MISSION

To facilitate innovation, collaborative research and technology development, demonstration and deployment for a responsible Canadian hydrocarbon energy industry.

VISION

To help Canada become a global hydrocarbon energy technology leader.

Contact Us

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Message from the Board of Directors

Industry today is challenged to meet concurrent demands for industrial progress, environmental stewardship, and economic prosperity. The key to finding harmony among these goals lies in embracing a culture of sustainability. For fourteen years PTAC has worked to foster a culture of sustainability in the oil and gas industry, championing development and production in equal consideration of environmental management, social impacts, profitability, economic prosperity, and security of global energy supply.

Looking to the future, experts predict that hydrocarbons will long remain the primary source of transportation fuel and that energy demands will continue to increase. It will be impossible for our supply of easily-accessed oil and gas to fulfill this demand. In fact, to meet estimated future demand, 64 million barrels of gross capacity must be installed between now and 2030; that’s equivalent to six times the current capacity of Saudi Arabia. We must act now to develop this capacity, increasing global production of more expensive and challenging offshore, heavy crude, and non-conventional gas and crude resources.

This call to action comes at a difficult time. The global economic downturn, coupled with market changes due to increased gas supply from the production of shale gas in North America, has resulted in reduced energy consumption and lower oil and gas prices. At the same time, shareholders are calling for improved operational efficiency and increased profitability. This economic situation has curtailed industry capability to spend capital on exploration and development activities. Meanwhile, world leaders are developing a renewed focus on environmental policy; demanding industry take on the necessary expenses to tangibly mitigate greenhouse gas (GHG) emissions. The confluence of these economic and political pressures presents a unique opportunity for innovation.

The challenge is clear. We need to produce commercially from our world-class resources while minimizing the environmental footprint. PTAC believes the solution is the application of existing and emerging technologies. With fewer dollars available for research while revenues are down, industry is forced to use research and development (R&D) funding more efficiently. Tackling research projects collaboratively stretches research dollars without sacrificing quality or scope. Fourteen years ago PTAC was created to enable collaborative R&D to take place in the upstream oil and gas industry, and we have been promoting it ever since. The PTAC collaborative model encourages the leveraging of financial and intellectual expertise across all stakeholder groups to develop essential non-competitive technologies and allow innovations to be pursued in a timely manner while minimizing individual risk. Guidance from industry and government has provided focus on technologies relevant to the challenges facing industry. Currently PTAC has forty projects underway focused on maximizing recovery, reducing costs and minimizing environmental footprint. Our collaborative model has propelled sustainable hydrocarbon R&D forward at an unprecedented pace, as stakeholders have been able to leverage resources on a grand scale while sharing the risks associated with technology development and verification.
Historically, R&D in the oil and gas industry has occurred in response to emerging short-term needs and has focused on small incremental improvements to processes and technologies. PTAC recently launched a new strategy that takes an entirely different approach, and strives to reach some very lofty goals. The PTAC plan addresses the specific challenges of increasing production rates to meet global energy security demand, achieving economic prosperity, reducing operating costs to improve profitability, and reducing environmental and social impacts through the development of existing, emerging, and breakthrough technologies. The plan is built on a structure with two distinct tandem paths; the first identifies R&D challenges and potential technology solutions, while the second focuses on implementing the identified projects. Underpinning the strategy is close collaboration among industry, universities, research providers, and governments to create a seamless process from basic research to commercialization. The recent implementation of this strategy has resulted in a rapid transition to an innovative, proactive approach with a long-term focus on new and more sustainable hydrocarbon resource development pathways.

To ensure the future of our industry we must commit both intellectual expertise and financial resources on an ongoing basis to develop technologies that enable sustainable, profitable production of our conventional and unconventional hydrocarbon resources. Granted, the current economy is challenging, but it is not an excuse. The fact remains that we have tremendous petroleum resources remaining to be recovered, and we need to invest in R&D to unlock their potential. The leadership and momentum to achieve a real commitment to R&D begins with promoting and living out a culture of sustainability. We must seek holistic, integrated solutions, optimizing our systems in equal consideration of security of energy supply, economic prosperity, profitability, and environmental management.

There is absolutely no limit to human potential for innovation and creativity, and we have tremendous resources just waiting to be tapped. PTAC is working to bring to fruition the full potential of Canadian hydrocarbon resources. Together, we can responsibly exploit these resources, increasing production and reserves in a sustainable manner that is sensitive to the need for both cost reduction and reduced environmental impact. After all, the future depends on it.

Soheil Asgarpour, Ph.D., P.Eng
President

Earle Shirley
Chairperson

PRESIDENT
CHAIRPERSON

BOARD OF DIRECTORS
(as at December 31, 2009)

Earle Shirley
Chair, PTAC
Executive Manager, Board Projects, Energy Resources Conservation Board

Fred Hutchings
Past Chair, PTAC
Vice President and General Manager-Acquisitions, ShawCor Ltd.

Soheil Asgarpour
President, PTAC
Petroleum Technology Alliance Canada

Mike W. Ekulund
Assistant Deputy Minister, Energy Future and Strategic Relations Division, Alberta Department of Energy

Michael Gatens
Chief Executive Officer, Unconventional Gas Resources Canada

Gordon Goodman
Assistant Deputy Minister, Oil & Gas Division, Ministry of Energy, Mines and Petroleum Resources, Province of British Columbia

Eddy Isaacs
Executive Director - AERI Alberta Energy Research Institute

Mark Johnstone
Senior Advisor, New Technology, Suncor Energy Inc.

Chris Lehecka
Manager, Technology & Optimization – Oil Sands, Conocophillips Canada Limited

Derek Narmore
President, Schlumberger Canada Limited

Wayne Patton
Program Director, Institute for Sustainable Energy, Environment and Economy, University of Calgary

Ian J. Potter
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Mary Previle
Acting Director General, Natural Resources Canada (NRCan)

Ken Pott
Independent

Randy Rudolph
Principal, Millennium EMS Solutions Ltd.

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Vice President Business Services, Cenovus Energy Inc.

Chuck J. Szumula
Vice President of Emerging and Alternative Technologies, Enbridge Inc.

Murray Todd
President, Todd Resources

Volunteers
Innovative R&D Technology Development

PROJECTS OR NEW PROJECT PHASES LAUNCHED IN 2009

In 2009 PTAC facilitated the following new research and development projects, new project phases and initiatives:

ENVIRONMENTAL (AUPRF)
- Development of Novel Method to Detect and Locate Fugitive Emissions
- UV and Condensation Technology for applications in the upstream oil and gas industry for removal of air contaminants
- Mercury and Heavy Metals Project
- Application of Different Measures of Bioavailability to Support the Derivation of Risk-based (Tiers 2 or 3) Remedial Benchmarks for PHC-contaminated Sites
- Study of the Fate and Transport of Calcium Sulfate (Gypsum) and Sodium Sulfate Concentrations in Shallow Soil
- Characterization of the Saturated Conductivity - SAR - EC Relationship in Subsoils
- Baron Guideline Development Work
- Development of a Shower Exposure Model for Benzene - Background Work for a Potential Update of Soil Quality and Drinking Water Guidelines for Benzene
- Distinguishing Natural vs Petroleum F3 Hydrocarbons in Diesel Invert Biopiles
- Development of Assessment and Remediation Approaches for Salt Releases to Peatlands in Western Canada
- Third Party Sensitivity Analysis of the Subsoil-Salinity Tool Version 2.1
- SST Program - Refinements, Training, Solicitation for Incorporation into Saskatchewan
- Evaluating the Ecological Risk of Energy Sector Development on Burrowing Owls in Native Prairie Habitat - Year 2
- Strategies for Evaluating the Effectiveness of Reclamation Successes on Native Landscapes, Including the Mixed Grass Prairies, the Northern Fescue Natural Region, Foothills Fescue Natural Regions, the Aspen Parkland Natural Region, Saline Areas and Hydrocarbon Contaminated Sites
- Seismic Line Successional Recovery - Implications for Animal Movement and Weed Invasion in the Boreal Forest
- Removing the Wellsite Footprint
- Range Expansion of White-tailed Deer: Differentiating Responses to Climate Change and Industrial Land Use
- Benefits of Use of Pre-treated Produced Water and Related Salt Impacted Waters Using Advanced Ceramic Membranes
- Chemical and Isotopic Characterization of Water and Dissolved Gases in Shallow Aquifers in the Vicinity of Coal Bed Methane Operations in Alberta
- Emerging Water Quality and Treatment Technologies
- Assessing Wastewater Treatment Technologies, Storage and Water Reuse

