

Equinor 2020 Exploration Drilling Program

Well Control Strategy

Equinor Canada Ltd. has contracted the Transocean Barents semi-submersible drilling rig to perform the 2020 drilling program consisting of three (3) planned operations:

1. Permanent abandonment and wellhead removal of exploration well Bay du Nord C-78z located on significant discovery license SDL 1055, originally drilled in 2013.
2. Drilling and abandonment of exploration well Cappahayden K-67 located on exploration license EL 1156.
3. Drilling and abandonment of exploration well Cambriol G-92 located on exploration license EL 1156.

All three (3) wells are located in the Flemish Pass, approximately 450 km from St. John's, in water depths ranging from 600 m to 1200 m. The duration of the 2020 drilling program is expected to be 4-6 months beginning in April 2020.

Well Control Philosophy

Equinor's goal is zero (0) well control or well integrity incidents. Establishing strong well control barriers in planning and execution is the basis of Equinor's "Always Safe" strategy to deliver wells with no harm to personnel or the environment.

Primary well control is maintained by drilling fluids ('mud') with sufficient density ('weight') to prevent the influx of formation fluid into the wellbore. Throughout the drilling industry, the loss of primary well control most frequently results from errors in fluid volume monitoring, swabbing, insufficient fluid density, or lost circulation. The objective for the 2020 drilling program is to maintain primary well control at all times by applying the preventative well control measures in the Transocean's Well Control Handbook, Equinor's Well Integrity and Well Control Manuals, and the *TBR-Equinor Canada Well Control Bridging Document* agreed between the Companies. Preventative well control measures include but are not limited to:



Figure 1: Transocean Barents MODU

- Mud weight with overbalance safety margin against the prognosed pore pressure during drilling.
- Mud weight with trip safety margin during tripping to prevent influx due to swabbing.
- Continuous monitoring of fluid level in well including flowback monitoring/fingerprinting on connections.
- Hands-on verification by rig leadership of swab simulations and trip sheet accuracy.
- Awareness of barrier status at all times, including barrier plan for riser disconnect.
- Well control drills and tabletops, including understanding of indicators that overbalance is decreasing.
- Clear roles and responsibilities for monitoring and communicating well control.
- Verification and regular testing of well barriers including casing, cement, and BOP.

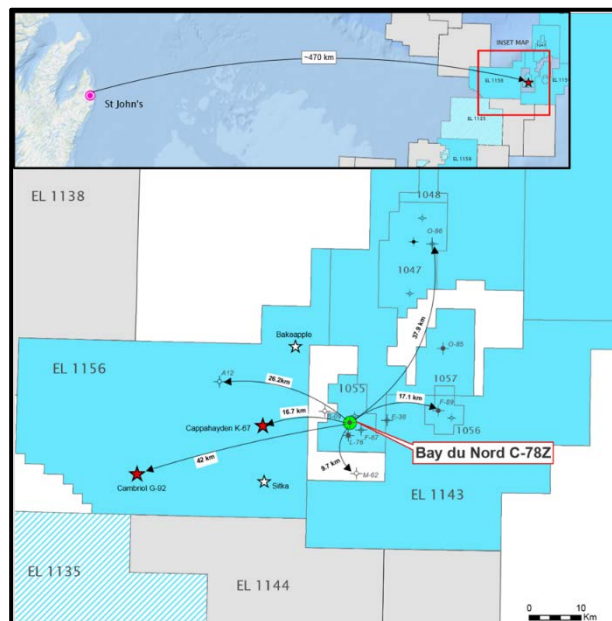


Figure 2: Map of 2020 Drilling Program Locations

Contents of the *TBR-Equinor Canada Well Control Bridging Document* are communicated to the crew through Equinor offshore well control forums, daily risk management routines onboard the rig, and through continuous well control risk focus in all operational procedures and pre-job meetings. Well control drills are conducted as per the *TBR-Equinor Canada Well Control Bridging Document* in the most realistic manner possible, with assessments to identify areas crew competency or the drills themselves can be improved.

Operations with reservoir pore pressure above 690 bar and/or a static bottom hole temperature above 150°C follow the Equinor-Transocean High Pressure High Temperature (HPHT) Manual. The HPHT Manual provides more in-depth checklists, fingerprinting, and drilling procedures to ensure well control and equipment rating safety margins are not exceeded while operating with elevated temperature and pressure conditions. HPHT simulator training and additional well control drills are performed to verify crew HPHT competency.

Well Barriers

If a loss of primary well control occurs, a secondary well control barrier envelope including the BOP is capable of shutting in the well. The effectiveness of the secondary barriers is a function of the technical, operational, and organizational elements in place. Each of the barrier functions for the 2020 drilling program have been addressed to ensure reliable well control preparedness and to avoid the escalation of a well control event.

