



Worldwide **Petroleum** Consultants

Sproule has evaluated oil & gas reserves in virtually every oil-and-gas-prone country in the world.

Sproule is a diversified, world-wide petroleum consulting firm. We have been in business for over 55 years and have experience in all aspects of the energy sector throughout North America and the world. Our main objective has always been to provide the best possible evaluation, no matter what type, to our clients. To that end, we maintain a strong commitment to our clients, who are indeed our best resource.



What makes Sproule a leader in the industry?

1. Integrity and experience.
2. Quality of staff.
3. Completely integrated consulting solution in-house.
4. Reputation with oil & gas companies.
5. Reputation with other companies such as pipeline, industrial, commercial and governments.
6. Reputation with other stakeholders such as regulators, bankers, underwriters and insurance.
7. Experienced staff with expertise in North American and international basins.
8. Use of cutting edge software and communication technology.

Complete List of Services

- Reserve Evaluations
- Resource Assessments
- Securities Commission Filings
- Project Management
- Fair Market Valuations
- Mergers and Acquisitions
- Reservoir Engineering
- Reservoir Simulation
- Geological Evaluations
- Geophysical Interpretations
- Petrophysical Evaluations
- Heavy Oil
- Mining/In-Situ Oilsands
- Coalbed Methane/Shale Gas
- CO₂ Sequestration
- Enhanced Oil Recovery
- Geo-Model Development
- Field Development Plans
- Unproven Land Valuations
- Expert Witness Testimony
- Educational Courses
- Corporate Advice



Selected Clients

Majors/International Oil Companies

BP Canada Energy Company
BP Corp. North America
BP Expl. (Alaska) Inc.
Canadian Natural Resources Limited
Chevron Canada Resources
ConocoPhillips Canada
Devon Energy Corporation
Husky Energy Inc.
Imperial Oil Limited
LUKOIL
Maersk Oilie og Gas AS
Mitsubishi Corporation
Murphy Oil Company, Ltd.
Nexen Inc.
Petro-Canada Oil & Gas Ltd./ Suncor Energy Inc.
PetroKazakhstan Incorporated
Repsol YPF
Shell Canada Energy
Shell Int. Expl. & Prod. B.V.
Talisman Energy Inc.
Total E&P Canada

National Oil Companies

China National Oil & Gas Exploration & Development
CNPC (Hong Kong) Ltd.
CNPC Int. (Canada) Ltd.
Japan Petroleum Expl. Co. Ltd.
Japan Canada Oilsands Ltd.
Korea National Oil Company
PetroChina International Ltd.
Petroleum Development Oman
Sinochem Petroleum
Sinipecc
Tonga Petroleum
WNP Slovakia
WASCO

Trusts

ARC Energy Trust
Avenir Diversified Income Trust
Baytex Energy Trust
Daylight Resources Trust
Enerplus Resources Fund
Enterra Energy Trust
Harvest Energy Trust
Paramount Energy Trust
Penn West Energy Trust
Provident Energy Trust
Trilogy Energy Trust
True Energy Trust
Vermilion Energy Trust

Independents

Apache Corporation
Advantage Oil and Gas Ltd.
Aspect Holdings, LLC
Arrow Energy Ltd.
Athabasca Oil Sands Corp.
Austral Pacific Energy Ltd.
Barrick Gold Corp.
Benchmark Energy Corp.
Big Sky Energy Corp.
Bonterra Oil & Gas Ltd.
Breaker Energy Ltd.
Burj Petroleum Corp.
Cadent Energy Partners
Canoro Resources Ltd.
Centurion Energy Int. Inc. (DanaGas)
Celtic Exploration Ltd.
Century Int. Oil & Gas Corp.
Citic Haiye Resources Limited
Condor Petroleum Inc.
Crescent Point Energy Corp.
Defiant Resources Corp.
Direct Energy Resources
EOG Resources Canada Inc.
Fairborne Energy Ltd.
GASTEM Inc.
Glencoe Resources Ltd.
Grizzly Oil Sands Inc.
Highpine Oil & Gas Limited
Ithaca Energy
Koch Exploration Canada Corp.
Lundin Petroleum
Niko Resources Ltd.
Noble Energy Inc.
Oilexco Incorporated
Orleans Energy Ltd.
Paramount Resources Ltd.
Petrobank Energy & Resources Ltd.
Progress Energy Resources Corp.
PT Energi Mega Persada TBK
Regal Energy Ltd.
Response Energy Corp.
Royal Atlantic Energy Corp.
Seaview Energy Ltd.
Shaman Energy Corp.
Stealth Ventures Ltd.
Storm Ventures Int. Inc.
Stratic Energy Corporation
Sun Wing Energy
Synergia Polygen Ltd.
TAQA North Ltd.
Tanganyika Oil Co. Ltd.
TransGlobe Energy Corp.
Trans-Orient Production
Trident Resources Corp.
TriStar Oil and Gas Ltd.
UTS Energy Corporation

Western Zagros
Westfire Energy Ltd.
Zapata Energy Corp.

