

GEOLOGIC & DRILLING PROGNOSIS

Prepared: 30-Dec-25 CMW

WELL NAME: FEDERAL RGU 344-6-297
Directional from the pad RGU 23-6-297

API: 05-103-12653
STATE: CO
COUNTY: RIO BLANCO
SURFACE HOLE LOCATION: Sec. 6 T 2S R 97W
TYPE OF UNIT: FED
FEDERAL EA: Yes
HARDLINE: No

ELEVATION (ft):
PAD (ft): 6222
GROUND (ft): 6222
KELLY BUSHING (ft): 6252

RIG INFORMATION:
RIG NAME: HP 522
KB HEIGHT (ft): 30

ESTIMATE TOPS:

Formation	TVD	MD	Formation Resource Notes
Uinta	30	30	Potentially Useable Water
Green River	650	653	Potentially Useable Water
A Groove	800	807	Potentially Useable Water
B Groove	1000	1014	Potentially Useable Water
Dissolution Surface	1300	1334	Possible Lost Circ Zone
Garden Gulch	2200	2298	Potentially Useable Water
Orange Marker	2249	2469	Potentially Useable Water
Upper Wasatch	2440	2554	Potentially Useable Water
Top of "G" Sand	5050	5348	Possible Lost Circ Zone
Fort Union	5310	5627	Gas and Limited Use and Quality Water
Lower Wasatch	6100	6472	Potentially Useable Water
Ohio Creek	6932	7363	Possible Lost Circ Zone
Upper Measaverde	7652	8119	Gas and Limited Use and Quality Water
Approx. Top Gas	8452	8925	Gas and Limited Use and Quality Water
Cameo Coals	10022	10495	Gas, Coal, and Limited Use and Quality Water
Rollins SS	10752	11225	Gas and Limited Use and Quality Water
Cozzette	10902	11375	Gas and Limited Use and Quality Water
Corcoran	11227	11700	Gas and Limited Use and Quality Water
Upper Segro	11487	11960	Gas and Limited Use and Quality Water
Lower Segro	11732	12205	Gas and Limited Use and Quality Water
TD	12232	12705	

MUD LOGGING: Type: (Optional) Remote Gas Unit
Interval: Base of surface casing to TD with total gas only

OPEN HOLE LOGS: Specifics: (Optional) Triple-Combo (DIL-GR-SP-Neutron Density)
Interval: (Optional) GR from TD to surface, DIL-SP and Neutron Density from TD to 100' inside surface casing

CASED HOLE LOGS: Cement Eval: CBL

CSG & CEMENT PROGRAM: SHOE TEST REQUIRED

	Csg Size (in)	Depth Set (tvd)	Depth Set (md)	Hole Size (in)	Approx. Cmt Tail (ft3)	Tail Yield (ft3/sx)	Approx. Sx Tail	Approx. Cmt Lead (ft3)	Lead Yield (ft3/sx)	Approx. Sx Lead	WOC (hrs)
Conductor:	20	80	80	30	230	1.15					
Surface:	9.625	2540	2661	12.25	188	1.68	112	880	2.53	348	
Liner or Production:	4.5	12232	12705	8.75	1685	1.88	896	1021	2.09	489	
							Surface (sacks):	460	Prod. (sacks):	1385	

ANTICIPATED PRESSURES (psi)

MASP	Prod Csg Test Pressure	Anticipated BHP	Prod. Csg. Grade
3,670	8,500	5,688	HCP-110

MUD PROGRAM: (Do not deviate from mud engineer's recommendation without prior consent from Parachute office)

FROM (md)	TO (md)	TYPE MUD	#/GAL	VIS	WL	CHEMICALS
0	2661	WBM	8.3-9.5	45-50	7-15	Bentonite/PHPA
2661	12705	LSND	8.6-10.0	40-80	6-10	PHPA/Barite

(Write mud added to system on tour sheets and report all mud mixed and daily cost in morning report)

LOST CIRCULATION: Report depth and bbls of mud lost on morning report and tour sheet. Any severe lost circulation problems should be reported immediately to well supervisor.

SURVEYS: Run every 100' on surface hole and trips unless otherwise instructed.

TEP GEOLOGIST: Office: 281-936-0361 Cell: 303-918-4327
Stephen Sunnenberg stephen.sunnenberg@flywheelenergy.com

(note: if there are questions concerning TD or logging, please call Geologist)

CASING & CEMENTING PLAN

Operator: TEP Rocky Mountain
 Well Name & Number: FEDERAL RGU 344-6-297
 Location: Ryan Gulch

Casing Design Calculations											
Type of Casing	Size of Hole (inches)	Size of Casing (inches)	Weight per Foot (lbs/ft)	Grade	Thread	Interval (ft - ft)	Length (feet)	Setting Depth (TVD feet)	Collapse (psi)	Burst (psi)	Tension (lbs)
Surface	12.25	9.625	36.0	J-55	BTC	0-2661	2,661	2,540	2,020	3,520	453,000
Production	8.75	4.500	11.6	HCP-110	GB (BTC)	0-12705	12,705	12,232	8,650	10,690	367,000

Surface Casing Shoe	Production Casing Shoe
Max MW = 9.5 ppg HP = 1,255 psi	Max MW = 10.0 ppg HP = 6,361 psi

True Vertical Depth = 12,232 ft
 Bottom Hole Pressure = 5,688 psi
 Pore Pressure Gradient = 0.465 psi/ft
 Max. Sur. Pressure = 3,670 psi
 BOP Required = 5M System

