



26-WDRC-RFP-04

INTEGRATED SCVF/GM REMEDIATION
SUCCESS AND VERIFICATION

BUDGET: \$125,000

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1. Background & Rationale

Surface casing vent flow (SCVF) and gas migration (GM) remain persistent well integrity and decommissioning challenges. The Alberta Upstream Petroleum Research Fund (AUPRF) has identified a combined need to improve SCVF/GM repair success metrics, evaluate cement and cement-alternative barriers (including bond quality behind pipe), and develop post-treatment as well as longer-term monitoring/management solutions (including quantitative measurement).

This RFP is intentionally distinct from the companion ‘Source and Leak Pathway Identification (Diagnostics Suite)’ effort. That project’s diagnostics suite is focused on diagnosing the problem—standardizing workflows and tool selection to produce confidence-rated conclusions about SCVF/GM origin/source, storage zones, and leak pathways (including multi-annular cases), so teams can plan the most appropriate intervention based on defensible pathway attribution.

In contrast, this ‘Integrated SCVF/GM Remediation project is focused on proving and sustaining the fix—defining repair success metrics, evaluating cement and cement-alternative barriers (including bond quality behind pipe), and establishing post-treatment verification plus longer-term monitoring/management with quantitative measurement so outcomes can be measured, verified over time, and used for learning and improved closure confidence.

For this RFP, proponents must explicitly align all success metrics, verification protocols, and monitoring recommendations with current AER requirements for SCVF and GM classification, testing, and reporting, including (at minimum) the definitions and thresholds for:

- SCVF classification (e.g., serious, considered nonserious, nonserious) and GM classification (serious, nonserious),
- “stabilized average gas flow” and “stabilized shut-in pressure” concepts and how stabilization is demonstrated,
- required follow-up testing expectations for nonserious/considered nonserious SCVF/GM cases, and
- record retention and evidence requirements sufficient to support auditability and regulatory review.

Where proponents recommend metrics or verification methods that differ from AER minimums, the suite must (a) clearly identify the difference, (b) justify why the approach remains defensible, and (c) provide a mapping back to AER-compliant reporting and decision outcomes.

Across these needs, the combined problem is that industry lacks an integrated, evidence-based approach that links barrier selection and treatment design to measurable success metrics and verification over time. This limits learning across wells and reduces confidence in closure outcomes, particularly when performance is assessed as a simple ‘worked/didn’t work’ outcome without disaggregating material, placement, procedure/QC, and monitoring evidence.

The suite developed under this RFP must support Alberta regulatory expectations for SCVF/GM testing, classification, reporting, repair/deferral decisions, and record retention (including AER Directive 087 and related requirements in AER Directive 020). Proponents should also identify where the approach maps cleanly to other Canadian jurisdictions (e.g., BC/SK) and where material differences matter.

Proponents must identify how the suite aligns with relevant Industry Recommended Practices (IRP) for wellbore remediation and decommissioning (e.g., IRP 26 and IRP 27) and where the suite provides additional specificity (e.g., quantitative acceptance criteria, stabilized trend definitions, evidence pack standards).

2. Benefits to Producers

This project is intended to deliver practical, defensible tools that producers can use to improve repair outcomes and reduce rework by connecting (a) barrier selection and treatment design to (b) measurable success criteria and (c) verification and monitoring over time. Expected benefits include:

- Higher first-attempt repair success probability through explicit linkage of design choices (products/placement/procedure) to measurable acceptance criteria.
- Reduced diagnostic/rework loops by standardizing success metrics, evidence capture, and verification planning.
- Improved auditability and knowledge transfer through structured evidence packs that trace rationale → execution → measured outcomes.
- More defensible monitoring/management decisions for non-serious SCVF/GM cases through cost-effective quantitative measurement approaches.

3. Research Objectives

Proponents must deliver an integrated 'Remediation Success & Verification Suite' consisting of processes, evaluation methods, and tools (which may include software, templates, protocols, and/or field-ready workflows) that accomplish the following objectives:

- A detailed workplan with clear milestones, dates when deliverables are provided and timelines for completion.
- Define a structured set of SCVF and GM repair success metrics that are operationally measurable, time-staged (immediate post-treatment, short-term confirmation, longer-term performance), and auditable.
- Link barrier selection and treatment design (including placement/access and procedure/QC) to expected outcomes and the verification evidence required to confirm those outcomes.

