

ARCHIVES

Newsletter of the Petroleum History Society

March 2005; Volume XVI, Number 2

P.H.S. ANNUAL GENERAL MEETING and 2003 AWARDS CEREMONY

March 23, 2005

Speaker: Earle Gray
Petroleum Historian
"From Governor General to Glenbow"

Our Annual General Meeting this year will be a tripleheader event. Besides the transaction of Society business, we will hold our long-awaited 2003 Awards Ceremony (see page 5) and will be entertained by a very well known petroleum historian who will explain to us the background to his very intriguing talk title. See page 4 for background and speaker bio.

TIME: 4:00 p.m., Wednesday, March 23, 2005.

Reception: 4:00 - 4:15 p.m.

Business Meeting: 4:15 - 4:45 p.m.

2003 Awards Ceremony: 4:45 – 5:15 p.m.

Guest Speaker: 5:15 – 6:00 p.m.

Mix and Mingle with friends and colleagues (cash bar and munchies): 6:00 - 6:30 p.m.

PLACE: Fairmont Palliser Hotel (133 - 9th Avenue S.W.) – Penthouse (check marquee)

COST: No charge.

R.S.V.P. if you wish to attend to: Clint Tippett, 691-4274 or clinton.tippett@shell.com by noon Monday, March 21

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www.petroleumhistory.ca

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THE PETROLEUM HISTORY SOCIETY THE BULL WHEEL





Next Board Meeting: The Board will meet next on Wednesday, March 23, 2005 at 3:30 p.m. at the Palliser Hotel in the Spanish Room, immediately before the AGM.

Volunteers: We are always on the lookout for people with the energy and dedication to help us grow and to undertake projects on the Society's behalf. Please contact Clint Tippett (691-4274), Doug Cass (268-4203) or Hugh Leiper (249-0707) if you would like to get involved.

Next Luncheons: Our next luncheon has been scheduled for Wednesday, May 4, 2005 at the Palliser and will feature Paul Chasko speaking about his recently released book "Developing Alberta's Oil Sands". We are seeking speakers and interesting subjects. If you would like to consider presenting, please contact Clint Tippett, President P.H.S., at 691-4274 or Director Debbie Knall at 780-463-3859 (Edmonton).

P.H.S. Membership: Micky Gulless, Past President and Membership Director, has indicated that P.H.S. membership now stands at 155. Website is getting over 3000 visits per month!

Canadian Centre for Energy Information: We are pleased to announce that the P.H.S. has entered into a "Content, Marketing and Traffic Partnership" with the Centre. This arrangement is an expression of the mutually beneficial cooperation that we hope will exist between our two organizations. One of its most tangible benefits will be a greater level of visibility for the P.H.S. and its activities. Other newly affiliated organizations are Athabasca University and the Canadian Chemical Producers' Association. Please see www.centreforenergy.com for more details. Of particular interest to our members is their on-line historical volume "Evolution of Canada's Oil and Gas Industry" that can be downloaded free of charge.



www.centreforenergy.com

Member Donations: We are very pleased to recognize the following members of the Society for their generous recent donations in support of our work. They are John Andrichuk, John Downing, Dave Barss, Paul Feunning, Ron Manz, George Pemberton and Updis Upitis. Thanks!

Oilweek Publication: Oilweek and the Oil and Gas Inquisitor have teamed up to produce an excellent 130 page historical volume called "Alberta 1905-2005 – Turning on the Taps".

P.H.S. Pin Sets: Our pin sets (of 6) have been reduced in price to \$40.00. Please contact the Society if you are interested in buying one or several sets. These make great and original Calgary- or Western Canada-related gifts. Detailed comprehensive descriptions accompany each plush-boxed set.

