PTAC
PETROLEUM TECHNOLOGY ALLIANCE CANADA

An Association that Facilitates Collaborative Research and Technology Development in the Conventional Oil and Gas Industry

1998 ANNUAL REPORT

114 Members
PTAC Member Organizations
As of March 9, 1999

Producers
Alberta Energy Company Ltd.
Amoco Canada Petroleum Co. Ltd.
Anderson Exploration Ltd.
Barrington Petroleum Ltd.
Chevron Canada Resources
Conoco Energy Inc.
Gulf Canada Resources Ltd.
Husky Oil Operations Ltd.
Imperial Oil Resources Ltd.
Mobil Oil Canada Ltd.
Murphy Oil Company Ltd.
Northstar Energy Corporation
Northstar Texas Energy Inc.
Oleo Energy Inc.
PenCan Petroleum
Petro-Canada Resources
Rio Petroleum Ltd.
Royal Canadian Oil Field Contractors
Ranger Oil Limited
Rigol Oil & Gas Ltd.
Shell Oil Canada Ltd.
Unocal Canada Resources Ltd.
Unocal Westcoast Ltd.

Service and Supply
Adams Pearson Associates Inc.
Air Liquide Canada Inc.
Alpine Environmental Ltd.
Baker Hughes - Centrilift
Benhope Energy Inc.
Briso-Add Fluids Ltd.
Business Development Bank of Canada
Cancrete Environmental Solutions Inc.
Canwell Enviro-Industries Ltd.
Centaur, Environmental Services Ltd.
Computalog Ltd.
Computer Modelling Group Ltd.
D.E. Towson & Associates Inc.
Diversity Corporation
EBA Engineering Consultants Ltd.
Epic Consulting Services Ltd.
ESG International
Foothills Diamond Coring Ltd.
Fracmaster Limited
Gris Gun Manufacturing Inc.
HSP Canada
Hycal Energy Research Laboratories Ltd.
Hycal Environmental Sciences Ltd.
Insight Information
KBL Land Use Consulting Ltd.
KPMG High Technology Practice Group
Lloyd Energy Inc.
M & F Corporation
Metcrones Inc.
Mobile Equipment Inc.
McNally Land Services Ltd.
McNally Process Equipment Ltd.
Meridian Technology and Research
Mercury Electric Corporation
New Princeton Engineering Ltd.
Nevada Corporation
Ohio Chemical Services Ltd.
Oil Field Research Laboratories Ltd.
Ogilvie & Company Ltd.
Orbis Inc.
Owens & Minor Inc.
Paro Services Ltd.
Petroleum Technologies Inc.
ProAlta Machine & Manufacturing Ltd.
ProAlta Machine & Manufacturing Ltd.
ProAlta Machine & Manufacturing Ltd.
ProAlta Machine & Manufacturing Ltd.
Q-Consulting Inc.
Radarscan Inc.
REDA Services (Div. of Camco)
Ryan Energy Technologies Inc.
Schlumberger of Canada
Sidekick Tools Inc.
Saskatchewan Research Council
TIPM Laboratory
Travis Chemicals (Stanchem Inc.)
United Oil & Gas Consulting Ltd.
Variperm Canada Ltd.
Vik International Inc.

Research Providers
Alberta Energy Research Institute
Centre For Engineering Technologies Inc.
Canadian Business Networks Coalition
Petroleum Recovery Institute
Saskatchewan Research Council

Learning Institutions
University of Alberta
University of Calgary

Government
Alberta Department of Energy

Founding Supporter:
Canadian Business Networks Coalition (CBNC)
PTAC continued to grow and expand services in 1998. We added 32 new members, hosted 16 Technology Information Sessions, sponsored 8 workshops, issued 21 Requests for Proposals (RFPs), and facilitated the launch of a record 21 R&D projects valued at $4.3 million.

The Environmental and Conventional Heavy Oil Technical Subcommittees were the most active groups. Through a variety of workshops they initiated 9 and 5 projects respectively. PTAC successfully collaborated with the Canadian Association of Petroleum Producers (CAPP) on environmental R&D for the first time in 1998.

PTAC’s reputation as a matchmaker for oil and gas industry research and technology development grew significantly during 1998. New R&D initiatives are now referred to PTAC on a regular basis for consideration by industry at our Technology Information Sessions and workshops.

