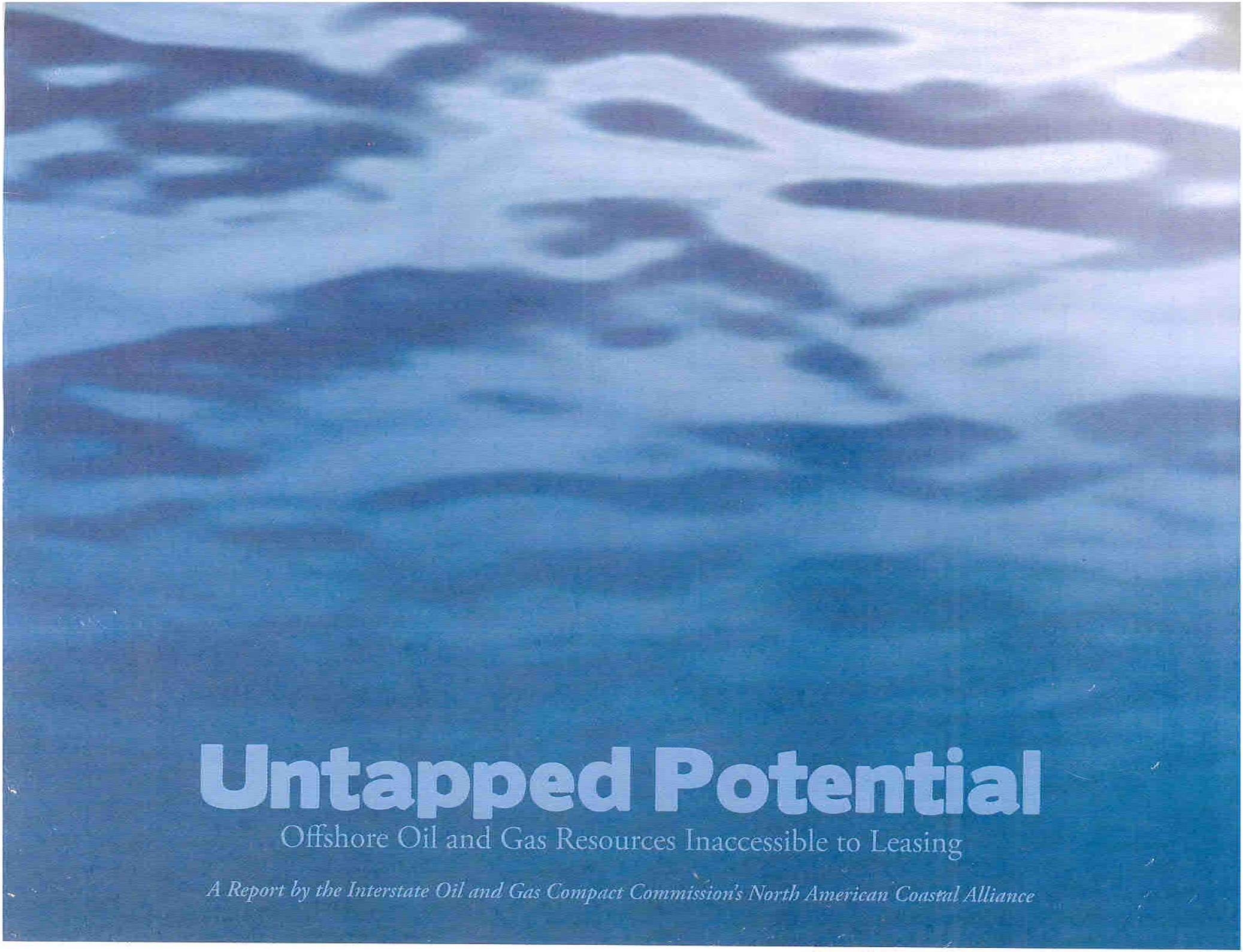

Untapped Potential

Offshore Oil and Gas Resources Inaccessible to Leasing

A Report by the Interstate Oil and Gas Compact Commission's North American Coastal Alliance

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About the North American Coastal Alliance

The North American Coastal Alliance (NACA) is a workgroup comprised of Interstate Oil and Gas Compact Commission (IOGCC) members whose states or provinces are located along coastlines.

The NACA focuses on areas of concern to coastal states and provinces through a forum of open dialogue and sharing of compliance information and environmental research results. In many areas, oil, gas and marine ecosystems represent a continuum between state/provincial and federal waters.

The IOGCC is a multi-state government agency that champions conservation and efficient recovery of the nation's oil and natural gas resources while protecting health, safety and the environment. Chartered by Congress in 1935, the organization consists of the governors of 37 states (30 members and seven associate states) that produce most of the oil and natural gas in the United States, as well as seven international affiliates.

IOGCC member states participating in the NACA include Alabama, Alaska, California, Florida, Louisiana, Mississippi, Texas, Virginia and Canadian provinces British Columbia, Newfoundland and Labrador, and Nova Scotia. The U.S. Department of Energy provides a significant amount of funding for NACA activites.

Executive Summary

This report presents the results of a collaborative effort of member states and provinces making up the North American Coastal Alliance (NACA), a workgroup of the Interstate Oil and Gas Compact Commission (IOGCC).

The report is intended to provide a complete characterization of potential offshore oil and natural gas resources in North America that are currently unavailable for leasing and development.

> The intent of the NACA in this report is to compile information to facilitate informed decision-making regarding future opportunities associated with potential oil and gas resources in these areas currently unavailable for leasing and development, not to recommend policy.

North American offshore moratorium areas are estimated to contain nearly 135 trillion cubic feet (Tcf) of natural gas and more than 30 billion barrels of crude oil (estimates are mean values). To provide some context, estimated technically recoverable oil and natural gas resources in these areas represent an amount comparable to current proved reserves in the United States. As of December 31, 2004, proved U.S. crude oil reserves amounted to 21.4 billion barrels and proved natural gas reserves (dry) were estimated to be 192.5 Tcf.[1]

Regardless of the existence of areas subject to moratoria and/or executive withdrawals, offshore oil and natural gas production in North America currently plays, and will continue to play, an important role in the energy picture of the United States and Canada. In fact, offshore production from the Outer Continental Shelf (OCS) of the Gulf of Mexico and California accounts for 29 percent of U.S. oil production (double the contribution of offshore production only 12 years ago) and 21 percent of U.S. natural gas production. This is a result of both an increase in production from the federal OCS and a decrease in onshore production.

In Canada, oil production from the offshore areas of Eastern Canada accounts for roughly 10 percent of total Canadian oil production, including bitumen. Offshore natural gas production in Eastern Canada accounts for approximately 2 percent of total Canadian natural gas production.

If the potential resources in areas that have been withdrawn from leasing or are under moratoria could be developed, they would play an important role in meeting future North American energy requirements from hydrocarbon resources on the continent. Therefore, it is important for citizens and policy makers to understand the significance of these potential North American oil and gas resources when making energy development decisions.

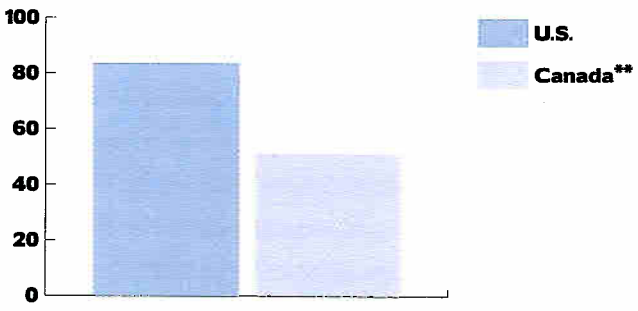
[1] U.S. Energy Information Administration, *U.S. Crude Oil, Natural Gas and Natural Gas Liquids Reserves: 2004 Annual Report (Advanced Summary)*, DOE/EIA-0216(2004), September 2005.

At a Glance

Estimate of Undiscovered Technically Recoverable Resources in Moratorium Areas*

	Gas (Tcf)	Oil (Bbbls)
United States - Federal OCS	77.95	18.07
United States - Nonfederal	5.55	1.22
Total United States	83.50	19.29
Total Canada**	51.10	10.96
TOTAL U.S. and Canada	**134.60**	**30.25**

Natural Gas (Tcf)



Crude Oil (Bbbls)

* No areas in offshore Mexico were considered in this analysis.
** Estimates for British Columbia are median in-place resources.

Characteristics of Resource Estimates

Resource estimates described in this report are undiscovered technically recoverable resources,** or the portion of the hydrocarbon estimated on the basis of geologic knowledge and theory to exist outside known accumulations, that are recoverable with current technology. The economic feasibility of recovering these resources is not considered. This is in contrast to the resource in-place, which represents the total hydrocarbon volume present without regard to recoverability. This value can be considered fixed and is determined only by the local geologic conditions. In contrast, the technically-recoverable portion of the resource is not fixed, but tends to grow with time as a result of experience and technology improvements.

There is much uncertainty associated with estimating undiscovered resources. Estimates are generally presented in terms of: 1) a high or optimistic estimate, 2) a low or conservative estimate, and 3) a mean value, which is the arithmetic average of all values in the distribution.

In this report, only mean values are reported.

Estimates in this report are based on existing knowledge of oil and gas resources in North American offshore waters and may change after additional exploration.

Introduction

SUPPLY AND DEMAND PROJECTIONS

A general tightening of world hydrocarbon supply and growing demand is causing hydrocarbon prices to increase, putting growing financial burdens on North American consumers.

