66W-24 GRACIE 15-24HZ PAD	North Reference:	True
Well:	GRACIE 24-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLan A		
Design:	Permit Rev-2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
GRACIE 24-15HZ HEEL - plan hits target center - Point	0.00	0.00	7,322.00	-422.36	284.55	14,569,262.09	1,718,354.24	40.116455	-104.721228
GRACIE 24-15HZ PBHL - plan hits target center - Point	0.00	0.00	7,351.00	-5,196.27	286.39	14,564,488.21	1,718,370.99	40.103346	-104.721222

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(usft)	(usft)		(")	(")	
1,831.14	1,800.00	Surface Csg	9-5/8	13-1/2	
7,719.01	7,322.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,503.09	1,484.00	Fox Hills				
4,238.48	4,201.00	Parkman				
4,726.48	4,689.00	Sussex				
7,213.68	7,129.00	Sharon Springs				
7,272.14	7,169.00	Niobrara				
7,392.11	7,238.00	Nio B				
7,547.48	7,298.00	Nio C				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
300.00	300.00	0.00	0.00	Build 1.5°/100 DLS	
1,366.67	1,352.86	88.02	118.94	Hold Inc	
1,710.41	1,683.29	144.38	195.10	Drop 2°/100 DLS	
2,510.41	2,472.93	210.40	284.31	Vertical Point	
6,722.87	6,685.39	210.40	284.31	KOP, Build 10°/100 DLS	
7,719.01	7,322.00	-422.36	284.55	Landing Target	
12,493.01	7,351.00	-5,196.27	286.39	PBHL/TD	