CO2 ENHANCED HYDROCARBON RECOVERY
- Alberta CO2 Purity Project

EMISSIONS REDUCTIONS AND ECO-EFFICIENCY
- Capacity Building in China’s Upstream Oil and Gas Industry to Reduce Methane Emissions and Energy Intensities

SMALL AND MEDIUM ENTERPRISE PROGRAM
- Providing SMEs with Support and Information for SMEs to Address the Needs of the Hydrocarbon Energy Industry
- Approved Service Provider for Advanced Education and Technology Innovation Voucher Pilot Program

OIL SANDS
- Alternative Energy Solutions to Replace Natural Gas in Oil Sands Development Phase III

VISCOUS OIL
- Flue Gas Steam Stimulation Phase II

WELLSITE ABANDONMENT
- Cased-hole Wellsite Abandonment Project

Technical Steering Committees

In 2009, PTAC facilitated 13 Technical Steering Committees and 6 sub-committees.

ENHANCED ENVIRONMENTAL MANAGEMENT
- Air Research Planning Committee
- Soil and Groundwater Research Committee
- Water Innovation Planning Committee
- Alternative Energy Solutions Committee
- Technology for Emission Reduction and Eco-efficiency (TEREE)
- Water Innovation Planning Committee

IMPROVED OIL AND GAS RECOVERY
- CO2 Enhanced Hydrocarbon Recovery Steering Committee
- Clean Bitumen Technology Action Plan (CBTAP) In Situ Steering Committee
- CBTAP In Situ Workshop Committee
- CBTAP Strategic Planning Committee
- CBTAP Technical Advisory Committee
- CBTAP Mining Steering Committee
- Mining Workshop Committee
- Unconventional Gas Technology Steering Committee
- Viscous Oil Recovery Steering Committee

UPGRADING, REFINING, PETROCHEMICAL TECHNOLOGIES, AND TRANSPORTATION
- Upgrading, Refining, Petrochemical Technologies and Transportation Committee

Volunteer Recognition Awards

The following were recognized for their significant contributions in 2009:

Recognition of Board Members
- Fred Hutchings, ShawCor Ltd.
- Col Farbanks, Canadian HSE Inc.
- Alison Thompson, Nexen Inc.

Life Time Achievement Award
- Rich Kerr, Nexen Inc.

Outstanding Service Award
- Lorraine Whale, Shell Canada Ltd.

Volunteer of the Year Awards
- Kathy Isaacs, Alberta Energy Research Institute (AERI)
- Michael Gaten, Unconventional Gas Resources Canada

Corporate Citizenship Award
- EnCana Corporation

Distinguished Service Awards
- Tom Harding – University of Calgary
- Brian Watt – Husky Energy Inc.
- John Masterson – Canadian Association of Petroleum Producers (CAPP)
- Phil Murray – Alberta Research Council
- Jerry Shaw – Devon Canada Corporation
- Sunil Singh – Alberta Energy Research Institute (AERI)

Technical Steering Committees

Air Research Planning Committee
- Mike Layen, Natural Resources Canada (NRCan)

Soil and Groundwater Research Committee
- Steve Kullman, Husky Energy Inc.

Water Innovation Planning Committee
- Tom Pye, Husky Energy Inc.

Technology for Emission Reduction and Eco-efficiency Steering Committee
- Miles Knipia, BP Canada Energy Company

CO2 Enhanced Hydrocarbon Recovery Steering Committee
- Kelly Edwards, Barrick Energy Inc., Jim McKay, Praxair

Unconventional Gas Technology Steering Committee
- Kirk Osadetz, Natural Resources Canada (NRCan)

Increased Recovery Steering Committee
- Ken Brown, Alberta Research Council

Viscous Oil Recovery Steering Committee
- Jerry Scoular, Husky Energy Inc.
ACHIEVEMENTS 2009

Key Accomplishments

Despite the undeniable impact of the economic downturn on the industry, 2009 proved a year of diverse accomplishments for PTAC. From successful events such as the Global Petroleum Conference, to the completion of multi-million dollar pilot projects, to taking significant steps with industry partners in collaborative projects, PTAC’s 2009 success stories strengthen our conviction that the environmental footprint and costs can be minimized, recovery from our resources can be maximized, and value added opportunities can be created through innovation and implementation of existing and emerging technologies.

Over the past year, PTAC focused on creating and completing a strategic plan to achieve our mission to facilitate innovation, collaborative research and technology development, demonstration, and deployment for a responsible Canadian hydrocarbon energy industry. This mission targets the sustainable development of Canada’s world-class conventional and unconventional resources. We believe that collaboration among industry, governments, research providers and service and supply companies in the following areas of focus is essential for long-term industry success:

• Reducing Costs
• Managing Environmental Impacts
• Improving Oil and Gas Recovery
• Improving Value Added Products (i.e., Upgrading, Refining, Petrochemical Technologies, and Transportation)

To enable PTAC to continue to deliver the best value and services to our members, we have further honed our approach to daily operations, conducting more collaborative projects in the areas of focus, improving our methods of disseminating and transferring existing and emerging technologies, and reorganizing our forums, workshops, and conferences to ensure continued alignment with industry needs.

Given the challenging economy, we worked diligently to ensure each of PTAC’s 2009 events provided significant value to participants, offering a chance to participate in meaningful discussions on topics clearly aligned with industry needs, all at an affordable cost. At the annual Spring Water Forum, a very successful one-day conference held in May 2009, presentations were made on existing and emerging technologies to reduce water consumption. Towards Clean Energy Production, a twinned forum series with one day focused on emissions management and minimizing operations costs and a second day focused on managing CO2 for enhanced oil recovery and carbon capture and storage, was held in November. Participants enjoyed discussions and presentations by respected experts from industry and government. At the Emissions Management forum, PTAC formally recognized Western Economic Diversification for their outstanding contribution to achieving our shared vision for sustainable hydrocarbon development through the application and development of existing and emerging technologies. In addition, the Air Issues Research Forum, the Soil and Groundwater Research Forum, and the Resource Access and Ecological Issues Forum were held to educate participants on current regulatory issues facing industry, to disseminate results of progress on research and technologies, and to provide a forum for discussion and identification of upcoming issues in each of these respective areas.

In June 2009, PTAC once again hosted our flagship event, the Global Petroleum Conference. This year, the large-scale conference focused on reducing overall costs and minimizing the environmental footprint using innovative technology solutions. Over the course of three days, sixty technical and business presentations by nationally and internationally respected experts brought participants the latest updates on conventional and unconventional resources. The highlight of the event was the 2009 Plenary Panel Session moderated by Mr. Peter Mansbridge, chief correspondent for CBC Television News. This session allowed for open and candid public discussion of the current issues facing the hydrocarbon energy industry. The distinguished panel included Honourable Mel Knight, Minister of Energy, Government of Alberta; Mr. Carlos Morales, President, Pemex Exploration & Production; Mr. Khaled Al Khamees, Deputy Managing Director, Administration & Finance, Kuwait Oil Company; Dr. Kevin Meyers, Senior Vice President, Exploration & Production Americas, ConocoPhillips; Mr. David Collyer, President, CAPP (Canadian Association of Petroleum Producers), and Dr. Soheil Asgarpour, PTAC President.