- Provide an evaluation approach for cement and cement-alternative barriers, including methods to assess bond quality behind pipe and to document uncertainty.
- Define post-treatment verification protocols and longer-term monitoring/management options that include quantitative measurement. These monitoring options shall be pragmatic and cost-effective approaches acceptable to oil and gas producers.
- Deliver evidence pack templates, data standards, and minimum QA/QC expectations that enable comparative learning across wells and projects.
- Produce a Directive-anchored “Classification-to-Acceptance” bridge: a decision-ready mapping that connects SCVF/GM classification outcomes to (a) minimum required evidence, (b) staged verification timing, (c) acceptance criteria, and (d) escalation/reclassification triggers.

4. In Scope

This RFP seeks practical, auditable outputs that prove and sustain SCVF/GM repair outcomes, including measurable success metrics, verification/QA-QC protocols, and long-term monitoring/management guidance aligned to Alberta requirements. Submissions that do not clearly deliver these implementable tools (e.g., proposals focused mainly on high-level reviews, generalized discussions, or unrelated technology development) may be deemed non-responsive.

- Integrated remediation success workflow: an end-to-end workflow linking design intent → execution → staged verification → learning outputs. Workflows must include a consideration of managing non-serious SCVF/GM situations before decommissioning.
- Repair success metrics catalogue + acceptance criteria: definitions, measurement methods, and QA/QC requirements for SCVF and GM outcomes.
- Barrier selection + treatment design guide: decision logic linking conditions and objectives to barrier classes and treatment approaches, including placement/access and procedure/QC considerations.
- Cement/cement-alternative evaluation: performance-relevant properties and behind-pipe bond evidence guidance, with applicability limits and uncertainty handling.
- Post-treatment verification: field-ready protocols specifying stabilization, repeatability controls, logging cadence, calibration expectations, and evidence capture.
- Minimum Measurement and QA/QC Specification (Required)
 - The suite must include a minimum measurement specification for SCVF and GM verification that addresses:
 - Measurement objectives (detection vs quantification vs trend confirmation),
 - Minimum instrument performance and documentation (resolution, range, calibration evidence, environmental constraints),

- Standardized test conditions (valve positions, vent configuration, stabilization period, ambient controls),
 - Repeatability controls (replicate tests, time-of-day/temperature effects, operator steps, documented deviations),
 - Data capture requirements (raw time-series where applicable, metadata, chain of custody),
 - Treatment/verification “hold points” and acceptance criteria linked to classification and risk,
 - Uncertainty documentation and how uncertainty influences acceptance decisions.
- The suite must provide staged verification timing guidance that explicitly includes:
 - Immediate post-treatment checks (same-day and/or within 24–48 hours, as appropriate to the method),
 - Short-term confirmation checks aligned to stabilization demonstration and repeatability controls,
 - Longer-term confirmation guidance aligned to nonserious/considered nonserious follow-up expectations (multi-year trend confirmation),
 - Clear criteria for when stabilization is considered achieved and how trend stability/decline is demonstrated,
 - Triggers for escalation, re-testing, reclassification, or additional remedial action.
 - The suite must include a practical screening method to identify receptors and hazards that affect classification, verification intensity, and acceptance criteria (e.g., proximity to domestic/agricultural water wells, off-lease impacts, and public safety/environmental hazards). The screening output must link directly to verification/monitoring escalation and documentation requirements.

5. Out of Scope

- Performing physical well repairs, abandonment operations, or construction work as a primary activity (unless proposed as a limited demonstration strictly to support deliverables).
- Purely theoretical reviews that do not produce implementable workflows, templates, and measurable acceptance criteria.

6. Specific Deliverables

- Remediation Success & Verification Suite Framework (core deliverable).
- Repair Success Metrics Catalogue + Acceptance Criteria.
- Barrier Selection & Treatment Design Guide.
- Behind-Pipe Barrier/Bond Evidence Guidance.
- Post-Treatment Verification Protocols.
- Long-Term Monitoring & Management Options Playbook.
- Case Study Package (demonstration of use).
- Validation Plan and Acceptance Criteria.
- Final Report + Producer-Facing Summary.

7. Success Criteria

- Produces actionable outputs that connect remediation design choices to measurable success metrics and verification plans.
- Improves transparency and learning via auditable evidence packs, tracing evidence → interpretation → conclusion.
- Addresses barrier performance and behind-pipe bond evidence with clear minimum evidence standards.
- Enables quantitative monitoring/verification with repeatability controls, calibration documentation, and raw-data retention.
- Is reproducible and scalable across teams, well types, and operating contexts.