Executive Summary
The Government of Alberta in its new document “Responsible Actions: A Plan for Alberta Oil Sands” includes a Strategy Six entitled “Increase available information, develop measurement systems, and enhance accountability in the management of oil sands”. This is directed at “…improved communication processes, transparent accountability systems, and consistent measurement and monitoring…”. These directives are being applied at the governmental level but inevitably will place increased requirements on source information from oil sands producers. This paper looks at the characteristics of oil sands operational data and what is required to increase credibility and confidence in the information to meet current and anticipated regulations.
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Enhanced Accountability in Oil Sands Reporting

Enhanced accountability means your permission to operate your facility and your CEO’s reputation, are directly linked to your ability to generate accurate, reliable measurements of production flows. This is essentially true now, but will become even more so with some new governmental and regulatory initiatives currently underway.

If we step back to look at the driving forces behind Alberta regulations, at the top of the heap is the Alberta Government’s Provincial Energy Strategy. This strategy published in 2008 has now been further qualified by the recently released “Responsible Actions: A Plan for Alberta Oil Sands”.

The Responsible Actions document itself, available on-line, describes the government strategies for six major areas. Briefly these areas concentrate on...

- environmental responsibility
- healthy communities
- economic growth
- aboriginal consultation
- research and innovation
- and “we will increase available information, develop measurement systems, and enhance accountability in the management of the oil sands.”

Strategy Six promises “…improved communication processes, transparent accountability systems, and consistent measurement and monitoring…” of information related to oil sands operations. This mandate will be managed by the “Ministry of Information and Statistics”. Their focus is really to provide accurate statistics and information to government departments making decisions affecting the oil sands. A longer term goal is to make this information available to other stakeholders.

This strategy actually has little direct impact on day to day operations other than to signal an intent to put more emphasis on better management of information and more coordination of the various agencies requesting information. The current regulatory environment requires duplication of effort from operators to meet the needs of …

- Alberta Energy
  - Mines and Minerals Act - governs the management and disposition of rights in Crown owned mines and minerals
- Alberta Energy Resources Conservation Board ERCB
  - Oil Sands Conservation Act - establishes a regulatory regime and scheme of approvals administered by the Alberta Energy Resources Conservation Board
- Alberta Environment AENV
  - Environmental Protection and Enhancement Act - supports and promotes the protection, enhancement and wise use of the environment.
  - Oil Sands Environmental Management Division (OSEM) in Alberta Environment is dedicated to developing oil sands in an environmentally responsible manner.
  - Water Act - focuses on managing and protecting Alberta’s water and on streamlining administrative processes.
- Alberta Sustainable Resource Development ASRD
  - Public Lands Act - deals with the selling and transferring of public land, as well as the management of rangeland and activities permitted on designated land.
• Alberta Utilities Commission (AUC)
  o Electric Utilities Act - provides the underlying authority for the restructure of the electric industry in Alberta.
  o Gas Utilities Act - governs the distribution of natural gas in Alberta by investor owned utilities.
  o Hydro and Electric Energy Act - establishes a scheme of approvals administered by the AUC for the construction and operation of electric generation projects, electric transmission facilities and electric distribution systems in Alberta.
  o Pipeline Act - establishes a scheme of approvals administered by the ERCB for the construction and operation of pipelines in Alberta.

• Alberta Boilers Safety Association (ABSA)
  o ABSA is responsible for the administration and delivery of safety programs related to boilers, pressure vessels and pressure piping systems in Alberta.

• Other
  o Energy Resources Conservation Act - established and governs the conduct of the Energy Resources Conservation Board.
  o Oil and Gas Conservation Act - establishes a regulatory regime and scheme of approvals administered by the ERCB for the development of oil and gas resources.
  o The Oil Sands Sustainable Development Secretariat was created by the Government of Alberta to address rapid growth issues in the oil sands.

In addition to the above governmental agencies there are several non-governmental agencies that monitor aspects of oil sands operations:

• Regional Aquatics Monitoring Program RAMP
  o Initiated in 1997, the Regional Aquatics Monitoring Program (RAMP) is a science-based, joint environmental monitoring program that assesses the health of rivers and lakes in the oil sands region of northeastern Alberta.

