

## HSR Ruth Camp 15-31 #0512318282– P&A Procedure

- 1 Call Foreman or Lead Operator at least 24 hr prior to rig move. If not already completed, request that they catch and remove plunger, isolate production equipment and remove any automation equipment prior to the rig showing up. Install perimeter fence as needed.
- 2 Provide notice of MIRU to COGCC field inspector as specified in approved Form 6.
- 3 Notify cement company to have **2 bbl** (10 sx) of G" mixed at 15.8 ppg and 1.38 ft<sup>3</sup>/sx blended for 5 hr pump time, **84 bbl** (409 sx) of G" w/ 0.25 pps cello flake, 4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sx blended for 5 hr pump time, **21 bbl** (85 sx) of Type III w/ CaCl<sub>2</sub> mixed at 14.0 ppg and 1.53 cuft/sk blended for 5 hr pump time.
- 4 Notify IOC when rig moves on location to generate work order for flow line removal and one call for line locates.
- 5 Prepare location for base beam rig.
- 6 MIRU WO rig. Kill well with fresh water.
- 7 A gyro survey for this well was completed on 5/17/2012.
- 8 MIRU wire line. RIH with CCL and gage ring / junk basket to **6900'**.
- 9 POOH with wire line. RIH with wire line and dump bail **2 bbl** (10 sx) of G" mixed at 15.8 ppg and 1.38 ft<sup>3</sup>/sx. POOH.
- 10 Pressure test csg to **2,000 psi** for 15 minutes. If pressure test fails, contact engineering for further support.
- 11 ND wellhead, NU BOP.
- 12 PU with 28,580-lb on csg. Do not exceed 80% of 2-7/8" J-55 csg tensile strength (80,000-lb).

Buoyant Force of Casing/ Tubing		
Casing Length Feet =		<b>5250</b>
Casing Weight PPF =		<b>6.5</b>
Tbg or Csg ID Inches		<b>2.441</b>
Capacity BPF =		<b>0.005791</b>
Weight of Cmt/Backside Fluid =		<b>9</b>
Buoyancy Factor of Backside Fluid =		0.862595
Fluid Weight Inside Pipe ppg =		<b>8.33</b>
Buoyancy Force lbs =		<b>28,581</b>

- 13 RIH with string shot to csg collar located at **+/- 5350'**. Torque casing for back off. Fire string shot.
- 14 If string shot does not back off csg, call engineering for further instructions.
- 15 TOOH with **3 jts** of 2-7/8" csg to **+/- 5250'**. LD csg.
- 16 MIRU cement company.
- 17 Circulate 285 bbl 9.0 ppg drilling mud at a rate of 5 bbl/min with cementing equipment. Prepare to cement.
- 18 Pump a spacer consisting of 5 bbl fresh water, 10 bbl sodium silicate and 5 bbl fresh water using cement equipment and a pump rate of 5 bbl/min followed by a balanced plug consisting of **84 bbl** (410 sx) of G" w/ 0.25 pps cello flake, 4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg at 2

bbl/min or normal cementing rate. Displace with 23 bbl fresh water. (Cement from 5250' to 4164').

**Cementing : Balanced Plug Calculator**

NOTE: WSI=Work String In, WSO=Work String Out

**Do Calculation**

**Reset**

Plug Top Depth (ft WSO): 4164.00  
 Plug Bottom Depth (ft WSO): 5250.00  
 Plug Volume (ft³): 470.747  
 Plug Volume Excess (%): 10.00  
 Spacer Volume Ahead (bbl): 30.00

Spacer Top (ft WSO): 3742.90  
 Top of Cement (ft WSI): 4131.53  
 Spacer Volume Behind (bbl): 2.51028  
 Displacement Volume (bbl): 21.4039  
 Displacement Depth (ft WSI): 3697.84

Casing Data		Open Hole Data		Workstring Data		
ID (in)	Depth (ft)	ID (in)	Depth (ft)	OD (in)	ID (in)	Depth (ft)
0	0	8.50	5250.00	2.875	2.441	5250.00
0	0	0	0	0	0	0

- 19 TOOH with 42 jts of 2-7/8" to middle of spacer. Circulate 2x csg volume or until cement cleans up. LD csg.
- 20 TOOH with 84 jts of 2-7/8" to 943'.
- 21 Spot a balanced plug of 21 bbl (85 sx) of Type III w/ CaCl<sub>2</sub> mixed at 14.0 ppg and 1.53 cuft/sk blended for 5 hr pump time. (Attempt to cement 200' below Fox Hill base to 100' into surface casing). Displace with 4 bbl fresh water.

**Cementing : Balanced Plug Calculator**

NOTE: WSI=Work String In, WSO=Work String Out

**Do Calculation**

**Reset**

Plug Top Depth (ft WSO): 643.00  
 Plug Bottom Depth (ft WSO): 943.00  
 Plug Volume (ft³): 122.452  
 Plug Volume Excess (%): 10.00  
 Spacer Volume Ahead (bbl): 5.00

Spacer Top (ft WSO): 556.327  
 Top of Cement (ft WSI): 632.058  
 Spacer Volume Behind (bbl): 0.51999  
 Displacement Volume (bbl): 3.1385  
 Displacement Depth (ft WSI): 542.224

Casing Data		Open Hole Data		Workstring Data		
ID (in)	Depth (ft)	ID (in)	Depth (ft)	OD (in)	ID (in)	Depth (ft)
8.097	743.00	8.50	943.00	2.875	2.441	943.00
0	0	0	0	0	0	0

- 22 TOOH with 13 jts of 2-7/8" csg to 500' and circulate until cement cleans up. TOOH remaining csg and LD.
- 23 PU 8-5/8" wiper plug and push down to 60' with sucker rods. TOOH with rods.
- 24 RMDO WO rig.

- 25 Well site supervisor turn all paper copies of cementing reports/invoices and logs in to Sabrina Frantz.
- 26 NOTE: During the job, well site supervisor should instruct the logging and cementing contractors to e-mail all logs, job reports/invoices to Sabrina Frantz.
- 27 Have excavation contractor notify One-Call to clear for digging around wellhead and flow line removal.
- 28 Excavate hole around surface casing of sufficient size and depth to allow welder to cut off 8-5/8" surface casing at least 5' below ground level.
- 29 Have welder cut off 8-5/8" surface casing at least 5' below ground level.
- 30 MIRU ready cement mixer. Fill the last 50' inside the 8-5/8" surface casing. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) to finish filling surface casing to top of cut off.
- 31 Spot weld on steel marker plate. (Note: marker shall be labeled with well name and number, legal location (¼ ¼ description) and API number.
- 32 Properly abandon flow lines as per Rule 1103.
- 33 Have excavation contractor back fill hole with native material. Clean up location and have leveled to plant any vegetation required.
- 34 Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.