Mining

Cambior Inc.
Canmex Minerals Corporation
Comaplex Minerals Corp.
Denison Mines Corp.
Forte Energy NL
Luscar Ltd.
RJZ Services Limited
Sherritt International Corporation
Teck Resources Limited

Legal Firms

Ackroyd, Piasta, Roth & Day LLP
Bennett Jones LLP
Borden Ladner Gervais LLP
Burnet, Duckworth & Palmer LLP
Covington & Burlington LLP
Fraser Milner Casgrain LLP
Freehills Hollinsdale & Page
Gowling Lafleur Henderson LLP
Kirkland & Ellis LLP
Lerners LLP
McCarthy Tetrault
Osler, Hoskins & Harcourt LLP
Parlee McLaws LLP

Financial Services/Investment Advisors

Arab Petroleum Investment Corp.
ARC Financial Corporation
Asian Development Bank
Avenir Diversified Income Trust
BMO Capital Markets
BNP Paribas
Cadent Energy Partners LLC
Camcor Capital Inc.
Canadian Western Bank
Canaccord Capital
CIBC World Markets
CIBC Trust Corp.
City National Bank
CB Securities Inc.
Computershare
Credit Suisse Securities (Europe) Ltd.
Direct Energy Marketing Ltd.
European Bank for Reconstruction and Development
Goldman Sachs
GMP Securities L.P.
Hua Lin Investment Co. Ltd.
Limerock Partners
Lloyds TSB
Macquarie Bank

Morgan Stanley Canada, Ltd.
Myers Norris Penny LLP
Ontario Municipal Employee Retirement Fund (OMERS)
PricewaterhouseCoopers
RBC Capital Markets
RSM Richter Inc.
Rundle Energy Partners
Saskatoon Leaseholds Ltd.
Scotia Capital
Scotia Waterous
TriNorth Capital Inc.
Yorkton Securities
Ziff Energy Group

Industrial/Pipeline/Utilities

Agrium Inc.
Emera Inc.
Enbridge Inc.
Hydro-Quebec
Newfoundland and Labrador Hydro
Nova Scotia Power Inc.
Regent Control Systems
TransAlta Corporation
TransCanada PipeLines Limited

First Nations / Metis

Acho Dene Ko Corporation
Ermineskin Cree Nation
Fort McMurray #468 First Nation
Fort Nelson First Nation
Kainiwa Tribal Government
Metis Nation British Columbia
Peavine Metis Settlement
Samson Oil and Gas Inc.
Treaty 8 Tribal Association

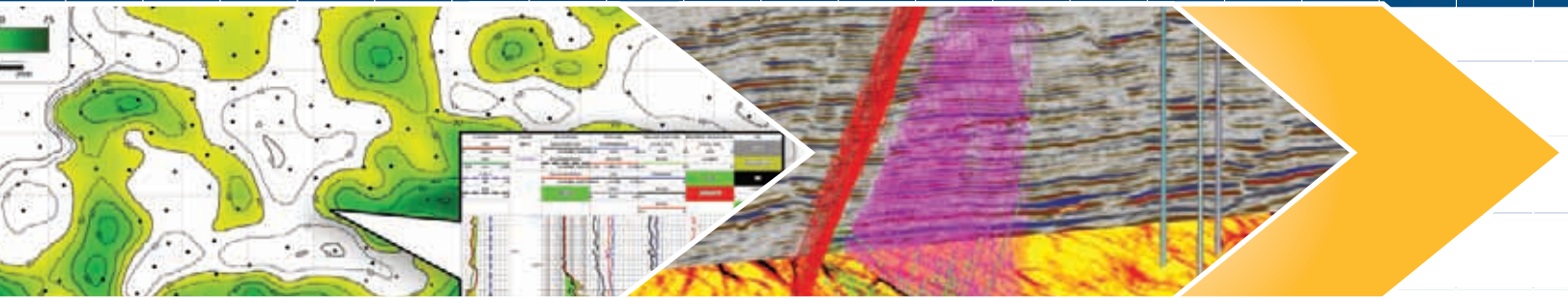
Government/Regulatory Agencies

Alberta Utilities Commission
Alberta Research Council
Alberta Department of Energy
Alberta Securities Commission
British Columbia Depart. of Energy
Canada, Dept. of National Defence
Canada, Foreign Affairs & International Trade
Canadian Int. Development Agency
Canadian Venture Exchange
Energy Resources Conservation Board of Alberta
International Energy Agency
Nalcorp Energy Oil & Gas
Newfoundland & Labrador Dept. of Natural Resources
Nova Scotia Department of Energy
Office of the Auditor General of Alberta
Revenue Canada
United Nations
World Bank

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Geology

Sproule's geological group provides services for clients who are involved in all aspects of oil and gas exploration and exploitation around the world.