Publication: "Reef Madness – Charles Darwin, Alexander Agassiz and the Meaning of Coral" by David Dobbs, 2005. Pantheon Books, 306 p., \$35.00. Paraphrased from the slipcover – "At the book's centre, two of the [19th] century's most bitter debates: one about the theory of natural selection and the other about the origin of coral. The subject of contention [of the latter] was "the coral reef problem" that pitted Darwin against Louis Agassiz's son." Given the importance of reefs as hydrocarbon traps, this volume will be of interest to petroleum geologists and others. For those of you too young to make the connection, the title is a takeoff on "reefer madness".

C.S.E.G.: The Canadian Society of Exploration Geophysicists has offered the P.H.S. some booth space at their upcoming convention in Calgary. If you are interested in helping organize a presence for our group, please call Clint Tippett at 691-4274.

Middle East Petroleum History: For those of you planning to attend the joint convention of the A.A.P.G. and C.S.P.G. in June, the following talks will be presented on the afternoon of Sunday, June 19, following the field trip to Turner Valley:

- 1. John Scott (Petroleum Geological Analysis Pty.) on how Iraq became second in reserves in the region so rapidly and yet holds the promise if still more giants.
- 2. Marlan Downey (Consultant) on the mistakes made in Iran and how to avoid making them again.
- 3. Mahmoud Abdul-Baqi (Aramco) on the meteoric success of exploration in Saudi Arabia.
- 4. Abdulkader M. Afifi (Aramco) on the special circumstances of source, reservoir and traps that are responsible for the cornucopia of hydrocarbons in the region.

Twin Provinces Oil Company: We received a question through our website about a company by this name that was active in southwestern Saskatchewan during the mid-1930's. However, we haven't been able to find any formal trace of it in the usual corporate tabulations. Does anyone out there remember such an outfit? We'd like to pass along the information to our inquirer.

Sports Teams and "The Patch": We have started an informal compilation of team names from the west that are in some way related to the oil and gas industry – or at least could be interpreted in that sense. First off, although we don't hear much about them these days, would, of course, be The Calgary Flames and The Edmonton Oilers. Calgary's current lacrosse team is The Roughnecks (also apparently nicknamed The Riggers) while the local basketball team is (or was) The Drillers. Anymore out there?

EnergyWalk: An initiative called the "EnergyWalk Centennial Initiative" has started rolling with plans to develop a number of historical displays related to the industry for exhibit in Calgary for the 100th anniversary. Various corporate partners have pledged money or venues and the P.H.S. will play a small role by advising the organizers on the availability of historical resources.

Vignettes: At a recent "Legends in Wildcatting" event in Houston, renowned wildcatter Marvin Davis is quoted as saying: "Early on I drilled 80 straight dry holes and I was walking around talking to myself. I figured there was no oil left in the U.S. I remember I took my family on an outing and when we went to the gas station the pump wouldn't work. That's when my wife told me "you can't even find oil at a gas station!"".

ANNUAL GENERAL MEETING PRESENTATION PREVIEW "FROM GOVERNOR GENERAL TO GLENBOW"

A Talk by Earle Gray
Author of "The Great Canadian Oil Patch"

How half a million acres of scattered farm lands and freehold mineral rights in central Alberta yielded the fabulous Eric Harvie fortune and the great Glenbow and Devonian Foundation philanthropies is a well known story.

But behind Harvie's sudden wealth is the untold dramatic story of 40 bitter years of struggle and financial failure as the fate of these properties and their hidden wealth were guided by successive hands. They included a Governor General who sought to promote British investment and thereby strengthen Britain's ties to Canada; his financier son-in-law whose bold speculations would threaten even the Bank of England; a former mayor of Medicine Hat who envisioned a land colonization scheme that would add 1.5 million people to the population of the prairie provinces and increase the national wealth by billions of dollars; a former Alberta premier who in the crushing years of the Great Depression sought relief for farmers who had yet to pay for their purchases of the surface rights; a British trustee whose telegrams went unanswered when London was being bombed during the Second World War; a former mayor of Edmonton who thought that transferring title to the mineral rights "would cost more than the whole thing is probably worth."

