

Directive 054

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Performance Reporting and Surveillance of In Situ Oil Sands Schemes

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1 Introduction

1.1 Purpose of This Directive

This directive contains performance report content, frequency, and formatting requirements for all thermal in situ oil sands schemes in the Athabasca, Cold Lake, and Peace River Oil Sands Areas. It applies only to activities governed by the *Oil Sands Conservation Act* and the *Environmental Protection and Enhancement Act*.

Performance reports provide a public-facing, annual summary of operations over a 12-month period. The primary purpose of performance reports is monitoring and evaluating scheme performance. This directive may additionally be used as a regulatory tool to assess risk, monitor incident rates, support approval conditions, and respond to the successes and challenges of in situ operations.

1.2 AER Requirements

Following AER requirements is mandatory for the responsible duty holder as specified in legislation (e.g., licensee, operator, company, applicant, approval holder, or permit holder). The term “must” indicates a requirement, while terms such as “should,” “recommends,” and “expects” indicate a recommended practice.

Information on compliance and enforcement can be found on the AER website.

1.3 Dissemination

Information required by this directive will be made available to the public unless confidential status has been granted under section 15(2) of the *Oil Sands Conservation Rules*. Information required by this directive will be kept confidential for the period stated in the scheme approval.

1.4 What's New in This Edition

This edition focuses on requirements that are relevant to the current operational environment of oils sands operators; obsolete or duplicative information requirements have been removed. The changes can be summarized as follows:

- Operators of primary and enhanced recovery schemes are no longer required to report unless specifically requested. All other oil sands schemes are still required to submit reports.
- Report submission dates are now aligned across all operators (June 30).
- Detailed tabulated and graphical data, previously in appendices, are no longer required, including plots on pad-based production and piezometer and temperature logs and plots.
- Level of detail required in a number of sections has been reduced.

2 Report Submission Requirements

Operators must submit performance reports in electronic format by emailing Directive54@aer.ca.

2.1 Scheme Type Reporting Requirements

- Thermal In Situ Schemes: Must submit an annual performance report unless otherwise specified by the AER.
- Primary Schemes: Performance reports are not required unless requested by the AER.
- Enhanced Oil Recovery (EOR) Schemes: Performance reports are not required unless requested by the AER.
- Pilots and Experimental Schemes: Must submit annual performance reports unless otherwise specified by the AER.

2.2 Frequency and Timing

Operators must begin reporting after the first year of oil production unless otherwise directed by the AER. Reporting for the previous calendar year is expected by June 30 of the year following.

The AER may alter the frequency of or exempt entirely from performance reporting requirements by request and at its own discretion.

2.3 Format

Performance reports must conform to the following format requirements:

- All performance reports must be submitted electronically as PDF files (or comparable form acceptable to the AER) that are full-text searchable.
- All figures must be of appropriate resolution for variable-scale legibility. Figures should be labelled and provide brief descriptive text to explain intended messaging.
- All units must be in metric.

3 Information Requests for Ongoing Surveillance

Operators may be asked follow-up questions relating to the performance report to support the AER's ongoing surveillance and risk management. At its discretion, the AER may require an operator to present its performance submission in person.

4 Scheme Performance Report Content

4.1 Introduction

- 1) A brief discussion summarizing the scheme's setting and background,

4.2 Subsurface

- 2) A scheme-level lifespan production plot that includes
 - a) production curves (e.g., steam injection rate, co-injected rates, oil production rate, water production rate, iSOR, cSOR, WSR, producing well count) and
 - b) annotation of major events (e.g., expansions, disruptions, and major operational changes).
- 3) Updated maps of the development area that include
 - a) drilled and approved drainage pattern areas with name annotation,
 - b) net pay isopach with resource cut-off,
 - c) major gas and water intervals in communication with pay,
 - d) geomechanical anomalies, and
 - e) seismic acquisition.
- 4) A representative well cross-section of the active development area that includes
 - a) formation tops,
 - b) pay intervals, and
 - c) associated gas and water intervals.
- 5) A table showing
 - a) original bitumen in place for
 - i) the project area,
 - ii) the development area, and
 - iii) the combined active well pattern area;
 - b) cumulative percentage bitumen recovery; and
 - c) average reservoir parameters for the development area.
- 6) A table of well patterns (or logical grouping of patterns) that includes
 - a) well pattern area,
 - b) net pay thickness,
 - c) average reservoir parameters (e.g., porosity, oil saturation, permeability),
 - d) original bitumen in place,
 - e) producible bitumen in place,

- f) total recovery % of original bitumen in place, and
 - g) ultimate recovery of original bitumen in place.
- 7) The following co-injection information:
- a) a map indicating the type of co-injection for each well,
 - b) a technical discussion of the injection strategy (e.g., timing, fluid type, volumes, concentration, per cent recovered), and
 - c) a statement of any positive or negative impacts of co-injection (e.g., influence on aquifers, recovery factor, wellbore integrity).

4.3 Surface

- 8) The following surface detail:
- a) a map of the development area to include built and planned surface infrastructure,
 - b) a summary of modifications to the central processing facility over the last year that have required an AER application approval, and
 - c) a comparison of the annual operational bitumen and steam rates to the design throughputs.

4.4 Historical and Upcoming Activity

- 9) A summary of suspension and abandonment activity within the last year that includes
- a) a map or list of the year's activity, indicating
 - i) suspension/abandonment production wells or well patterns and
 - ii) well patterns with active blow-down or ramp-down;
 - b) suspension/abandonment information for each well pattern, including
 - i) an account of the remaining reserves and
 - ii) the impact of and justification for the abandonment/suspension of production.
- 10) A summary of recent regulatory and operational changes, including
- a) a table indicating regulatory approvals over the past year that includes
 - i) the application number,
 - ii) a brief description of the application, and
 - iii) the approval date, or submission date if approval is pending;

- b) a summary of events over the past year that could materially affect scheme performance or energy or material balances (e.g., phase expansions, change in injection strategy, infrastructure changes, etc.);
 - c) a discussion of any lessons, successes, or failures the operator has identified over the last 12 months; and
 - d) an update on any pilots or major technical innovations the operator has conducted over the last 12 months.
- 11) An account of compliance history over the last 12 months that includes at least the following:
- a) reportable incidents,
 - b) voluntary self-disclosures,
 - c) contraventions, and
 - d) corresponding remediation or compliance efforts.
- 12) The scheme's future plans, including
- a) an update on any activity expected to occur within the next 12 months that could significantly alter performance or energy or material balance of the scheme,
 - b) a map of planned development over the next 5 years (e.g., delineation, seismic, well patterns, etc.), and
 - c) any applications expected to be submitted to the AER in the next year.