The United States consumes more petroleum than it currently produces, and is the world's largest importer of crude oil and petroleum products. In 2004, nearly 5.7 billion barrels of crude oil were supplied to U.S. refineries. Of this, nearly 2 billion barrels came from U.S. production, including about 564 million barrels of oil (31 percent) from U.S. offshore production.[2] To satisfy its supply requirements, the United States imported 3.7 billion barrels of crude oil, representing nearly two-thirds of U.S. oil supplies.[3] More importantly, the Energy Information Administration (EIA) currently forecasts that the United States will require 7.6 billion barrels of crude oil annually by 2025, an increase of 33 percent.[4]

In addition, the United States consumed almost 22.4 Tcf of natural gas in 2003. In 2004, the United States produced more than 20 Tcf (wet) of natural gas, including about 4.0 Tcf (20 percent) from U.S. offshore production. Most of the remaining demand was met by natural gas imports from Canada, with a relatively small portion met by imports of liquefied natural gas (LNG).[5] As with the oil forecast, U.S. natural gas consumption is predicted to grow to 30.6 Tcf annually by 2025, an increase of nearly 37 percent.[6]

Today, approximately 8 percent of U.S. oil supply and 14 percent of U.S. natural gas supply comes from Canada. Canada's future capability to deliver oil and natural gas resources to the United States depends on many factors, including Canada's own energy needs. Canada consumes more than 784 million barrels of oil and 3.1 Tcf of gas annually, while producing 876 million barrels of oil and 7.8 Tcf of gas annually, making Canada a net exporter of oil and gas. Similar to the United States, Canada's oil consumption is forecast to grow 29 percent by 2025. While conventional oil production is forecast to decline by 30 percent, Canadian production of unconventional oil is massive, and recovery from oil sands deposits is forecast to increase nearly four-fold over this same time period.[7] Canada will remain a net exporter of oil for the foreseeable future.

On the other hand, growth in Canadian natural gas production is not expected to keep pace with demand, so the amount of U.S. natural gas imports coming from Canada is forecast to decline.

Combined, the United States and Canada are net importers of crude oil, and are essentially self-sufficient in natural gas. However, as oil and gas demand continues to increase, it is estimated that the portion of U.S. and Canadian combined petroleum needs that will be met by imports will continue to grow. Moreover, as gas demand continues to grow, these two countries also could become a net importer of natural gas in the future.

The offshore areas of the United States and Canada provide some of the last frontiers on the continent for new potential conventional hydrocarbon supply sources. However, it is important to acknowledge that new offshore discoveries, depending on whether or not they are in developed or undeveloped basins, can typically take up to 15 years to reach the market. Therefore, plans made today to develop new offshore oil and gas resources may not result in corresponding production until between 2015 and 2020.

[2] Minerals Management Service, MMS/MRN, May 2005 (http://www.mms.gov/stats/OCSproduction.htm).
[3] Energy Information Administration, *Petroleum Supply Annual 2004*, Volume 1, Table 1.
[4] Energy Information Administration, *Annual Energy Outlook 2005*, Table A11.
[5] Energy Information Administration, *Natural Gas Annual 2003*, Table 1.
[6] Energy Information Administration, *Annual Energy Outlook 2005*, Table A13.
[7] Energy Information Administration, *Annual Energy Outlook 2005*, Table A20.

PURPOSE OF THIS REPORT

The purpose of this study is to report on the hydrocarbon resource potential in offshore areas of the United States and Canada that currently are under leasing moratoria or are otherwise withdrawn or excluded from exploration, drilling and production by legislation or policy.

This report is unique in that it is the first complete compilation of data on resources that are not available for leasing and development in the offshore waters of the United States and Canada, including those in state and federal waters of the United States, and those in federal and provincial waters of Canada.

The report outlines the areas under moratoria or otherwise inaccessible, and presents current estimates of oil and gas resources in those areas.[8] The report can be used as a quick reference document that summarizes the supply potential currently inaccessible to leasing and development.

DEFINITION OF MORATORIUM AREAS

NACA defines "moratorium areas" as those offshore that effectively have restrictions, whether through legislation or policy, which preclude exploration and development activity. In the United States, these include areas that have been subject to congressional moratoria or presidential withdrawal from leasing, and include: (1) presidential withdrawal of additional leasing under Section 12 of the Outer Continental Shelf Lands Act until after June 30, 2012, applying to all of California, Oregon, and Washington, and specific areas on the East Coast; and (2) long-running congressional leasing moratoria enacted annually as part of the Department of Interior's appropriations which, in addition to the aforementioned areas, apply to the U.S. Atlantic Coast, the eastern Gulf of Mexico (except for areas proposed, but not offered, as part of Lease Sale 181 in 2001) and, until 2004, the North Aleutian Basin in Alaska.

For Canada off the West Coast, in 1972, the federal government placed a policy moratorium on tanker traffic in the Inside Passage coming from Alaska and on offshore exploration activity. In 1989, in response to the Exxon Valdez oil spill and the Nestucca barge oil spill, the Province of British Columbia placed a policy moratorium on offshore oil and gas exploration and development. In 2003, the provincial government asked the federal government to consider lifting the moratorium. The federal government undertook a scientific review, a public review, and a First Nations Engagement Process; and is considering its position as of the date of this report. The moratorium on Georges Bank off Nova Scotia was extended to 2012 and corresponds with the presidential moratorium on the U.S. side of Georges Bank.

Throughout the remainder of this report, use of the term "moratorium areas" refers to those in the United States subject to congressional moratorium and/or presidential withdrawals, and those areas in Canada also subject to moratoria.

MORATORIUM AREAS CONSIDERED

In this report, the areas currently impacted by a ban on leasing and/or exploration and development in the United States include: (1) Offshore Alaska, which includes the North Aleutian Basin planning area and the Alaska-owned waters of Katchemak Bay; (2) the Offshore Atlantic planning areas of North Atlantic, Mid-Atlantic, South Atlantic, and the Straits of Florida; (3)

[8] For purposes of this study, estimates of resource potential for moratoria/withdrawal areas in the U.S. federal OCS were provided by the U.S. Minerals Management Service based on the 2003 National Assessment. For state and provincial waters, estimates generally are based on information provided by the state and provincial governments.

Offshore Eastern Gulf of Mexico (except for the areas proposed, but not offered, as part of Lease Sale 181); (4) the unleased areas of the Offshore Pacific, which includes the states of California, Oregon and Washington; and (5) the Great Lakes Region.

In Canada, the areas currently under moratoria that are believed to have hydrocarbon resource potential include: (1) the West Coast of British Columbia and (2) Georges Bank off Nova Scotia. Lancaster Basin in Northern Canada had exploration activity suspended from 1976 to 1997 for environmental assessment purposes and remains a very environmentally sensitive area.

INTEGRATED MANAGEMENT OF COASTAL AND OFFSHORE INTERESTS

The environmental concerns associated with exploration and development of oil and natural gas must be weighed against the benefits that these energy resources could potentially provide. This is particularly true in coastal and offshore areas.

The governments of the United States and Canada are striving to develop management plans that balance all competing uses and promote national economic opportunities without compromising the coastal and offshore environments. These management plans necessarily must include varying, site-specific accommodations and requirements, as well as appropriate mitigation measures. For example, in 1972, U.S. Congress enacted the Coastal Zone Management Act (CZMA), which established a program to encourage voluntary partnerships between the federal government and coastal states dedicated to comprehensive management of the nation's coastal resources to preserve, protect, develop, restore and enhance coastal zone resources while balancing competing national economic, cultural and environmental interests. The CZMA requires that each federal activity within or outside the coastal zone that affects areas and natural resources in the zone be consistent with the goals and policies of the appropriate state coastal management program. State coastal management programs must anticipate and plan for effects of energy facilities. In practice, CZMA affords the states broad discretion in the extent of energy activities, including offshore oil and gas development, to be allowed.

In many areas, the nations have not imposed wholesale moratoria on large blocks of the offshore, but have determined that some areas are so unique and sensitive as to preclude any activity. For example, the U.S. National Marine Sanctuary Program, administered by the National Oceanic and Atmospheric Administration, manages and protects specially designated areas of the nation's oceans and Great Lakes for their habitat, ecological value, threatened and endangered species, and historic, archeological, recreational, and aesthetic resources. Thirteen national marine sanctuaries are part of this program, with steps currently underway to designate one additional coral reef ecosystem as the 14th national marine sanctuary.

In Canada, there also are a variety of federal and provincial legislative designations to protect the marine environment, including marine protected areas, national marine conservation areas, national parks with marine components, marine wildlife areas, migratory bird sanctuaries as well as those provincial parks or recreation areas, ecological reserves, protected areas and wildlife management areas, established in a marine environment.

Both the United States and Canada require environmental assessments of areas proposed for development. In the United States, under the National Environmental Policy Act (NEPA) of 1969, federal agencies must include an environmental review process early in the planning for proposed actions to help public officials make decisions based on an understanding of environmental consequences and take actions that protect, restore, and enhance the environment. In Canada, virtually all phases of offshore oil and gas activity are subject to some form of environmental assessment or review. In areas of federal jurisdiction, the Canadian Environmental Assessment Act (CEAA) applies. The primary purpose of CEAA is to ensure that environ-

mental assessment is undertaken as early as possible in the project planning and approval process before irrevocable decisions are made.

In both Canada and the United States, federal and state/provincial governments require mitigation of adverse impacts.

Outside of the current moratorium areas, responsible exploration and development in sensitive and/or unique environments can, and does, occur. Appropriate and reasonable restrictions and/or stipulations can be imposed on exploration and development activities that would ensure protection of these environments. In both the United States and Canada, an oil and gas operator must take steps, regardless of jurisdiction, to ensure that the environment is appropriately protected. Offshore oil and gas exploration and production activities are subject to environmental restrictions and mitigation requirements imposed by both federal and state/provincial government, from the initial leasing of areas for exploration to the ultimate decommissioning of offshore platforms.

For example, in the Alaska offshore, specific areas within the Beaufort Sea lease areas are deferred or withdrawn from the lease offerings, especially areas related to protecting habitat, cultural resources and subsistence fishing. For those areas that are available for lease, stipulations on exploration and development are imposed to ensure protection of sensitive biological populations and habitat. In addition, lessees must develop oil spill response plans, which must include identification and appropriate measures to ensure protection of areas of special biological and cultural sensitivity.

RECENT POLICY INITIATIVES - UNITED STATES

Concerns over energy supply in the United States have many looking for innovative ideas to gain access to restricted areas with petroleum potential. At the federal level, several legislative initiatives have been proposed to modify state offshore boundaries, enhance revenue/impact sharing with the states, and give states greater control over leasing in federal waters off their shores that have previously been under moratoria for leasing and development. Some states are also taking major steps to encourage additional oil and gas development off their coasts. [9]

Arguably the most important legislative actions affecting offshore oil and gas development activities are represented in provisions in the Energy Policy Act of 2005 that:

- Authorize the Department of Interior (DOI) to develop an inventory of oil and gas resources on the OCS, including those areas under moratoria.

