

SCOMM

144:1

6

(7)

Date Referred to Committee: January 10, 2005

FURTHER REFERRALS: Resources

Date of Committee Action: 1/18/2005

The HOUSE SPECIAL COMMITTEE ON OIL AND GAS considered:

HJR 4

HOUSE JOINT RESOLUTION NO. 4

ENDORSING ANWR LEASING

Urging the United States Congress to pass legislation to open the coastal plain of the Arctic National Wildlife Refuge, Alaska, to oil and gas exploration, development, and production.

Recommends it be replaced with [] HCS or ☒ CS for HJR4 (OEG)
For Senate Bills with new title: [] Technical Title [] New Title: HCR _____ ☒ Same Title [] New Title _____

- [] attach amendments
[] add new referral to _____ Committee
[] Letter of Intent _____ Committee

**List of
Abbrev
for
Depts.:**
ADM
CED
COR
CRT
EED
DEC
DFG
GOV
HSS
LEG
LAW
LWF
MVA
DNR
DPS
REV
DOT
UA

[illegible][illegible]

Signing with recommendations	Printed Last Name	DP 5	DNP	NR	AM
	SAMUELS	X			
Beta Gardner	Gardner	X			
Thompson	Thompson	X			
Amokely	ROKEBERG	X			
Chair: Lisa Lehman	Lehman	X			
Chair:					

Representative Mike Hawker

Alaska State Legislature

Session:

State Capitol
Juneau, AK 99801
907 465-4949 direct
800 478-4950 toll free
907 465-4979 fax

Interim:

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Anchorage, AK 99501
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Member:

House Finance Committee
Legislative Budget
& Audit Committee

House District 32:

Eagle River
Anchorage
Rainbow
Indian
Bird
Girdwood
Portage
Whittier
Sunrise
Hope

House Joint Resolution 4 Sponsor Statement

"Urging the United States Congress to pass legislation to open the coastal plain of the Arctic National Wildlife Refuge, Alaska, to oil and gas exploration, development, and production"

House Joint Resolution 4 urges the United States Congress to pass legislation to open the coastal plain of the Arctic National Wildlife Refuge to environmentally responsible oil and gas exploration, development and production.

Opening ANWR is a vital key to relieving Alaska's financial pressures, protecting Alaskans' jobs and sustaining our economic growth. Oil production from ANWR will improve America's energy security and provide new jobs throughout the country.

Alaska has proven that Arctic oil and gas resources can be developed in an environmentally responsible manner consistent with protection of wildlife and preservation of traditional lifestyles and human values. Exploration in ANWR will be the most environmentally and socially responsible oil development undertaken anywhere in the world.

Alaska's persistent and patient efforts to educate Americans and build the national consensus we need to access our resources within ANWR have been successful. With the seating of a new Congress in Washington, we are on the brink of achieving our objective. It is vitally important that the 24th Alaska Legislature endorse previous legislatures' efforts, demonstrate our solidarity and enthusiastically state our support for opening ANWR.

This resolution mirrors those passed by previous Alaska legislatures and will be a cornerstone of this legislature's commitment to responsibly develop our natural resources, promote sustained economic expansion, create good job opportunities for our citizens and assure safe, growing and healthy communities throughout our state.



ANWR:

JOBS AND ENERGY FOR AMERICA

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January 11, 2005

The Honorable Mike Hawker
Alaska State Legislature
State Capitol #502
Juneau, Alaska 99801-1182

Dear Representative Hawker,

This letter is in support of and urging your fellow member's support of HJR 4, *'A resolution urging the United States Congress to pass legislation to open the coastal plain of the Arctic National Wildlife Refuge, Alaska, to oil and gas exploration, development and production'*.

The Arctic National Wildlife Refuge is the nation's best source for domestic energy production, while creating thousands of high-paying jobs and creating substantial revenues for both the federal government and the State of Alaska.

The coastal plain of ANWR represents the largest known on-shore reserve of oil resources in North America. The State of Alaska has a proven track record as a world leader in oil exploration, with over 40 years of environmentally responsible production. This positive record will continue, as "ANWR will require the tightest environmental standards ever imposed," as noted by U.S. Secretary of Interior Gale Norton.

Alaskans know that we can develop our resources responsibly and with concern for our natural environment. In fact, over 75% of Alaskans support the responsible development of ANWR.

In addition, the residents of Kaktovik, the *only* village located within ANWR, support responsible development of their lands so that they too can benefit from their resources in the form of jobs, public infrastructure, and a strengthened rural economy.

The United States is alarmingly dependent upon foreign oil; with over 63% of our petroleum energy needs coming from abroad. This represents over \$174 Billion (\$174,246,000,000) that exits our economy only to enrich other governments. ANWR oil production can directly replace the imports from Saudi Arabia for over 30 years.

We as Alaskans understand that responsible exploration of a small portion of ANWR can take place while gaining the benefits of thousands of jobs, increased revenue to the state government, production of a safer domestic energy supply, and the ability to further the economic life of the Trans-Alaska Pipeline System (TAPS).

I urge you to support this call to Congress for the opening of ANWR. Join the majority of Alaska residents who support the responsible use of our resources for the benefit of Alaska.

Sincerely,

Gail Phillips
Co-Chair

Al Adams
Co-Chair

AMENDMENT

OFFERED IN THE HOUSE

BY REPRESENTATIVE

TO: HJR 4

1 Page 3, line 23, following "Representatives;":

2 Insert: "the Honorable Nancy Pelosi, Minority Leader of the U.S. House of
3 Representatives;"

4

5 Page 3, line 24, following "Senate;"

6 Insert: "the Honorable Harry Reid, Minority Leader of the U.S. Senate; the Honorable
7 Pete V. Domenici, Chair of the Energy and Natural Resources Committee of the U.S. Senate;"

AMENDMENT

OFFERED IN THE HOUSE

TO: CSHJR 4(O&G)

1 Page 2, following line 13:

2 Insert a new clause to read:

3 "WHEREAS the Trans Alaska Pipeline System, a transportation facility that is a
4 national asset and that would cost billions of dollars to replace, would have its useful physical
5 life extended for a substantial period if the additional reserves of recoverable oil from the
6 coastal plain were produced; and"

7 Page 2, line 15, following "Alpine,"

8 Delete "Badami"

9 Insert "North Star"

24-LS0179\G
Chenoweth
1/18/05

CS FOR HOUSE JOINT RESOLUTION NO. 4(O&G)
IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTY-FOURTH LEGISLATURE - FIRST SESSION