About the author:

Earle Gray was editor of Oilweek magazine in Calgary for nearly 20 years. In the 1970s he was director of public affairs for Canadian Arctic Gas, a consortium of major oil and gas companies that planned and researched a multi-billion dollar gas pipeline from Alaska's Prudhoe Bay and the Mackenzie River Delta and Beaufort Sea in the Canadian Arctic. He is a former publisher, editorial consultant, speechwriter and has written for such publications as the Canadian Encylopedia, Maclean's, Financial Post, Toronto Star, and others. He is the recipient of numerous business writing awards, and a lifetime achievement award from the Petroleum History Society.

He is the author of six books about the energy industry: "The Great Canadian Oil Patch", "The Impact of Oil", "The Great Uranium Cartel", "Wildcatters", "Super Pipe", and "Forty Years in the Public Interest, a history of the National Energy Board". His latest book, "The Great Canadian Oil Patch: The Petroleum Era from birth to peak", is scheduled for launch in April 2005. It is a new version of his 1969 classic history of Canada's petroleum industry, from the development of coal oil by Abraham Gesner in the 1850s to the development of the world's largest petroleum deposit in the Athabasca oil sands of northeastern Alberta.

Gray is a native of Medicine Hat but grew up on the West Coast and lived in Alberta and British Columbia for 41 years before moving to Ontario in 1972. He has deep family roots in of the two Western provinces and in Ontario. His work as a journalist and author has taken him to every province and territory of Canada, from St. John's to Tofino, from the 49th parallel to the northern tip of the Arctic Islands. He and his wife, Joan, live in Woodville, Ontario, "but my home," says Gray, "is Canada."

Thanks to P.H.S. Director Bob Bott for arranging Earl's involvement in our A.G.M. and to Bill Whitelaw of JuneWarren Publishing for facilitating this presentation.

PETROLEUM HISTORY SOCIETY AWARDS FOR 2003

Book of the Year for 2003: to Mr. Paul Rubak for "Big Wheels Across the Prairie – A History of trucking in Alberta prior to 1960". BWATP Publisher, 502 p.

Article of the Year Award for 2003: to Dr. Christina Burr of the University of Windsor for her work "Some Adventures of the Boys: Enniskillen Township's "Foreign Drillers," Imperialism, and Colonial Discourse, 1873-1923", published in Labour, v. 51, Spring 2003, pp. 47-80.

Multimedia Award for 2003: to the Oil Sands Discovery Centre in Fort McMurray.

Preservation Award for 2003: to Mr. Dennis Teskey of Turner Valley.

Lifetime Achievement Award for 2003: to Mr. Frank Dabbs.

OBITUARY – DONALD W. AXFORD

It is with deep regret that we inform our membership of the passing of P.H.S. Lifetime Member Don Axford on March 3, 2005. The following industry-related text is extracted from his published obituary notice:

"Don was born in Winnipeg on September 16. 1920. He joined the Canadian Navy in 1943 and was a radar operator in the North Atlantic protecting Allied shipping lanes. After the war Don completed a B.Sc. degree in geology and physics at the University of Manitoba. Early work experiences surveying around lake Superior and canoeing the Mackenzie Delta provided the early fascination for a remarkable fifty-seven year career in the oil industry.

Don spent the first twenty-eight years of his career with Mobil Oil. He was a pioneering figure in the discovery and development of Canada's east coast energy industry. By his mid-fifties Don joined PetroCanada briefly and then started his own small company, together with his son Jon, and enjoyed another twenty-eight years pursuing his passion for exploration. He was called by some "a wild eyed explorationist", "the father of Canada's east coast energy industry", "the billion barrel man" or simply "The Chief".

Don received numerous recognitions for his achievements including a gold medal from the Canadian Society of petroleum Geologists and induction into the Canadian Petroleum Hall of Fame in 2001. People will remember his endless energy, enthusiasm, curiosity for everything and everyone and the twinkle in his eye. Even in deteriorating health Don remained always curious of industry events and dreamed of his next big venture."