- Prohibit the issuance of any new federal or state lease in the Great Lakes for oil and gas drilling, whether from offshore or onshore directional wells.

- Amend the Coastal Zone Management Act to establish a 160-day deadline for closure of the CZMA administrative record, unless the Secretary of Interior stays this deadline to receive supplemental/clarifying information.

[9] South Carolina General Assembly, 116th Session, 2005-2006, H. 4128 (http://www.scstatehouse.net/sess116_2005-2006/bills/4128.htm). Virginia General Assembly, 2005-2006 HB1132 (http://leg1.state.va.us/cgi-bin/legp504.exe?061+sum+HB1132).

- Provide a variety of incentives to avoid the premature abandonment of marginal oil and gas production and stimulate new development of resources underlying federal lands.

- Establish a financial assistance program for coastal states with offshore oil and gas production, to assist in coastal enhancement, restoration and conservation programs.

- Direct DOE to establish a research and development program for ultra-deep and unconventional natural gas and other petroleum resources.

RECENT POLICY INITIATIVES - CANADA

In 1997, Canada's Oceans Act, comprehensive oceans management legislation, came into force. This was followed by Canada's Oceans Strategy in 2002, the federal government's policy for the "management of estuarine coastal and marine environments." In 2005, the federal government published its Oceans Action Plan. "The plan serves as the overarching umbrella for coordinating and implementing oceans activities, and as the framework to sustainably develop and manage our oceans."

The Oceans Action Plan is based on four pillars: (1) International Leadership, Sovereignty and Security (2) Integrated Oceans Management for Sustainable Development (3) Health of the Oceans; and (4) Oceans Science and Technology.

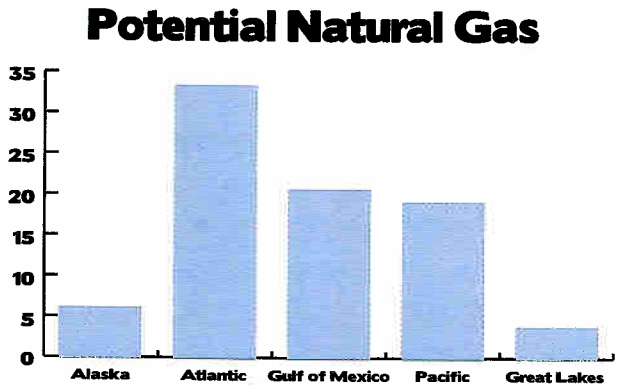
In 2004, Canada and British Columbia entered into a Memorandum of Understanding respecting the implementation of Canada's Ocean Strategy off the Pacific Coast of Canada. The purpose of the MOU is to advance collaboration between the parties to implement specific activities and objectives identified in Canada's Oceans Strategy.

United States Overview

A mean estimate of the undiscovered natural gas underlying U.S. moratorium areas is approximately 83.5 Tcf, and mean undiscovered crude oil is estimated to be 19.3 billion barrels.

The National Petroleum Council in 2003 estimated mean undiscovered natural gas resources in moratorium areas to be 79 Tcf,[10] but excluded the Alaska OCS, the Great Lakes, and state waters from this estimate.

The updated review by the Minerals Management Service (MMS) in 2003 showed that the estimates of resource potential in most regions remain close to the 2000 numbers. The most dramatic increase is in the Eastern Gulf of Mexico area, in which the estimates increased from 8.5 to more than 20 Tcf of gas and from 2.7 to 3.65 billion barrels of oil. These increases are primarily the result of new field discoveries resulting from the recent leasing of tracts in the Eastern Gulf.



Offshore U.S.

Estimate of Undiscovered Technically Recoverable Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
Alaska	6.23	0.48
Atlantic	33.34	3.45
Gulf of Mexico	20.72	3.65
Pacific	19.21	11.44
Great Lakes	4.00	0.27
TOTAL	**83.50**	**19.29**

[10] National Petroleum Council, *Natural Gas – Meeting the Challenges of the Nation's Growing Natural Gas Demand*, Volume 1, Summary Report, 2003.

Alaska

There are two moratorium areas associated with the state of Alaska. The first affects waters in the North Aleutian Basin OCS planning area (formerly the Bristol Bay Basin planning area). The second affects state waters in Katchemak Bay, which is located in the southern portion of the Cook Inlet Basin between Point Pogibshi and Anchor Point on the Kenai Peninsula.

FEDERAL - NORTH ALEUTIAN BASIN

Congress established a moratorium on leasing and drilling for the North Aleutian Basin OCS in October 1989. The moratorium was extended several times during the 1990s by federal legislation but was eventually discontinued by Congress. However, on June 12, 1998, the basin was withdrawn from leasing by presidential order until June 30, 2012.

Oil companies that had acquired leases in the planning area prior to the imposition of the moratorium brought suit against the federal government. In 1995, in a settlement with Chevron Oil Company, the federal government bought back the North Aleutian OCS leases for a reported 10 percent of the original lease acquisition costs.

The leasing moratorium originally had wide support of the commercial fishing industry, as well as native and environmental groups. However, the fishing industry subsequently has crashed economically, and many of the local residents, including fishermen, have reconsidered, and now support leasing and developing the hydrocarbon resources on native, private, state and federal leases.

STATE - NORTH ALEUTIAN BASIN

The state of Alaska, one of the original proponents of the federal OCS moratorium, had maintained an ad hoc moratorium in the North Aleutian Basin state waters from the late 1980s through 2004. In response to the change in attitude toward possible oil and gas development by the local Bristol Bay population, the state has initiated a program of oil and gas exploration incentives in the North Aleutian Basin. On December 16, 2004, an exploration license in the general vicinity of Dillingham, Alaska was awarded on 329,000 acres of primarily onshore lands.

The state of Alaska also has completed a best interest finding for a North Aleutian Basin lease offering involving approximately 4.5 million gross onshore and offshore acres. On October 26, 2005, the state of Alaska conducted its first lease sale in offshore state waters in the Bristol Bay area.[11] This Alaska Peninsula area-wide sale encompassed 1,047 tracts ranging in size from 1,280 to 5,760 acres in an area that stretches from the Nushagak Peninsula in the north, down the north side of the Alaska Peninsula to just north of Cold Bay.

STATE - KATCHEMAK BAY

Katchemak Bay in the southern portion of the Kenai Peninsula in state waters is the location of several important fishing ports and a number of aquaculture projects. In 1976, a state law was passed prohibiting oil and gas activities in the area. The prohibition followed an oil and gas lease sale in the area, and was then followed by a lease buy back by the state government, in a series of events that are similar to those described for the North Aleutian Basin federal OCS. The area of the prohibition was modified in 1986, and now comprises approximately 150 square miles. Several oil and gas wells have been drilled either adjacent to or within Katchemak Bay. These wells have encountered porous sandstones with significant gas shows, though

[11] Alaska Department of Natural Resources, Division of Oil and Gas, *Notice of Competitive Oil and Gas Lease Sale and Issuance of Final Best Interest Finding and Alaska Coastal Management Program Determination for Alaska Peninsula Area Wide 2005*, July 25, 2005 (http://www.dog.dnr.state.ak.us/oil/products/publications/akpeninsula/2005/sale_notice.pdf).

no strong evidence of hydrocarbon liquids has yet been encountered in the immediate area.

RESOURCES UNDER MORATORIA

Outcropping portions of the North Aleutian Basin Tertiary fill and the underlying Mesozoic sequence on the Alaska Peninsula are associated with common oil seeps and oil staining.[12] The evidence of oil in these rocks is so strong that the Alaska Peninsula was one of the first areas drilled in the early 20th Century.

The sparsely drilled North Aleutian Basin contains a primarily non-marine Tertiary basin fill overlying a complex series of Mesozoic predominantly marine sediments. The MMS estimates indicating a gas prone hydrocarbon charge are influenced strongly by geochemical analysis from wells that have not penetrated mature oil-prone source rocks.

The MMS has performed independent assessments of the economically recoverable undiscovered oil and gas resource in the North Aleutian Basin three times in recent years (1995, 2000, and 2005 {in press}). The most recent MMS estimate is based on a substantially different set of assumptions and methodologies compared to early MMS assessments. The most recent mean undiscovered resource estimates are 480 million barrels of oil and 6.18 Tcf of natural gas.

The North Aleutian Basin is highly analogous to the Cook Inlet Basin, a prolific oil and gas-producing basin in south-central Alaska. The similarities in these basins are especially relevant in the distribution of hydrocarbon source and reservoir rocks. Because of the significant hydrocarbon resource potential discovered in the Cook Inlet Basin (greater than 1.4 billion barrels of oil and 8.4 Tcf of natural gas), some geologists believe that the hydrocarbon resource potential in the North Aleutian Basin should be similar, and the MMS estimates of undiscovered resource potential in the basin may be too low.

For the purposes of this report, an undiscovered economically recoverable gas resource estimate for Katchemak Bay of 50 billion cubic feet (Bcf) was determined to be appropriate.[13]

Offshore Alaska

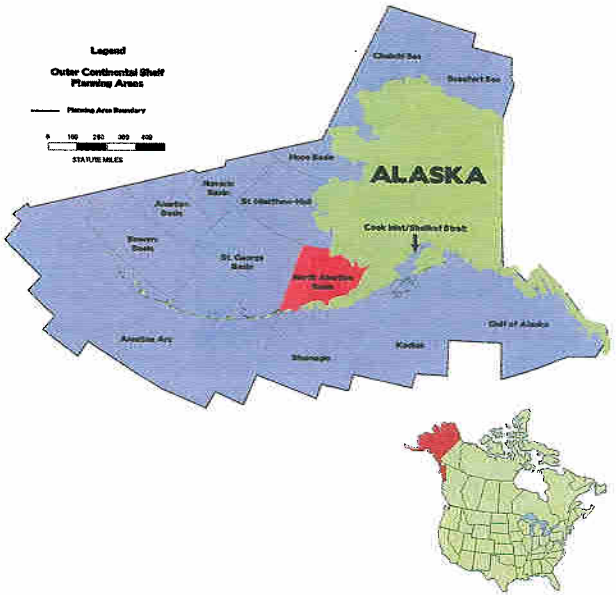
Estimate of Undiscovered Technically Recoverable Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
North Aleutian Basin*	6.18	0.48
Katchemak Bay**	0.05	-
TOTAL	**6.23**	**0.48**

* Estimates provided by the U.S. Mineral Management Service based on the 2003 National Assessment.

