



US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-66W-24 GRACIE 15-24HZ PAD
GRACIE 24-13HZ**

PLan A

Plan: Permit Rev-2

Standard Planning Report

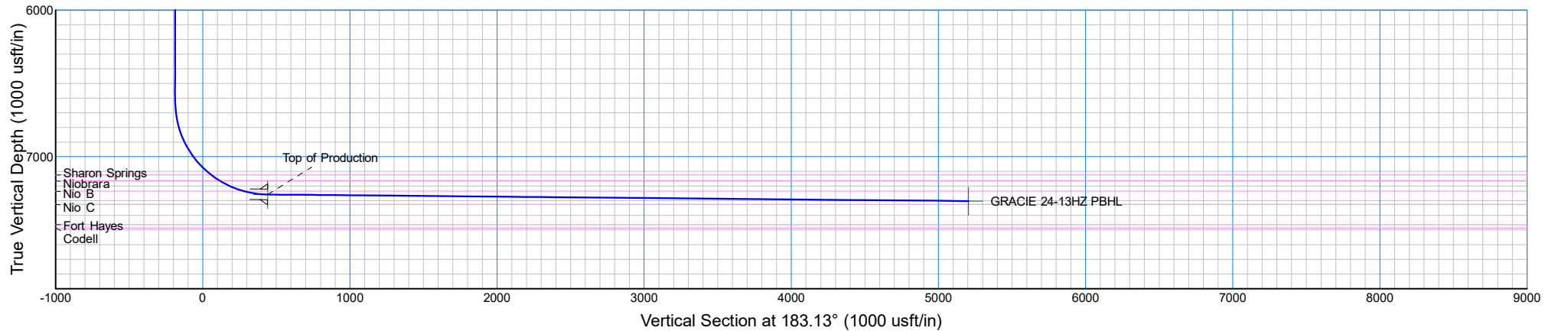
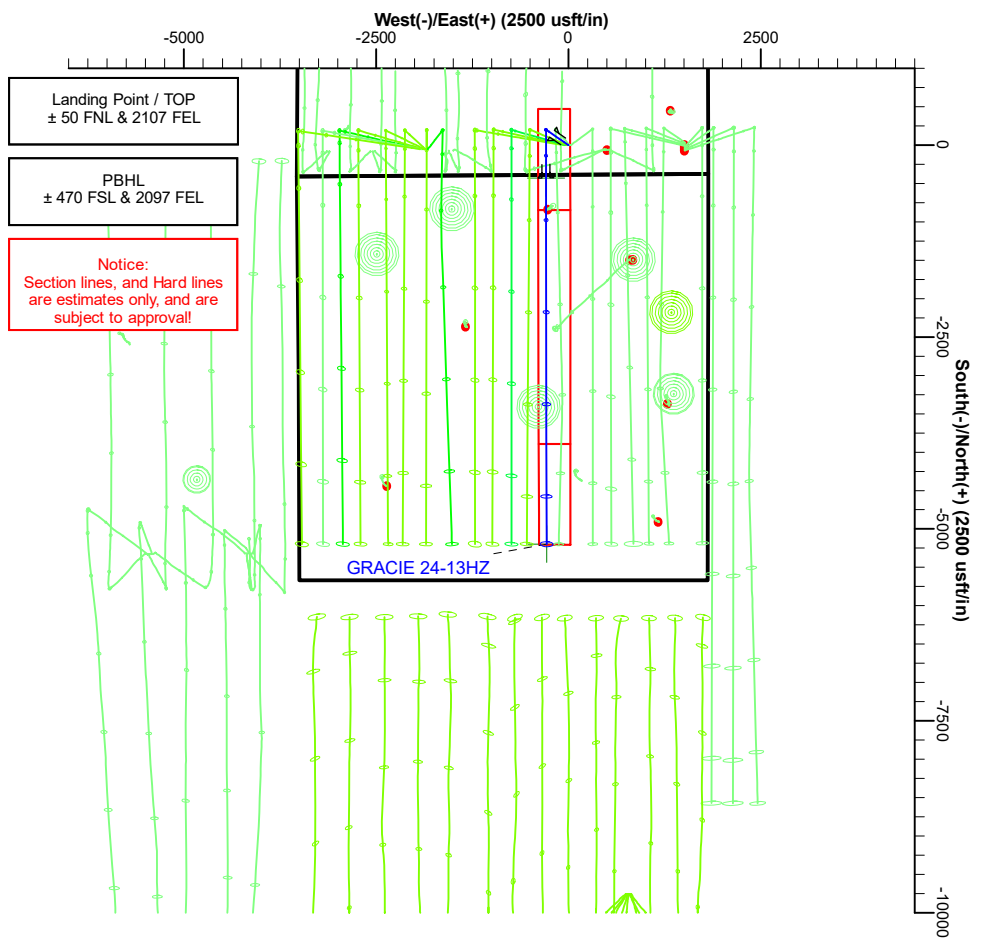
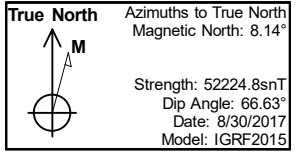
12 September, 2017

