OROGO
NWT OFFICE OF THE REGULATOR OF OIL AND GAS OPERATIONS

Safety Bulletin: Shallow Wellbore Plugs

INTRODUCTION

Some historical suspension operations used shallow wellbore plugs (plugs at approximately 50 mKB). These plugs must be milled out during well abandonment or reactivation programs. Milling out these plugs can pose significant safety risks because the operator cannot properly kill the well with a weighted fluid or assess actual pressures beneath the plug prior to downhole intervention.

The Office of the Regulator of Oil and Gas Operations (OROGO) regulates the safety of oil and gas operations by requiring operators to submit:

- Safety plans (for the Regulator's approval);
- Well-specific suspension and abandonment procedures (for the Regulator's approval);
- Investigation reports for any safety incidents or accidents; and
- Incident status reports.

This safety bulletin lists the factors and requirements operators must address for any wellbore plug that does not allow the wellbore to be safely killed by over balancing the plug, including a margin of safety, with weighted fluid and the drill string. These factors and requirements must be also be addressed in cases where such a wellbore plug is suspected, but not confirmed, to be present based on historical records.

BACKGROUND

During abandonment and suspension operations within OROGO's area of jurisdiction in the Northwest Territories, milling out of a shallow wellbore plug has caused loss of well control, jacking of the tubing string, uncontrolled releases of gas and a serious lost time injury that could have resulted in death.

AGGRAVATING FACTORS

- Unavailable or incomplete historical information on previous well interventions and monitoring;
- Inability to measure any real time potential pressures under the plug;
- Lack of adequate hazard identification, hazard assessment and control measures; and
- Use of unsecure pressurized hoses and equipment during milling operations.

If you would like this information in another official language, contact us at (867) 767-9097.

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REQUIREMENTS

As of April 23, 2021, all Well Approval applications submitted to OROGO for wellbore interventions must include the following information where any wellbore plug is identified or suspected, requires removal and cannot be over balanced with a combination of weighted fluid and weight on string.

- **Risk Assessment and Well Control:**
  - The operator must assume reservoir pressure is present below the plug.
  - If the combination of kill fluid density and weight-on-bit (drill string) does not overbalance the estimated reservoir pressure at the actual plug depth, a snubbing unit is required.
- **Engineering Controls:**
  - Snubbing units must be installed before starting milling operations for the removal of any applicable wellbore plug. The snubbing unit must remain in place until the plug has been removed and pressures equalized or the well bore sufficiently killed with weighted fluid.
- **Administrative/Elimination:**
  - Before milling out the wellbore plug, operators must conduct and record an on-site risk assessment and hazard analysis of the task. This should include, but not be limited to:
    i. Identifying hazards and mitigations if pressure is found;
    ii. Reviewing blow out preventer and evacuation procedures;
    iii. Inspecting and securing the rig, hoses and other equipment that may encounter pressures from the wellbore;
    iv. Identifying danger zones and ensuring only essential staff are present and safely positioned to avoid the identified potential hazards in the immediate work area during the milling operations; and
    v. Alerting the medic to be on standby and ensuring they are present for all steps above.
- **Reporting:**
  - Operators must submit to OROGO at orogo@gov.nt.ca:
    - A record of the risk assessment and hazard analysis for the operation, as described above, no less than an hour before it begins; and
    - A summary of the operations related to the milling of the plug within an hour of its completion.
  - Operators must report all incidents and near misses as soon as circumstances permit, as required under the *Oil and Gas Drilling and Production Regulations*, to OROGO at 867-445-8551.

Notes:

1. The operator must still comply with any other applicable Act, Regulation or other regulatory requirement, including those of the NT/NU Workers Safety and Compensation Commission.
2. The operator must bring any conflict between this bulletin and its internal policies to the attention of OROGO in its application for a Well Approval. The conflict must be addressed to the satisfaction of the Chief Safety Officer before the Regulator issues the Well Approval.

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