**Estimates provided by the Alaska Oil and Gas Conservation Commission for the purposes of this report.

Alaska Coast



[12] Alaska Department of Natural Resources, Division of Oil and Gas, *Alaska Peninsula Lease Sale: New DNR Geologic Report,* Media Release October 28, 2005 (http://www.dnr.state.ak.us/standard/dsp_media_release.cfm?id=543&title=Alaska%20Peninsula%20Lease%20Sale%3A).

[13] This estimate is based on an Alaska Oil and Gas Conservation Commission preliminary assessment that is based on onshore reserves covering a similar area just to the north, as analog to the Katchemak Bay. Although the section is thinner, there is at least one potential structure that could hold 50 Bcf of natural gas.

Atlantic Coast

FEDERAL - OFFSHORE ATLANTIC

Ten oil and gas lease sales were held in the Atlantic OCS between 1976 and 1983, where 9,240 blocks were offered and 433 leased.

A total of 49 exploratory wells and five Continental Offshore Stratigraphic Test (COST) wells were drilled.[14] Five wells discovered hydrocarbons, but were abandoned as non-commercial.

The Atlantic OCS, as defined by MMS, is divided into four planning areas along the Atlantic Seaboard: the North Atlantic, Mid-Atlantic, South Atlantic and the Straits of Florida:

- North Atlantic - The North Atlantic planning area lies offshore of the northeast portion of the United States extending from Maine to New Jersey. The area encompasses approximately 48.8 million acres (8,840 blocks). The main prospective areas are the Georges Bank area off Cape Cod, and the Baltimore Canyon Basin off Atlantic City. There was one lease sale in the late 1970s, with eight exploratory wells and two COST wells drilled. Between 1983 and 1990, most of the North Atlantic was withdrawn from leasing. The most recent scheduled lease sale in the North Atlantic was canceled.

- Mid-Atlantic - The Mid-Atlantic planning area lies offshore the Middle Atlantic states and extends from Rhode Island to North Carolina. The main prospective area is the Carolina Basin. The area encompasses approximately 82.2 million acres, and has had the most lease sales (five) in the Atlantic region (between 1976 and 1983), the majority of leases awarded, and the most wells drilled (32 exploratory, two COST). Most of the Mid-Atlantic was withdrawn from leasing in 1983. Eight leases remained active until November 17, 2000, when the interests in these leases in the federal waters offshore North Carolina were relinquished by Conoco, Shell Offshore and OYX USA.

- South Atlantic - The South Atlantic planning area lies offshore of the southern Atlantic states and extends from North Carolina to Florida. The main prospective area is the Southeast Georgia Embayment. The area encompasses approximately 114.2 million acres. No leases currently remain active. Several lease sales were held between 1978 and 1983, and six exploratory wells and one COST well were drilled in this area. Since 1983, all scheduled lease sales were either canceled or deferred, until the entire area was placed under moratorium in 1998.

- Straits of Florida - The Straits of Florida planning area in the Atlantic region lies offshore Florida, with the only lease sale in this area held in 1959. The Straits of Florida is not under moratorium since MMS canceled the last proposed sale in this area (Sale 140) in early 1998, as part of a litigation settlement on its five-year Program. There are no active leases in this area.

Regardless of the divisions in the MMS Atlantic OCS area, the geological setting ties all of these areas together and connects Nova Scotia to the Atlantic Mesozoic environment (see discussion on the Nova Scotia region of Canada for details).

[14] The Continental Offshore Stratigraphic Test (COST) well program was a federal government drilling program in the 1970s where energy company consortiums were allowed to drill a limited number of test wells to gain geologic information prior to anticipated federal leasing.

STATE - OFFSHORE ATLANTIC

No information is available from Maine to Florida on potential resource estimates in state waters off states adjacent to the Atlantic moratorium areas.

RESOURCES UNDER MORATORIA

The most recent MMS estimates for mean undiscovered resources in the moratorium areas of the Atlantic OCS are 3.45 billion barrels of oil and 33.34 Tcf of natural gas.

Offshore Atlantic*

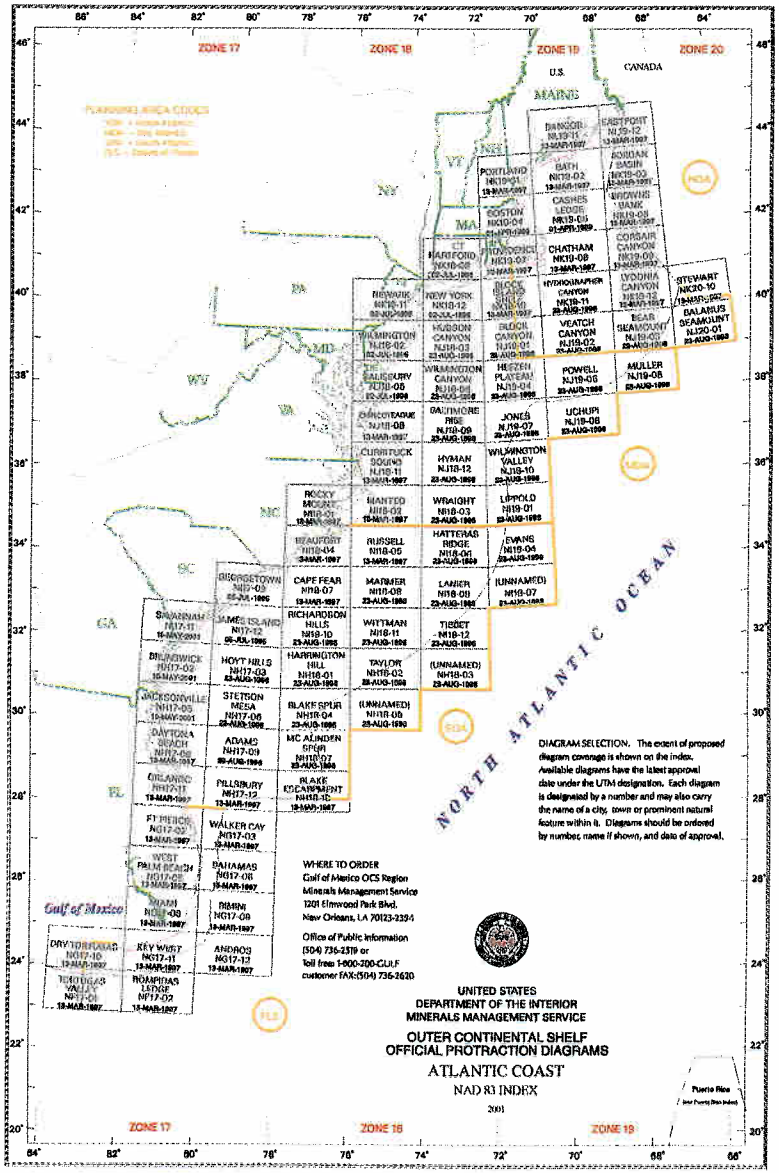
Estimate of Undiscovered Technically Recoverable Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
North Atlantic	n/a	n/a
Mid Atlantic	n/a	n/a
South Atlantic	n/a	n/a
Straits of Florida	n/a	n/a
Atlantic State Waters**	n/a	n/a
TOTAL	**33.34**	**3.45**

* Estimates provided by the U.S. Mineral Management Service based on the 2003 National Assessment. No breakdown by Planning Area was provided.

** For the purposes of this report, no estimates were provided for state waters off the Atlantic coast.

Atlantic Coast



Gulf of Mexico

On August 20, 2003, the U.S. Department of Interior celebrated the 50th anniversary of the Outer Continental Shelf Lands Act, as it reviewed bids for the Western Gulf of Mexico Lease Sale 187. This lease sale was the 100th offshore oil and gas lease sale conducted in the Gulf of Mexico. According to Secretary of Interior Gale Norton, "Over the past 50 years, lease sales ... have produced about 14 billion barrels of oil and about 150 trillion cubic feet of natural gas. They have also provided oil-in-kind to help fill the Strategic Petroleum Reserve, created thousands of jobs, and generated $145 billion in revenue from federal offshore collections."

FEDERAL - EASTERN GULF OF MEXICO OCS

However, not all of the Gulf of Mexico federal OCS is currently accessible for leasing and development. Leasing in the Eastern Gulf of Mexico has been limited over the last several decades. The Eastern Gulf planning area extends along the Gulf's northeastern coast for some 1,120 kilometers (700 miles) from Baldwin County, Alabama, southward to the Florida Keys. The area encompasses approximately 76 million acres, with water depths ranging from tens of meters to more than 3,000 meters (9,900 feet). Seaward of the state/federal boundary (three leagues or roughly nine miles off the Florida coast), the area extends southward for more than 480 kilometers (300 miles).

Drilling for natural gas and oil first took place in the Eastern Gulf of Mexico offshore Alabama and Florida more than three decades ago. The first sales held offshore Florida occurred in 1959 and resulted in 23 leases being issued. Exploratory drilling started in the Eastern Gulf of Mexico in the mid-1970s with the drilling of Destin Dome Block 162, located 64 kilometers (40 miles) south of Panama City, Florida. After two years of drilling and 15 dry holes, exploration ground to a halt. The 1980s ushered in three Eastern Gulf lease sales and renewed industry interest in this area. Finally, in the late 1980s, Chevron and Gulfstar made natural gas discoveries in the area. In October 1995, 73 oil and gas leases located south of 26 degrees north latitude were returned to the federal government as part of a litigation settlement.