Our focus on ensuring value and quality resulted in a year of events that were very well attended and offered participants timely, relevant, and cost-effective learning opportunities to bring valuable information back to their organizations. Although very successful in their own right, these 2009 PTAC events also served to enhance our organization’s main driver – our renewed focus on collaborative projects.

PTAC’s 2009 projects covered a variety of disciplines and formats, but all were focused on achieving sustainable and responsible
hydrocarbon energy production. Despite the economic downturn, our commitment to advancing R&D led to the launch of many new phases and new projects, as well as the completion of existing projects.

The TEREE Steering Committee wrapped up the Firetube Immersion Heaters Design Guide and the REMVue SlipStream™ Demonstration and Impact Assessment project. In the area of Alternative Energy Solutions, phase two of the Alternative Energy Solutions to Replace Natural Gas in Oil Sands Production (AESOS) Project was also completed in 2009. The AESOS project is a phased study to evaluate the potential for using nuclear technology to produce CHP (combined heat and power) and hydrogen. Phase two focused on high temperature gas reactors.

In July 2009, PTAC made public the findings of the PTAC Carbon Capture and Storage Study. This PTAC initiated study included collaboration from sixteen producers, transportation pipeline companies, water and power utilities, and provincial government departments that provided funding for this project and oversaw its implementation through a Technical Steering Committee. Conducted by SNC-LAVALIN, the study evaluated representative CO2 sources in the Fort Saskatchewan area in order to understand what is required to aggregate different quality types of CO2. The study reviewed the merits of CO2 compression economies of scale and other facility configurations to demonstrate an efficient design for CO2 capture.

PTAC continued to facilitate the Alberta Upstream Petroleum Research Fund (AUPRF). This project provides funding for peer-reviewed environmental research studies. In 2009, PTAC facilitated 21 projects with over $1.4 million in AUPRF funding. This industry funding is leveraged by government, institutional, and stakeholder support, resulting in projects valued at over $4.7 million.

In addition to these successful project completions, PTAC launched several new projects such as the Cased-Hole Wellsite Abandonment Project. These new projects focused on reducing costs, increasing recovery, and improving environmental performance.

In the challenging economic environment of 2009, SMEs required more assistance in the areas of securing funding and demonstration sites, technical support, networking opportunities and marketing their technologies. PTAC, with the support of the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP), continued to provide support to SMEs in transforming ideas, technologies and “know-how” into a product or service to benefit the industry.

The advice from PTAC staff and contracted subject experts helped SMEs make significant advances in moving their technologies forward in a value-added manner and adapting their technologies to better meet specific industry needs. PTAC provided guidance to SMEs on marketing their technologies and assisted several SME members to hold effective technology information sessions. PTAC subject experts and staff also facilitated meetings with SMEs to provide technology advice, help identify funding, and collaborate with other SMEs or organizations to move their technology projects forward. Nearly seventy SMEs presented their research and technologies at PTAC conferences, forums and information sessions in 2009.

The NRC-IRAP support also allowed PTAC to design an acclaimed educational seminar/webinar series “Oil and Gas Principles (OGP) 101” to help SMEs better understand the needs, priorities, economics, business and environmental/regulatory drivers of the hydrocarbon energy industry. These sessions were very well received and attracted an audience of nearly 300 participants who joined in or logged on for these events. SMEs were extremely interested in learning about technology needs and prospects to develop or tweak their technologies to help address industry challenges. In addition, these seminar/webinars provided excellent networking opportunities for SMEs.

PTAC’s many successes can be traced directly back to our dedicated volunteers. In 2009, we continued to expand our volunteer recognition program. At large events throughout the year PTAC held several formal awards ceremonies, presenting individual and corporate awards to outstanding volunteers in recognition of their valuable contributions and dedicated service. In addition to these ceremonies honouring select individuals, all PTAC volunteers received letters of appreciation acknowledging and thanking them for their service.
2010 Outlook

In 2009, PTAC developed specific strategies to achieve its vision to help Canada become a global hydrocarbon energy technology leader by facilitating innovation, collaborative research and technology development, demonstration, and deployment for a responsible Canadian hydrocarbon energy industry. An assessment of our vision revealed a focus on both increasing production and reducing the environmental footprint. To achieve our vision PTAC will:

• Proactively assess long-term industry needs, and develop strategies to encourage industry and government to support R&D to meet those needs.
• Be the clear focal point for collaborative research, development, demonstration, and deployment of technologies for responsible development of the Canadian hydrocarbon energy industry.
• Build organizational capacity to meet its vision.

As a result of this commitment, in 2010 PTAC will focus more intently on increasing the number of projects and improving project management in the areas of Reducing Costs, Improving Oil and Gas Recovery, and Improving Value Added Products. Currently, the number of environmental research projects exceeds those in other areas. Therefore, while the number of environmental projects will be increased modestly in 2010, our strategy is to significantly increase our activities in other areas to achieve a more balanced approach for sustainable and profitable hydrocarbon development and production.

Historically, the majority of PTAC activities have been applied research and engineering studies. To remain relevant and focused on our vision, we must expand our activities to close the gap between pure research and commercialization. Therefore, in 2010 our efforts will emphasize field pilot demonstrations. By adding this new focus on commercialization to our successful project development model, PTAC hopes to create a seamless process from basic research to commercialization of technology. We will continue to implement this expanded model by facilitating collaboration between research providers, academia, government, and industry.

PTAC facilitation of projects will be delivered through our existing strategies and collaborative models that have been successful for the past fourteen years. We will continue to proactively assess long-term industry needs and identify challenges, encourage industry and government to support R&D, provide innovative technical and technology solutions, and effectively disseminate existing and emerging technologies.

PTAC will host the Global Petroleum Conference in conjunction with the Global Petroleum Show in 2010, a conference featuring three concurrent sessions addressing such topics as Oil Sands, Operations, CO2 Management, Unconventional Resources, Increased Recovery, Business Strategies, and Health and Safety. The conference will aim to feature sixty speakers over the course of three days to bring the latest updates on conventional and unconventional resources. The conference will focus on reducing overall costs and minimizing the environmental footprint using innovative technology solutions. The first day will bring together international dignitaries from around the world to discuss the challenges faced by industry specific to the economic and political climate of the day. Other PTAC events anticipated for 2010 include an Annual Spring Water Forum, a two-day Towards Clean Energy Conference in the autumn, and a series of environmental portfolio events held throughout the year to share the results of AUPRF research.

Project development in the area of Enhanced Environmental Management will continue in 2010 under the auspices of TEREE, AUPRF, and the PTAC CO2 EHR Committee. PTAC is lined up to facilitate thirty projects receiving over $1.7M in AUPRF funding for research in the areas of air, soil, ecological, water and caribou issues. Meanwhile, the launch of a new eco-efficiency project is expected to be a major undertaking for TEREE in 2010. The objective of this initiative will be to identify gaps, identify new and existing technologies, and effectively launch new projects to reduce costs and GHG emissions such as NOx, SOx, and CO2. In addition, an exciting Joint Industry Project to develop a suitable solution to lift water for shallow gas is underway and expected to develop further in 2010. Water loading is the primary cause of production restriction and reserve loss in shallow gas wells across North America. Reliable pumping technology capable of removing water at an economic price point does not currently exist. This Joint Industry Consortium will investigate and test de-watering pumps/processes for shallow gas wells.

PTAC’s Alternative Energy Committee has been working since 2007 on looking at potential alternatives to natural gas for bitumen production. PTAC and its partners completed Phase II of this project in June 2009. Now, bitumen producers are further interested in exploring the cost and schedule of generating Combined Heat and Power (CHP) using nuclear technologies. In August of 2009 PTAC issued a Request for Proposal to Nuclear Power Producers soliciting interest. This resulted in a number of proposals submitted to PTAC looking at the formation of a Sample Term Sheet for supplying CHP to producers. In 2010 the Alternative Energy Solutions Committee will be working...
alongside nuclear power producers to further define terms and
explore opportunities.