BY THE HOUSE SPECIAL COMMITTEE ON OIL AND GAS

Offered:
Referred:

Sponsor(s): REPRESENTATIVES HAWKER, Samuels, Ramras, Holm, Stoltze, Lynn, McGuire, Seaton, Chenault, Kelly, Anderson, Wilson

A RESOLUTION

1 **Urging the United States Congress to pass legislation to open the coastal plain of the**
2 **Arctic National Wildlife Refuge, Alaska, to oil and gas exploration, development, and**
3 **production.**

4 **BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

5 **WHEREAS**, in sec. 1002 of the Alaska National Interest Lands Conservation Act
6 (ANILCA), the United States Congress reserved the right to permit further oil and gas
7 exploration, development, and production within the coastal plain of the Arctic National
8 Wildlife Refuge, Alaska; and

9 **WHEREAS** the oil industry, the state, and the United States Department of the
10 Interior consider the coastal plain to have the highest potential for discovery of very large oil
11 and gas accumulations on the continent of North America, estimated to be as much as
12 10,000,000,000 barrels of recoverable oil; and

13 **WHEREAS** the "1002 study area" is part of the coastal plain located within the North
14 Slope Borough, and residents of the North Slope Borough, who are predominantly Inupiat
15 Eskimo, are supportive of development in the "1002 study area"; and

1 **WHEREAS** oil and gas exploration and development of the coastal plain of the refuge
2 and adjacent land could result in major discoveries that would reduce our nation's future need
3 for imported oil, help balance the nation's trade deficit, and significantly increase the nation's
4 security; and

5 **WHEREAS** domestic demand for oil continues to rise while domestic crude
6 production continues to fall with the result that the United States imports additional oil from
7 foreign sources; and

8 **WHEREAS** development of oil at Prudhoe Bay, Kuparuk, Endicott, Lisburne, and
9 Milne Point has resulted in thousands of jobs throughout the United States, and projected job
10 creation as a result of coastal plain oil development will have a positive effect in all 50 states;
11 and

12 **WHEREAS** Prudhoe Bay production is declining by approximately 10 percent a year;
13 and

14 **WHEREAS**, while new oil field developments on the North Slope of Alaska, such as
15 Alpine, Badami, and West Sak, may slow or temporarily stop the decline in production, only
16 giant coastal plain fields have the theoretical capability of increasing the production volume
17 of Alaska oil to a significant degree; and

18 **WHEREAS** opening the coastal plain of the Arctic National Wildlife Refuge now
19 allows sufficient time for planning environmental safeguards, development, and national
20 security review; and

21 **WHEREAS** the 1,500,000-acre coastal plain of the refuge makes up only eight
22 percent of the 19,000,000-acre refuge, and the development of the oil and gas reserves in the
23 refuge's coastal plain would affect an area of only 2,000 to 7,000 acres, which is less than
24 one-half of one percent of the area of the coastal plain; and

25 **WHEREAS** 8,000,000 of the 19,000,000 acres of the refuge have already been set
26 aside as wilderness; and

27 **WHEREAS** the oil industry has shown at Prudhoe Bay, as well as at other locations
28 along the Arctic coastal plain, that it can safely conduct oil and gas activity without adversely
29 affecting the environment or wildlife populations; and

30 **WHEREAS** the state will ensure the continued health and productivity of the
31 Porcupine Caribou herd and the protection of land, water, and wildlife resources during the

1. exploration and development of the coastal plain of the Arctic National Wildlife Refuge,
2. Alaska; and

3. **WHEREAS** the oil industry is using innovative technology and environmental
4. practices in the new field developments at Alpine and Northstar, and those techniques are
5. directly applicable to operating on the coastal plain and would enhance environmental
6. protection beyond traditionally high standards;

7. **BE IT RESOLVED** by the Alaska State Legislature that the Congress of the United
8. States is urged to pass legislation to open the coastal plain of the Arctic National Wildlife
9. Refuge, Alaska, to oil and gas exploration, development, and production, and that the Alaska
10. State Legislature is adamantly opposed to further wilderness or other restrictive designation in
11. the area of the coastal plain of the Arctic National Wildlife Refuge, Alaska; and be it

12. **FURTHER RESOLVED** that that activity be conducted in a manner that protects the
13. environment, the naturally occurring population levels of the Porcupine Caribou herd, and
14. that uses the state's work force to the maximum extent possible; and be it

15. **FURTHER RESOLVED** that the Alaska State Legislature opposes any unilateral
16. reduction in royalty revenue from exploration and development of the coastal plain of the
17. Arctic National Wildlife Refuge, Alaska, and any attempt to coercē the State of Alaska into
18. accepting less than the 90 percent of the oil, gas, and mineral royalties from the federal land in
19. Alaska that was promised to the state at statehood.

20. **COPIES** of this resolution shall be sent to the Honorable George W. Bush, President
21. of the United States; the Honorable Richard B. Cheney, Vice-President of the United States
22. and President of the U.S. Senate; the Honorable Gale Norton, United States Secretary of the
23. Interior; the Honorable J. Dennis Hastert, Speaker of the U.S. House of Representatives; the
24. Honorable Nancy Pelosi, Minority Leader of the U.S. House of Representatives; the
25. Honorable Bill Frist, Majority Leader of the U.S. Senate; the Honorable Harry Reid, Minority
26. Leader of the U.S. Senate; the Honorable Pete V. Domenici, Chair of the Energy and Natural
27. Resources Committee of the U.S. Senate; and to the Honorable Ted Stevens and the
28. Honorable Lisa Murkowski, U.S. Senators, and the Honorable Don Young, U.S.
29. Representative, members of the Alaska delegation in Congress.