Note from C. Tippett, P.H.S. President: Don Axford personified exploration with his upbeat and optimistic business and personal perspectives on the industry. As an explorationist myself, I always felt energized after a discussion with Don. In his later years he had returned to his east coast roots, working in conjunction with the new Canadian Superior of Greg Noval to promote and drill new prospects on the Scotian margin – clearly a high stakes explorer's game if there was one – and he reveled in it. I also recall Don at an Aubrey Kerr book launch – he bet me \$10.00 that a billion barrel field would be discovered in the Mackenzie Corridor – maybe it will be!

DR. SEUSS AND THE STANDARD OIL COMPANY

Extracts from an article in the "Petro-Philatelist" by Hugo Vargas, Winter 2005

Hugo Vargas is one of the main drivers behind the Petroleum Philatelic Society International – i.e those folks who collect and study the stories behind stamps that relate in some way (often somewhat obscurely) to the oil industry. Rigs and tankers are shoe-ins but racing cars make it partly because of oil industry advertising and explosive manufacturers like the Nobels fall within their net because of the Nobel family's extensive involvement in the early European and Russian oil fields. Hugo has been wandering the Internet and has discovered an interesting connection between the well-known children's author Dr. Seuss (real name Theodore Seuss Geisel) and the Standard Oil Company. The following are excerpts from his recent article, which in turn quotes his Internet source, in which he poses the question of whether a just-minted U.S. Postal service stamp depicting the author and illustrator ought to be considered an "oily-issue".

"Before Theodore Seuss Geisel found fame as a children's book author, the primary outlet for his creative efforts was magazines. His first steady job after he left Oxford was as a cartoonist for "Judge", a New York City publication. In 1927 one of his cartoons opened the way to a more profitable career, as well as greater public exposure, as an advertising illustrator. This fortuitous cartoon depicts a medieval knight in his bed, facing a dragon who had invaded his room, and lamenting "Darn it all, another dragon. And just after I've sprayed the whole castle with Flit" (a well known brand of bug spray).

According to an anecdote in Judith and Neil Morgan's book "Dr. Seuss and Mr. Geisel" (Random House, 1995), the wife of an ad executive who handled Standard Oil Company's account saw the cartoon. At her urging, her husband hired the artist, thereby inaugurating a 17-year campaign of ads whose recurring plea "Quick, Henry, the Flit" became a common catchphrase. These ads, along with those for several other companies, supported the Geisels throughout the Great Depression and the nascent period of his writing career. Many examples of his works are preserved in the Mandeville Special Collections Library at the University of California in San Diego."

WELCOME TO WESTERN CANADA

The following brief description of Western Canada's petroleum-related history is extracted from the "Welcome to Cosmopolitan Cowtown" in the registration brochure for the upcoming A.A.P.G – C.S.P.G. convention in June. Does anyone see any problems with this description?

"Western Canada's hydrocarbon history can be traced back to the first oil seeps known to exist along the Athabasca River. When the first European explorers arrived, First Nations peoples were using bitumen from these seeps to patch their canoes. The source of these seeps later led to the discovery of the Athabasca Tar Sands deposits. In 1883, a Canadian Pacific Railroad crew drilling for water made Alberta's first shallow gas discovery, marking the beginning of Western Canada's petroleum industry. The modern/post-war search for oil and gas in Canada began in 1947, and Alberta's oil and gas industry took off in the late 1960's. Due to the energy crisis of the 1970's the price of oil soared and the City of Calgary boomed. Growth and development occurred quickly and oil and gas transformed Calgary from a regional town into a major city."

THE DRILLING OF SHELL-ABERCAN GOVENLOCK #1 By P.H.S. Member Richard McCreary

It has been quite a while so some of the details are a little fuzzy. Geologic retrieved the well ticket for me and it seems to agree with my memories.