PTAC will implement the Clean Bitumen Technology Action
Plan (CBTAP) in 2010. This project follows a structured format
of scheduled investigations and collaborative meetings. Beginning
with a review of existing technologies and studies to identify
gaps, the CBTAP will unfold throughout 2010 as a series of five
workshops and topical reports, culminating in an authoritative
document that will serve as an action plan for technology
development and foundation for future policy, strategy and
investment decisions. The plan will include launching numerous
R&D and field pilot projects in the area of surface mining,
in situ resources and upgrading with the goal of increasing
recovery, reducing costs, and minimizing environmental
impact on air, water and land, as well reducing greenhouse gas
emissions. CBTAP is a combined industry, government, and
non-government organizations (NGOs) effort for sustainable
bitumen development in equal consideration of environmental
management, social impacts, profitability, economic prosperity,
and security of energy supply. It is an action plan that is more
than just a roadmap. So far, twenty six oil companies, government
agencies, and non-government organizations have joined the
CPTAP Project.

In 2009 PTAC launched a new environmentally focused project
that addresses cement dump bailing in cased-hole wellsites. This
project will conduct a series of experiments with a recognized
laboratory and wellbore testing facility to evaluate and optimize
the physical characteristics of the cement commonly used as a
permanent well abandonment plug (contained within casing).
This project will continue to be implemented in 2010. PTAC was
asked to help facilitate a project working with the Canadian
Association of Petroleum Producers (CAPP) on cased-hole well
abandonment to provide a technical, in-depth review of the ERCB
Directive 20 – Well Abandonment Guide (revised December 7,
2007). PTAC and CAPP formed the Project Committee and
engaged the Southern Alberta Institute of Technology (SAIT) to
conduct focused research and experimentation on dump bailing
operations that would serve to qualify any proposed changes
or modifications to the current dump bailing practices and the
Directive.

In 2008, PTAC was awarded a $1.5 M grant from the Alberta
Department of Energy to provide the foundation and structure
to promote additional industry support and focus for projects,
and help leverage funding from industry and other organizations.
In 2010, PTAC expects to allocate approximately $500K of this
Alberta Energy Research Grant to launch collaborative R&D and
demonstration projects to discover and develop technological
solutions to maximize recovery from Alberta’s world class
resources while minimizing costs and the environmental
footprint. As in previous years, industry and other organizations
are invited to participate in these projects, which will provide
tremendous opportunities to create value through the leveraging
of financial resources and intellectual expertise.

Working with a membership representing all aspects of the
Canadian hydrocarbon energy industry, and buoyed by a renewed
commitment and focused strategy to achieve our vision, PTAC is
confident 2010 will be another year marked by success. Despite
challenges inherent in the 2010 economic and political climate,
we will strive to help Canada become a global hydrocarbon
energy technology leader by facilitating innovation, collaborative
research, and technology development, demonstration, and
deployment for a responsible Canadian hydrocarbon energy
industry.
Member Services

PTAC offers a variety of services to its members, and provides opportunities to benefit the Canadian hydrocarbon energy industry.

For more information on the many benefits of PTAC membership please visit our website at www.ptac.org.

Facilitating

PROJECTS
PTAC facilitated twenty eight research and development projects or new project phases and initiatives valued at $5.5M during the course of 2009. PTAC provides industry with a neutral forum to work in collaboration, leveraging collective experience and expertise to identify opportunities, challenges, and potential solutions that require research or technology development. These discussions can lead to joint-industry projects where PTAC, as a neutral facilitator, assists with soliciting proposals and launching projects through a fair and balanced process. PTAC also identifies existing research and development to raise industry awareness and minimize duplication.

INNOVATION VOUCHERS APPROVED SERVICE PROVIDER
In 2009, PTAC became an Approved Service Provider for the Alberta Advanced Education and Technology Innovation Voucher Pilot Program. Innovation vouchers help small technology and knowledge-driven businesses in Alberta get their ideas and products to market more quickly. As an approved service provider, PTAC assists small to medium companies (SMEs) to successfully navigate the program's application process. In addition, PTAC helps voucher recipients to identify third party service providers and develops and executes contracts. To communicate with members about this new service, PTAC hosted a Technology Information Session to inform SMEs about the Alberta Innovation Voucher program. As a result, PTAC's technical advisors and staff worked with eighteen SMEs over the two rounds of innovation voucher awards, helping to determine the feasibility and viability of proposed projects and reviewing applications to ensure applicants met the requirements to successfully apply for a voucher.

Networking

TECHNOLOGY INFORMATION SESSIONS
In 2009, PTAC facilitated sixteen Technology Information Sessions (TIS) attended by over eight hundred participants. As a service to members, PTAC facilitates TISs for interested companies, providing benefits to both the presenting company and all those in attendance. The company presenting is provided a forum to solicit interest, feedback, participation or potential funding for new research and development projects; find industry partners to complete proposed research or technology development such as field tests or pilot sites; report on field test or pilot results; provide information on technology-related services; and market new technology to the Canadian oil and gas industry. Those in attendance have the opportunity to be exposed to these new projects and ideas through a targeted, facilitated presentation.

Engaging

FORUMS AND WORKSHOPS
PTAC hosted seven forums and one workshop in 2009, attracting nearly four hundred and fifty participants. These targeted events provide industry members with an opportunity to gather with others to share ideas, opinions, and learning on a specific technical subject. In addition, over three hundred participants took part in the 2009 Global Petroleum Conference.

PTAC forums focus on broader needs or technical areas. These events are comprised of presentations detailing new technologies, case studies, and the objectives and results of current research, as well as providing opportunities for questions and answers.
PTAC workshops provide opportunities for participants to work collaboratively in focused groups to clearly define research and development issues, identify potential solutions, and select the best approach to move forward. Industry members are provided a platform to share their needs, and R&D providers hear about issues firsthand. Solutions are formed by leveraging the collective expertise and ideas of all participants, while protecting proprietary interests. PTAC hosts the workshops and provides the necessary facilitation, administrative support, and coordination to launch projects.

**Informing**

**KNOWLEDGE CENTRE**

The PTAC Knowledge Centre provides public access to non-proprietary technical information on commercially available oil-and-gas-related technologies pertinent to the hydrocarbon energy industry. The collection, which is updated on an ongoing basis, focuses on sustainable, eco-efficient, energy-efficient, and GHG-reducing technologies. The Knowledge Centre offers access to core energy and premier technical databases to meet the educational, informational, and technical needs of the user community. The Knowledge Centre Manager provides services to SMEs, technical steering committees, project performers, researchers, and others to help identify technologies and research needs, avoid duplicate research, and monitor industry trends. Knowledge Centre Services for PTAC members include literature searches, search alerts, and contact information for subject experts in industry, government, and academia. PTAC members are invited to provide non-proprietary technical information on their technologies to PTAC for display in the Knowledge Centre. Relevant materials are accepted on an ongoing basis.

**Collaborating**

**TECHNICAL STEERING COMMITTEES**

PTAC Technical Steering Committees consist of PTAC members representing various industry sectors, governments, and non-governmental associations. These technical steering committees help to identify opportunities for collaborative research and technology development, raise awareness of existing research and technology through planning events, find solutions to challenges through the process of soliciting proposals and launching new projects, and promote involvement by informing appropriate colleagues of Technical Steering Committee activities.

