**Atlantic Region**
**Expression of Interest (EOI) / Prequalification**
**Well Integrity Assurance Services**
**Reference 8.41.1.024**

Cenovus Energy Inc. (Cenovus) is seeking Expressions of Interest (EOI's) and Prequalification responses from interested companies for:

**Reference 8.41.1.024 – Well Integrity Assurance Services**

## General Requirements

Interested companies must be qualified to conduct the work as outlined in the Scope of Work below and are asked to demonstrate their capabilities and experience via a formal response to the Prequalification Questionnaire for EOI / Prequalification advertisement.

The Well Integrity Assurance Services contract will be bid as a system. While Cenovus' preference is for a single integrated service provider, based on responses to this EOI/Prequalification and subsequent bid, Cenovus reserves the right to split award of the Well Integrity Assurance Services into multiple contracts if it is considered beneficial.

## Scope of Work

Cenovus Atlantic Region (AR) is upgrading its Well Integrity Management System and requires the services of qualified and experienced contractors to provide assurance that it is adequately controlling full life cycle well integrity risks. The well categories include offshore subsea development, wellhead platform development (potential), and exploration.

The Contractor will support the management of full life cycle well integrity with their industry knowledge, professional opinion, and their independent evaluation of risk. The Contractor shall act as a check at defined points in the well design, construction (i.e., drilling and completions), operation (i.e., production/injection), maintenance, intervention/modification, suspension and abandonment phases.

The Contractor will use their depth of experience to test Cenovus against local regulations and international well integrity best practices relevant to the White Rose operating environment. The intent is such that, so far as reasonably practicable, well pressure containment envelopes are controlled and there are no unplanned well fluid releases. During all well phases, two well barrier envelopes should be maintained between the reservoir and the environment. The evaluation of well fluid pressure containment boundaries outside of the well barrier envelopes, such as flowlines and topsides facilities, are out of scope.

An onboarding process will be conducted to introduce the contractor to the White Rose field and the Well Integrity Management System. Upon request for assurance services, the Contractor will be given a formal detailed well information package. The Contractor will follow an assurance procedure to ensure the review is conducted in compliance with Cenovus' requirements. Deliverables will include, but not be limited to, a well integrity assurance report for the examined well(s), including a summary of assurance activities, findings, and

a list of recommendations and/or concerns. Well integrity actions will ultimately be resolved to Cenovus' technical requirements and risk management processes. If the Contractor's concerns cannot be fully resolved with Cenovus, the basis for recommendation/concern closure will be formally documented.

Well integrity assurance is a chosen initiative by Cenovus Atlantic Region. Therefore, the Contractor will not be acting as a technical authority – they will be acting as an independent team member to complement internal verification with external expertise. As such, well integrity accountability is solely on Cenovus, thereby preserving the independence of the Contractor.

The Contractor shall provide competent assurance staff and a matured organization capability with established management systems and practices. While the intent is continuity of staff when assurance activities are needed, the common systems and processes of the organization would enable seamless staffing changes if required.

To pre-qualify for this scope of work, interested companies must demonstrate their technical and commercial experience and capabilities as it relates to the activities outlined below.

## Well Design Phase

Assurance activities for well integrity aspects of Cenovus Atlantic Region well designs may include but not be limited to the items in the table below.

The assurance activities will occur upon completion of a basis of design (BOD) document for a base well design – it is not intended to have the Contractor assure each well-specific BOD against its base design (see Section 3 for definitions). However, if a well-specific BOD deviates significantly from its base design, or if a well alteration is planned during its operating life, the Contractor may be asked to review these items with the perspective of how the changes might impact well integrity or the risk profile of the well.