FISCAL NOTE

STATE OF ALASKA
2005 LEGISLATIVE SESSION

Fiscal Note Number: _____
 Bill Version: HJR004-DNR-O&G-01-14
 () Publish Date: _____

Revision Date/Time (Note if correction): _____ Dept. Affected: Natural Resources
 Title Endorsing ANWR Leasing RDU Resource Development
 Component Oil and Gas Development
 Sponsor Reps. Hawker, Samuels, Ramras
 Requester House Oil and Gas Component No. 439

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL EXPENDITURES						
-----------------------------	--	--	--	--	--	--

CHANGE IN REVENUES ()						
-------------------------------	--	--	--	--	--	--

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--Do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2005) cost: 0.0

Mark this box (X) if funding for this bill is included in the Governor's FY 2006 budget proposal: ☐

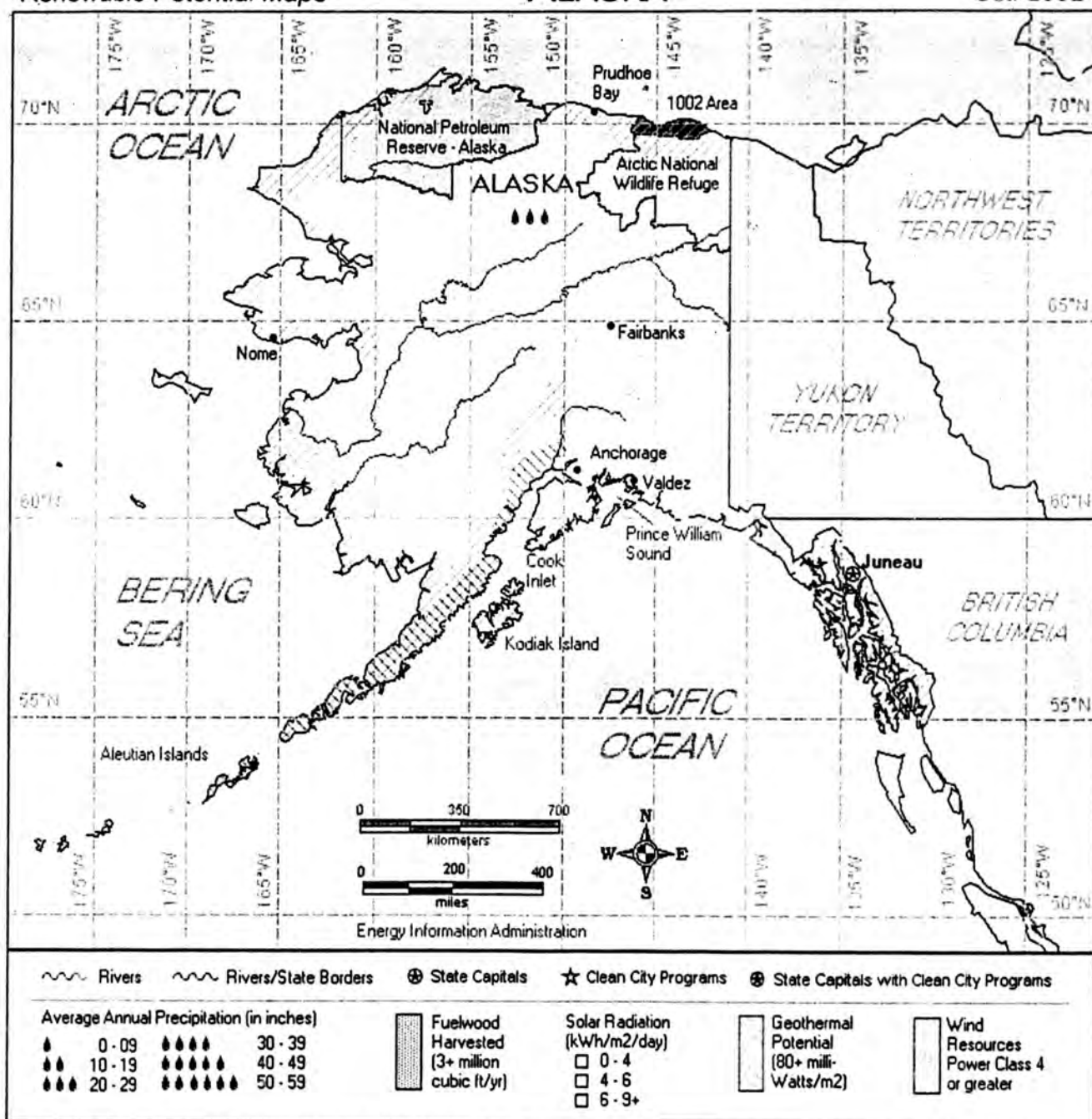
POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

No fiscal impact anticipated with passage of this resolution.

Prepared by: Mark D. Myers Phone 269-8800
 Division Oil and Gas Date/Time 1/14/2005
 Approved by: Tom Irwin, Commissioner Date 1/14/2005
 Agency Natural Resources



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♦ Contact: Barbara.Fichman@eia.doe.gov ♦ 202-586-5737 ♦ Energy Information Administration

♦ File created: October 9, 2002

Analysis of Oil and Gas Production in the Arctic National Wildlife Refuge

March 2004

Energy Information Administration
Office of Integrated Analysis and Forecasting
U.S. Department of Energy
Washington, DC 20585

This Service Report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy. The information contained herein should be attributed to the Energy Information Administration and should not be construed as advocating or reflecting any policy position of the Department of Energy or of any other organization. Service Reports are prepared by the Energy Information Administration upon special request and are based on assumptions specified by the requestor.

Contacts

This report was prepared by the staff of the Office of Integrated Analysis and Forecasting, Energy Information Administration (EIA). General questions concerning the report can be directed to Mary J. Hutzler (mary.hutzler@eia.doe.gov, 202/586-2222), Director of the Office of Integrated Analysis and Forecasting, and James Kendell (james.kendell@eia.doe.gov, 202/586-9646), Director of the Oil and Gas Division in the Office of Integrated Analysis and Forecasting. Specific questions regarding Alaska resources and production can be directed to Philip Budzik (philip.budzik@eia.doe.gov, 202/586-2847).

Preface

On February 23, 2004, Representative Richard W. Pombo, Chairman of the U.S. House Committee on Resources, requested that the Energy Information Administration (EIA) provide an assessment of authorizing oil and gas leasing in the coastal plain of the Arctic National Wildlife Refuge (ANWR) in Alaska. In his request, Representative Pombo cited Division C, Title III, Sections 30401 through 30412 of the H.R. 6, "Energy Policy Act of 2003," as it passed in the House. Representative Pombo asked that the impact of this oil and gas leasing authorization be compared to the projections shown in the *Annual Energy Outlook 2004*. In addition, Representative Pombo asked EIA to assess whether there were any "significant synergies" regarding the opening of ANWR to oil and gas leasing and the potential construction of an Alaska gas pipeline, which would transport natural gas from the Alaska North Slope to the lower 48 States. This report responds to Chairman Pombo's request.

The legislation that established EIA in 1977 vested the organization with an element of statutory independence. EIA does not take positions on policy questions. It is the responsibility of EIA to provide timely, high-quality information and to perform objective, credible analyses in support of the deliberations of both public and private decision makers. This report should not be construed as representing the official position of the U.S. Department of Energy or the Administration.