Well: GRACIE 24-13HZ	Plan: Permit Rev-2	Field: WELD-NAD83-UTMFT13N	Site: 2N-66W-24 GRACIE 15-24HZ PAD
Borehole: PPlan A	Plan Date: 6:55, September 12 2017	Datum: UTM (US Survey Ft)	RKB: 5071ft
Grid Conv: 0.18	VSec: 183.13deg	Zone: Zone 13N (108 W to 102 W)	GL: 5054.00ft
Latitude: 40.117615		Longitude: -104.722354	
Northing / Y: 14569683.47		Easting / X: 1718038.18	
Model: IGRF2015		Date: 30-Aug-17	DEC: 8.14°
DIP: 66.63°		FS: 52224.77007636nT 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	350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	Build 1.5°/100 DLS
3	1416.67	16.00	304.91	1402.86	84.67	-121.35	1.50	304.91	-77.92	Hold Inc
4	1637.04	16.00	304.91	1614.69	119.43	-171.16	0.00	0.00	-109.90	Drop 1.5°/100 DLS
5	2703.70	0.00	0.00	2667.55	204.11	-292.51	1.50	180.00	-187.82	Vertical Point
6	6657.29	0.00	0.00	6621.13	204.11	-292.51	0.00	0.00	-187.82	KOP, Build 10°/100 DLS
7	7651.24	89.46	179.91	7257.72	-426.47	-291.57	9.00	179.91	441.76	Landing Target
8	12421.61	89.46	179.91	7303.00	-5196.61	-284.43	0.00	0.00	5204.39	PBHL/TD

Target Details									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
GRACIE 24-13HZ HEEL	7258.00	-426.48	-291.57	14569256.08	1717747.94	40.116416	-104.723378		
GRACIE 24-13HZ PBHL	7303.00	-5196.61	-284.43	14564486.00	1717769.97	40.103344	-104.723371		

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1484.00	1501.08	Fox Hills
4201.00	4237.16	Parkman
4689.00	4725.16	Sussex
7125.00	7238.66	Sharon Springs
7165.00	7309.32	Niobrara
7234.00	7482.85	Nio B



Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-13HZ
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 24-13HZ	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 24-13HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,569,683.47 usft	Latitude:	40.117615
	+E/-W	59.83 usft	Easting:	1,718,038.17 usft	Longitude:	-104.722354
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	52,224.77007636

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	183.13

Plan Survey Tool Program	Date	9/11/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	12,421.61	Permit Rev-2 (PLan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio

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	
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,416.67	16.00	304.91	1,402.86	84.67	-121.35	1.50	1.50	0.00	304.91	
1,637.04	16.00	304.91	1,614.69	119.43	-171.16	0.00	0.00	0.00	0.00	
2,703.70	0.00	0.00	2,667.55	204.11	-292.51	1.50	-1.50	0.00	180.00	
6,657.29	0.00	0.00	6,621.13	204.11	-292.51	0.00	0.00	0.00	0.00	
7,651.24	89.46	179.91	7,257.72	-426.47	-291.57	9.00	9.00	18.10	179.91	
12,421.61	89.46	179.91	7,303.00	-5,196.61	-284.43	0.00	0.00	0.00	0.00	GRACIE 24-13HZ PB

Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-13HZ
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 24-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 1.5°/100 DLS									
400.00	0.75	304.91	400.00	0.19	-0.27	-0.17	1.50	1.50	0.00
500.00	2.25	304.91	499.96	1.69	-2.42	-1.55	1.50	1.50	0.00
600.00	3.75	304.91	599.82	4.68	-6.71	-4.31	1.50	1.50	0.00
700.00	5.25	304.91	699.51	9.17	-13.14	-8.44	1.50	1.50	0.00
800.00	6.75	304.91	798.96	15.15	-21.71	-13.94	1.50	1.50	0.00
900.00	8.25	304.91	898.10	22.62	-32.42	-20.81	1.50	1.50	0.00
1,000.00	9.75	304.91	996.87	31.57	-45.25	-29.05	1.50	1.50	0.00
1,100.00	11.25	304.91	1,095.19	42.00	-60.19	-38.65	1.50	1.50	0.00
1,200.00	12.75	304.91	1,193.00	53.90	-77.24	-49.60	1.50	1.50	0.00
1,300.00	14.25	304.91	1,290.24	67.26	-96.38	-61.89	1.50	1.50	0.00
1,400.00	15.75	304.91	1,386.83	82.07	-117.61	-75.52	1.50	1.50	0.00
1,416.67	16.00	304.91	1,402.86	84.67	-121.35	-77.92	1.50	1.50	0.00
Hold Inc									
1,500.00	16.00	304.91	1,482.96	97.82	-140.18	-90.01	0.00	0.00	0.00
1,501.08	16.00	304.91	1,484.00	97.99	-140.43	-90.17	0.00	0.00	0.00
Fox Hills									
1,600.00	16.00	304.91	1,579.09	113.59	-162.79	-104.53	0.00	0.00	0.00
1,637.04	16.00	304.91	1,614.69	119.43	-171.16	-109.90	0.00	0.00	0.00
Drop 1.5°/100 DLS									
1,700.00	15.06	304.91	1,675.35	129.08	-184.98	-118.78	1.50	-1.50	0.00
1,800.00	13.56	304.91	1,772.25	143.22	-205.25	-131.79	1.50	-1.50	0.00
1,828.52	13.13	304.91	1,800.00	146.98	-210.64	-135.25	1.50	-1.50	0.00
Surface Csg									
1,900.00	12.06	304.91	1,869.76	155.90	-223.42	-143.46	1.50	-1.50	0.00
2,000.00	10.56	304.91	1,967.82	167.12	-239.50	-153.78	1.50	-1.50	0.00
2,100.00	9.06	304.91	2,066.35	176.86	-253.47	-162.75	1.50	-1.50	0.00
2,200.00	7.56	304.91	2,165.30	185.13	-265.31	-170.36	1.50	-1.50	0.00
2,300.00	6.06	304.91	2,264.60	191.91	-275.03	-176.60	1.50	-1.50	0.00
2,400.00	4.56	304.91	2,364.16	197.20	-282.61	-181.47	1.50	-1.50	0.00
2,500.00	3.06	304.91	2,463.94	201.00	-288.05	-184.96	1.50	-1.50	0.00
2,600.00	1.56	304.91	2,563.86	203.30	-291.35	-187.08	1.50	-1.50	0.00
2,700.00	0.06	304.91	2,663.84	204.11	-292.51	-187.82	1.50	-1.50	0.00
2,703.70	0.00	0.00	2,667.55	204.11	-292.51	-187.82	1.50	-1.50	0.00
Vertical Point									
2,800.00	0.00	0.00	2,763.84	204.11	-292.51	-187.82	0.00	0.00	0.00
2,900.00	0.00	0.00	2,863.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,000.00	0.00	0.00	2,963.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,100.00	0.00	0.00	3,063.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,200.00	0.00	0.00	3,163.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,300.00	0.00	0.00	3,263.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,400.00	0.00	0.00	3,363.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,500.00	0.00	0.00	3,463.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,600.00	0.00	0.00	3,563.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,700.00	0.00	0.00	3,663.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,800.00	0.00	0.00	3,763.84	204.11	-292.51	-187.82	0.00	0.00	0.00
3,900.00	0.00	0.00	3,863.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,000.00	0.00	0.00	3,963.84	204.11	-292.51	-187.82	0.00	0.00	0.00