| Assurance Item | Actions Required |
|---|---|
| Technical information within the Well Basis of Design Documents:<br><br>• Kick tolerance<br>• Fluid plan and hydraulics<br>• Cement plan<br>• Well design pressure<br>• Well equipment specifications<br>• Casing and tubing stress load cases<br>• Hydrate studies | **Core Scope**<br>• Check calculation and modeling methods against local regulations, applicable industry standard(s) and/or specification(s). Contrast with international well integrity best practices relevant to the White Rose operating environment.<br>• Check well barrier equipment certifications against applicable industry standard(s) and/or specification(s) for their intended purpose. Contrast with international well integrity best practices relevant to the White Rose operating environment.<br><br>**Potential Scope**<br>• Ensure applicable calculation inputs reference the data provided in the Subsurface Basis of Design (i.e. $H_2S$ & $CO_2$ concentrations, pressure/temperature vs. depth plots, shut-in wellhead pressures, etc.)<br>• Re-perform calculations for accuracy – ensure results meet minimum design criteria<br>• Ensure the well design is within pore pressure and fracture gradient limits |

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| Well Barrier Philosophy and Risk Assessments | **Core Scope**<br>• Review the well design's well barrier philosophy and well integrity related risks for the full life cycle. Check against local regulations and industry standards. Contrast with international well integrity best practices relevant to the White Rose operating environment. |
| Cenovus AR Well Design Standards/Procedures | **Potential Scope**<br>• Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

## Well Construction Phase

Assurance activities for well integrity aspects of Cenovus Atlantic Region well construction may include but not be limited to the items in the table below.

The assurance activities should be performed for initial program development. However, where rig operations use previously prepared and assured programs or procedures, there should be no requirement for re-assurance provided that the significance of any potential deviations and/or excursions are adequately assessed.

| Assurance Item | Actions Required |
|---|---|
| Well control equipment (e.g., blow-out preventer system) configuration/stack-up | **Core Scope**<br>• Check the well control equipment configuration against the well design |
| Well barrier management procedures:<br>• Well control equipment planned test pressures<br>• Shut-in procedures<br>• Emergency shut-down/disconnect procedures | **Core Scope**<br>• Check the well control equipment test plan and barrier management procedures against the previously assured well design, local regulations, and industry standard(s) and/or specification(s). Contrast with international well integrity best practices relevant to the White Rose operating environment. |
| Technical information associated with well construction standards, programs and/or work instructions:<br>• Planned well test pressures and duration<br>• Well equipment depths<br>• Cement top information<br>• FIT/LOT values<br>• Pore pressure / fracture gradient assessments<br>• Mud weight validation<br>• Surge & swab modelling<br>• ECD modelling<br>• Hydrate prevention plan<br>• Well suspension procedures<br>• Contingency procedures | **Potential Scope**<br>• Check the well construction written programs against the approved well design<br>• Check the real-time well construction activities against the approved written program<br>• Provide assurance on unexpected non-standard rig operations that potentially impact well integrity |
| Cenovus AR Well Construction Standards/Procedures | **Potential Scope** |

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| | • Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

**Well Operations Phase**

Assurance activities for well integrity aspects of Cenovus Atlantic Region well operations may include but not be limited to the items in the table below.

The assurance activities will occur once annually and will be primarily well-specific. Cenovus will identify wells of interest for the Contractor to assess. Wells of interest will include those with well barrier anomalies, non-well barrier anomalies, operational excursions, flow assurance concerns, etc. Annually thereafter, assurance activities will focus on well-specific items that may have changed from the previous year, as identified by Cenovus.

The Contractor may choose to provide an overall assurance report for the identified wells, or an assurance report for each well.