The projections in the reference case used in this report are not statements of what will happen but of what might happen, given the assumptions and methodologies used. The reference case projections are business-as-usual trend forecasts, given known technology, technological and demographic trends, and current laws and regulations. Thus, they provide a policy-neutral starting point that can be used to analyze policy initiatives. EIA does not propose, advocate, or speculate on future legislative and regulatory changes. All laws are assumed to remain as currently enacted; however, the impacts of scheduled regulatory changes, when defined, are reflected.

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Introduction

On February 23, 2004, Representative Richard W. Pombo, Chairman of the U.S. House Committee on Resources, requested that the Energy Information Administration (EIA) provide an assessment of authorizing oil and gas leasing in the coastal plain of the Arctic National Wildlife Refuge (ANWR) in Alaska.¹ In his request, Representative Pombo cited Division C, Title III, Sections 30401 through 30412 of the H.R. 6, "Energy Policy Act of 2003," as it passed in the House. Representative Pombo asked that the impact of this oil and gas leasing authorization be compared to the projections in the *Annual Energy Outlook 2004 (AEO2004)*.² He also requested that a prior EIA analysis of oil and gas development on the ANWR coastal plain be used, as appropriate.³ Finally, Representative Pombo asked EIA to assess whether there were any "significant synergies" regarding the opening of ANWR to oil and gas leasing and the potential construction of an Alaska gas pipeline, which would transport natural gas from the Alaska North Slope to the lower 48 States.

This analysis presents three ANWR cases that assess the potential impact of oil and gas leasing in the coastal plain area of ANWR.⁴ These ANWR cases represent the following potential oil resource levels:

- A mean oil resource case, which is based on the U.S. Geological Survey (USGS) mean probability estimate⁵ of technically recoverable oil resources in the coastal plain area of ANWR;
- A low oil resource case, which is based on the USGS 95-percent probability estimate of technically recoverable oil resources in the coastal plain area of ANWR; and
- A high oil resource case, which is based on the USGS 5-percent probability estimate of technically recoverable oil resources in the coastal plain area of ANWR.

These three ANWR scenarios are compared to the *AEO2004* reference case, which serves as the analytical baseline for this report.⁶

¹ A copy of the request letter is included in Appendix A.

² Energy Information Administration, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004), (Washington, DC, January 2004); <http://www.eia.doe.gov/oiaf/aeo/index.html>.

³ Energy Information Administration, *Potential Oil Production from the Coastal Plain of the Arctic Wildlife Refuge: Updated Assessment*, SR/O&G/2000-2 (Washington, DC, May 2000); http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/arctic_national_wildlife_refuge/html/anwr101.html.

⁴ The coastal plain of ANWR is roughly north of the Sadlerochit Mountains and west of the Aichilik River.

⁵ The 95-percent probability estimate refers to a 19 in 20 chance of there being oil resources equal to the size of that estimate; the mean probability estimate refers to a 1 in 2 chance of there being oil resources equal to the size of that estimate; and the 5-percent probability estimate refers to a 1 in 20 chance of there being oil resources equal to the size of that estimate.

⁶ A similar question was raised by Senator Frank Murkowski in a December 20, 2001, request. See Energy Information Administration, *The Effects of the Alaska Oil and Natural Gas Provisions of H.R. 4 and S. 1766 on U.S. Energy Markets*, SR/OIAF/2002-02, (Washington, DC, February 2002); [http://www.eia.doe.gov/oiaf/servicert/aong/pdf/sroiaf\(2002\)02.pdf](http://www.eia.doe.gov/oiaf/servicert/aong/pdf/sroiaf(2002)02.pdf).

Analysis Summary

The opening of the ANWR 1002 Area to oil and gas development is projected to increase domestic oil production starting in 2013. In 2025, the coastal plain of ANWR is projected to reach 0.9 million barrels per day under the USGS mean oil resource case, and 0.6 and 1.6 million barrels per day under the low and high resource cases, respectively. These cases include the impact of production in the Federal 1002 Area plus Native lands and the State offshore area within a 3-mile limit.

Petroleum imports are projected to decline one barrel for every barrel of ANWR production. Opening the coastal plain of ANWR is projected to reduce 2025 oil import dependence from 70 percent in the *AEO2004* reference case to 66 percent in the mean resource case. The high and low oil resource cases project a 2025 oil import dependency of 64 percent and 67 percent, respectively. Expenditures on foreign oil and petroleum products are also projected to be lower in 2025 by \$8 billion dollars (2002 dollars) in the mean oil resource case, and by \$15 and \$6 billion dollars in the high and low oil resource cases, respectively.

The opening of the coastal plain of ANWR to oil and gas development is expected to have little impact on the development of an Alaska gas pipeline. Although the opening of ANWR might reduce the gas resource risk of building an Alaska gas pipeline, there is expected to be a much larger gas resource in the National Petroleum Reserve-Alaska (NPRA). The NPRA is currently being leased and explored for oil and gas resources, and has an expected gas resource base six times larger than that expected for the coastal plain of ANWR. The NPRA is expected to have a greater impact on reducing the gas resource risk associated with an Alaska gas pipeline than ANWR.

Background

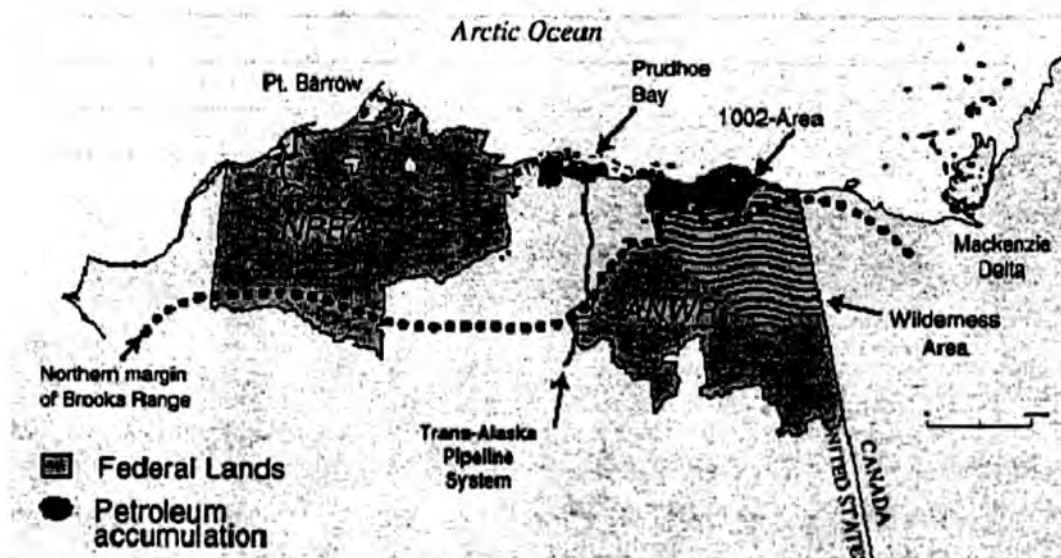
The Federal Government currently prohibits oil and natural gas development in ANWR. ANWR was created by the Alaska National Interest Lands Conservation Act (ANILCA) in 1980. Section 1002 of ANILCA deferred a decision on the management of oil and gas exploration and development of 1.5 million acres of Federal lands in the coastal plain of ANWR. Division C, Title III, Sections 30401 through 30412 of H.R. 6 proposes to open the 1002 Area to oil and gas exploration and production. The USGS estimates that 74 percent of the oil resources in ANWR's coastal plain area are on Federal lands, with the remaining 26 percent on State and Tribal lands.

