



NWT OFFICE OF THE REGULATOR OF OIL AND GAS OPERATIONS

Office of the Regulator of Oil and Gas Operations

P.O. Box 1320, Yellowknife, NT X1A 2L9

Tel: 867-767-9097 • Fax: 867-920-0798 • Web: www.oro.go.nt.ca

Courier Address: 4th floor, 5201 – 50th Avenue, Yellowknife, NT X1A 3S9

Ryan Munro, P.Eng.
Manager, Abandonment Engineering
Canadian Natural Resources Ltd.
Suite 2100, 8800 – 2ST SW
CALGARY AB T2P 4J8

October 7, 2020

Dear Ryan Munro:

**Letter of Decision: Abandonment of the
Arrowhead River C-55 Well (ACW-2020-003-CNRL-C-55-WID1979)**

On September 10, 2020, the Office of the Regulator of Oil and Gas Operations (OROGO) received a Well Approval application from Canadian Natural Resources Ltd. (CNRL) to Alter the Condition of a Well (ACW) for the abandonment of the Arrowhead River C-55 (WID 1979) well.

The Regulator, designated under section 121 of the *Oil and Gas Operations Act* (OGOA), may issue a Well Approval under section 10(4) of that act. On August 2, 2020, the Commissioner in Executive Council designated me as the Regulator under section 121 of OGOA.

I have reviewed CNRL's description of its proposed activity and find that the application demonstrates that this activity will be conducted safely, without waste and without pollution, in compliance with the *Oil and Gas Drilling and Production Regulations*.

However, Section 6A - Downhole Abandonment Requirements of the *Well Suspension and Abandonment Guidelines and Interpretation Notes* (Guidelines) requires the setting of a permanent bridge plug within 15 meters above a single zone open-hole section or perforations. Step 31 of CNRL's abandonment program proposes the setting of a permanent bridge plug at 2,525 mKB, which would result in placement of the plug at a height greater than the required 15 meters above the open hole section for the abandonment of the non-discrete zones (Slave Point, Watt Mountain, Keg River, Headless and Landry) described in the open hole section.

.../2

Bureau de l'organisme de réglementation des opérations pétrolières et gazières
B.P. 1320, Yellowknife, TNO X1A 2L9

Tél : 867-767-9097 • Téléc : 867-920-0798 • Site web : www.oro.go.nt.ca

Adresse de messagerie : 4^e étage, 5201 – 50^e Avenue, Yellowknife TNO X1A 3S9



BUREAU DE L'ORGANISME DE RÉGLEMENTATION DES OPÉRATIONS PÉTROLIÈRES ET GAZIÈRES DES TNO

In addition, Section 4A - Gas Migration Testing Requirements of the Guidelines requires that gas migration (GM) testing must occur prior to the beginning the downhole abandonment program. GM testing as described in Section 4A, must be completed in frost free months only and periods immediately after a rainfall must be avoided. Well Inspection Reports submitted to OROGO do not demonstrate that GM testing has been completed as required by the Guidelines.

Therefore, CNRL's application is approved, subject to the terms contained in the attached Well Approval, and I also approve the following exemptions to the Guidelines to:

1. Allow for the setting of a permanent bridge plug at a depth of 2,525 mKB in order to abandon the open hole section as noted in Step 31 of the abandonment program; and
2. Allow for the completion of gas migration testing as described in Section 4A of the Guidelines during the frost free months of 2021, should the well be abandoned during the 2021 winter season.

CNRL must post a copy of the attached Well Approval in a clearly visible location at the work site.