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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 24-13HZ	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)
4,100.00	0.00	0.00	4,063.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,200.00	0.00	0.00	4,163.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,237.16	0.00	0.00	4,201.00	204.11	-292.51	-187.82	0.00	0.00	0.00
Parkman									
4,300.00	0.00	0.00	4,263.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,400.00	0.00	0.00	4,363.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,500.00	0.00	0.00	4,463.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,600.00	0.00	0.00	4,563.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,700.00	0.00	0.00	4,663.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,725.16	0.00	0.00	4,689.00	204.11	-292.51	-187.82	0.00	0.00	0.00
Sussex									
4,800.00	0.00	0.00	4,763.84	204.11	-292.51	-187.82	0.00	0.00	0.00
4,900.00	0.00	0.00	4,863.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,000.00	0.00	0.00	4,963.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,100.00	0.00	0.00	5,063.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,200.00	0.00	0.00	5,163.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,300.00	0.00	0.00	5,263.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,400.00	0.00	0.00	5,363.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,500.00	0.00	0.00	5,463.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,600.00	0.00	0.00	5,563.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,700.00	0.00	0.00	5,663.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,800.00	0.00	0.00	5,763.84	204.11	-292.51	-187.82	0.00	0.00	0.00
5,900.00	0.00	0.00	5,863.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,000.00	0.00	0.00	5,963.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,100.00	0.00	0.00	6,063.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,200.00	0.00	0.00	6,163.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,300.00	0.00	0.00	6,263.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,400.00	0.00	0.00	6,363.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,500.00	0.00	0.00	6,463.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,600.00	0.00	0.00	6,563.84	204.11	-292.51	-187.82	0.00	0.00	0.00
6,657.29	0.00	0.00	6,621.13	204.11	-292.51	-187.82	0.00	0.00	0.00
KOP, Build 10°/100 DLS									
6,700.00	3.84	179.91	6,663.81	202.68	-292.51	-186.39	9.00	9.00	0.00
6,800.00	12.84	179.91	6,762.65	188.18	-292.48	-171.92	9.00	9.00	0.00
6,900.00	21.84	179.91	6,858.01	158.40	-292.44	-142.18	9.00	9.00	0.00
7,000.00	30.84	179.91	6,947.53	114.07	-292.37	-97.92	9.00	9.00	0.00
7,100.00	39.84	179.91	7,029.01	56.28	-292.29	-40.22	9.00	9.00	0.00
7,200.00	48.84	179.91	7,100.46	-13.55	-292.18	29.49	9.00	9.00	0.00
7,238.66	52.32	179.91	7,125.00	-43.41	-292.14	59.31	9.00	9.00	0.00
Sharon Springs									
7,300.00	57.84	179.91	7,160.10	-93.69	-292.06	109.51	9.00	9.00	0.00
7,309.32	58.68	179.91	7,165.00	-101.62	-292.05	117.42	9.00	9.00	0.00
Niobrara									
7,400.00	66.84	179.91	7,206.46	-182.17	-291.93	197.85	9.00	9.00	0.00
7,482.85	74.30	179.91	7,234.00	-260.25	-291.81	275.80	9.00	9.00	0.00
Nio B									
7,500.00	75.84	179.91	7,238.42	-276.82	-291.79	292.35	9.00	9.00	0.00
7,600.00	84.84	179.91	7,255.17	-375.30	-291.64	390.68	9.00	9.00	0.00
7,651.24	89.46	179.91	7,257.72	-426.47	-291.57	441.76	9.00	9.00	0.00
Landing Target									
7,651.25	89.46	179.91	7,257.72	-426.48	-291.57	441.77	2.78	2.78	0.00
Top of Production									
7,700.00	89.46	179.91	7,258.18	-475.22	-291.49	490.44	0.00	0.00	0.00