My first well log was on Shell-Albercan Govenlock # 1 in the southwest corner of Saskatchewan across Willow Creek about a mile from the Canada Customs Station. Location 2-7-1-28W3. The well spudded October 30, 1951 and was about 2000 feet deep when I arrived in early November (U.S. Thanksgiving). I was the junior man on the Core Laboratories wellsite sample logging crew of three. Ray Gould was in charge. He and Terry Adamson, the other man, shared a housekeeping suite at the Shamrock Motel in Havre, Montana - 40 paved miles south to which they drove daily.

South of Coutts/Sweetgrass I saw my first Burma Shave signs:

HERE LIES STUBBORN O'DAY
DIED DEFENDING HIS RIGHT OF WAY
RIGHT, DEAD RIGHT AS HE SPED ALONG
COULDN'T BE DEADER
IF HE'D BEEN DEAD WRONG
- BURMA SHAVE

Driving east from Great Falls we had passed several billboards:

"WHEN IN HAVRE - STAY AT THE SHAMROCK MOTEL RECOMMENDED BY CLYDE R. THOMAS".

The menu in the Shamrock restaurant said "owner: Clyde R. Thomas".

Govenlock was 15 or 20 gravel miles north and had a garage, a post office, a tiny general store and several other buildings. My wife and I had a trailer on the lease and usually drove to Havre for groceries, clearing Canadian Customs at the border then reporting to U.S. Customs in Havre when we got there.

The well was operated by Shell. Bill Weaver was the engineer and Art Rupp the geologist. The well ticket says "unknown" but I think Lloydminster Petroleum was the contractor. Lloyd. Pet. had successfully drilled innumerable shallow wells in the Lloyd area and wanted to get into deeper well drilling. Lloyd had agreed to buy the triple drilling rig from Albercan provided it could drill 6000 feet.

Albercan had repatriated the rig from Venezuela. There were four English diesel motors, three on the substructure and a never used spare by the lease fence. A full time mechanic tried to keep the motors running by welding shut the auxiliary oil coolers (definitely unnecessary in a Saskatchewan winter) and keeping a water hose running into the leaking radiators. Drilling continued as long as any two motors were OK. When they got down to one motor, they pulled out in low-low until another motor was ready, then drilling recommenced. Slowly by today's standards, 200 - 300 feet per day, until we reached the Mississippian where cherty dolomite wore out the hardest bits (W7R) in just a few feet and many hours and we shortened our sample interval to five feet.

Then the clutch burnt out and they had to finish coming out of the hole slamming into gear without the clutch. This additional stress bent the drum. The line had to be un-spooled. The drum was sent to Calgary to have the drum axle straightened, returned to the lease, reinstalled, re-spooled and drilling recommenced. During this time the clutch had also been repaired or replaced.

Sometime before or after the clutch problem, a rod on the mud pump went through the side of the pump. This blew the pop valve sending a jet of mud across the sump knocking over the outhouse on the far side of the sump. Luckily nobody was in it. A replacement pump was found on an idle rig in Montana. The Texas crew had left. (No reasonable crew would drill at –40 degrees.)

Eventually the English diesels were replaced with twin Jimmies and drilling proceeded. As the well neared TD and anticipating road bans, a Schlumberger truck and a shothole rig were brought in too so that the seismic people could measure the one-way travel times. This took longer than planned because spring had begun and the feet of snow were underlain by inches of slush that triggered numerous shorts in the geophone cables. Also most of the shotholes were used up before all of the various travel times had been measured, so part of the seismic crew went back to Havre while the shothole crew drilled some more holes.

That night, Willow Creek flooded and went from a few inches deep to several feet and from a few feet to tens of feet wide. The crew rigged a line across the creek so people could cross. The road to Havre washed out in several places. After the flood subsided the trip to Havre could only be made by leap-frogging from one vehicle to another that had been stranded in between washouts and walking across the washouts.