The estimates presented in this report include oil production from the Federal 1002 Area, the Native lands within ANWR, and the State offshore areas of the coastal plain. The linkage between development on Federal and Tribal lands is legally driven: under terms of ANILCA, development on the Native lands can only proceed after a Congressional decision to open the Federal 1002 Area. In contrast, the linkage between development in ANWR and State offshore lands is economic, not legal; without ANWR development, the necessary infrastructure for offshore development would likely not be available. Since

both the State and Native corporations have expressed a strong interest in developing their respective oil resources, an approach that reflects the legal and economic linkages operating on the North Slope is appropriate in evaluating the potential production impact of a Congressional decision to allow development in ANWR. Estimates for the Federal 1002 Area alone, such as those in the USGS Economic Assessment issued in 1999,⁷ are most useful for an assessment of physical development impacts within the Federal ANWR area and for development of Federal revenue estimates. The difference in geographical coverage is one of several important factors leading the results of this report to differ from those presented in the USGS Economic Assessment.

ANWR is located on the northern coast of Alaska, due east of both Prudhoe Bay, the largest oil field ever discovered in the United States, and NPRA (Figure 1.) Surveys conducted by the USGS suggest that between 5.7 and 16.0 billion barrels of technically recoverable oil⁸ are in the coastal plain area of ANWR, with a mean estimate of 10.4 billion barrels, divided into many fields.⁹ This estimate includes oil resources in Native lands and State waters out to a 3-mile boundary within the coastal plain area. The mean estimated size of oil resources in the Federal portion of the ANWR coastal plain is 7.7 billion barrels. In comparison, the estimated volume of technically recoverable,

Figure 1. Map of Northern Alaska Showing ANWR and the Coastal Plain Area



Source: Energy Information Administration, *Potential Oil Production from the Coastal Plain of the Arctic National Wildlife Refuge: Updated Assessment*, SR/O&G/2000-02, May 2000.

⁷ U.S. Geological Survey, "The Oil and Gas Resource Potential of the Arctic National Wildlife Refuge 1002 Area, Alaska," Survey Open File Report 98-34, 1999, Chapter EA (Economic Analysis).

⁸ Technically recoverable resources are resources that can be produced using current technology.

⁹ US Geological Survey, USGS Fact Sheet FS-028-01, April 2001; <http://pubs.usgs.gov/fs/fs-0028-01>.

accessible, unproved oil in the rest of the United States is 105 billion barrels, as of January 1, 2002.¹⁰

To date, there has been no assessment of the oil and natural gas resources in the rest of ANWR outside of the coastal plain area. However, it is unlikely that the non-coastal plain area of ANWR has the same level of resources that are estimated to be in the coastal plain area, due to differences in geology. The House version of the Energy Policy Act of 2003¹¹ calls for opening the coastal plain area to development and does not open any of the rest of ANWR.

Methodology and Assumptions

The effects of opening the coastal plain area of ANWR were determined by incorporating the resources of that region into the National Energy Modeling System (NEMS).¹² The key assumptions required to forecast crude oil production from the coastal plain of ANWR are discussed below.

- *Timing of first production*

At the present time, there has been little exploration and development activity in the coastal plain region. The EIA report *Potential Oil Production from the Coastal Plain of the Arctic National Wildlife Refuge: Updated Assessment* suggested that between 7 and 12 years were required from an approval to explore and develop the coastal region of ANWR until first production. The study further noted that the time to first production could vary significantly based on the time required for petroleum leasing once approval to develop ANWR has been given. Environmental considerations and the possibility of drilling restrictions also could significantly affect projected schedules.

Following the earlier study, this analysis assumes that passage of the current legislation in 2004 will result in first production from the ANWR area in 10 years, i.e., 2013, assuming that the first lease sale occurs 22 months after enactment, as required by H.R.6 passed by the House of Representatives.

- *Timing of continuing development*

This study assumes that much of the oil resources in ANWR, like the other oil resources on Alaska's North Slope, could be profitably developed given the current levels of technology. This study assumes that new fields in the coastal plain of ANWR will be sequentially developed every 2 years after a prior field is opened.

¹⁰ Energy Information Administration, *Assumptions for the Annual Energy Outlook 2004*, DOE/EIA-0554(2004), (Washington, DC, February 2004), page 89, Table 50; [http://www.eia.doe.gov/oiaf/aeo/assumption/pdf/0554\(2004\).pdf](http://www.eia.doe.gov/oiaf/aeo/assumption/pdf/0554(2004).pdf).

¹¹ Energy bill: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h6eh.txt.pdf.

¹² Energy Information Administration, *The National Energy Modeling System: An Overview*, DOE/EIA-0581(2003), (Washington, DC, March 2003); <http://tonto.eia.doe.gov/FTP/ROOT/forecasting/05812003.pdf>.

The decision to use a 2-year lag in bringing fields into production is driven by four factors. First, there is the large expected size of the coastal plain of ANWR fields, which complicates the logistical problems associated with their development. Second, there is considerable investment infrastructure required both to begin production in these fields and to link these fields to the Trans Alaska Pipeline System (TAPS). Third, there is competition of financial resources from other domestic and foreign projects, including the projected development of oil fields in the NPRA, which potentially limits the resources available for ANWR development. Finally, increasing the rate of ANWR development might also require an expansion of TAPS throughput capacity.