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	KB @ 5071.00usft (D Rig)
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Well:	GRACIE 24-13HZ	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)
7,800.00	89.46	179.91	7,259.13	-575.22	-291.34	590.28	0.00	0.00	0.00
7,900.00	89.46	179.91	7,260.08	-675.21	-291.19	690.12	0.00	0.00	0.00
8,000.00	89.46	179.91	7,261.03	-775.21	-291.04	789.95	0.00	0.00	0.00
8,100.00	89.46	179.91	7,261.98	-875.20	-290.89	889.79	0.00	0.00	0.00
8,200.00	89.46	179.91	7,262.93	-975.20	-290.74	989.63	0.00	0.00	0.00
8,300.00	89.46	179.91	7,263.88	-1,075.20	-290.60	1,089.47	0.00	0.00	0.00
8,400.00	89.46	179.91	7,264.83	-1,175.19	-290.45	1,189.31	0.00	0.00	0.00
8,500.00	89.46	179.91	7,265.78	-1,275.19	-290.30	1,289.14	0.00	0.00	0.00
8,600.00	89.46	179.91	7,266.73	-1,375.18	-290.15	1,388.98	0.00	0.00	0.00
8,700.00	89.46	179.91	7,267.68	-1,475.18	-290.00	1,488.82	0.00	0.00	0.00
8,800.00	89.46	179.91	7,268.62	-1,575.17	-289.85	1,588.66	0.00	0.00	0.00
8,900.00	89.46	179.91	7,269.57	-1,675.17	-289.70	1,688.49	0.00	0.00	0.00
9,000.00	89.46	179.91	7,270.52	-1,775.16	-289.55	1,788.33	0.00	0.00	0.00
9,100.00	89.46	179.91	7,271.47	-1,875.16	-289.40	1,888.17	0.00	0.00	0.00
9,200.00	89.46	179.91	7,272.42	-1,975.15	-289.25	1,988.01	0.00	0.00	0.00
9,300.00	89.46	179.91	7,273.37	-2,075.15	-289.10	2,087.85	0.00	0.00	0.00
9,400.00	89.46	179.91	7,274.32	-2,175.14	-288.95	2,187.68	0.00	0.00	0.00
9,500.00	89.46	179.91	7,275.27	-2,275.14	-288.80	2,287.52	0.00	0.00	0.00
9,600.00	89.46	179.91	7,276.22	-2,375.14	-288.65	2,387.36	0.00	0.00	0.00
9,700.00	89.46	179.91	7,277.17	-2,475.13	-288.50	2,487.20	0.00	0.00	0.00
9,800.00	89.46	179.91	7,278.12	-2,575.13	-288.35	2,587.03	0.00	0.00	0.00
9,900.00	89.46	179.91	7,279.07	-2,675.12	-288.20	2,686.87	0.00	0.00	0.00
10,000.00	89.46	179.91	7,280.01	-2,775.12	-288.05	2,786.71	0.00	0.00	0.00
10,100.00	89.46	179.91	7,280.96	-2,875.11	-287.90	2,886.55	0.00	0.00	0.00
10,200.00	89.46	179.91	7,281.91	-2,975.11	-287.75	2,986.39	0.00	0.00	0.00
10,300.00	89.46	179.91	7,282.86	-3,075.10	-287.60	3,086.22	0.00	0.00	0.00
10,400.00	89.46	179.91	7,283.81	-3,175.10	-287.46	3,186.06	0.00	0.00	0.00
10,500.00	89.46	179.91	7,284.76	-3,275.09	-287.31	3,285.90	0.00	0.00	0.00
10,600.00	89.46	179.91	7,285.71	-3,375.09	-287.16	3,385.74	0.00	0.00	0.00
10,700.00	89.46	179.91	7,286.66	-3,475.08	-287.01	3,485.58	0.00	0.00	0.00
10,800.00	89.46	179.91	7,287.61	-3,575.08	-286.86	3,585.41	0.00	0.00	0.00
10,900.00	89.46	179.91	7,288.56	-3,675.08	-286.71	3,685.25	0.00	0.00	0.00
11,000.00	89.46	179.91	7,289.51	-3,775.07	-286.56	3,785.09	0.00	0.00	0.00
11,100.00	89.46	179.91	7,290.46	-3,875.07	-286.41	3,884.93	0.00	0.00	0.00
11,200.00	89.46	179.91	7,291.41	-3,975.06	-286.26	3,984.76	0.00	0.00	0.00
11,300.00	89.46	179.91	7,292.35	-4,075.06	-286.11	4,084.60	0.00	0.00	0.00
11,400.00	89.46	179.91	7,293.30	-4,175.05	-285.96	4,184.44	0.00	0.00	0.00
11,500.00	89.46	179.91	7,294.25	-4,275.05	-285.81	4,284.28	0.00	0.00	0.00
11,600.00	89.46	179.91	7,295.20	-4,375.04	-285.66	4,384.12	0.00	0.00	0.00
11,700.00	89.46	179.91	7,296.15	-4,475.04	-285.51	4,483.95	0.00	0.00	0.00
11,800.00	89.46	179.91	7,297.10	-4,575.03	-285.36	4,583.79	0.00	0.00	0.00
11,900.00	89.46	179.91	7,298.05	-4,675.03	-285.21	4,683.63	0.00	0.00	0.00
12,000.00	89.46	179.91	7,299.00	-4,775.02	-285.06	4,783.47	0.00	0.00	0.00
12,100.00	89.46	179.91	7,299.95	-4,875.02	-284.91	4,883.30	0.00	0.00	0.00
12,200.00	89.46	179.91	7,300.90	-4,975.02	-284.76	4,983.14	0.00	0.00	0.00
12,300.00	89.46	179.91	7,301.85	-5,075.01	-284.61	5,082.98	0.00	0.00	0.00
12,400.00	89.46	179.91	7,302.80	-5,175.01	-284.46	5,182.82	0.00	0.00	0.00
12,421.60	89.46	179.91	7,303.00	-5,196.61	-284.43	5,204.38	0.00	0.00	0.00
PBHL/TD									
12,421.61	89.46	179.91	7,303.00	-5,196.61	-284.43	5,204.39	0.00	0.00	0.00