Technical barrier elements

Technical barrier elements are engineered equipment, such as the BOP. Technical barriers must meet the performance standards for the operation – temperature/pressures rating, shear capacity, etc. Each technical barrier is designed, pressure and/or function tested to confirm required integrity for the 2020 drilling program.

Operational barrier elements

Operational barrier elements are safety-critical tasks performed by the offshore team, such as the shut-in procedure for the BOP and the kill procedure to re-establish primary well control (fluid overbalance). The preferred kill method within the *TBR-Equinor Canada Well Control Bridging Document* is Driller's Method. Operational barrier elements have been documented by leading Equinor-Transocean well control expertise and subject matter experts will be available to support the offshore team throughout the 2020 drilling program.

Organizational barrier elements

Organizational barrier elements are defined roles, competence, and training to achieve the desired well control response in a timely manner. Organizational barriers are maintained through well control drills including onshore organization response, well control forums, and well control certifications (IWCF/IADC) as per Canadian Association of Petroleum Producers (CAPP) standards for Training and Qualifications of Personnel (TQSP).

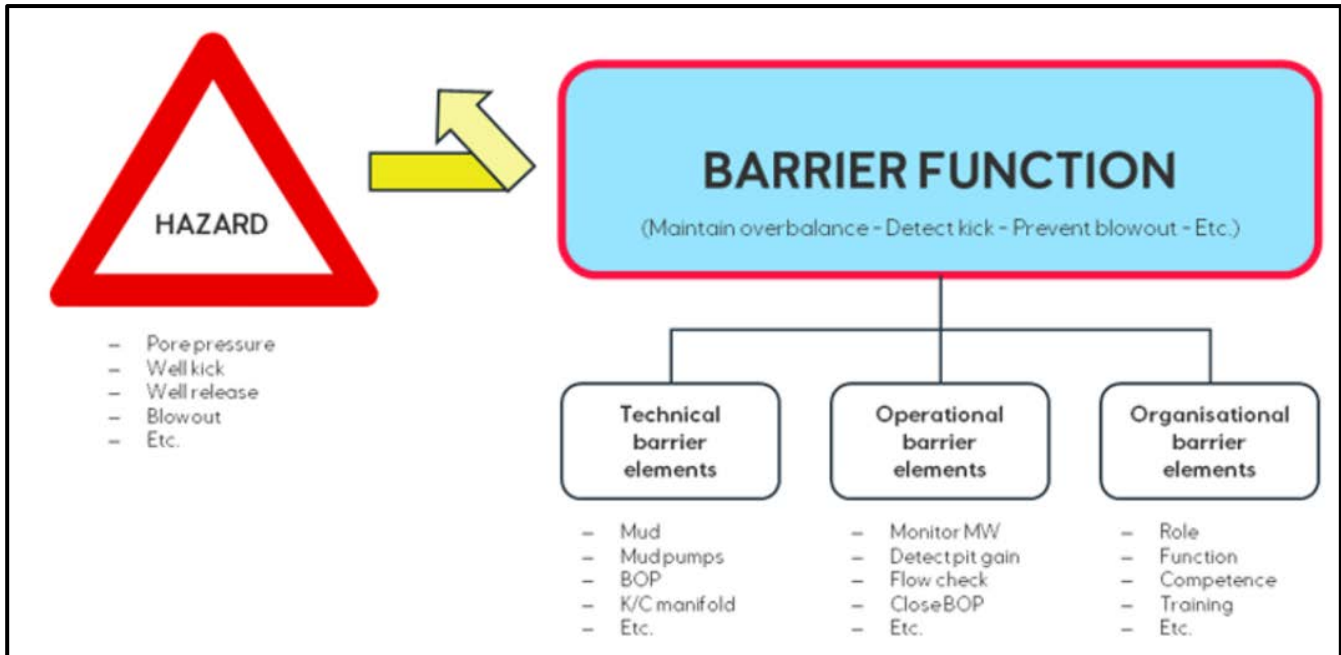


Figure 3: Barrier Elements

Source Control

If the primary BOP closure is unsuccessful, there are several back-up BOP functions including ROV closure, acoustic signal, and deadman autoshear which may shut-in and seal the well. To prepare for the unlikely event of loss of well control, the Source Control Branch (SCB) and Incident Management Team (IMT) have plans and resources in place to mobilize vessels and equipment for site survey, subsea debris clearance, BOP intervention, subsea dispersant application, and capping stack installation. The capping stack can be connected on top of the BOP (at BOP/LMRP interface) or on top of the wellhead. Following the capping operation, a relief well may be required to intercept the existing wellbore and permanently seal the well. Relief drilling rigs and relief well equipment have also been identified for this purpose.



Figure 4: Capping stack