Our expertise extends from petrophysical evaluations through reservoir-specific and regional studies, field development planning, prospect generation and evaluation, to conventional and unconventional resource assessments for areas ranging from small land parcels to entire concessions.

We can offer opinions and advice with regard to land sale bonuses, as well as the merits of large-scale exploration programs in new areas, and we can plan and direct complete exploration and development programs, including geophysical surveys and drilling operations. Our expertise in geophysics, reservoir engineering and economic evaluations allows us to offer full service support for such projects.

Our geologists are proficient in the use of geological software, including **Geographix, PRIZM and Petrel**.

Geophysics

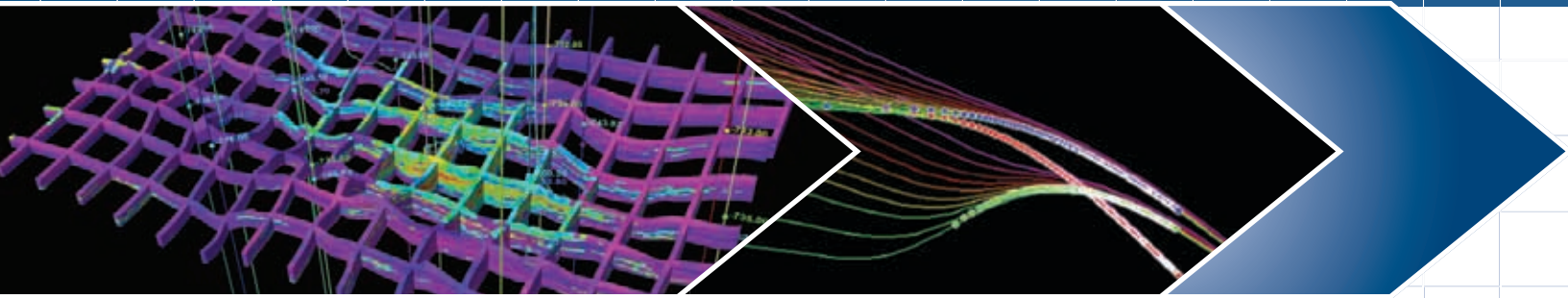
Our advanced geophysical skills and tools ensure that you receive the most complete and accurate assessment of your resources.

Our Geophysical Department works in close collaboration with Sproule's geologists and reservoir engineers to enhance the resource/reserve assessments and evaluation work or to provide independent interpretive services.

Special studies and evaluations can be undertaken, from large-scale basin analysis to detailed reservoir mapping. These can be enhanced through advanced mistie and grid balancing, well log calibration to seismic data, integrated 2D/multiple-3D interpretation, advanced 3D visualization, complex structural mapping, seismic trace, horizon and interval-based attribute analysis.

Seismic technology can help reduce E&P risks through:

- Identification of exploration targets
- Selection of drilling locations
- Better reservoir imaging
- Improved reservoir characterization
- Reservoir monitoring
- Using advanced software tools such as **Petrel and SeisWare**



Geo-Modeling

Sproule's geo-modeling group has the tools and skills to build or audit detailed static reservoir models.

When an accurate, high-resolution geological model of reservoir structure and stratigraphy is needed, our geo-modeling team works with our geological, petrophysical and geophysical experts to integrate all aspects of the reservoir into one static model or multiple geo-statistical realizations of a model.

From the simple to the complex, from conventional to unconventional, from thermal in-situ recovery to oil sands mining, our static models can then be used as input into our reservoir simulation or mine models to help our clients understand and develop their reservoirs more efficiently.

Sproule builds geo-models for:

- Integration of seismic and geological data
- Estimates of in-place hydrocarbons
- Oil sands mine planning or auditing
- Development planning and optimization
- Local and global uncertainty assessment
- Using advanced software tools such as **Petrel** and **Geographix**

Reservoir Engineering

Sproule's reservoir engineers offer *predictive* tools that can help achieve realistic evaluations of clients' oil and gas reserves and resources.

Our highly qualified petroleum engineers, technologists and technicians provide expertise in oil and gas field development, and have extensive experience with the challenges and problems inherent in operations in remote locations.

Sproule evaluates hydrocarbon reserves and resources for:

- North American and international oil and gas companies
- Financial organizations
- Government organizations

In addition to reserves evaluation and resource assessment, our Engineering services include field development plans, production forecasting, enhanced oil recovery studies, natural gas storage evaluation, and energy price forecasting. We use state-of-the-art software, such as **OilWat/GasWat**, **Fekete RTA/Welltest/Virtuwell/Evolution**, **PEEP DECLINE**, **PVTLIB**, **FORGAS** and **WELLFLO** to perform material balance calculations, conventional and advanced decline analysis, pressure transient analysis, fluid property correlations, gas deliverability forecasting and wellbore modelling.