| Assurance Item | Actions Required |
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| Well Barrier Anomalies and<br>Non-Well Barrier Anomalies | **Core Scope**<br>• Ensure the risk profile is complete and accurate, and that the management plan is aligned with industry standards. Contrast with international well integrity best practices relevant to the White Rose operating environment.<br><br>**Potential Scope**<br>• Ensure well barrier element and/or envelope changes are correctly represented in a well barrier schematic |
| Well Conversions | |
| Well Barrier Testing | **Core Scope**<br>• Interpret and evaluate tests for success and provide opinions on testing procedures employed |
| Well Operating Pressure Limits | **Core Scope**<br>• Ensure any operating pressure excursions, anomalies and management plans are addressed appropriately. Contrast with international well integrity best practices relevant to the White Rose operating environment. |
| Well Flow Assurance | **Potential Scope**<br>• Evaluate $H_2S$ and $CO_2$ trends and note any concern for exceedance of well specifications<br>• Evaluate well developments pertaining to hydrates, wax and sand production and note any concern of the management philosophy for each |
| Cenovus AR Well Operations Standards/Procedures | **Potential Scope**<br>• Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

## Well Intervention Phase

Assurance activities for well integrity related aspects of Cenovus Atlantic Region well interventions should include but not be limited to the items in the table below.

The assurance activities should be performed for initial program development. However, where intervention operations use previously prepared and assured programs or procedures, there should be no requirement for re-assurance provided that the significance of any potential deviations and/or excursions are adequately assessed.

If significant well alterations are being performed, such as a change in well functionality, this should be addressed within the well design phase and assurance procedures.

| Assurance Item | Actions Required |
|---|---|
| Well pressure control equipment (e.g., blow-out preventer system) configuration/stack-up | **Core Scope**<br>• Check the well pressure control equipment configuration against the well intervention plan |
| Well barrier management procedures:<br><br>• Well pressure control equipment planned test pressures<br>• Shut-in procedures<br>• Emergency shut-down/disconnect procedures | **Core Scope**<br>• Check the well pressure control equipment test plan and barrier management procedures against the previously assured well design, local regulations, and industry standard(s) and/or specification(s). Contrast with international well integrity best practices relevant to the White Rose operating environment. |
| Technical information associated with well intervention standards, programs and/or work instructions:<br><br>• Planned well test pressures and duration<br>• Well-related SIMOPS management plans<br>• Hydrate prevention plan<br>• Well suspension procedures<br>• Contingency procedures | **Potential Scope**<br>• Check the real-time well intervention activities against the approved written program<br>• Provide assurance on unexpected non-standard operations that potentially impact well integrity |
| Cenovus AR Well Intervention Standards/Procedures | **Potential Scope**<br>• Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

## Well Abandonment Phase

Assurance activities for well integrity related aspects of Cenovus Atlantic Region well abandonment designs and execution may include but not be limited to the items in the tables below.

The assurance activities will occur upon completion of an abandonment basis of design (BOD) document for a base well design – it is not intended to have the Contractor assure each well-specific abandonment BOD against its base design (see Section 3 for definitions). However, if a well-specific abandonment BOD deviates significantly from its base design, the Contractor may be asked to review these items with the perspective of how the changes might impact well integrity or the risk profile of the well.

| Assurance Item | Actions Required |
|---|---|
| Technical information within the Well Basis of Design Documents:<br><br>• Fluid plan and hydraulics<br>• Cement plan<br>• Well plugging material specifications | **Core Scope**<br>• Check calculation and modeling methods against local regulations, applicable industry standard(s) and/or specification(s). Contrast with international well integrity best practices relevant to the White Rose operating environment.<br>• Check well barrier equipment certifications against applicable industry standard(s) and/or specification(s) for their intended purpose. Contrast with international well integrity best practices relevant to the White Rose operating environment.<br><br>**Potential Scope**<br>• Ensure applicable calculation inputs reference the data provided in the Subsurface Basis of Design (i.e. $H_2S$ & $CO_2$ concentrations, pressure/temperature vs. depth plots, shut-in wellhead pressures, etc.)<br>• Re-perform calculations for accuracy – ensure results meet minimum design criteria<br>• Ensure the well abandonment design is within pore pressure and fracture gradient limits |
| Well Barrier Philosophy and Risk Assessments | **Core Scope**<br>• Review the well design's well abandonment barrier philosophy and well integrity related risks. Check against local regulations and industry standards. Contrast with international well integrity best practices relevant to the White Rose operating environment. |
| Cenovus AR Well Abandonment Design Standards/Procedures | **Potential Scope**<br>• Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