Sincerely,



Pauline de Jong
Executive Director

Encl. ACW-2020-003-CNRL-C-55-WID1979

- c. James Ireland, Well Abandonment Engineer, CNRL
Arly Castillo, Regulatory Coordinator, CNRL

WELL APPROVAL

Subject to the terms listed below, a well approval is granted under Section 10 of the *Oil and Gas Operations Act* and Part 2 of the *Oil and Gas Drilling and Production Regulations* to


Company Name Canadian Natural Resources Limited	Company Operating Licence # NWT-OL-2014-001
Responsible Officer and Title Ryan Munro, Manager, Abandonment Engineering	

to proceed with the works and activities described in its September 10, 2020 application for

Type of Work Well abandonment	Settlement Area or Region Dehcho
Scope of Work Abandonment of the Arrowhead River C-55 Well (WID1979)	

This approval is granted under Operations Authorization OA-2018-005-CNRL and expires on January 31, 2023.

Dated at Yellowknife, Northwest Territories on October 7, 2020.

Name of Regulator / Delegate Ms. Pauline de Jong	Signature of Regulator / Delegate 
Title Executive Director	

ADDITIONAL TERMS

1. Canadian Natural Resources Limited shall cause the approved work and activities to be conducted in accordance with the requirements of the *Oil and Gas Operations Act* and the *Oil and Gas Drilling and Production Regulations*, as well as any other acts or legislation as may apply.
2. Canadian Natural Resources Limited shall cause the approved work and activities to be conducted in accordance with any guidelines and/or interpretation notes issued by the Regulator under section 18 of the *Oil and Gas Operations Act*.
3. Canadian Natural Resources Limited is granted an exception from Section 6A, Downhole Abandonment Requirements of the *Well Suspension and Abandonment Guidelines and Interpretation Notes* to allow for the setting of a permanent bridge plug at a depth of 2,525 mKB in order to abandon the open hole section, as noted in Step 31 of the approved abandonment program.
4. Should the well be abandoned during the winter season of 2021, Canadian Natural Resources Limited is granted an exception from Section 4A, Gas Migration Testing Requirements of the *Well Suspension and Abandonment Guidelines and Interpretation Notes* to allow for the completion of gas migration testing as described in the Guidelines during the frost free months of 2021.
5. Canadian Natural Resources Limited shall cause the approved work and activities to be conducted in accordance with the specifications, standards and other information referred to in its application received September 10, 2020.
6. Canadian Natural Resources Limited shall request approval from the Regulator prior to undertaking any change to or deviation from the authorized work or activities, including but not limited to key personnel, the safety plan, the environmental protection plan, contingency plans and the approved abandonment program.
7. Canadian Natural Resources Limited shall provide all staff and contractors for this program with its Emergency Response Plan and the OROGO 24-hour Incident Reporting phone number (867-445-8551) prior to commencing any work or activity.
8. Canadian Natural Resources Limited shall notify OROGO at least 10 days prior to the start of well abandonment operations.

9. Canadian Natural Resources Limited shall submit to OROGO certificates and inspection documents for any service rig, well control and associated equipment (including boilers) at least 10 days prior to the rig commencing work.
10. Canadian Natural Resources Limited shall submit to OROGO an updated operator contact list for this program prior to any work or activity.
11. Canadian Natural Resources Limited shall submit to OROGO a completed Change of Well Status form and Well Termination Report 30 days after the service rig release date or when the operation has been successfully completed.
12. Pursuant to section 67 of the *Oil and Gas Drilling and Production Regulations*, Canadian Natural Resources Limited is approved to conduct controlled flaring utilizing separator packages and/or flare stacks as part of well kill operations at a maximum daily flow rate of 30 x 10³ m³/day and maximum daily duration of 4.0 hours per day. Canadian Natural Resources Limited is also approved to conduct controlled venting of sweet gas as part of well kill operations at a maximum daily flow rate of 900 m³/day and maximum daily duration of 4.0 hours per day. Canadian Natural Resources Limited shall include the volume and composition of any amount of flared and/or vented gas in its daily report to OROGO. Flaring and/or venting of any volume, daily volume rate and/or duration greater than the approved maximum daily flow shall be reported to OROGO as an incident under section 75 of the *Oil and Gas Drilling and Production Regulations*.