Additional lease sales were held in the Eastern Gulf between 1973 and 2001. Lease Sale 181 in the Eastern Gulf of Mexico in 2001 initially offered a 6 million-acre expanse about 15 miles off the coast of Florida - a tract excluded from federal moratoria on new offshore oil leases that applies elsewhere. In July 2001, prior to the scheduled sale, the area offered was reduced to 1.5 million acres, and the sale's boundaries were adjusted. In the revised sale area, drilling can occur no closer than 100 miles offshore from Pensacola and 285 miles from Tampa. Subsequent leases in this reduced area have been offered.

Currently, there are 241 active leases in the Eastern Gulf of Mexico planning area. To date, more than 60 exploratory wells have been drilled in the Eastern Gulf and 20 wells have discovered natural gas, condensate, and/or crude oil.

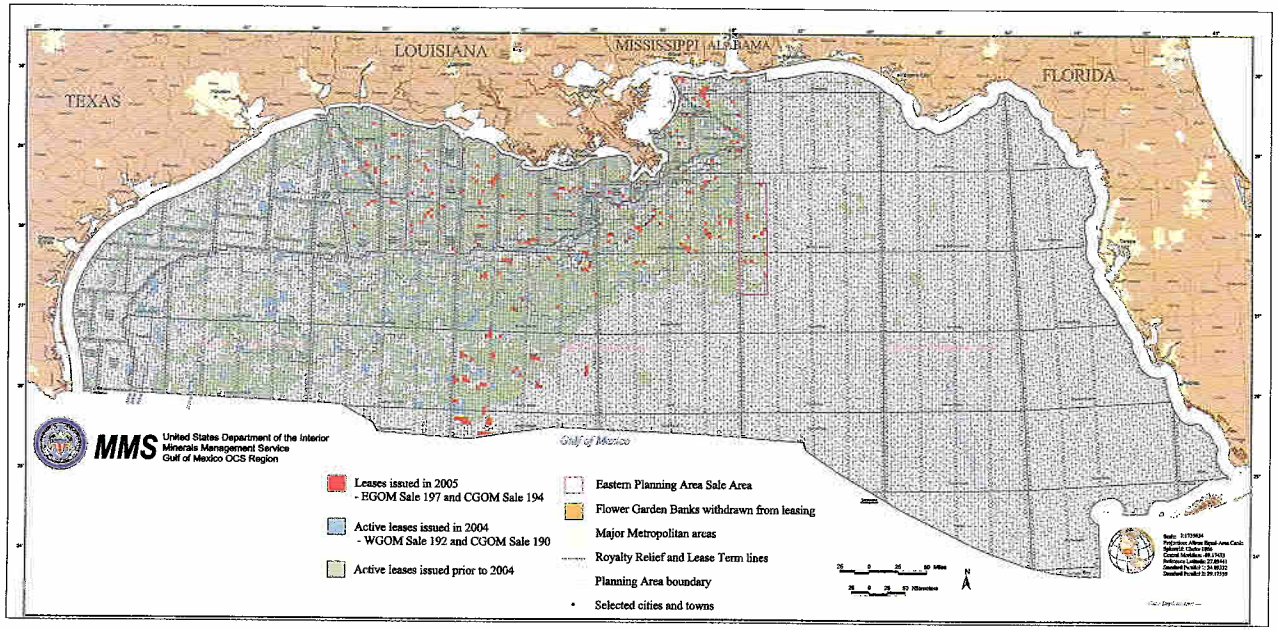
STATE WATERS IN THE GULF OF MEXICO

There are no moratoria in Texas, Alabama and Louisiana state waters. Essentially 75 percent of the 500,000 offshore acres off the coast of Mississippi are restricted from being leased for oil and gas. Moreover, in Mississippi, a bill was enacted in 2004 (Senate Bill 2853) that, among other things, prohibits mineral leasing of offshore lands except for certain blocks south of the state's barrier islands.

RESOURCES UNDER MORATORIA

In 2000, MMS estimated that between 10 and 18.9 Tcf of natural gas, and between 2.35 and 6.61 billion barrels of oil and condensate, were contained in the Eastern Gulf of Mexico federal OCS planning area. However, based on recent drilling successes, since Sale 181, these estimates have been increased substantially. The most recent MMS assessment of mean technically recoverable undiscovered oil and gas resources in the Eastern Gulf of Mexico is 3.65 billion barrels of oil and 20.22 Tcf of natural gas.

Gulf of Mexico



Gulf of Mexico*

Estimate of Undiscovered Technically Recoverable Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
Eastern Gulf	20.22	3.65
Gulf Coast State Waters**	0.50	-
TOTAL	**20.72**	**3.65**

* Estimates provided by the U.S. Mineral Management Service based on the 2003 National Assessment. No breakdown by planning area provided.

**For the purposes of this report, no moratorium areas existed in Alabama, Louisiana and Texas. Mississippi state waters currently under moratorium are estimated to contain 500 Bcf of natural gas.

In Mississippi state waters, an estimated 250 to 750 Bcf of technically recoverable resources correspond to the areas currently under moratoria.[15] For purposes of this report, 500 Bcf was assumed for this area. Therefore, this amounts to total estimated resources under moratoria in the Gulf of Mexico (federal and state waters) of 3.65 billion barrels of oil and 20.7 Tcf of natural gas.

[15] Mississippi Mineral Resources Institute, *Overview of Miocene Hydrocarbon Potential of Mississippi Sound and the Adjacent Onshore Areas*, Open File Report 04-2, February 5, 2004.

Pacific Coast

FEDERAL - PACIFIC OCS

All of California, Oregon and Washington have been subject to long-running leasing moratoria enacted annually as part of the U.S. Department of Interior's appropriations legislation. These states are split into four OCS planning areas: Washington-Oregon, Northern California, Central California and Southern California. Under authority of Section 12 of the OCS Lands Act, all of these areas were withdrawn from leasing until after June 30, 2012, and all National Marine Sanctuaries were indefinitely withdrawn from leasing. The congressional moratoria and Section 12 withdrawal do not apply to existing leases. There are 79 active OCS leases in Central and Southern California, of which 43 are developed and 36 undeveloped.

California is currently a substantial offshore producer. In 2004, the Pacific OCS produced, on average, more than 75,000 barrels of oil per day and nearly 150,000 Mcf of gas per day from 14 fields. [16]

In the Washington-Oregon planning area, a total of 12 exploratory wells were drilled, and 101 leases were issued, all of which have expired or were relinquished. In the Northern and Central California planning areas, there were 20 exploratory wells drilled on 57 leases, all of which have been relinquished.

The Southern California planning area has seen 977 development wells (not under moratoria), 297 exploratory wells (several in moratorium areas) and a total of 312 leases. Of those, 79 leases are active and 43 are producing. Those remaining have expired, have been relinquished, or have been terminated. Remaining proved and unproved reserves not under federal OCS moratoria (from the active leases) are estimated to be 1.47 billion barrels of oil and 1.48 Tcf of natural gas.

STATE - OFFSHORE PACIFIC

In June 2005, California state offshore production was 41,500 barrels of oil per day and 18,400 Mcf of natural gas per day, according to the California Department of Conservation. The majority of this production is from the offshore production islands in Wilmington oil field in the Los Angeles Basin. Both Washington and Oregon currently have moratoria in place:

- Washington Statute Section RCW 43.143.010 prohibits leasing in tidal waters and submerged lands out to 3 miles along the entire coast, and parts of the Columbia River.
- Oregon Statute Section ORS 196.410 is a legislative finding for offshore oil and gas leasing and states that Oregon is unwilling to risk damaging sensitive marine environments or to sacrifice environmental quality to develop offshore oil and gas resources.

In addition, California Statute Section PRC 6242 defines all state waters (three-mile limit) not subject to a lease effective January 1, 1995, as a California Coastal Sanctuary and prohibits future leasing. Furthermore, the California Coastal Commission presented a resolution on April 5, 2004, asking the federal government to prevent development of the 36 undeveloped federal leases. The Coastal Commission also referenced recent court decisions under the Coastal Zone Management Act (CZMA) that affirm California's right to review and approve these lease developments.

RESOURCES UNDER MORATORIA

Undiscovered technically recoverable resources in fed-

[16] Source: U.S. Minerals Management Service (2005) (http://www.mms.gov/stats/OCSproduction.htm).

eral OCS moratorium areas for the Pacific OCS are estimated to be 10.5 billion barrels of oil and 18.2 Tcf of natural gas. In addition, the California Coastal Lands Commission estimates that 950 million barrels of crude oil and 1 Tcf of natural gas exist in state waters currently under a state leasing moratorium. Therefore, total estimated hydrocarbon resources in areas under moratoria in the West Coast (state and federal waters) amount to 11.4 billion barrels of oil and 19.2 Tcf of natural gas.

