

encana™



Operator: Encana Oil & Gas (USA) Inc.
Well Name: SOUTH DOUGLAS CREEK 7330
Lease Number: COC03963
Unit Number: COC47687A
Location: NWNW Sec.12 -T4S -R102W
Field: Douglas Creek South
County, State: Rio Blanco, CO
API Number: 05-103-09729-0000
Diagram Date: As of May 26, 2011

Plug and Abandonment Procedure

June 1, 2011

Prepared by: Nicholas Ronan 720-876-3838

Attachments:

- Attachment 1 – Current Wellbore Diagram
- Attachment 2 – Proposed Wellbore Diagram

API Number: 05-103-09729-0000

KB Elevation: 6,555 ft
GL Elevation: 6,548 ft

PBTD: 1,362 ft MD
TD: 1,362 ft MD

Surface Casing: 9 – 5/8" OD, 36 lb/ft, set at 94 ft, assumed J-55

Surface Casing OD	9 5/8	in.
Surface Casing ID	8.921	in.
Surface Casing Drift	8.765	in.
Surface Hole size	12 3/4	in.
Surface Casing COLLAPSE (100%)	2,020	psi
Surface Casing BURST (100%)	3,520	psi
Surface Casing JOINT YIELD	394,000	lbs

Production Casing: 7" OD, 23 lb/ft, set at 1,275 ft, J-55

Production Casing OD	7	in.
Production Casing ID	6.366	in.
Production Casing Drift	6.241	in.
Production Hole size	8 3/4	in.
Production Casing COLLAPSE (100%)	3,270	psi
Production Casing BURST (100%)	4,360	psi
Production Casing JOINT YIELD	284,000	lbs

Tubing: 2-3/8" OD, 4.7 lb/ft, set 1,295 ft., J-55

Tubing Casing OD	2 3/8	in.
Tubing Casing ID	1.995	in.
Tubing Casing Drift	1.901	in.
Tubing COLLAPSE (100%)	8,100	psi
Tubing BURST (100%)	7,700	psi
Tubing JOINT YIELD	71,730	lbs

Safety

Safety meetings are to be held with all service company personnel prior to each job. Wellsite supervisor must notify contractors as to known hazards of which the contractors may be unaware. Well site supervisor must ensure that all workers are aware of their responsibilities and duties under the EH&S guidelines. All safety meetings will be recorded on the EnCana daily completion reports in Wellcore.

Regulations

All verbal notifications and approval from government regulatory agencies will be recorded on the EnCana daily report. The name of the individual contacted and the subject matter of approval or notification will be recorded.

****Please note Chemical Inventory on Wellcore Report. Note amount of chemicals pumped downhole and amount stored on location each evening.**

JOB OBJECTIVE

The SOUTH DOUGLAS CREEK 7330 is a vertical well OPEN HOLE completed in October, 1994 in the Castlegate formation. The well has not produced since May, 2006. The well has very low production potential; therefore the **SOUTH DOUGLAS CREEK 7330 will be plugged and abandoned.**

PROCEDURE

Rig Up and Pull Tubing

1. Notify State of Colorado and BLM (White River Field Office) at least 48 hours prior to start of operations.
2. Hold a pre-job safety meeting. Discuss all aspects of the procedure with any involved personnel. Identify and address any safety concerns before the job begins.
3. MIRU pulling unit. Blow down well and kill well as needed with produced water. ND production tree. NU BOPs.
4. TOOH with 2-3/8", 4.7#, J-55 tubing. Scope and tally while TOOH. Visually inspect all tubing for scale, corrosion, and wear. Replace joints as needed. **Report results of inspection in Wellcore Report.**

Isolate Open Hole

5. TIH and tag PBTD with wireline. (Current PBTD is assumed to be equal to TD: PBTD = 1,362 ft) MAKE NOTE OF NEW TAG. **NOTE: Based on the calculations below, if the tag is the same as TD i.e. PBTD = 1,362 ft, then the total # of sacks below the CICR = B = 53 sks.**
6. TIH with wireline and set CICR in 4-1/2" casing at 1,200 ft (Must be placed at least 50 ft above the Production shoe set at 1,275 ft). Verify that the CICR will not be placed within 5 ft of a collar.
7. RDMO wireline unit.
8. TIH with 2-3/8", 4.7#, J-55 tubing. Circulate hole with 9 lb/gal mud.

CALCULATIONS for the # of sacks needed below the CICR:

where **A** is the number of sacks calculated for the open hole geometry; **B** is the number of sacks calculated for the casing geometry; and **C** is the total sacks required.

Open Hole Cement = $[0.41758 \text{ ft}^3/\text{ft} * ((\text{NEW TAG DEPTH}) - 1,275) \text{ ft} / 1.15 \text{ ft}^3/\text{sks}] = \text{A sks}$

Casing Cement = $[0.22103 \text{ ft}^3/\text{ft} * [1275 - 1,200] \text{ ft} / 1.15 \text{ ft}^3/\text{sks}] = 14.4 \text{ sks}$

TOTAL SACKS NEEDED With 13.62% Excess = $(\text{A sks} + 14.4 \text{ sks}) * 1.1861 = \text{B sks}$

9. Sting into CICR and pump **B sks** of Class G cement under the CICR.

10. Sting out of CICR. Spot 50 ft (12 sks) of class G cement on top of CICR set at 1,200 ft.

$$\text{Casing Cement} = [0.22103 \text{ ft}^3/\text{ft} * 50 \text{ ft} / 1.15 \text{ ft}^3/\text{sk}] = 9.61 \text{ sks}$$

$$\text{With 16.90\% Excess} = 9.61 \text{ sks} * 1.1690 = 11.2 \text{ sks} = \mathbf{12 \text{ sks}}$$

11. Wait on cement for 4 hours. Tag cement top. Pump more cement as needed to ensure at least 50 ft of cement is on top of the CICR set at 1,200 ft.
12. Pressure test production casing to 300 psig surface pressure.

Contact Nicholas Ronan (720-876-3838) or Mitch Steinke (303-918-3844) if the casing fails the pressure test.

13. Circulate hole with 9 lb/gal mud. POOH with tubing.

Cement Annulus across Surface Casing Shoe

14. TIH with wireline and set CIBP in 4-1/2" casing at 150 ft. Verify that CIBP will not be placed within 5 ft of a collar. Production annulus top of cement was calculated to be at surface, and good cement returns were seen at surface during the drilling operation. Therefore, no squeeze is needed at the surface shoe.

Cement Plug in Casing from CIBP to Surface

15. Pump 150 ft of Class G cement (30 sks) in casing on top of CIBP set at 150 ft. Casing plug must extend a minimum of 50 ft above and below the surface casing shoe at 94 ft.

$$\text{Casing Cement} = [150 \text{ ft} * 0.22103 \text{ ft}^3/\text{ft} / 1.15 \text{ ft}^3/\text{sk}] = 28.8 \text{ sks}$$

$$\text{With 1.5\% Excess} = 28.8 \text{ sks} * 1.015 = 29.3 \text{ sks} = \mathbf{30 \text{ sks}}$$

16. WOC for four hours.
17. Top off annulus and casing as needed to bring cement to surface.
18. ND BOP. RDMO pulling unit.
19. Cut off anchors.
20. Cut off all casing at the base of the cellar or 4 ft below final restored ground level; whichever is deeper.
21. Weld on metal plate at least 1/4" thick and dry hole marker.
22. Restore surface location.
23. Ensure that cement tickets are mailed (or scanned and emailed) to the Denver office for subsequent reporting.