The well abandonment execution assurance activities should be performed for initial program development. However, where rig operations use previously prepared and assured programs or procedures, there should be no requirement for re-assurance provided that the significance of any potential deviations and/or excursions are adequately assessed.

| Assurance Item | Actions Required |
|---|---|
| • Well control equipment (e.g., blow-out preventer system) configuration/stack-up | **Core Scope**<br>• Check the well control equipment configuration against the well design |
| Well barrier management procedures:<br><br>• Well control equipment planned test pressures<br>• Shut-in procedures<br>• Emergency shut-down/disconnect procedures | **Core Scope**<br>• Check the well control equipment test plan and barrier management procedures against the well design, local regulations, and industry standard(s) and/or specification(s). Contrast with international well integrity best practices relevant to the White Rose operating environment. |

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|---|---|
| Technical information associated with well construction standards, programs and/or work instructions:<br><br>• Planned well test pressures and duration<br>• Well equipment depths<br>• Cement top information<br>• Pore pressure / fracture gradient assessments<br>• Mud weight validation<br>• Surge & swab modelling<br>• ECD modelling<br>• Hydrate prevention plan<br>• Well suspension procedures<br>• Contingency procedures | **Potential Scope**<br>• Check the well abandonment written programs against the approved well abandonment design<br>• Check the real-time well abandonment activities against the approved written program<br>• Provide assurance on unexpected non-standard rig operations that potentially impact well integrity |
| Cenovus AR Well Abandonment Execution Standards/Procedures | **Potential Scope**<br>• Review the company standard(s) and identify gaps with industry standard(s) and applicable international well integrity best practices. |

## Definitions

**Base Well Design:**

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| **Base Well Design:** | A well with a standardized and pre-defined design basis (i.e. permanently installed equipment, pressure ratings, metallurgy and elastomeric requirements, and barrier philosophy).<br><br>A field development may consist of many wells, each of which may be categorized under a base well design (i.e. ESP Producer, Gas Lift Producer, Passive Control Injector, Active Control Injector, etc.). |
| **Well-Specific Base Well:** | One of several wells with a common base design. |
| **Singular-Well:** | A stand-alone well with a unique design basis. |
| **Operating Well:** | Currently under active producing or injecting operations |

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| **Shut-in Well:** | Not currently producing or injecting, and no reservoir isolation |
| **Suspended Well:** | Temporary or permanent reservoir isolation via tubing plugs and/or casing plugs/cement, without change to the wellhead |
| **Abandoned Well:** | Permanently plugged and decommissioned, with wellsite restored to an accepted permanent state |

If interested in submitting a response for this scope of work, responses will be received via Ariba, Cenovus's online sourcing platform. To receive an upload link, please send the following information to Allison.Scarth@cenovus.com no later than 7 days prior to the submission deadline:

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| **Company Legal Name:** | |
| **Company Full Address:** | |
| **Company Phone Number (Main):** | |
| **Contact Full Name:** | |
| **Contact Phone Number:** | |
| **Contact Email Address:** | |

**Please provide a formal response electronically no later than Wednesday, June 15th, 2022 at 15:00 NST.**

Cenovus strongly supports providing opportunities to Canadian and, in particular Newfoundland and Labrador companies and individuals, on a commercially competitive basis. Companies are required to complete a Canada/Newfoundland and Labrador Benefits Questionnaire as part of the Prequalification process. Cenovus also encourages the participation of members of designated groups (women; Aboriginal peoples; persons with disabilities; and members of visible minorities) and corporations or cooperatives owned by them, in the supply of goods and services.

Only those respondent(s) who are successful in pre-qualifying will be invited to submit priced commercial proposals at the bid stage.

For all queries relating to this EOI/Prequalification, please contact:

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