Offshore Pacific*

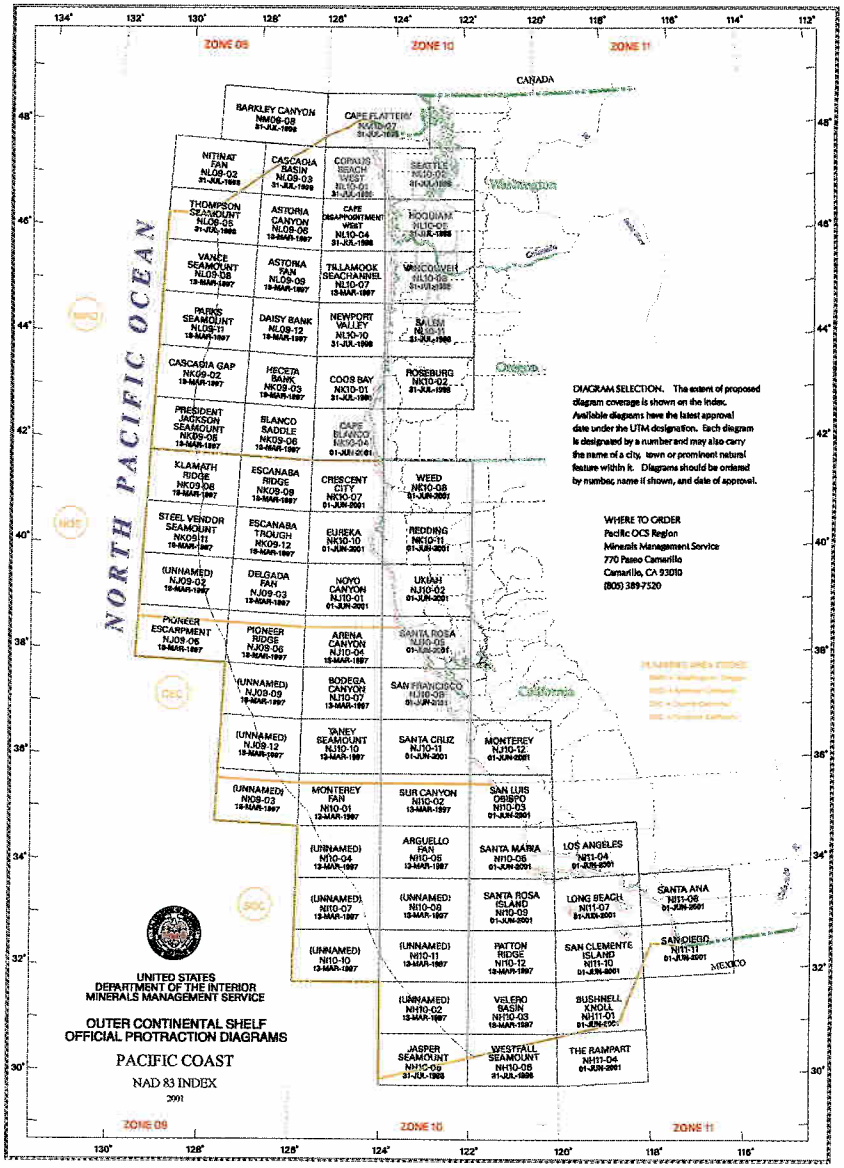
Estimate of Undiscovered Technically Recoverable Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
Washington/Oregon	2.26	0.35
Northern California	3.56	2.04
Central California	2.45	2.30
Southern California	9.94	5.80
Total Federal OCS	18.21	10.49
Pacific State Waters**	1.00	0.95
TOTAL	**19.21**	**11.44**

* Estimates provided by the U.S. Mineral Management Service based on the 2003 National Assessment. No breakdown by Planning Area was provided.

** Based on estimates provided by the California State Lands Commission.

Pacific Coast



Great Lakes

At present, Michigan is the only state in the United States that has leased oil and gas rights under the Great Lakes. None of the states bordering the Great Lakes allow offshore rigs in the water, but 13 wells have been drilled directionally from the Michigan coastline of Lake Erie. In April 2002 the Michigan Legislature passed a statute that permanently bans directional drilling beneath the Great Lakes and prohibits the state from issuing any lease that would allow such drilling. More that 2,000 wells have been drilled under Lake Erie from Canada.

FEDERAL - GREAT LAKES REGION

In 2001, Congress issued a two-year moratorium on Great Lakes drilling, citing environmental concerns. This ban prevented state and federal agencies from issuing leases or permits for new drilling, either directional or offshore, in or under the Great Lakes through September 30, 2003. The ban was subsequently extended through 2007.

Section 503 of the Energy and Water Appropriations Act of 2002 directed the U.S. Army Corps of Engineers (the Corps) to conduct a study of the known and potential environmental effects of oil and gas drilling activity in the Great Lakes. In June 2004, the House Energy and Water Appropriations Subcommittee requested that the Corps initiate this study, which Congress intended to use to help inform its decision regarding whether to further extend the moratorium.

STATE - GREAT LAKES REGION

In 1987, the Michigan Environmental Science Board (MESB) issued a report on the subject of directional oil drilling under the Great Lakes. The MESB reported that directionally drilling a well under the lake poses very little risk of leaking pollution into the water, but rather the risk of potential environmental impact exists on land at the location of the well-head and associated pipelines. The state of Michigan suspended all new lease sales until the state could implement the MESB recommendations. Some controversy has been associated with the interpretation and implementation of the MESB recommendations.

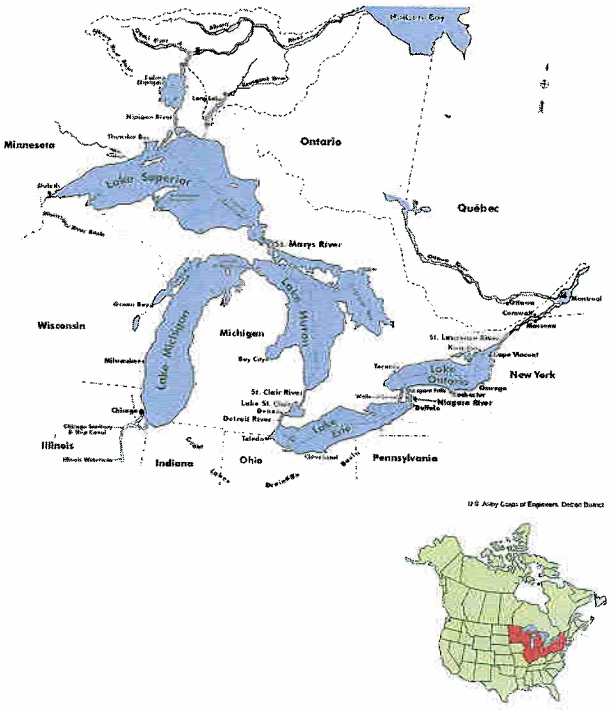
In 1985, the eight governors of Great Lakes states signed a non-binding compact agreeing to ban oil drilling in the waters of the Great Lakes, but this statement did not specifically address directional drilling. States having reconsidered the issue have taken the position that the governors' compact applies only to offshore drilling and not directional drilling from land.

Section 386 of the Energy Policy Act enacted in August 2005 now prohibits the issuance of any new state or federal lease in the Great Lakes for oil and gas drilling, whether from offshore or from onshore directional wells.

RESOURCES UNDER MORATORIA

For purposes of this study, potential resource estimates underlying the Great Lakes were determined to range from 30 million to 500 million barrels of oil (a mid-range estimate of 270 million barrels was assumed) and about 4 Tcf of natural gas.

Great Lakes

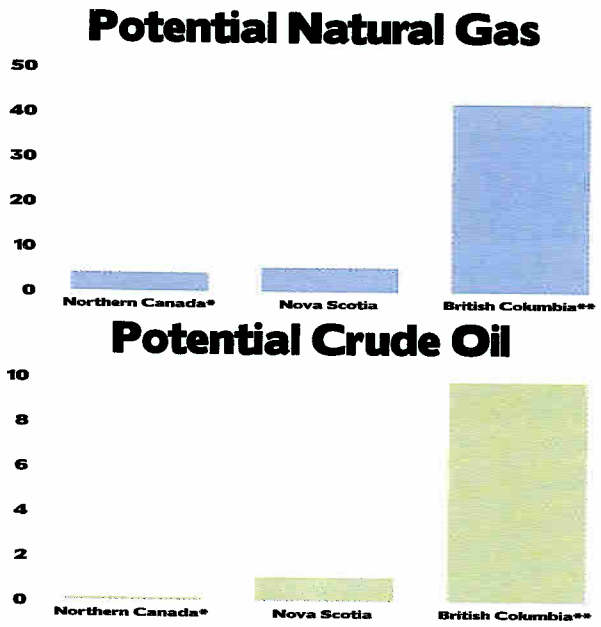


Canada Overview

The mean estimate of the undiscovered natural gas underlying Canadian moratorium areas is 51 Tcf, and mean undiscovered crude oil is estimated to be 11 billion barrels.** However, the size of Canada's offshore natural gas resource base is a major uncertainty, particularly for those frontier areas under moratoria, since they are based on a limited amount of geological data.

Moreover, some of the moratorium areas within Canada exist within various parts of larger assessment areas; and the potential resources under these areas have not been separately assessed.

Finally, the estimates reflect information taken from existing publications that date back several years.



Offshore Canada

Estimate of Undiscovered Crude Oil
and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
Northern Canada*	4.00	0.10
Nova Scotia	5.30	1.06
British Columbia**	41.80	9.80
TOTAL	**51.10**	**10.96**

* Estimates are based on internal studies performed in 2004-2005 by the Northern Oil and Gas Directorate, Canadian Federal Department of Indian Affairs and Northern Development. Lancaster Basin was formally under moratorium, but it remains a very environmentally sensitive area.

** Estimates for British Columbia are total median in-place resources.

Northern Canada

The management of oil and gas resources north of 60 degrees latitude in the Northwest Territories, Nunavut, and northern offshore is a federal responsibility, carried out by the Northern Oil and Gas Directorate of the Department of Indian Affairs and Northern Development. Prior to devolution in 1998, management of Yukon oil and gas was also a federal responsibility.

Petroleum resource management on Crown lands north of 60 degrees latitude is exercised under two federal statutes: the Canada Petroleum Resources Act (CPRA) and the Canada Oil and Gas Operations Act (COGOA). The CPRA governs the allocation of Crown lands to the private sector, tenure to the allocated rights and the setting and collection of royalties. The Minister of Indian Affairs and Northern Development administers the act. The COGOA regulates the industrial activities with respect to resource conservation, environmental protection and safety of workers. The National Energy Board administers the act.

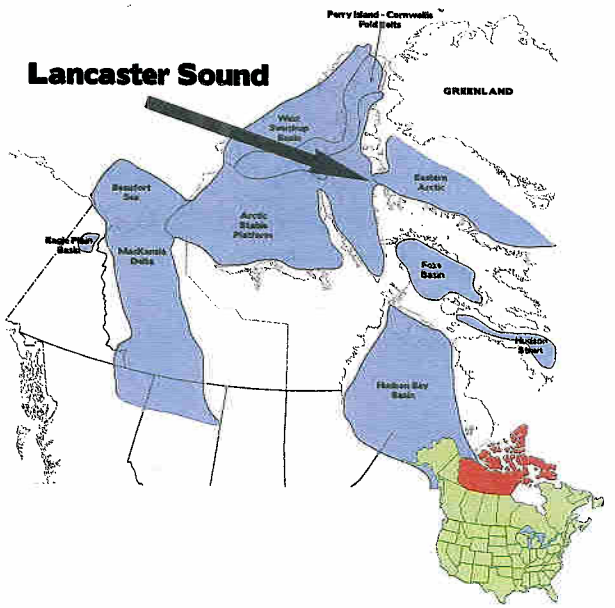
Oil and gas activity in the north has a long history extending back to the discovery of the Norman Wells Oil Field in 1919. Exploration rights issued throughout the 1960s and 1970s covered almost all of the prospective sedimentary basins in the north. In the 1970s, the government instituted a freeze on the issuance of new exploration rights in order to facilitate the aboriginal land claims process in general, and the accompanying land selection process in particular.