**Communicating**

**MEMBER COMMUNICATIONS**

PTAC is committed to ensuring effective communication with members. The PTAC website provides members with access to comprehensive information on PTAC activities, opportunities, upcoming events, and other industry news. Our bi-weekly newsletter, e-talk, distils this information into an at-a-glance format delivered directly to members and interested stakeholders via email.
Volunteers

ENHANCED ENVIRONMENTAL MANAGEMENT

Technology for Emission Reduction and Eco-Efficiency (TEREE) Steering Committee
- Marlene Blakney, NRCAN
- Mark Bath, Sunco Energy Inc.
- Pierre-Yves Caux, Environment Canada
- Norman Chiu, Husky Energy Inc.
- Alex Dickson, CETAC West
- Joe Dusseauault, Canxus Energy Inc.
- Geoff Frazel, Devon Canada Corporation
- Jackson Hegland, ARC Resources
- Lorenzo Hernandez, Husky Energy Inc.
- Ray Kanten, Shell Canada Limited
- Ibrahim Kariaio, Alberta Environment
- Jerry Keller, Alberta Environment
- Milos Knjiza, BP Canada Energy Company
- Jeremy Moorhouse, Pembina Institute for Appropriate Development
- Richard Nelson, Alberta Innovates - Energy and Environment Solutions
- Bruce Peachey, New Paradigm Engineering Ltd.
- Ron Quick, Sustainable Ventures Inc.
- Brian Ross, Nexen Inc.
- Jerry Shaw, Devon Canada Corporation
- Paul Slobodnik, ConocoPhillips Canada Limited
- Al Smadych, ERCB
- Jim Spangelo, ERCB
- Lynn Svenson, Climate Change Central
- Bill Wilson, Western Economic Diversification Canada
- Philip K. S. Wong, Sustainable Development Technology Canada

Air Research Planning Committee
- Glynnis Catling, Imperial Oil Resources
- Randy Doblo, Alberta Environment (government co-chair)
- John Drinkwater, BP Canada Energy Company
- Henry Eva, ERCB
- Wayne Hiller, Husky Energy Inc.
- Mike Layer, NRCAN
- Rosanna Ng, Talisman Energy Inc. (Industry Co-Chair)
- Kathy Ostermann, ERCB
- Roxanne Pettips, ConocoPhillips Canada Limited
- Krista Phillips, CAPP
- Lisa Solonchuk, Shell Canada Limited (Industry Co-Chair)

Soil and Groundwater Research Committee
- Paul Baechus, Environment Canada
- Bora Borkovic, City of Calgary
- Shaunna Cartwright, ERCB
- Kathy Cox, Enplanus
- Gordon Dinwoodie, Alberta Environment (Regulatory Chair)
- Susan Halla, ERCB
- Ted Johnson, Talisman Energy Inc.
- Steve Kullman, Husky Energy Inc. (Industry Chair)
- Chris Meloche, Husky Energy Inc.
- Brent Moore, Devon Canada Corporation
- Michael Morden, Petro-Canada
- Rick Scroggins, Environment Canada
- Natalie Shea, NRCAN
- Michelle Young, Imperial Oil Resources

PTAC Baron Working Group
- Aslaw Belete, Imperial Oil Resources
- Tim Chadlaw, Northern Envirosearch
- Bob Corbet, Access Labs
- Gordon Dinwoodie, Alberta Environment (Regulatory Chair)
- Susan Halla, ERCB
- Michael Harrats, S. U. Borax Inc.
- Greg Huber, Equilibrium Environmental
- Tony Knatla, Equilibrium Environmental
- Steve Kullman, Husky Oil (Industry Chair)
- Darlene Lintott, Bodycote
- Rob Maclennan, Celilith Environmental
- Pat Payne, Orphan Well Association
- Leanne D. Siebert, Imperial Oil Resources
- Ron Venzi, Maxam Analytics

Ecological Research Planning Committee
- Carol Engstrom, Husky Energy Inc.
- Jennifer Hendricks, Nexen Inc.
- Adam Judd, Nexen Inc.
- Sandra Marken, ConocoPhillips Canada Limited
- Terry Osko, AIPAC
- Gary Sargent, CAPP
- Amt Saxena, Devon Canada Corporation

Water Innovation Planning Committee
- Brenda A. Austin, ERCB
- John S. Czeckowski, Shell Canada Limited
- Carrie C. Dickinson, ERCB
- Marc Dubez, Canxus Energy Inc.
- Chris Goodlad, Alberta WaterSMART
- Thomas G. Harding, University of Calgary
- Scott Miller, ConocoPhillips Canada Limited
- Rebecca Jacksteit, EnCana Corporation
- Bob Kutzki, Nexen Inc.
- Keith Minnich, VEOLIA Water
- Richard Nelson, Alberta Innovates - Energy and Environment Solutions
- Tom Pye, Husky Energy Inc.
- Jennifer Soldan, Husky Energy Inc.
- Greg Shyba, Alberta Water Law
- Rudy Tamayo, Husky Energy Inc.
- Prasad Valapadas, Alberta Environment
- Monica E. Varga, NRC - IRAP
- Keith Watson, Sustainable Development Technology Canada

Wellsite Abandonment Project Committee
- Ken Anderson, Shell Canada Limited
- Dave Baker, Encana Corporation
- Richard Bean, Apache Corp.
- Lane Becker, Ioninca Energy
- John Dinnan, Trident Resources Corp.
- Jack Halliday, ConocoPhillips Canada Ltd.
- Brent Harrison, Encana Corporation
- Brad Herald, CAPP
- Brent Hughes, Nexen Inc.
- Dan Jones, Apache Corp.
- Andrew Jones, Black Watch Energy
- Orest Kostelko, CNRL
- Erin Lazenby, Encana Corporation
- Robert Layher, CAPP
- Warren Lloyd, Encana Corporation
- John Lucic, Nexen Inc.
- Sean Meehan, PennWest Petroleum Ltd.
- Clint Nerbos, BP Canada Energy Company
- Eugene Ng, Shell Canada Limited
- Tara Payton, CAPP
- Chris Persson, Encana Corporation
- Jim Quell, Devon Canada Corporation
- Danny Scott, Encana Corporation
- Ken Shevwan, Frontier Ltd.
- Tyler Simpson, Devon Canada Corporation
- Harold Slater, PennWest Petroleum Ltd.
- John Slobits, Talisman Energy Inc.
- Ravi Thakkar, PennWest Petroleum Ltd.
- Jennifer Walter, CAPP
- Nevin Wolf, Talisman Energy Inc.

IMPROVED OIL AND GAS RECOVERY

CO2 Enhanced Hydrocarbon Recovery (EHR) Steering Committee
- Garth Ayres, Interpeline Fund
- Stefan Bachu, Alberta Department of Energy
- Don Bradshaw, Alberta Department of Energy
- Ian Bryden, PennWest Petroleum Ltd.
- Heather Campbell, ARC Resources
- Jodie Cissell, ATCO
- Gary Cook, Capital Power
- Robert Craig, ICO,N
- Kelly Edwards, Barnick Energy Inc.
- Chris Finzie, Alberta Environment
- Dave Foster, Ferus Inc.
- Chris Harper, Pembina Pipelines
- Blaine Hawkins, Alberta Innovates - Technology Futures
- Larry Hegy, NRCAN
- Chris Holly, Alberta Department of Energy
- Eddy Isaac, Alberta Innovates - Energy and Environment Solutions
- Karen Kelly, Syncrude Energy Inc.
- Jim Kenny, Individual PTAC Member
- Jay Kowaski, Air Liquide
- David Lemont, ConocoPhillips Canada Limited
- Frank Lin, Husky Energy Inc.
- Sandra Locke, Alberta Department of Energy
- Herb Longsworth, ERCB
- Richard Luhning, Enbridge Inc.
- Jim Maguire, Praxair Canada Inc.
- Christine Malaka, ATCO
- Anna Maslowski, Alberta Department of Energy
- Jim McKay, PennWest Petroleum Ltd.
- John Lucic, Nexen Inc.
- Warren Lloyd, Encana Corporation
- Jack McNaught, Encana Corporation
- Brian Meehan, PennWest Petroleum Ltd.
- Garth Minnich, Veolia Water
- Bob Kutzak, EnCana Corporation
- Rebecca Jacksteit, EnCana Corporation
- Marc Dubord, Cenovus Energy Inc.
- Carrie C. Dickinson, ERCB
- John S. Czechowski, Shell Canada Limited
- Brenda A. Austin, ERCB
- Larry Hegan, NRCAN
- Blaine Hawkins, Alberta Innovates - Technology Futures
- Larry Hegy, NRCAN
- Chris Holly, Alberta Department of Energy
- Eddy Isaac, Alberta Innovates - Energy and Environment Solutions
- Karen Kelly, Syncrude Energy Inc.
- Jim Kenny, Individual PTAC Member
- Jay Kowaski, Air Liquide
- David Lemont, ConocoPhillips Canada Limited
- Frank Lin, Husky Energy Inc.
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- Richard Luhning, Enbridge Inc.
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- Frank Lin, Husky Energy Inc.
- Sandra Locke, Alberta Department of Energy
- Herb Longsworth, ERCB
- Richard Luhning, Enbridge Inc.
- Jim Maguire, Praxair Canada Inc.
Clean Bitumen Technology Action Plan (CBTAP)