Database:	PLANNING	Local Co-ordinate Reference:	Well GRACIE 24-13HZ
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 24-13HZ	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 24-13HZ HEEL	0.00	0.00	7,258.00	-426.48	-291.57	14,569,256.08	1,717,747.94	40.116444	-104.723397
- plan misses target center by 0.28usft at 7651.26usft MD (7257.72 TVD, -426.48 N, -291.57 E)									
- Point									
GRACIE 24-13HZ PBHL	0.00	0.00	7,303.00	-5,196.61	-284.43	14,564,485.99	1,717,769.97	40.103345	-104.723371
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(usft)	(usft)		(")	(")	
1,828.52	1,800.00	Surface Csg	9-5/8	13-1/2	
7,651.25	7,257.72	Top of Production	5-1/2	7-7/8	

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
1,501.08	1,484.00	Fox Hills			
4,237.16	4,201.00	Parkman			
4,725.16	4,689.00	Sussex			
7,238.66	7,125.00	Sharon Springs			
7,309.32	7,165.00	Niobrara			
7,482.85	7,234.00	Nio B			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
350.00	350.00	0.00	0.00	Build 1.5°/100 DLS	
1,416.67	1,402.86	84.67	-121.35	Hold Inc	
1,637.04	1,614.69	119.43	-171.16	Drop 1.5°/100 DLS	
2,703.70	2,667.55	204.11	-292.51	Vertical Point	
6,657.29	6,621.13	204.11	-292.51	KOP, Build 10°/100 DLS	
7,651.24	7,257.72	-426.47	-291.57	Landing Target	
12,421.60	7,303.00	-5,196.61	-284.43	PBHL/TD	