At the time, it was not anticipated that the lands claim process would take so long to conclude. Two decades passed before the signing of many land claims settlements. In the intervening years, almost all historical exploration licenses had lapsed. The rights issuance process was re-introduced after the settlement of lands claims in the Beaufort-Mackenzie Basin in 1989, in the High Arctic in 1991 and in the mainland Northwest Territories in 1994.

In 1976 exploration activity in the Lancaster Basin area of the Eastern Arctic was suspended so that comprehensive environmental assessment work could be preformed. In 1998, pre-1976 exploration permits were converted to exploration licenses, which are scheduled to expire in 2007. To date there has been no oil and gas activity in the licensed areas, despite significant potential. The Lancaster Basin remains a very environmentally sensitive area.

RESOURCES FORMERLY UNDER MORATORIA

The ultimate hydrocarbon resources (discovered and undiscovered) of Northern Canada's offshore areas are estimated to be approximately 10 billion barrels of oil and 190 Tcf of gas. The reported resources do not break out that portion of the ultimate resources that may be found in onshore portions of these predominantly offshore basins. The ultimate potential of the Lancaster Basin is believed to be approximately 100 million barrels of oil and 4 Tcf of natural gas.[17]



[17] The source of the estimates found in this section is from internal studies performed in 2004/05 by the Northern Oil and Gas Directorate, Canadian Federal Department of Indian Affairs and Northern Development.

Nova Scotia

Georges Bank is a shallow, submarine bank located on the OCS about 150 kilometers southwest of Cape Sable, Nova Scotia. It is bound on the north by the Gulf of Maine, on the northeast by the Northeast Channel which separates it from Brown's Bank, and on the southwest by the Great South Channel, which lies between the bank and Nantucket Shoals.

In 1964, the Canadian government issued the first petroleum exploration permit in the Georges Bank area. In 1969, the United States informed Canada that it too was claiming territorial rights on Georges Bank. The Canada-U.S. boundary was eventually submitted to the international court at The Hague, and was settled in 1984. The decision gave Canada jurisdiction over the northeast portion of the bank.

In 1986, local fishing interests and residents opposed any petroleum exploration activity in the bank area. In response to their concerns, the governments put a moratorium in effect.

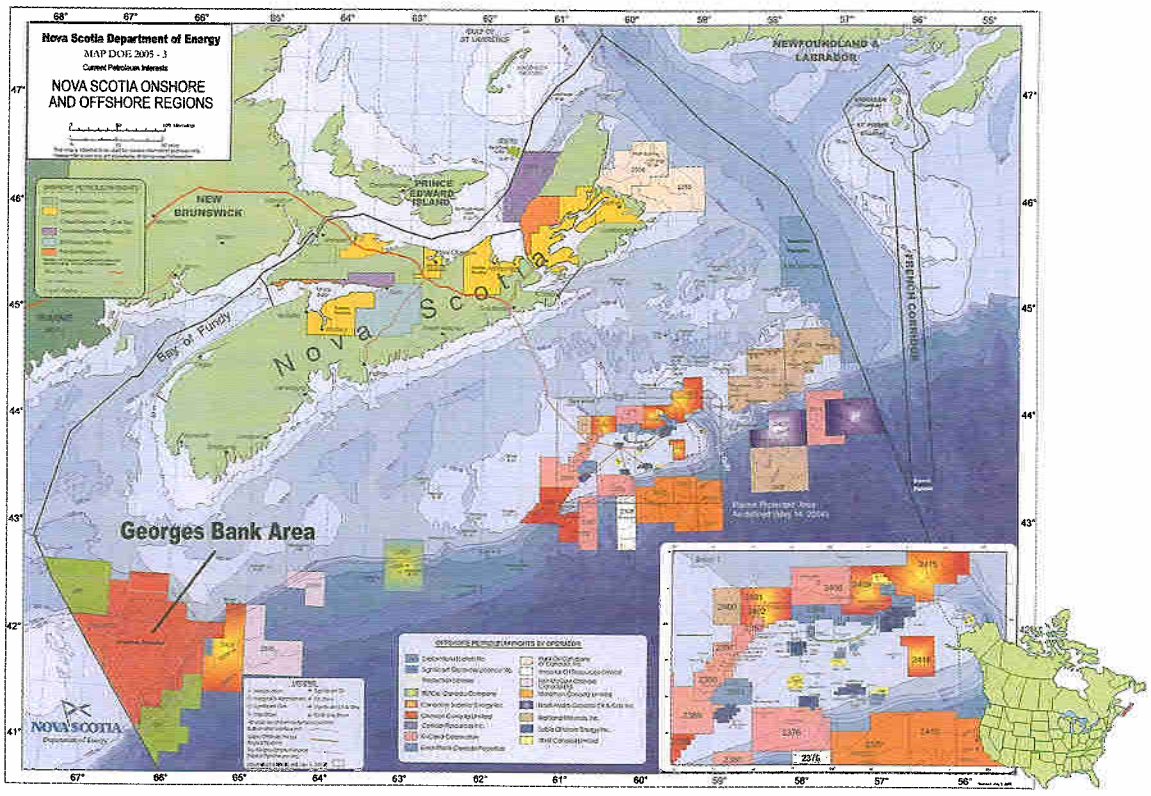
Both the federal and provincial levels of government enacted the Canada-Nova Scotia Accord Acts in 1988. This legislation placed a moratorium on petroleum activities on Georges Bank until January 2000. The legislation also required a public review be conducted and the ministers were required to make a decision on the future of the moratorium by January 2000.

A Canadian public review of activity on Georges Bank conducted in 1999 ended in a decision to extend the moratorium until 2012, which corresponds to the expiry on the U.S. side.

RESOURCES UNDER MORATORIUM

Based on seismic surveys, the Geological Survey of Canada estimates there is potential for 1.06 billion barrels of oil and 5.3 Tcf of natural gas in the Georges Bank area.

Nova Scotia Onshore and Offshore Regions



British Columbia

Offshore British Columbia contains four basins: Queen Charlotte Basin, Winona Basin, Tofino Basin and the Georgia Basin. The seabed of the Georgia Basin is owned by British Columbia, while the seabed of the Winona and Tofino Basins is owned by Canada. The ownership of the Queen Charlotte Basin is disputed by British Columbia and Canada. Several aboriginal groups have made claims of aboriginal rights and title to various parts of these basins.

There was extensive permitting and seismic activity off the West Coast of British Columbia in the 1950s and 1960s. The major phase of offshore exploration in the Queen Charlotte and Tofino Basins was carried out by Shell Canada Resources from 1963 to 1969. Over 32,000 kilometers of seismic were shot, and 14 wells were drilled. None of the wells indicated the presence of commercial quantities of oil or natural gas. The Geological Survey of Canada also conducted a major geological study of the Queen Charlotte Basin in the 1980s that included over 1,000 kilometers of additional seismic.

Offshore activity was halted in 1972 as part of a federal moratorium to restrict Alaskan oil tanker traffic from the inside passage off the coast of British Columbia. In the 1980s, Canada and British Columbia conducted a joint environmental assessment (EA) on a proposed exploration program. In 1986, the EA panel recommended approval of the exploration program, subject to a significant number of recommendations. At the same time, Canada and British Columbia started negotiations on a "Pacific Accord" (similar to those in Atlantic Canada) to establish an offshore regulatory system for the West Coast. The negotiations ended in 1989 without agreement. Following the Exxon Valdez and Nestucca oil spills in late 1988 and early 1989, British Columbia implemented a moratorium on offshore drilling activity. The federal government then announced that it would not consider any offshore development until so requested by British Columbia.

In 2001, British Columbia appointed an independent scientific panel to review and make recommendations with respect to the moratorium on offshore activity. The panel reported that, among other things, "there is no inherent or fundamental inadequacy of the science or technology, properly applied in an appropriate regulatory framework, to justify a blanket moratorium" on offshore activities. The science panel also identified a number of science gaps that needed to be addressed. The review of offshore development technologies found that "the evidence from a relatively extensive review of conditions off British Columbia in comparison to other oil and gas areas worldwide and the latest engineering technology that applies to development indicates that there are no unique fatal flaw issues that would rule out exploration and development activities." In 2001, British Columbia also appointed an Offshore Oil and Gas Task Force composed of elected members of the Government of British Columbia to visit northern coastal communities and report on the views of communities, local residents and First Nations. The task force concluded that Northern communities, including First Nations, want to have a strong voice in the contemplation of offshore oil and gas and made a number of recommendations for further work that needs to be done before any activity begins. Subsequently, British Columbia asked Canada to review its position on its moratorium on offshore activity.

In 2003, Canada announced that it would take a three-pronged approach to its review of the moratorium, namely a scientific review, a public review process, and a First Nations engagement process.