• Cumulative Environmental Management Association CEMA
  o The Cumulative Environmental Management Association (CEMA) is a registered not-for-profit, non-governmental organization established in Fort McMurray, Alberta June 2000.
  o CEMA’s mandate is to study the cumulative environmental effects of industrial development in the region and produce guidelines and management frameworks.

• The Wood Buffalo Environmental Association WBEA
  o The Wood Buffalo Environmental Association (WBEA) monitors the air in the Regional Municipality of Wood Buffalo, 24 hours a day, 365 days a year. We do this through a variety of air, land and human monitoring programs. The information collected is openly shared with stakeholders and the public.

• The Athabasca Tribal Council ATC
  o ATC represents the interests of the five First Nations of North Eastern Alberta

• Oil Sands Development Group OSDG
  o The Oil Sands Developers Group (OSDG), formerly known as the Athabasca Regional Issues Working Group (RIWG), plays an important role in addressing the need for accurate, credible information about Athabasca oil sands activity.

In general the regulations do not specify anything more than good business practices; and in general the reporting requirements of senior management will far outweigh the reporting requirements of the government. However, the result of all of this oversight is that much of the details of operations are public, making the Alberta Oil Sands industry one of the most closely regulated and monitored manufacturing operations in the world. The industry is also well and truly in the world spotlight with environmental criticism coming from all sides.
All regulations are of course subject to change. Several initiatives are currently underway that could have a significant impact on the Alberta regulatory environment. The “Responsible Actions Plan” is one of them, but there are more immediate catalysts for change. One comes from the USA. It is the Waxman-Markey bill entitled “The American Clean Energy and Security Act of 2009” currently in discussion in the US House of Representatives. It will have an impact on emissions standards and low carbon fuel standards and had wording directly aimed at cross border trade... “If the President finds that the rebate provisions do not sufficiently correct competitive imbalances, the President is directed to establish a “border adjustment” program. Under that program, foreign manufacturers and importers would be required to pay for and hold special allowances to “cover” the carbon contained in U.S.-bound products...”.

Closer to home the Alberta Energy Resources Conservation Board (ERCB) is changing how it manages its compliance audit program by bringing in the “Enhanced Production Audit Program (EPAP)”. This program changes the ERCB’s compliance enforcement from being reactive to be much more proactive. The focus will change from auditing data to find deviations, to auditing business processes to ensure there are sufficient controls in place for an organization to have confidence in its own compliance.

One of the major changes is that the EPAP process will be based on an annual declaration of compliance from each operator. This declaration is required to be signed by two senior officers of the corporation. The ERCB will monitor monthly submissions against the declaration and provide feedback to the operator if any anomalies are detected. The philosophy will be “Trust but Verify”. If an organization has good business processes in place to assure compliance then there will be more trust.

What this means to the average operator is that there will likely need to be a review of business processes feeding the regulatory process so that someone can go in front of the CEO and CFO and say “Please sign this declaration saying we are in compliance with government regulations”.

So how do you increase confidence in your ability to comply with government regulations? Essentially, the focus should be on the fundamentals:

- Good Business Practices
- Sound Technology
- Effective Controls
- Good Stewardship
- Continuous Improvement
- Anticipate Change
The beginning of any analysis needs to be the measurement systems. For most oil sands plants this will be their instrument systems and laboratory sampling and analysis systems. A self audit needs to be done concentrating on the instrumentation as well as the work processes surrounding them. For example, questions need to be answered along the lines of:

- What is the calibration work process?
- When are calibrations performed?
- Are accurate metering schematics available?
- Are instrumentation staff adequately trained to perform calibration actions?
- Where are the records stored?
- What are the general maintenance work processes associated with instrumentation?
- How are measurement inconsistencies followed up?

Similarly with laboratory analyses:

- What quality control procedures are in place for laboratory data?
- How are stale analyses detected?
- What controls are in place on the sampling process?
- What checks are made on the analysis results?
- Where are the sample points?
- Are the tests and associated accuracies appropriate for the material being sampled?