Reservoir Simulation

Sproule's simulation engineers focus on providing reliable predictions to meet the clients' aims while maintaining technical accuracy.

With the increased accessibility to reservoir simulators, more oil and gas property evaluations are being substantiated by reservoir simulation studies.

We have reservoir engineers on staff that have practical experience conducting simulation studies for different types of reservoirs such as **light oil, heavy oil, gas, gas storage, gas-condensate, CBM, CO₂ sequestration**, etc., operated under various types of recovery schemes including **gas-cycling, waterflooding, miscible flooding, thermal** (cyclic steam stimulation, steam flooding, chemical flooding, and steam-assisted gravity drainage), etc.

Our engineers are familiar with simulators and pre and post processors recognized throughout the industry, such as **Imex, Gem, Stars, Eclipse**, and **Winprop**. Since you are not limited to using one particular type of simulator at Sproule, great flexibility exists for converting outdated simulation models, or models obtained due to acquisition, from one simulator to another.

Unconventional Oil and Gas

Sproule is a recognized expert in unconventional oil & gas development studies, & recovery process selection, resources & reserves evaluation on conventional heavy oil, extra heavy oil, oilsands, oil shales, coalbed methane & shale gas.

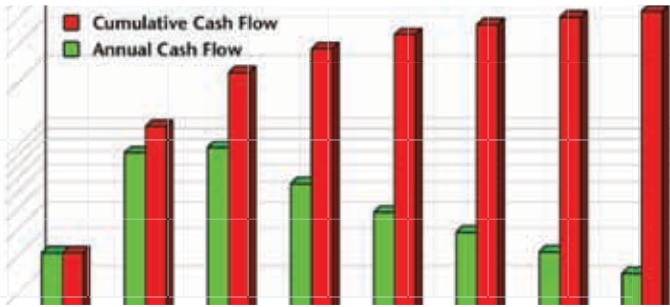
Sproule has carried out conventional heavy oil, extra heavy oil and oil sands evaluations and development studies in Canada, U.S.A., South America, the Middle East, Africa and Southeast Asia.

We have completed projects based on:

- Mining
- Cold production, waterflood and polymer flood of conventional heavy oil
- Cold heavy oil production with sands (CHOPS)
- Cyclic steam stimulation (CSS)
- Steam-assisted gravity drainage (SAGD)
- Steam flood
- In-situ combustion

Sproule offers coalbed methane evaluations and have completed numerous projects worldwide, including resource and reserve estimations for corporate purposes and third party opinions of commerciality. Sproule also has experience with shale gas evaluations in **Canada** and the **U.S.A.**

These unconventional areas are an exciting new aspect of the oil and gas industry and are a large part of the future of the industry in North America and around the world.



Economics

Sproule fulfills the needs of shareholders, corporate management, financial lenders, asset sellers and buyers in their quest for independent economic evaluation of petroleum assets.

With the diversity of regulatory agencies, governments and client requirements throughout the world, Sproule has adapted to using a variety of economic evaluation software, such as **Value Navigator**, **MOSAIC**, **Aries** and **Schlumberger (Merak)** to address these calculation and reporting needs. At Sproule you are not limited to using one particular software program. Flexibility exists to use any evaluation software that our clients request.

Sproule is an expert in the requirements for National Instrument 51-101, SEC and other international disclosure regulations.

We have extensive experience in the modeling of PSAs, TSAs and hybrid contracts throughout the world, as well as addressing the emerging need for after income tax analysis both at a ringed-fence and corporate level.

Sproule has run numerous sensitivities addressing price, cost, inflation and proposed regulatory factors influencing reserves and discounted values. In Sproule's standard reporting we focus on highlighting those factors which significantly impact the final numbers reported in an evaluation.

Integrated Projects

Sproule understands the need for an integrated approach when planning sound strategies for challenging projects. That's why we have world class specialized teams ready to help.

Sproule recognizes the importance of partnership. Our integrated projects approach to advanced studies is about partnering with global industry leaders with world class capabilities. By building interdisciplinary teams, Sproule can help you design a field development strategy that optimizes your opportunity with considerations for:

- Drilling and completion design and optimization.
- Upstream facilities design, with focus on primary and thermal development, mining or EOR considerations.
- Mid and downstream facilities optimization.
- Markets and downstream strategy.
- Environmental compliance and solutions.
- Risk management and mitigation.

Sproule's project management structure is straightforward and transparent. We provide a one-stop solution for your field development needs without losing focus on reservoir uncertainties. From scoping level to full feasibility studies, our attention to detail and quality will help you optimize your field development decisions.