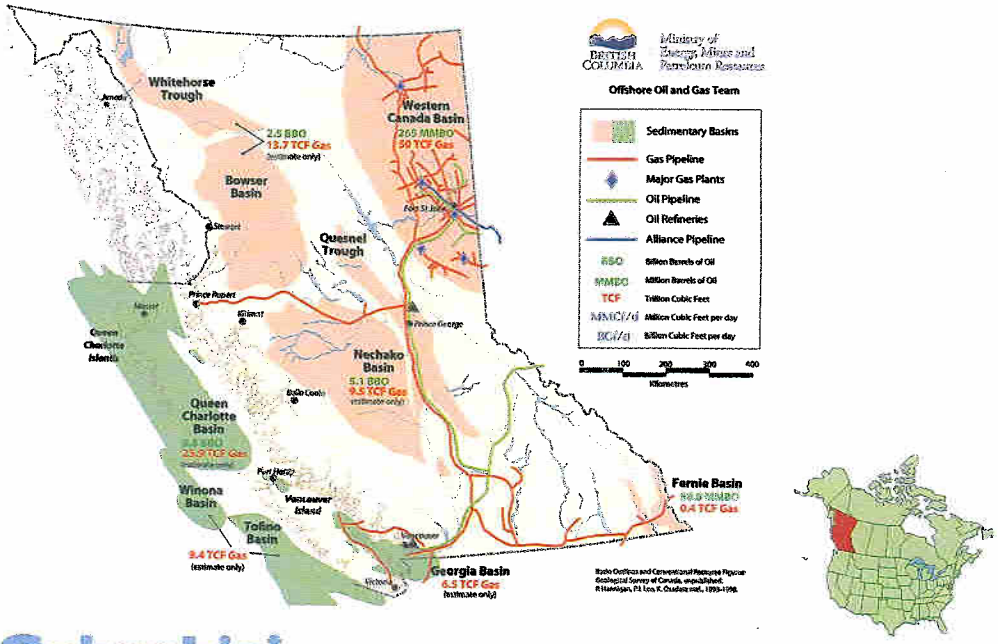
The Royal Society of Canada appointed an expert panel to carry out the science review. The panel identified a number of science gaps and made various recommendations. The panel concluded that "provided an adequate regulatory regime is in place, there are no science gaps that need to be filled before lifting the moratoria on oil and gas development." The public review panel held public hearings in a number of communities/cities on the West Coast of British Columbia. The public review reported on what it had heard; there was no analysis of the views put before the panel. A significant

majority of those who participated in the process were opposed to lifting the moratorium, but the panel gave equal weight to an oral submission from government or a business or environmental group as to a person who signed a sheet supporting or opposing the lifting of the moratorium. The panel concluded that "the strongly held and vigorously polarized views it received do not provide a ready basis for any kind of public policy compromise at this time in regard to keeping or lifting the moratorium." The panel set out four options for the government of Canada (from keeping the moratorium to lifting it), but made no specific recommendations on those options.

The First Nations Engagement Process involved numerous First Nations of the Northwest Coast, other coastal communities and inland communities. The process found that all participating First Nations indicated that it was not in the best interests of their people to lift the moratorium on oil and gas exploration in the Queen Charlotte Basin. A small number also added the qualifier, "it should not be lifted at this time." However, some First Nations did indicate that they were prepared to "more fully explore the issue of offshore oil and gas exploration, provided that they were adequately resourced and given enough time to do so."

As of the date of this report, the federal government is still reviewing its position on the moratorium.

British Columbia Onshore and Offshore Basins



British Columbia*

Estimate of Undiscovered Total Median In-Place Crude Oil and Natural Gas Resources in Moratorium Areas

	Gas (Tcf)	Oil (Bbbls)
Queen Charlotte	25.90	9.80
Georgia Basin	9.40	-
Tofino/Winona Basin	6.50	-
TOTAL	**41.80**	**9.80**

* Source: Geological Survey of Canada, Bulletin 564, 2001

RESOURCES UNDER MORATORIA

The Geological Survey of Canada published a quantitative assessment of the hydrocarbon potential of the basins off the British Columbia coast in 2001. Total median estimates of resources in place of 41.8 Tcf of natural gas and 9.8 billion barrels of oil were reported.

Appendix A: Survey Table

North American Moratoria Survey					
	Moratorium Established	**Current Expiry Date**	**Description of Area**	**Extent of Area**	**Technically Recoverable Resources**
United States					
Alaska	1989; extended in 1998	2012	North Aleutian Basin Katchemak Bay	52,234 sq. miles 150 sq. miles	6.2 Tcf (gas) 0.5 million bbls (oil)
Pacific Coast	1998	2012	Washington-Oregon Northern California Central California Southern California	NI*	19.2 Tcf (gas) 11.4 billion bbls (oil)
Gulf of Mexico	1998	2012	Alabama Florida	76 million acres	20.7 Tcf (gas) 3.6 billions bbls (oil)
Atlantic Coast	1998	2012	North Atlantic Mid Atlantic South Atlantic Strait of Florida	245.2 million acres	33.3 Tcf (gas) 3.5 billion bbls (oil)
Great Lakes	2001	Extended indefinitely by the Energy Policy Act of 2005	Lake Erie Lake Huron Lake Michigan Lake Ontario Lake Superior	38,500 sq. miles	4.0 Tcf (gas) 30-500 million bbls (oil)

North American Moratoria Survey

	Moratorium Established	Current Expiry Date	Description of Area	Extent of Area	Technically Recoverable Resources
Canada					
Northern Canada	1978	1998 (considered to be a very environmentally sensitive area)	Lancaster Sound Basin	3.3 million acres	4.0 Tcf (gas) 100 million bbls (oil)
Nova Scotia	1999	2012	Georges Bank	7,000 sq. km	5.3 Tcf (gas) 1.06 billion bbls (oil)
British Columbia**	1972/1989	no expiry date identified	Queen Charlotte Basin Tofino Basin Georgia Basin Winona Basin	90,000 sq. km	41.8 Tcf (gas) 9.8 million bbls (oil)

NOTES:

* No Information available

** Estimates for British Columbia are median in-place resources

Appendix B: Contributors

Information and data contained in this report is derived solely through research of documentation of potential resources from a variety of publicly available reports and documents. The North American Coastal Alliance consolidated and summarized this information and data into a single document to facilitate review by other interested parties.

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U.S. Department of Energy

U.S. Department of Interior

About the Commission

The Interstate Oil and Gas Compact Commission is a multi-state government agency that champions conservation and efficient recovery of our nation's oil and natural gas resources while protecting health, safety and the environment.

The IOGCC consists of the governors of 37 states (30 members and seven associate states) that produce most of the oil and natural gas in the United States, as well as seven international affiliates. Chartered by Congress in 1935, the organization is the oldest and largest interstate compact in the nation.

The IOGCC assists states in balancing interests through sound regulatory practices. These interests include: maximizing domestic oil and natural gas production, minimizing the waste of irreplaceable natural resources, and protecting human and environmental health.

The IOGCC also provides an effective forum for government, industry, environmentalists and others to share information and viewpoints, allowing members to take a proactive approach to emerging technologies and environmental issues. For more information visit www.iogcc.state.ok.us or call 405.525.3556.

IOGCC

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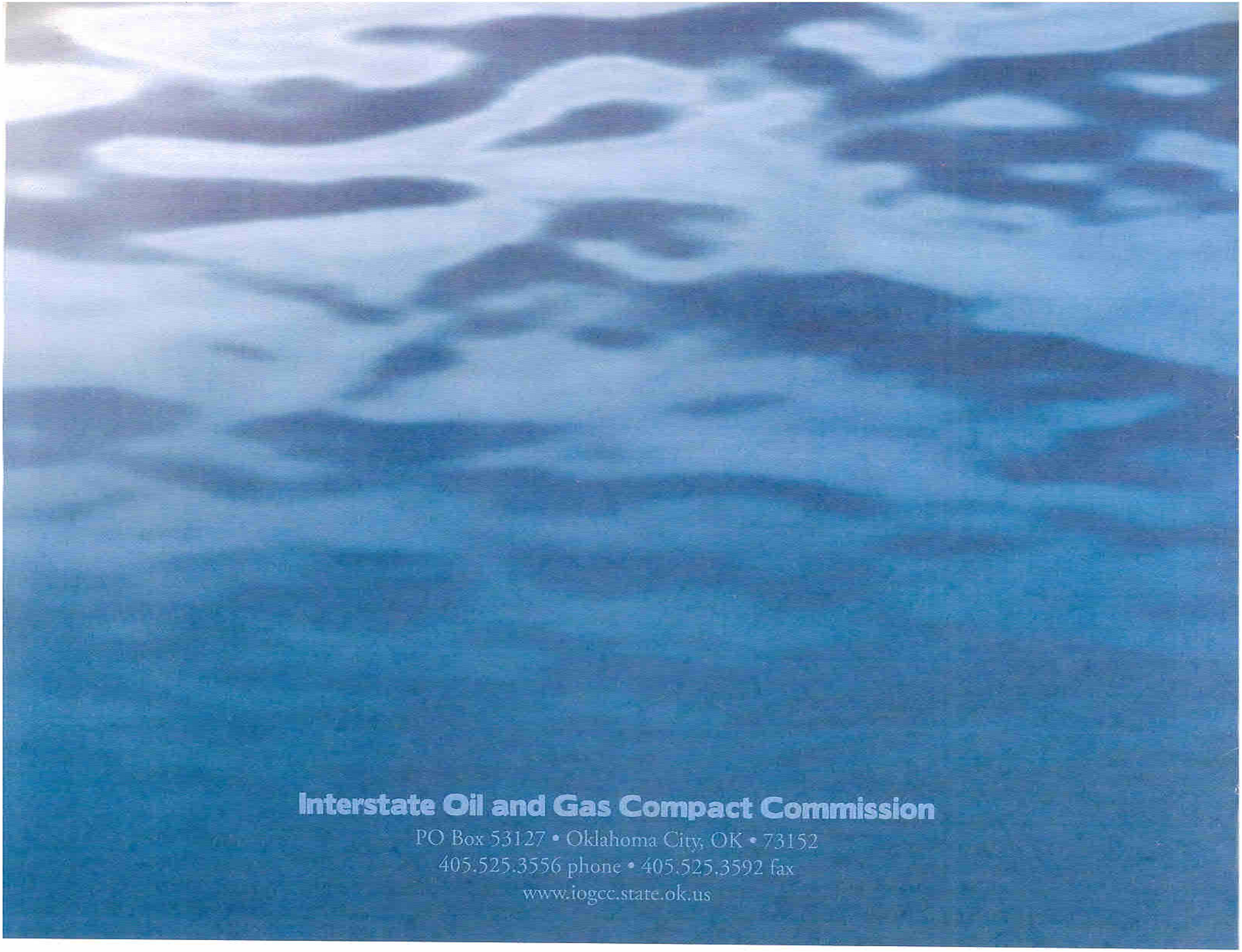
January 2006



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