This study does not assume that the expected rate of technological change in the oil and gas industry for exploration and development will affect the rate of development of ANWR. While a higher rate of technological development might reduce costs and lead to more efficient development of ANWR resources, the primary impediment to the development of ANWR resources is the current legal restriction, which precludes access to these oil resources.

- *Field size distributions*

The current analysis uses the USGS assessment of potential field sizes in the coastal plain area, based on its assessment of the underlying geology. For the purposes of evaluating the impact of opening ANWR for U.S. markets, EIA assumed that State and Tribal lands within the coastal plain of ANWR would be opened for development. In the mean oil resource case, the total volume of technically recoverable crude oil projected to be found within the coastal plain area is 10.4 billion barrels, compared to 5.7 billion barrels for the 95-percent probability estimate, and 16.0 billion barrels for the 5-percent probability estimate. Because the USGS 5-percent and 95-percent oil resource estimates are asymmetric around the mean estimate, the expected field size distribution and, in turn, the distribution of projected oil production are also asymmetric with respect to the mean estimate's field sizes and projected production.

In the mean oil resource case, the largest projected field in the coastal plain of ANWR is nearly 1.4 billion barrels. While considerably smaller than the 13-billion-barrel Prudhoe Bay field,¹³ this would be larger than any new field brought into production in decades. Subsequent fields, which are developed through 2025 in the mean resource case, are expected to be smaller, with two additional fields with 700 million barrels of oil, four additional fields each with 360 million barrels of oil (Table 1). To put these field sizes in context with recent North Slope Alaska oil discoveries, the Alpine Oil field, the largest field to start producing in recent years, is estimated to have 435 million barrels of ultimate recovery.

These field size assumptions presume that the largest oil fields are developed first, based on the concept that the larger fields are generally easier to find and cheaper to develop.

¹³ The 13 billion barrels of Prudhoe Bay field oil represent the cumulative volume of oil expected to be produced from this field over its entire production life. The amount of in-place oil in Prudhoe Bay is estimated to be 25 billion barrels.

Table 1. Oil Field Sizes and Their Date of Initial Production for the Three ANWR Resource Cases (million barrels)

Year In Which Field Begins Production	Mean Oil Resource Case	Low Oil Resource Case	High Oil Resource Case
2013	1,370	700	2,000
2015	700	700	1,340
2017	700	340	1,340
2019	360	340	700
2021	360	340	700
2023	360	340	700
2025	360	180	700
Total	4,210	2,940	7,480

Source: Energy Information Administration, Office of Integrated Analysis and Forecasting.

- **Production profiles**

Potential production from ANWR fields is based on the size of the field discovered and the production profiles of other fields of the same size in Alaska with similar geological characteristics. In general, fields are assumed to take 3 to 4 years to reach peak production, maintain peak production for 3 to 4 years, and then decline until they are no longer profitable and are closed. Identical production profiles were used in the prior EIA report, *Potential Oil Production from the Coastal Plain of the Arctic National Wildlife Refuge: Updated Assessment*.

Results

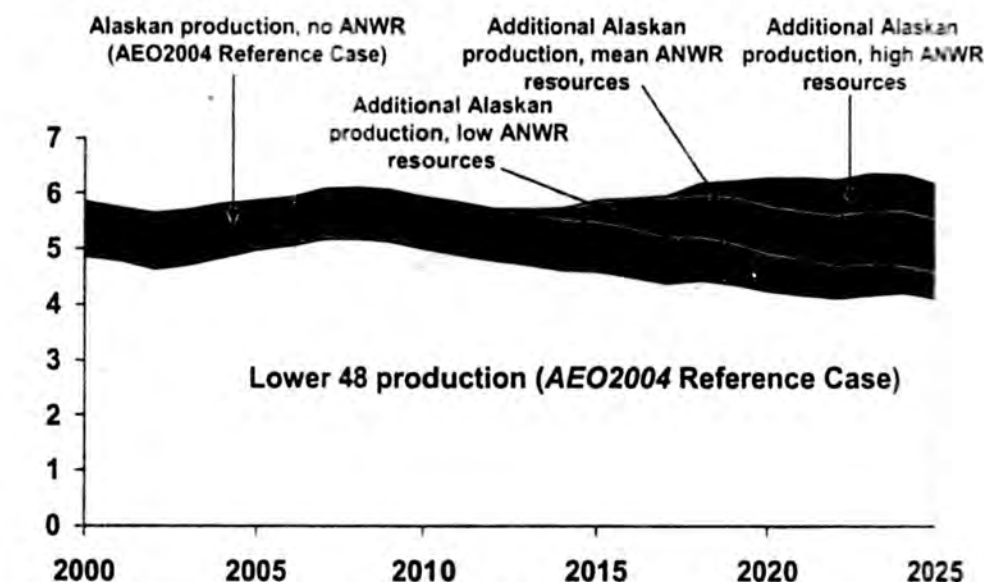
In the *AEO2004* reference case, total U.S. crude oil production is projected to grow from 5.8 million barrels per day in 2002 to 6.1 million barrels per day in 2008 (Figure 2).¹⁴ After 2008, domestic oil production is projected to decline during the remainder of the forecast period, reaching 4.6 million barrels per day in 2025.

In the reference case, Alaska oil production is projected to continue at about 0.9 million barrels per day through 2016, with a projected drop in North Slope oil production offset by new oil production from the NPRA. After 2016, total Alaska oil production is projected to decline to 0.5 million barrels per day in 2025. The decline in Alaska oil production is expected to occur in all regions, including the State lands on the North Slope, the NPRA, and the southern Alaska oil fields of Cook Inlet.

In all three resource cases, ANWR coastal plain oil production begins in 2013 and grows during most of the forecast. In the mean oil resource case, ANWR oil production peaks

¹⁴ The growth in U.S. crude oil production between 2002 and 2008 largely reflects the projected growth in offshore lower 48 oil production.

Figure 2. Domestic Crude Oil Production for Three ANWR Resource Cases and the AEO2004 Reference Case, 2000-2025 (million barrels per day)



Source: National Energy Modeling System runs anwr_lo.d022304b, anwr_lo.d022304b, anwr_hi.d022304b, and aeo2004 d101703e.

at 876,000 barrels per day in 2024. The low resource case production peaks at 639,000 barrels per day in 2024, while the high resource case production peaks at 1,595,000 barrels per day in 2023.