In Situ Steering Committee
- Chris Lehecka, ConocoPhillips Canada (Government Co-Chair)
- Christopher Holly, Alberta Energy (Industry Co-Chair)
- Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC)
- Randy Corrigan, Nexen Inc.
- Heather Dupillka, Suncor Energy Inc.
- Subbadh Gupta/Song Si, Canexus Energy Inc.
- Dan Hausemann/Jack Suggitt, Athabasca Oil Sands Corp.
- Howard Ioseff, Government of Saskatchewan
- Wayne Patton, University of Calgary - ISEEE
- Pete Sametz, Connacher Oil and Gas Limited
- Kurt Ullrich, BP Canada Energy Company

CBTAP In Situ Workshop Committee
- Vincent Saubestre, Total E&P Canada Ltd. (Industry Co-Chair)
- Shannon Preston/Preston McEachern, Alberta Environment (Government Co-Chair)
- Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC)
- Rodger Berner, Quadraise Canada Corporation
- Martyn Griggs, Canadian Association of Petroleum Producers (CAPP)
- Tom Keelan, Energy Resources Conservation Board (ERCBC)
- Bernie LeSage, ETX Systems
- Les Little, Alberta Innovates - Energy and Environment Solutions
- Matt McCulloch, Pembina Institute for Appropriate Development
- Monica Varga, NRC - IRAP
- Mark Weber

CBTAP Strategic Planning Committee
- Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC) (Chair)
- Shannon Flint, Alberta Environment
- Tom Keelan, ERCB
- Matt McCulloch, Pembina Institute for Appropriate Development
- George Rhudey, Rhudey & Associates
- Mark Weber

CBTAP Technical Advisory Committee
- K.C. Yeung, Husky Energy Inc. (Chair)
- Subcommittees to be formed as technology projects are developed

CBTAP Mining Steering Committee
- Mark Johnstone, Suncor Energy Inc. (Industry Co-Chair)
- Christopher Holly, Alberta Energy (Government Co-Chair)
- Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC)
- Ken Brown, Petroleum Technology Research Centre (PTRC)
- Allan Far, Syncrude
- Stephen Moran, University of Alberta – Oil Sands Research and Information Network (OSRIN)

CBTAP Mining Workshop Committee
- Vincent Saubestre, Total E&P Canada Ltd. (Industry Co-Chair)
- Shannon Preston/Preston McEachern, Alberta Environment (Government Co-Chair)
- Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC)
- Martyn Griggs, CAPP
- Tom Keelan, ERCB
- Les Little, Alberta Innovates - Energy and Environment Solutions
- Matt McCulloch, Pembina Institute for Appropriate Development
- Monica Varga, NRC - IRAP

Unconventional Gas Technology Steering Committee
- Roberto Aguilera, University of Calgary
- Ken Brown, Petroleum Technology Research Centre
- Tom Byrnes, ERCB
- Mike Davison, Canadian Society for Unconventional Gas (CSUG)
- Basim Faraj, Talisman Energy Inc.
- Filippo Ferri, Ministry of Energy, Mines and Petroleum Resources, Province of British Columbia
- Rob Galant, Nexen Inc.
- Michael Gatenas, Unconventional Gas Resources Canada
- Derek Knivik, Stealth Ventures Ltd.
- James Lee, ARC Resources Ltd.
- Tim Lestchychyn, Century Frac Services
- Vic Levson, Ministry of Energy, Mines and Petroleum Resources, Province of British Columbia
- Les Little, Alberta Innovates - Energy and Environment Solutions
- Michael Murchie, Shell Canada Limited
- Kirby Nicholson, Alberta Innovates - Technology Futures
- Kirk Osadetz, NRCan
- Jerry Shaw, Devon Canada Corporation
- Javier Sola, ConocoPhillips Canada Limited
- Rick Solinger, EnCana Corporation

Viscous Oil Recovery Steering Committee
- Chandra Anger, NRCan
- Wayne Arnold, Pengrowth Management Limited
- Tom Boone, ExxonMobil Oil Canada Energy
- Chantal Bourque, CANMET Energy Technology Centre
- Randy Corrigan, Nexen Inc.
- Ted Cyr, Alberta Department of Energy
- Maurice Dusseault, University of Waterloo
- Garry Erickson, Saskatchewan Ministry of Energy and Resources
- Tim Hancsicsak, Devon Canada Corporation
- Ted Heidrick, University of Alberta
- Cal Hill, ERCB
- Eddy Isaacs, Alberta Innovates - Energy and Environment Solutions
- Patrick Jamieson, Nexen Inc.
- Chris Lehecka, ConocoPhillips Canada Limited
- Sandra Locke, Alberta Department of Energy
- Howard Loseth, Saskatchewan Ministry of Energy and Resources
- Frank McIntyre, Husky Energy Inc.
- Patrick McKone, Petro-Canada
- Ron Sawatzky, Alberta Innovates - Technology Futures
- Jerry Scoular, Husky Energy Inc.
- Doug Soveran, Saskatchewan Research Council
- Brian Watt, Husky Energy Inc.

UPGRADING, REFINING, PETROCHEMICAL TECHNOLOGIES, AND TRANSPORTATION

Upgrading, Refining, Petrochemical technologies, and Transportation Steering Committee
- Rob Birkholz, Shell Canada Limited
- Hal Gunnarson, Air Products Canada Ltd
- Josephine Hill, University of Calgary
- Eddy Isaacs, Alberta Innovates - Energy and Environment Solutions
- Pat Jamieson, Nexen Inc.
- Terry Kimmel, Canadian Hydrogen Association
- Shunlan Liu, Alberta Innovates - Energy and Environment Solutions
- Ian Potter, Alberta Innovates - Technology Futures
- Todd Pugsley, University of Saskatchewan
- Ron Quick, Sustainable Ventures Inc.
To the Members of PTAC
Petroleum Technology Alliance Canada,

We have audited the statement of financial position of PTAC Petroleum Technology Alliance Canada as at December 31, 2009 and the statements of operations and changes in net assets, and cash flows for the year then ended. These financial statements are the responsibility of the organization's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of PTAC Petroleum Technology Alliance Canada as at December 31, 2009 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting.

Lo Porter Hetu  
Certified General Accountants  
Calgary, Alberta, Canada  
February 16, 2010.