Bottom Hole Temperature = 260 degrees Fahrenheit

Casing Safety Factors			
Surface Casing	Pb = 1.17	Min = 1.100	Pass
	Pc = 1.61	Min = 1.125	Pass
	Sj = 4.73	Min = 1.500	Pass
Production Casing	Pb = 3.57	Min = 1.100	Pass
	Pc = 1.36	Min = 1.125	Pass
	Sj = 2.49	Min = 1.500	Pass

Cement Design Calculations

Critical Depths - Permitting Purposes Only	
Casing/Formation	Measured Depth
Surface Casing	2,661 ft
Top of "G" Sand	5,348 ft
Top of Mesaverde	8,119 ft
Top of Gas	8,925 ft
Total Depth	12,705 ft

Surface Cement	Stg II Lead	Stg I Lead	Tail
Top of Cement (ft)	0	0	2,161
Bottom of Cement (ft)	0	2,161	2,661
Cement Type	Type II	Type II	Class G
Additives (lb/sk)	.25 IntegraSeal	.25 IntegraSeal	.25 IntegraSeal
Volume, bbls	0	121	28
Annular vol w/ excess, ft ³	0	880	188
Volume (sks)	0	348	112
Slurry Density (ppg)	12.3	12.3	13.9
Slurry Yield (ft ³ /sk)	2,530	2,530	1,680
Mixwater (gal/sk)	14.80	14.80	8.27
Annular Capacity (BBL)	0.0558	0.0558	0.0558
Annular Capacity (CF)	0.3132	0.3132	0.3132
Excess (%)	0.30	0.30	0.20
Total Sacks =	460		
Total Cubic Ft. =	1,068		

Production Cement	Lead	Tail
Top of Cement (ft)	5148	7919
Bottom of Cement (ft)	7919	12705
Cement Type	Type II	Class G
Additives (lb/sk)	.25 IntegraSeal	35% Silica
Volume, bbls	182	300
Annular vol w/excess, ft ³	1,021	1685
Volume (sks)	489	896
Slurry Density (ppg)	12.7	13.5
Slurry Yield (ft ³ /sk)	2,090	1,880
Mixwater (gal/sk)	11,200	9,100
Annular Capacity (BBL)	0.0547	0.0547
Annular Capacity (CF)	0.3072	0.3072
Excess (%)	0.20	0.10
Total Sacks =	1,385	
Total Cubic Ft. =	2,706	

NOTES:

Surface

Single track guide shoe and float collar. Bowspring Centralize 1st, 2nd, & 3rd jt. & every 4th joint.
 WOC prior to drill out for a minimum of 500 psi compressive.

Production

Reamer/Guide Shoe, 1jt blank, and Single Valve FC. Spiralizer Centralize 1st, 2nd, 3rd, 6th and 8th. 10' short jt above Ohio Creek
 5 Spiralizers every other joint above drop/TOG From 8925 to 8425

All Casing strings will be tested to .22psi/ft, or 1500 psi, whichever is greater, but will not exceed 70% of the minimum internal yield. If pressure declines more than 10% in 30 minutes, notification will be made and corrective actions will be taken.

Casing Design Calculations

<p>Surface Casing - 36#</p>	<p>Burst Bottom Hole Pressure = TVD * Pore Pressure Gradient = 12232 * 0.465 RG 312-24-298 5687.9 psi RGU 23-6-297 Pburst = Bottom Hole Pressure - (0.22 * TVD) = 5687.88 - (0.22 * 12232) = 2996.8 psi Pb = Casing Burst Rating / Pburst = 3520 / 2996.84 = 1.17 Pb ≥ 1.1 1.17 ≥ 1.1</p> <hr/> <p>Collapse If: Max MW * Setting TVD * 0.052 ≥ Pore Pressure Gradient * Setting TVD 9.5 * 2540 * 0.052 ≥ 0.465 * 2540 1254.8 ≥ 1181.1 Pcollapse = Max MW * Setting TVD * 0.052 = 1254.8 psi Else: Pcollapse = Pore Pressure Gradient * Setting TVD = 1181.1 psi Pcollapse = 1254.8 psi Pc = Casing Collapse Rating / Pcollapse = 2020 / 1254.76 = 1.61 Pc ≥ 1.125 1.61 ≥ 1.125</p> <hr/> <p>Tensile Tension = (Weight1 * Length1) = (36 * 2661) = 95796 lbs Sj = Casing Tension Rating / Tension = 453000 / 95796 = 4.73 Sj ≥ 1.5 4.73 ≥ 1.5</p>
<p>Production Casing</p>	<p>Burst Bottom Hole Pressure = TVD * Pore Pressure Gradient = 12232 * 0.465 = 5687.9 psi Pburst = Bottom Hole Pressure - (0.22 * TVD) = 5687.88 - (0.22 * 12232) = 2996.8 psi Pburst = MATP = 8,500 psi Pburstmax = 8,500 psi Pb = Casing Burst Rating / Pburst max = 10690 / 8500 = 1.26 Pb ≥ 1.1 1.26 ≥ 1.1</p> <hr/> <p>Collapse If: Max MW * Setting TVD * 0.052 ≥ Pore Pressure Gradient * Setting TVD 10 * 12232 * 0.052 ≥ 0.465 * 12232 6360.6 ≥ 5687.88 Pcollapse = Max MW * Setting TVD * 0.052 = 6360.6 psi Else: Pcollapse = Pore Pressure Gradient * Setting TVD = 5687.9 psi Pcollapse = 6360.6 psi Pc = Casing Collapse Rating / Pcollapse = 8650 / 6360.64 = 1.36 Pc ≥ 1.125 1.36 ≥ 1.125</p> <hr/> <p>Tensile Tension = Weight * Length = 11.6 * 12705 = 147378 lbs Sj = Casing Tension Rating / Tension = 367000 / 147378 = 2.49 Sj ≥ 1.5 2.49 ≥ 1.5</p>