The opening of ANWR to oil and gas development includes the following impacts:

- Reducing the U.S. dependence on imported foreign oil;
- Improving the U.S. balance of trade;
- Extending the life of TAPS for oil;
- Increasing U.S. jobs; and
- Reducing world oil prices.

The remainder of this section focuses primarily on the first three impacts, because the employment impacts are difficult to determine and are not within the realm of EIA's expertise and because the impact on world oil prices is not expected to be significant. With respect to the world oil price impact, ANWR coastal plain oil production in 2025 is projected to constitute between 0.5 to 1.3 percent of total world oil consumption.¹⁵ It is

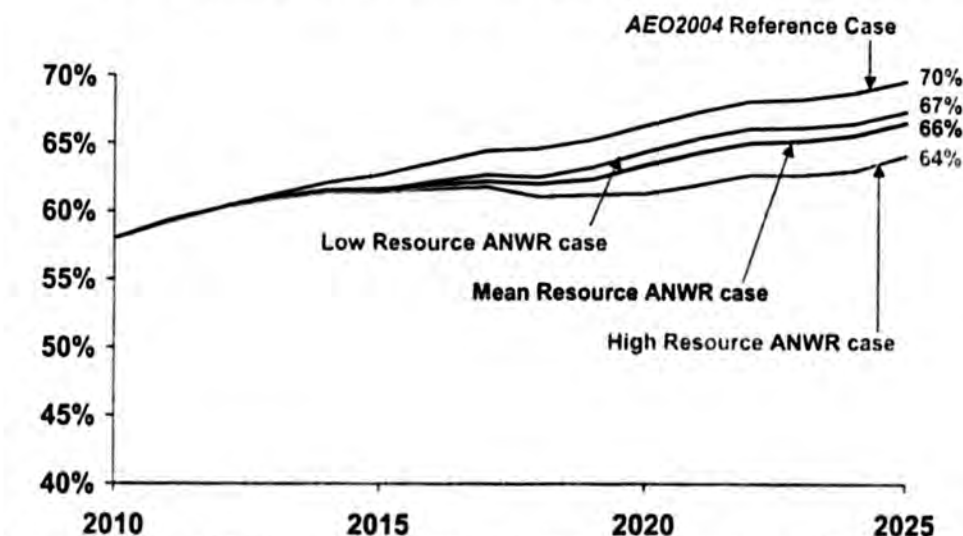
¹⁵ Based, respectively, on the low and high oil resource case ANWR production levels in 2025. World oil consumption is projected to be 118.8 millions barrels per day in 2025, as published in Energy Information Administration, *International Energy Outlook 2003*, DOE/EIA-0484(2003), (Washington, DC, May 2003), Table A4, page 185; <http://www.eia.doe.gov/oia/ieo/index.html>.

expected that the price impact of ANWR coastal plain production might reduce world oil prices by as much as 30 to 50 cents per barrel, relative to a projected 2025 world oil price of \$27 per barrel (2002 dollars) in the *AEO2004* reference case. Assuming that world oil markets continue to work as they do today, the Organization of Petroleum Exporting Countries could countermand any potential price impact of ANWR coastal plain production by reducing its exports by an equal amount.

The leasing and development of ANWR oil resources potentially extends the life of TAPS. Currently, TAPS is believed to be uneconomic to operate once the oil throughput falls to between 200,000 to 400,000 barrels per day, depending on prevailing oil prices. Although the reference case projects North Slope production to be above this minimum level (i.e., 510,000 barrels per day in 2025), the development of ANWR coastal plain oil resources extends the life of this pipeline well beyond 2025. The retention of this oil pipeline infrastructure could prove crucial in the future, if and when other regions of North Alaska are leased and developed, such as the offshore Beaufort and Chukchi Seas.

ANWR coastal plain oil production is projected to reduce future petroleum imports on an equal barrel-to-barrel basis. In the *AEO2004* reference case, 70 percent of U.S. oil consumption is projected to be satisfied by crude oil and petroleum product imports in 2025. The mean oil resource case reduces the percentage of petroleum imports to 66 percent, with an import range of 64 to 67 percent for the high and low oil resource cases, respectively (Table 2 and Figure 3).

Figure 3. Net Import Share of Petroleum Consumed in the United States for the Three ANWR Resource Cases and the *AEO2004* Reference Case, 2010-2025 (percent)



Source: National Energy Modeling System runs anwr_bs.d022304b, anwr_lo.d022304b, anwr_hi.d022304b, and aeo2004.d101703e.

Table 2. Petroleum Supply Impact of Opening ANWR to Petroleum Development under Three Oil Resource Cases (million barrels per day, unless otherwise noted)

Petroleum Supply Category	2002	2015			
		AEO2004 Reference Case	Mean Oil Resource Case	Low Oil Resource Case	High Oil Resource Case
U.S. Crude Production	5.8	5.5	5.8	5.8	5.9
---- Lower 48	4.8	4.6	4.6	4.6	4.6
---- Alaska	1.0	0.9	1.2	1.2	1.3
Net Crude Imports	9.1	13.5	13.2	13.2	13.1
Total Crude Supply	14.9	19.0	19.0	19.0	19.0
Natural Gas Liquids	1.9	2.3	2.3	2.3	2.3
Other Inputs	1.6	1.4	1.4	1.4	1.4
Net Product Imports	1.5	2.1	2.1	2.1	2.1
Total Primary Supply	19.9	24.8	24.8	24.8	24.8
Net Import Share of Total Primary Supply (percent)	53	63	62	62	61
Net Expenditures For Crude & Product Imports (billion 2002 dollars)	\$90.4	\$143.8	\$141.5	\$141.5	\$141.0
Petroleum Supply Category	2002	2020			
		AEO2004 Reference Case	Mean Oil Resource Case	Low Oil Resource Case	High Oil Resource Case
U.S. Crude Production	5.8	5.0	5.7	5.5	6.3
---- Lower 48	4.8	4.2	4.2	4.2	4.2
---- Alaska	1.0	0.7	1.5	1.3	2.1
Net Crude Imports	9.1	14.5	13.7	13.9	13.1
Total Crude Supply	14.9	19.5	19.4	19.4	19.4
Natural Gas Liquids	1.9	2.5	2.5	2.5	2.5
Other Inputs	1.6	1.5	1.5	1.5	1.5
Net Product Imports	1.5	3.0	3.0	3.0	3.1
Total Primary Supply	19.9	26.4	26.4	26.4	26.4
Net Import Share of Total Primary Supply (percent)	53	66	63	64	61
Net Expenditures For Crude & Product Imports (billion 2002 dollars)	\$90.4	\$169.0	\$161.9	\$164.3	\$157.0