PETROLEUM TECHNOLOGY ALLIANCE CANADA 2009 ANNUAL REPORT

Auditor’s Report

PTAC PETROLEUM TECHNOLOGY ALLIANCE CANADA
STATEMENT OF FINANCIAL POSITION
As at December 31, 2009

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>$100,102</td>
<td>$47,453</td>
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<tr>
<td>Marketable Securities</td>
<td>2,984,244</td>
<td>2,817,635</td>
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<tr>
<td>Accounts Receivable</td>
<td>568,200</td>
<td>796,030</td>
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<tr>
<td>Prepaid Expenses</td>
<td>84,476</td>
<td>63,194</td>
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<tr>
<td></td>
<td>3,737,022</td>
<td>3,724,312</td>
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<tr>
<td>Property And Equipment</td>
<td>48,066</td>
<td>68,827</td>
</tr>
<tr>
<td></td>
<td>3,785,088</td>
<td>3,793,139</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LIABILITIES</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts Payable and Accrued Liabilities</td>
<td>$359,279</td>
<td>$523,820</td>
</tr>
<tr>
<td>Deferred Revenue</td>
<td>400,621</td>
<td>624,351</td>
</tr>
<tr>
<td>Deferred Contributions Related to Operations</td>
<td>1,580,614</td>
<td>1,538,059</td>
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<tr>
<td></td>
<td>2,340,514</td>
<td>2,686,230</td>
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</table>

<table>
<thead>
<tr>
<th>NET ASSETS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Invested in Property and Equipment</td>
<td>$48,066</td>
<td>$68,827</td>
</tr>
<tr>
<td>Unrestricted</td>
<td>1,396,508</td>
<td>1,038,082</td>
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<tr>
<td></td>
<td>1,444,574</td>
<td>1,106,909</td>
</tr>
<tr>
<td></td>
<td>$3,785,088</td>
<td>$3,793,139</td>
</tr>
</tbody>
</table>
### Measurement and Accountability

#### Membership Revenue by Category

PTAC’s 2009 membership was comprised of 188 active members, grossing $583,356 revenue at year end 2009. PTAC provides a variety of services and benefits to our members, including collaborative research and technology development, project facilitation services, event coordination, event registration discounts, access to the knowledge centre, opportunities to serve on technical steering committees, and a complimentary bi-weekly newsletter.

<table>
<thead>
<tr>
<th>Category</th>
<th>Revenue 2009</th>
<th>Revenue 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producers</td>
<td>$294,151</td>
<td></td>
</tr>
<tr>
<td>Service &amp; Supply Companies</td>
<td>164,175</td>
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<tr>
<td>Individuals</td>
<td>1,552</td>
<td></td>
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<tr>
<td>Government</td>
<td>53,905</td>
<td></td>
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<tr>
<td>Transporters</td>
<td>31,460</td>
<td></td>
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<tr>
<td>Learning</td>
<td>13,975</td>
<td></td>
</tr>
<tr>
<td>Research Providers</td>
<td>19,298</td>
<td></td>
</tr>
<tr>
<td>Midstream Processors</td>
<td>4,840</td>
<td></td>
</tr>
</tbody>
</table>

#### Project Expenditure

Since inception in 1996, PTAC has facilitated the launch of 285 projects or new project phases valued at $142.9 M. Of those, PTAC facilitated 28 new projects, initiatives, and project phases valued at $5.5M in 2009.
PTAC MEMBERS
193 members as at March 15, 2010

PRODUCERS – 27
ARC Resources Ltd.
Athabasca Oil Sands Corp.
Barracuda Energy
BP Canada Energy Company
Canovus Energy Inc.
Chevron Canada Limited
ConocoPhillips Canada
Devon Canada Corporation
EnCana Corporation
EnerMark Inc.
 Husky Energy Inc.
 IIP Technologies (Canada) Inc.
 Imperial Oil Limited
 Lantario Energy Ltd.
 Nexen Inc.
 Pengrowth Management Limited
 Penn West Petroleum Ltd.
 Petro-Canada Resources
 QuickSilver Resources Canada Inc.
 Shell Canada Resources Ltd.
 Syncrude Inc. – Resources Group
 Talisman Energy Inc.
 Total Exploration & Production Ltd.
 Trident Exploration Corporation
 Unconventional Gas Resources Canada
 Vermilion Gas Resources Canada

INDIVIDUALS – 8
Blair, Jim
Coulter, Brad
Hobie, Bryan
Kearney, John
Kenny, James
Lloyd, Eric
Putt, Ken
Todd, Murray

TRANSPORTERS – 4
Enbridge Pipelines Inc.
Bayera Energy Ltd.
Pembina Pipelines
TransCanada Pipelines Ltd.

SERVICE AND SUPPLY COMPANIES – 116
3M Canada - Oil and Gas Division
Abandonable Environment Services Corp.
Advanced Geotechnology
Advanced Measurements Inc.
Affinion Oil and Gas Division
AEGON Canada (formerly Great Britain)
Alina Energy Inc.
AGAR Canada Corporation
AGAT Laboratories Ltd.
Alfa Laval - Process Technology Oilfield Marketing Unit
Altek Power Corporation
AMEC Earth & Environmental
Amperage Energy Inc.
ARCADIS Canada
Boreas Laser Inc.
Bosch Engineering & Technology
Brine Add Fluids Ltd.
CS Oilfield Enterprises Ltd.
Canada Tech Corporation
Canadian Fertilizers Limited
CH2M Hill Energy & Chemicals
Chinook Engineering Ltd.
Citaram Engineering
CJL Cooled Tubing Supply
Clearstone Engineering Ltd.
Chocolate Energy Group
Comtech Energy Services
ComplyMark Ltd.
Complete Modelling Group Ltd.
Cooper & Associates Inc.
Cybera
Daily Oil Bulletin
Delta C Technologies Inc.
Delta – Research and Development, Tax
Digital Time Capture
E&P Technologies Inc.
EBA Engineering Consultants
 - Research Department
ENEFEN Energy Efficiency Engineering Ltd.
EnvironSafe Technologies Inc.
Envirosoft Products Inc.
Envirotech Engineering
EnviroVault Canada Ltd.
Epic
Epsilon Consulting Services Ltd.
Epicentre Consulting Ltd.
ERT Systems Inc.
Expro Group Canada Inc.
Extreme Telematics Corp.
Fekete Associates Inc.
Ferus Gas Industries
Firmsoft Technologies Inc.
Fractal Systems Inc.
Gas Liquids Engineering Ltd.
Graham Environmental Ltd.
Gulfplus Power Inc.
geoLOGIC systems Ltd.
GEOSYS Inc.
GHG Solutions Corp.
GreenPath Energy Ltd.
Ground Effects Environmental
GuardOne, Inc.
Geolith Inc.
Heli Energy Engineering Inc.
HTC Purenergy
HydroNat Reservoir Systems Ltd.
InSiteView Technologies Inc.
IJKM Equipment Ltd.
JPRM Inc.
Katch Kani Limited
KPMG High Technology Practice Group
Kincon Industries Ltd.
Kodiak Services Ltd.
 - Technology Department
LiData Inc.
Macleod Dixon
Maple Leaf Environmental Ltd.
MAPEN Energy Engineering
Meggitt Space Division
McMorin Consulting
Meridian Environment.
MEI Resources
Methanol Recovery Technologies
MME Gas Systems Limited
Mojave Desert (Technology, Enterprise Group)
Maple Leaf Environmental Ltd.
McCall Engineering
MCF Resources
Marathon Environmental
MatTHEdesign Development Ltd.
Millennium Energy Solutions Ltd.
Molycor Oil & Gas Vertical Team
MPG Environmental Ltd.
New Paradigm Engineering Ltd.
Newco Tank Corp
Norwest Engineering Inc.
Oilflow Solutions Inc.
Orion Projects Inc.
Oxidor Canada Inc.
P.K. Services International
Paradigm Shift Technologies Inc.
Paradox Access Solutions Inc.
Paxor Systems Inc.
Potinite Associates Inc.
Potomac Sevret Group
Proxair Canada Inc.
Presscal Ltd.
PricewaterhouseCoopers LLP
Technology (ITCE) Practice
Process Ecology Inc.
ProTechtest
Q’Max Solutions Inc.
Quadrise Fuel System Inc.
Rainmaker Global Business Development
REM Technology Inc.
Renascence Consulting Group Inc.
Rogers Communications Inc.
RWDI Air
Schulmberger of Canada
Seal Well Inc.
ShawCor Ltd.
Siemens Product Lifecycle
 - Management Software Ltd.
Sky Hunter Exploration Ltd.
SNC Lavalin – Studies and
Development Projects
Spartacuss Associates Ltd
StatOilHydro Canada Ltd.
Stantec Consulting Ltd.
Syvaden Inc.
Systemsware Innovation Corporation
Technosol Engineering Ltd.
Terra Water Systems LP
Terraprobe Group
The Moorhead Group LLC
Total Combustion Inc.
Total Pacific Environment Energy
Trojan Well Service Ltd.
Trito Industries Inc.
Triple D Technologies Inc.
Tundra Boiler & Instrumentation Ltd.
Ultrafabrics Industries Ltd.
USB Limited Partnership
Veolia Water Solutions & Technologies
Water Control Systems Ltd.
WaterWare/Komers
Younkers Welding Ltd.