In December 1998 we moved to a new and expanded office location at PanCanadian Petroleum Ltd. As a result, we have access to a greater selection of in-house meeting venues, which has improved our services to members and the industry.

Outlook for 1999

PTAC will continue to provide a structure that brings stakeholders together to identify industry problems and define research projects to deal with them.

The current environment of low product prices is placing significant pressure on cash flow within the oil and gas industry. Continued improvements will be required to manage costs, increase production efficiencies and comply with growing regulatory requirements. In short, the conventional oil and gas industry will be challenged to do more with less. Innovation, collaboration and effective R&D will be keys to success. Where appropriate, PTAC will assist in identifying R&D work that can be performed internally by project participants.

Environment, Heavy Oil, Well Completions and Reservoir Recovery R&D have been identified as priorities and will be the focus of several workshops in 1999. We will continue to work towards the launch of 5 Environmental, 6 Heavy Oil and 4 Inactive Well/Abandonment projects that were initiated in 1998. We have set a goal of launching at least 15 projects with a combined value of $3.0 million in 1999, while maintaining our budget at 1998 levels.

On behalf of the Board, we would like to thank PTAC staff and all volunteers on committees, workshops and projects for their dedication and efforts. Our vision of applying leading-edge technology developed through collaboration is becoming a reality.

Eric Lloyd, President of PTAC
Larry Bell, Chairman of PTAC
PTAC now has 10 Technical Subcommittees (TS) and over 1700 contacts in the following areas:

- Natural Gas Production, Processing and Transportation
- Drilling
- Oil Production and Transportation
- Well Completion, Stimulation and Workover
- Reservoir Recovery/Geoscience
- Conventional Heavy Oil
- Environmental
- Inactive Well Management/Abandonment
- Telecommunications and Data Management

Basic Research

We need interested senior technical people to assist in identifying important issues that require R&D. The approach utilized by the Conventional Heavy Oil and Environmental TS has proven very effective in moving forward needed R&D. If you are interested in participating, or seeing particular issues addressed, we encourage you to contact PTAC for additional information.

During 1998, PTAC provided feedback to government on several important issues including:

- Panel on Energy Research and Development (FERD) federal R&D funding priorities for the oil and gas industry
- Alberta Science and Research Authority (ASRA) R&D incentive proposals
- Alberta funding for high priority Environmental R&D projects for the oil and gas industry
- ADOE model study for funding energy related R&D
- CO2 Enhanced Oil Recovery (EOR)
- Coordination of University Research for Synergy and Effectiveness (COURSE)

PTAC will continue to provide input to government on matters that are related to oil and gas R&D, in cooperation with members and associations.

PTAC sponsored workshops to provide an opportunity for people to clearly define R&D issues and identify the direction that is believed will yield possible solutions. Potential suppliers of R&D have the opportunity to hear first hand about such issues and to contribute their expertise and ideas for solutions. PTAC funds the workshops, ensures the necessary facilitation is provided and provides the necessary administrative support and coordination to launch projects. We widely distribute Request for Proposals (RFPs) with Expressions of Interest for each priority issue from workshops. Once we have identified those who will consider supporting the R&D, proposals are then solicited from potential suppliers. PTAC brings together the interested organizations in a structured way that leads to new R&D, while protecting proprietary interests.

PTAC sponsored workshops in Environmental, Conventional Heavy Oil, Completions and Workovers and Inactive Well Management/Abandonment in 1998. As a result, 21 RFPs were formally issued in 1998 and 7 more followed in early 1999.

PTAC needs the involvement of industry personnel in 1999 to plan workshops in areas such as Environmental, Reservoir, Completion, Stimulation and Workovers, and in other technical subcommittee areas. Mini workshops that focus on one particular issue are an effective way to initiate collaborative R&D projects. We encourage you to contact PTAC if you have ideas for such workshops.

Association and Regulator Working Relationships

PTAC believes that working with industry associations and regulators to jointly sponsor events and distribute information is an important component of the overall approach to collaborative R&D.

The successful launch of the 1998 Environmental R&D projects resulted from the cooperation and support of the Canadian Association of Petroleum Producers (CAPP), Environment Canada, Alberta Energy and Utilities Board (AEUB), Alberta Environmental Protection (AEP), Alberta Department of Energy (ADOE) and Petroleum Services Association of Canada (PSAC).