One might think that once the instrument data and laboratory data have been validated then regulatory reporting requirements have been covered. Actually this is really only the tip of the iceberg.

Instrumentation values feed through to distributed control systems (DCS) that feed data historians that feed reporting systems.

- Are the units of measure consistent between each system?
- Are the change management processes in place to ensure accurate configurations?
- Is there a history of configuration changes available for audit?

Laboratory data is actually only a portion of analysis results that are collected at a facility.

- Where are the results of plant or mini lab analyses validated and stored?
- What are the quality control steps performed on non-routine samples?
- Where are external third party laboratory results stored / secured?
- What are the work processes around environmental sampling and analysis?
- Where are environmental investigations stored / secured?

Certain data may use special instrumentation that may have special data feeds.

- Where do the results of down-hole instrumentation get stored?
- What are the work processes around reservoir data?
Many volumes for regulatory reporting require temperature correction to bring values in line with standard conditions. Work processes and validation of these calculations is quite important.

- Where are flow volumes corrected?
- How do observed densities and calibration densities get in to the correction calculations?
- Where are tank strapping tables maintained?
- Are tank material changes accounted for in inventory calculations?
- What work processes are in place to ensure consistency of temperature corrections?

There are a significant number of values that may be collected manually or may be imported into the data systems from Microsoft® Excel® spreadsheets.

- What are the data validation and audit processes associated with manual inputs?

There may also be ticketing systems for shipments or receipts that need to be collected.

- What are the work processes around acceptance of the ticketing information?

Any of the above raw values collected from the different data collection systems may need to be adjusted for a variety of reasons. E.g. bad data, missing data, differing plant operating mode, loss allocation.

- Which values are allowed to be adjusted?
- Who is allowed to adjust which values?
- What audit trails are maintained when data values are adjusted?
- How are data secured after submission?
- Can all calculations be audited to provide traceability?

A major source of information for regulatory reporting comes from operational events, e.g. flaring events, spills, incidents, leaks, excursions. These events may be generated by plant alarms, operator logbook entries or by other incident reporting systems. Data and documentation will be associated to each of these events along with specific regulatory reporting requirements. Work processes need to be in place to ensure appropriate reporting, follow-up, escalation and close-out. A plant logbook needs to be appropriately managed meeting the needs of ABSA in terms of security and sign off. It also needs to be available in case of plant audit. Other information that are required includes: Plant routine and non-routine inspection information, personnel competence and training records, asset configuration, instrumentation availabilities, and more…

Regulatory reporting covers a wide variety of information and requires management processes in place because it has to be maintained with a secure audit trail and access controls. It also may go through several versions in its life. There will be the raw values, the daily aggregated values, the adjusted daily values, the reconciled values, the locked best case daily values, the monthly values, the locked monthly values and the values as submitted to the government. Values will undergo consolidation, validation and historization.
Enhanced Accountability in Oil Sands Reporting

Figure 1 - Version Controls

Consolidation processes will convert time scales, convert units of measure, aggregate over business units, aggregate over materials and aggregate over time. Validation processes may involve consistency analysis, balancing, reconciliation and exception reporting. Following validation data will be of quality ready for submission to the government if not in the specific format. All reports and submissions to the government for daily, monthly or annual submissions need to be stored for future reference or future revision. Any data delivered to the government needs to be protected with appropriate access controls and audit.

Documentation associated with any of the values, events or versions also needs to be maintained in a manner that it can be retrieved on-demand. The compliance process itself also needs to be managed so that deadlines are not missed and there is evidence and backup for all submissions. Remember also that there are significant benefits to self-disclosure if non-compliance is likely. This means that each operator needs to be self-monitoring against regulatory limits. So before you stand up in front of your CEO to ask for the signature on a declaration, make sure you:

- have implemented best practices
- have documented work processes
- are monitoring your own regulatory performance
- are ensuring auditability and traceability of data
- have secure records storage
- are managing the compliance process itself
- and are anticipating change
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WP 943
July 2011
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