RESEARCH PROVIDERS – 10
Alberta Innovates - Technology Futures
Alberta Sulphur Research Ltd.
Dew Engineering and Development LLC
EI DuPont Canada Company
El DuPont Canada Company
Natural Resources Canada
Petroleum Technology Research Centre
Pure Elements Environmental Solutions
Saskatchewan Research Council
Syncrude Canada Ltd.
TIPM Laboratory (Parks Inc.)

LEARNING INSTITUTIONS – 3
Southern Alberta Institute of Technology
University of Alberta
University of Calgary

GOVERNMENT – 5
Alberta Innovates - Energy and
Environment Solutions
Alberta Finance & Enterprise
CRA Canada Revenue Agency
Province of British Columbia
Saskatchewan Ministry of Energy
and Resources

PRODUCERS – 27
ARC Resources Ltd.
Athabasca Oil Sands Corp.
Barracuda Energy
BP Canada Energy Company
Canovus Energy Inc.
Chevron Canada Limited
ConocoPhillips Canada
Devon Canada Corporation
EnCana Corporation
EnerMark Inc.
 Husky Energy Inc.
 IIP Technologies (Canada) Inc.
 Imperial Oil Limited
 Lantario Energy Ltd.
 Nexen Inc.
 Pengrowth Management Limited
 Penn West Petroleum Ltd.
 Petro-Canada Resources
 QuickSilver Resources Canada Inc.
 Shell Canada Resources Ltd.
 Syncrude Inc. – Resources Group
 Talisman Energy Inc.
 Total Exploration & Production Ltd.
 Trident Exploration Corporation
 Unconventional Gas Resources Canada
 Vermilion Gas Resources Canada

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Blair, Jim
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Hobie, Bryan
Kearney, John
Kenny, James
Lloyd, Eric
Putt, Ken
Todd, Murray

TRANSPORTERS – 4
Enbridge Pipelines Inc.
Bayera Energy Ltd.
Pembina Pipelines
TransCanada Pipelines Ltd.

SERVICE AND SUPPLY COMPANIES – 116
3M Canada - Oil and Gas Division
Abandonable Environment Services Corp.
Advanced Geotechnology
Advanced Measurements Inc.
Affinion Oil and Gas Division
AEGON Canada (formerly Great Britain)
Alina Energy Inc.
AGAR Canada Corporation
AGAT Laboratories Ltd.
 - Hydrocarbon Division
Alberta-Pacific Forest Industries, Inc.
 - Woodlands Division
Alfa Laval - Process Technology Oilfield Marketing Unit
Altek Power Corporation
AMEC Earth & Environmental
Amperage Energy Inc.
ARCADIS Canada
Boreas Laser Inc.
Bosch Engineering & Technology
Brine Add Fluids Ltd.
CS Oilfield Enterprises Ltd.
Canada Tech Corporation
Canadian Fertilizers Limited
CH2M Hill Energy & Chemicals
Chinook Engineering Ltd.
Citaram Engineering
CJL Cooled Tubing Supply
Clearstone Engineering Ltd.
Chocolate Energy Group
Comtech Energy Services
ComplyMark Ltd.
Complete Modelling Group Ltd.
Cooper & Associates Inc.
Cybera
Daily Oil Bulletin
Delta C Technologies Inc.
Delta – Research and Development, Tax
Digital Time Capture
E&P Technologies Inc.
EBA Engineering Consultants
 - Research Department
ENEFEN Energy Efficiency Engineering Ltd.
EnvironSafe Technologies Inc.
Envirosoft Products Inc.
Envirotech Engineering
EnviroVault Canada Ltd.
Epic
Epsilon Consulting Services Ltd.
Epicentre Consulting Ltd.
ERT Systems Inc.
Expro Group Canada Inc.
Extreme Telematics Corp.
Fekete Associates Inc.
Ferus Gas Industries
Firmsoft Technologies Inc.
Fractal Systems Inc.
Gas Liquids Engineering Ltd.
Graham Environmental Ltd.
Gulfplus Power Inc.
geoLOGIC systems Ltd.
GEOSYS Inc.
GHG Solutions Corp.
GreenPath Energy Ltd.
Ground Effects Environmental
GuardOne, Inc.
Geolith Inc.
Heli Energy Engineering Inc.
HTC Purenergy
HydroNat Reservoir Systems Ltd.
InSiteView Technologies Inc.
IJKM Equipment Ltd.
JPRM Inc.
Katch Kani Limited
KPMG High Technology Practice Group
Kincon Industries Ltd.
Kodiak Services Ltd.
 - Technology Department
LiData Inc.
Macleod Dixon
Maple Leaf Environmental Ltd.
MAPEN Energy Engineering
Meggitt Space Division
McMorin Consulting
Meridian Environment.
MEI Resources
Methanol Recovery Technologies
MME Gas Systems Limited
Mojave Desert (Technology, Enterprise Group)
Maple Leaf Environmental Ltd.
McCall Engineering
MCF Resources
Marathon Environmental
MatTHEdesign Development Ltd.
Millennium Energy Solutions Ltd.
Molycor Oil & Gas Vertical Team
MPG Environmental Ltd.
New Paradigm Engineering Ltd.
Newco Tank Corp
Norwest Engineering Inc.
Oilflow Solutions Inc.
Orion Projects Inc.
Oxidor Canada Inc.
P.K. Services International
Paradigm Shift Technologies Inc.
Paradox Access Solutions Inc.
Paxor Systems Inc.
Potinite Associates Inc.
Potomac Sevret Group
Proxair Canada Inc.
Presscal Ltd.
PricewaterhouseCoopers LLP
Technology (ITCE) Practice
Process Ecology Inc.
ProTechtest
Q’Max Solutions Inc.
Quadrise Fuel System Inc.
Rainmaker Global Business Development
REM Technology Inc.
Renascence Consulting Group Inc.
Rogers Communications Inc.
RWDI Air
Schulmberger of Canada
Seal Well Inc.
ShawCor Ltd.
Siemens Product Lifecycle
 - Management Software Ltd.
Sky Hunter Exploration Ltd.
SNC Lavalin – Studies and
Development Projects
Spartacuss Associates Ltd
StatOilHydro Canada Ltd.
Stantec Consulting Ltd.
Syvaden Inc.
Systemsware Innovation Corporation
Technosol Engineering Ltd.
Terra Water Systems LP
Terraprobe Group
The Moorhead Group LLC
Total Combustion Inc.
Total Pacific Environment Energy
Trojan Well Service Ltd.
Trito Industries Inc.
Triple D Technologies Inc.
Tundra Boiler & Instrumentation Ltd.
Ultrafabrics Industries Ltd.
USB Limited Partnership
Veolia Water Solutions & Technologies
Water Control Systems Ltd.
WaterWare/Komers
Younkers Welding Ltd.

RESEARCH PROVIDERS – 10
Alberta Innovates - Technology Futures
Alberta Sulphur Research Ltd.
Dew Engineering and Development LLC
EI DuPont Canada Company
El DuPont Canada Company
Natural Resources Canada
Petroleum Technology Research Centre
Pure Elements Environmental Solutions
Saskatchewan Research Council
Syncrude Canada Ltd.
TIPM Laboratory (Parks Inc.)

LEARNING INSTITUTIONS – 3
Southern Alberta Institute of Technology (SAIT)
University of Alberta
University of Calgary

GOVERNMENT – 5
Alberta Innovates - Energy and
Environment Solutions
Alberta Finance & Enterprise
CRA Canada Revenue Agency
Province of British Columbia
Saskatchewan Ministry of Energy
and Resources