SGS SERVICES FOR THE OIL SANDS

AN OVERVIEW OF SGS' CAPABILITIES TO SERVE THE OIL SANDS

From its base of operations in Fort McMurray, Alberta, SGS offers integrated solutions to oil sands mining and in-situ operations. SGS has the capability to provide a wide range of integrated services. Our services are diverse, from a full service laboratory to tailings management expertise to an advanced pilot testing facility for testing mining processes for ore and process optimization. SGS solutions include:

EXPLORATION AND RESOURCE DEFINITION

- Complete management of exploration programs and QA programs
- Geological mapping
- Layout of reference grids and topographic surveys
- Supervision of drilling and core logging
- Trenching and bulk sampling
- Core cutting, logging and sample selection
- Chemical and mineralogical analysis
- Bench-scale process testing

GEOLOGICAL AND PROCESS MODELING

- Block estimation of geological, assay, and process parameters.
- Construction of process models that represent plant and process conditions.
- Process simulations to obtain details of expected extraction and tailings performance.
- Reconciliation of resource block model with mined zones.

QUALITY SYSTEMS

Globally, SGS is at the forefront of providing quality work. Our facilities operate under internationally recognized quality standards, which consist of a documented quality system. Upon request, we can detail our full scope of our ISO/IEC 17025 accreditation for our oil sands laboratory.

PROCESS DEVELOPMENT AND PILOTING

- Extraction and froth treatment flowsheet development.
- Bitumen extraction technology assessment and piloting.
- Pilot testing of alternative processing methods or technologies.
- Detailed process engineering including heat and material balancing.

- Commissioning support.

PLANT OPTIMIZATION AND ANDVANCED PROCESS CONTROL

- Pilot testing to identify optimum operating conditions and to benchmark the process performance of new ore-types.
- Pilot-scale comparison of flotation and primary separation equipment design.
- Instrumentation selection and process control engineering.
- Advanced process control systems.
- Image analysis of froths linked to automated process control system.
- Ore blending recommendations.

MINE PLANNING

- Identification of controls (geotechnical stability, ore/waste contacts, geological features, etc.)
- Ultimate pit design.
- Long range (maximize NPV) and short range planning (logistically and cash-flow driven).
- Communication interface between mine planning and extraction to link block processing characteristics and recommended operating conditions.
- Reconciliation of as-built mine and update ultimate pit design.

GEOTECHNICAL SERVICES

- Media stability, compaction and permeability.
- Construction product testing.
- Sediment and slurry flow and hydrology.
- Site reclamation and monitoring.

ENVIRONMENTAL SERVICES AND TAILINGS MANAGEMENT

- Air, water and soil hazard analysis.
- Environmental baseline studies, monitoring, mineralogy and auditing.
- Acid rock drainage prediction and mitigation.
- Water and effluent testing, treatment and management.
- 3-D pond surveys.
- Mine closure and tailings reclamation planning.
- Settling strategies to ensure consolidated tailings and rapid reclamation.
- Pilot testing of advanced tailings settling technologies.
- Reconciliation between claimed material and survey results.
- Wildlife deterrents.
- Industrial hygiene, silica, dust, air quality and noise analysis.
- Greenhouse gas emission verification.

MINING EQUIPMENT AND FLEET OPTIMIZATION

- Inspection, maintenance and certification of AC and fire suppression systems.

- Comprehensive fire hazard management programs.
- Mining equipment maintenance outsourcing.

INDUSTRIAL SUPPORT

- Non-destructive testing of metals and corrosion products.
- Outsourcing and on-site services.
- Testing natural, construction and industrial materials.
- Supply chain and asset integrity management.

AUDITING AND CERTIFICATION

- ISO 9001:2008 Quality Management Systems.
- ISO 14001:2004 Environmental Management Systems.
- OHSAS 18001 Occupational Health and Safety Management Systems.
- BS EN 16001:2009 Energy Management.