In recording the travel times the Schlumberger line hit a bridge and got snarled but was successfully pulled out and drilling recommenced. Because of the roads a replacement truck could not be brought in so the Schlumberger crew Steve Buckley and Tom Wilson made Schlumberger history by cutting out the snarled line and (with the manual) rewiring the sonde in the field (a job normally done in the shop). Rewiring was completed before the well reached TD. The well TD'd on April 23, 1952 at a depth of 7383 feet.

Anticipating the thaw, I had parked my car on the other side of the creek before the flood and when the well was logged. I had a cat tow my trailer to Govenlock. The cat took the most direct route that meant going through a few sloughs thereby flooding the bottom foot of my trailer. I hitched a ride to my car and drove to my trailer. The water line was below the bed so we slept and headed for home in the morning. The washouts had been largely repaired but there was still a lot of the highway under water, hoses pumping water from one side to the other. Heading west from Havre many stretches were lakes with highway edges marked by stakes. You'd go slow so you didn't flood the motor.

One stretch, water, water, only the stakes marking the edge of the pavement and the tops of barbwire fences showing it was not always a lake. On one fence post out in the lake in the distance a sign, coming closer, getting larger: JESUS SAVES.

We thank Richard for taking the time to write down his memories of this exciting time of exploration in the Canadian oil patch. We encourage all of you to do likewise and will do whatever we can to assist you in making this happen. Often the most difficult part is getting started. And don't let modern technology intimidate you! Many aspects of word processing and Internet research are so simple that you'll be wondering why you didn't do it a long time ago. Finally, advances in "publishing on demand" make it possible to print small editions cheaply.

HOW DID PETRO-CANADA GET ITS 25% IN PARTS OF THE FRONTIERS?

The following is a summary of some background research that was done by Director Bob Bott and President Clint Tippett in an attempt to resolve the question of how Petro-Canada, as an arm of the Federal Government back in the last 1970's, was able to obtain a 25% working interest in certain exploration lands formerly held exclusively by certain multinational companies. The best example of this appears to be on the Grand Banks, offshore Newfoundland and Labrador, where Petro-Canada was able to come on board prior to the discovery of the giant Hibernia Field that today is one of its key oil properties.

I (CT) was fortunate enough to find what I think could be considered the "smoking gun" in this case. The reference is from the Daily Oil Bulletin of May 21, 1976, pages 1-3, and the story being covered was the speech made by the [un-named] Federal Minister in tabling the Policy Paper for the new Canada Oil and Gas Land Regulations on May 19, 1976. This text is preserved in the DOB 50th anniversary volume. The Minister prefaces his remarks by noting that the existing regulations had been introduced in 1961 and that they allowed the permitting of frontier lands with cumulative potential tenure of over 50 years if all the potential extensions through production life were exercised. Hence there was little scope for the turnover of prospective land for a long, long time. Therefore:

"Under the new Regulations, existing permits will remain in effect but with modified requirements. However, there will be no 21-year oil and gas leases. Instead the permitee, if still in the exploration stage of operations, will be able to go to a five year provisional lease covering the entire permit area." [The earlier regulations had involved a 50% relinquishment after the permit stage.], and

Preference for Petro-Canada

As an agency of the Government, Petro-Canada has an important role to play in accelerating exploration for oil and gas in the frontier areas. It will be given preferences with respect to the acquisition of oil and gas rights in Canada Lands. Petro-Canada, subject to meeting levels of work obligations similar to those imposed on other companies, will have the right to acquire any existing areas not now covered by permits or leases, as well as 25% of any acreage that returns to the Crown upon the termination of permits or leases over the 7-year period following the promulgation of the new Regulations. Lands in these catagories are commonly termed Crown Reserves.

Where no prior discoveries have been made, Petro-Canada will have the option to acquire a working interest of up to 25 percent in permits that are granted special renewals by the Minister as well as any provisional leases issued while operations are still in the exploration stage, with no payback of past exploration expenditures to the permitee."