PTAC wishes to build new relationships where there is mutual interest and continue to strengthen existing relationships wherever possible.
PTAC Board Members

As of December 31, 1998

Larry Bell, Chairman, PTAC, Crestar Energy Inc.
Eric Lloyd, President, PTAC, Petroleum Technology Alliance Canada
Alan Archibald, Chairman Elect of PTAC, Anderson Exploration Ltd.
JoAnne Butler, Amoco Canada Petroleum Ltd.
Neil McCrank, Alberta Energy and Utilities Board
Roger Bailey, Alberta Department of Energy
Denis Gaudet, Fracmaster Ltd.
Bob Hill, Canadian Energy Pipeline Association (CEPA)

Patrick Jamieson, C-FER Technologies Inc.
Rich Kerr, Wascana Energy Inc.
Pat McEllan, Advanced Geotechnology Inc.
Frank McIntyre, Husky Oil Operations Ltd.
Bruce Peachey, New Paradigm Engineering Ltd.
Ken Putt, K.W. Putt Consulting Services
Bruce Stewart, Natural Resources Canada (CANMET)
Bill Svrek, University of Calgary
Murray Todd, Todd Resources

Auditor’s Report to the Directors

We have audited the financial statements of PTAC Petroleum Technology Alliance Canada for the year ended December 31, 1998 and have reported thereon without reservation under date of February 26, 1999. The accompanying summarized balance sheet and summarized statements of revenues, expenses and surplus have been prepared from the audited financial statements.

In our opinion, the accompanying summarized balance sheet and statement of revenues, expenses and surplus fairly summarize the information as to the financial position of PTAC Petroleum Technology Alliance Canada and the results of its operations contained in the audited financial statements.

KPMG, Chartered Accountants
Calgary, Canada,
February 26, 1999

Summarized Balance Sheet

As at December 31, 1998, with comparative figures for 1997

<table>
<thead>
<tr>
<th>Assets</th>
<th>1998</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$ 29,938</td>
<td>$ 53,114</td>
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<tr>
<td>Marketable securities</td>
<td>62,237</td>
<td>53,488</td>
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<td>Accounts receivable</td>
<td>75,040</td>
<td>47,963</td>
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<tr>
<td>Capital assets</td>
<td>167,215</td>
<td>154,565</td>
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<td>Total Assets</td>
<td>$194,362</td>
<td>$185,937</td>
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</table>

<table>
<thead>
<tr>
<th>Liabilities and Surplus</th>
<th>1998</th>
<th>1997</th>
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</thead>
<tbody>
<tr>
<td>Accounts payable, accrued liabilities</td>
<td>$ 6,240</td>
<td>$ 9,167</td>
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<tr>
<td>Deferred revenue</td>
<td>168,692</td>
<td>157,175</td>
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<tr>
<td>Surplus</td>
<td>19,430</td>
<td>19,595</td>
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<tr>
<td>Total Liabilities and Surplus</td>
<td>$194,362</td>
<td>$185,937</td>
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Summarized Statements of Revenues

Expenses and Surplus for the year ended December 31, 1998, with comparative figures for 1997

<table>
<thead>
<tr>
<th>Revenues</th>
<th>1998</th>
<th>1997</th>
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<tr>
<td>Membership</td>
<td>$297,088</td>
<td>$227,616</td>
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<tr>
<td>Other</td>
<td>38,238</td>
<td>35,576</td>
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<tr>
<td>Total Revenues</td>
<td>$335,326</td>
<td>$263,192</td>
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<table>
<thead>
<tr>
<th>Expenses</th>
<th>1998</th>
<th>1997</th>
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</thead>
<tbody>
<tr>
<td>Operating</td>
<td>$335,491</td>
<td>$266,567</td>
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<tr>
<td>Excess (short) of revenues over expenses</td>
<td>(165)</td>
<td>(3,375)</td>
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<tr>
<td>Surplus, beginning of period</td>
<td>19,595</td>
<td>22,970</td>
</tr>
<tr>
<td>Surplus, end of period</td>
<td>$ 19,430</td>
<td>$ 19,595</td>
</tr>
</tbody>
</table>

The complete audited financial statements of PTAC for the year ended December 31, 1998 are available from PTAC offices upon request.