From this I take it that Petro-Canada could pick up 100% of land not currently held (presumably by just asking for it), 25% of lands that were relinquished and then reacquired and up to 25% of exploration lands that were to make the transition from permits to special renewals. I believe that the last was the situation on the Grand Banks, hence Petro-Canada's 25% interest there. In such situations the existing owners would normally expect some sort of "equalization" for past expenditures as the cost of "joining the club" but the new regulations specifically exempted the "new boy" Petro-Canada from that requirement or expectation. This is not to say that such "free" back-ins are unheard of even today. Sometimes existing partners welcome a dilution of their interests and expect no premium if early exploration is unsuccessful but a continuation if efforts is desired at a lower per-company cost. Having said that, there is normally some sort of a farmin with the new player paying a "promote" to the original stakeholders.

The only unknown in this is whether Petro-Canada was able to obtain, as a part of the back-in, the seismic that the existing partners would have shot, or if a separate purchase would have been required. As far as I can see, the Grand Banks and perhaps the Nova Scotia Shelf were the only places that this back-in was exercised on existing exploration lands. There is no evidence of it in the Mackenzie Delta and Beaufort. The policy certainly did not impact pre-existing discoveries. So in effect, despite a lot of the hysteria about "confiscation", the situation was perhaps not as bad as some made it seem. Conclusion - the 25% effect was not introduced as a part of the creation of Petro-Canada. It came in 1976, shortly after the birth of the national oil company, and was further enshrined in the National Energy Policy in 1980.

<u>Bob Adds</u>: Alastair Gillespie would have been minister of EMR in 1976, but it's possible the announcement might have been made by the Minister of Indian Affairs and Northern Development, which would have been either Judd Buchanan or Warren Allmand in 1976. One more reference found on this topic -- page 30, "CANADIAN GOVERNMENT POLICIES TOWARD INWARD FOREIGN DIRECT INVESTMENT," *Working Paper Number 24, Industry Canada, September 1998 (Globerman, Steven)* http://tinyurl.com/5qsc6

"In 1972, Cabinet approved a directive stressing that there must be Canadian content in any major development project on Canada's lands in the far North and Atlantic offshore. The 1970s saw other discriminatory initiatives toward foreign investors in the energy sector. In the early 1970s, the federal government blocked two important takeovers in the resources sector, and created the Canada Development Corporation and Petro-Canada to increase Canadian ownership in that sector.

In August 1977, the Canada Oil and Gas Land Regulations were amended to give effect to the governments previously announced policy that authority would be granted for production of petroleum from federal public lands only if Canadian-equity interests in the undertaking amounted to at least 25 per cent. Arguably the most dramatic government initiative on foreign ownership in the energy sector was the National Energy Program (NEP), announced on October 28, 1980. Three goals were identified for the NEP: (i) at least 50-per-cent Canadian ownership of oil and gas production by 1990; (ii) Canadian control of a significant number of larger oil and gas firms; and (iii) an early increase in the share of the oil and gas sector owned by the Government of Canada (Crane, 1982).

The major features of the NEP include the following: (i) some tax write-offs such as depletion allowances were replaced by direct grants (the Petroleum Incentives Program) weighted in favour of Canadian-controlled companies; (ii) land rules were changed in the frontier regions making Petro-Canada or another Crown agency a 25-per-cent partner in all oil and gas developments, while a minimum of 50- per-cent Canadian participation would be required in any production from Canada Lands; (iii) a new petroleum and gas revenue tax was introduced; and (iv) Petro-Canada was instructed to begin discussions with industry to negotiate the takeover of several foreigncontrolled firms. The federal government officially altered the NEP several times after its introduction in 1980. The first alterations took place in May 1981 and dealt primarily with the 25per-cent back-in clause. The government offered to pay some of the exploration costs of the projects it was backing into from the money it would receive once production began. In addition, it agreed to pay 25 per cent of exploration expenditures for wells started before December 31, 1980, and for "declared significant" discoveries within two years of that date (Jenkins, 1986). Other alterations affected the pricing system; these distinguished between "new oil" eligible to receive world prices in domestic markets and "old oil" eligible to receive less than world oil prices."