Table 2. (continued) Petroleum Supply Impact of Opening ANWR to Petroleum Development under 3 Oil Resource Cases (million barrels per day, unless otherwise noted)

Petroleum Supply Category	2002	2025			
		AEO2004 Reference Case	Mean Oil Resource Case	Low Oil Resource Case	High Oil Resource Case
U.S. Crude Production	5.8	4.6	5.5	5.2	6.2
---- Lower 48	4.8	4.1	4.1	4.1	4.1
---- Alaska	1.0	0.5	1.4	1.1	2.1
Net Crude Imports	9.1	15.7	14.8	15.0	14.0
Total Crude Supply	14.9	20.4	20.3	20.3	20.2
Natural Gas Liquids	1.9	2.5	2.5	2.5	2.5
Other Inputs	1.6	1.5	1.5	1.5	1.5
Net Product Imports	1.5	3.9	4.0	4.0	4.1
Total Primary Supply	19.9	28.3	28.3	28.3	28.3
Net Import Share of Total Primary Supply (percent)	53	70	66	67	64
Net Expenditures For Crude & Product Imports (billion 2002 dollars)	\$90.4	\$200.2	\$191.9	\$194.4	\$185.1

Source: National Energy Modeling System runs aeo2004.d101703e, anwr_bs.d022304b, anwr_lo.d022304b, and anwr_hi.d022304b.

The reduction in oil import volumes also reduces the level of expenditures on crude oil and petroleum product imports. In the *AEO2004* reference case, expenditures in 2025 on foreign oil and petroleum products are projected to be \$200 billion (2002 dollars). The mean oil resource case projects expenditures in 2025 of \$192 billion, with a range of \$185 to \$194 billion for the high and low oil resource cases, respectively. So, the opening of ANWR is projected to improve the U.S. balance of trade by \$6 to \$15 billion in 2025.

ANWR Production Uncertainties

Significant areas of uncertainty regarding the impact on U.S. oil production and imports of opening ANWR are:

- *The size of the underlying resource base.* Because there has been little petroleum drilling or exploration in ANWR, there is little first-hand knowledge regarding the petroleum geology of this region. The USGS oil resource estimates are based largely on the geologic conditions that exist in the neighboring State lands. Consequently, there is considerable uncertainty regarding both the size and

quality of the oil resources that exist in ANWR. Thus, the potential ultimate oil recovery and potential yearly production are uncertain.

- *The underlying field structure.* The size of reservoirs that are found in ANWR will determine the rate at which ANWR oil and gas resources are developed. If the reservoirs are larger than expected, then production will be greater in earlier years. Similarly, if the reservoirs are smaller than expected, then production will be less in the early years.
- *The costs of developing oil resources in ANWR.* This analysis assumes that the costs of developing ANWR are not significantly different than developing the Prudhoe Bay field. Oil field development costs depend upon the quality of oil found (e.g., light or heavy) and the field's reservoir characteristics, such as permeability, faulting, and water saturation. If the ANWR oil field development costs are higher than those associated with the Prudhoe Bay field, the timing of ANWR production could be delayed.
- *Timing of ANWR production.* This analysis assumes that production in the ANWR coastal plain will begin in 2013. This analysis also assumes the size of the oil fields expected to be discovered in ANWR (based on USGS estimates) and their production rates (based on the industry's experience in the State lands on the North Slope). The actual timing of ANWR production could vary significantly from the timing assumed in this study. In addition, in the high oil resource case, North Slope production is slightly below the throughput capacity of TAPS. Although the TAPS throughput capacity could be expanded through the construction of additional pumping stations and/or the use of surfactants, it might be more economic to restrict ANWR oil production to the level of TAPS throughput capacity.¹⁶
- *Environmental considerations.* Environmental restrictions could affect access for exploration and development.

Synergies with the Alaska Gas Pipeline

The Alaska natural gas pipeline faces three types of business risk: gas market price risk, pipeline construction cost risk, and resource availability risk. Gas price risk is associated with the potential that future lower 48 natural gas prices might be too low to recover all pipeline and production costs, along with an adequate rate of return. Gas market price risk is further enhanced by the 9- to 10-year permitting and construction period for a gas pipeline, which increases the possibility that lower 48 gas market conditions and prices could have changed considerably by the time the pipeline goes into operation. For example, more than 35 North American liquefied natural gas (LNG) terminals, with more

¹⁶ The maximum throughput capacity of TAPS is 2.136 million barrels per day, which is slightly above the 2.12 million barrels per day projected in the high oil resource case in 2023. (Rates exceeding 1,440,000 barrels per day assume drag reduction agent injection.) Source: Alyeska Pipeline Service Co., <http://www.alyeska-pipe.com/PipelineFacts/PipelineOperations.html>.

than 30 billion cubic feet of daily delivery capacity, have been proposed for completion over the next decade. Some analysts have concluded that LNG imports are a less expensive gas supply option for the lower 48 than the transportation of gas from the Alaska North Slope.¹⁷ If this is true and if a significant portion of the proposed North American LNG capacity is built, then gas prices might be lower than the breakeven cost for gas transported by an Alaska gas pipeline.

The last two *Annual Energy Outlooks* have projected a need for both new LNG terminals and an Alaska gas pipeline to satisfy future natural gas consumption requirements. However, no new LNG terminals have been built since the 1970s, and LNG terminal project sponsors are faced with local siting issues, because many landowners do not want such facilities situated near them.

The risk of potential economic loss is also increased by the possibility that an Alaska gas pipeline might experience significant construction cost overruns, as happened with the construction of TAPS. A significant construction cost overrun could result in an Alaska gas pipeline being uneconomic upon its completion, especially if lower 48 gas prices decline substantially.

A gas resource risk exists because gas producers have proven the existence of 35 trillion cubic feet (tcf) out of the 51 tcf of natural gas needed to supply an Alaska gas pipeline.¹⁸ Of the 35 tcf of proved recoverable natural gas assets that have already been found on State lands in the Alaska North Slope, about 26 tcf reside in the Prudhoe Bay Field, about 8 tcf reside in the Point Thomson Field, with the remainder located in various other fields. The difference between the 51 tcf required for a pipeline and the 35 tcf of proved gas resource constitutes a requirement to discover an additional 16 tcf of recoverable gas resources for an Alaska gas pipeline.

Other areas of the Alaska North Slope besides ANWR are expected to hold considerable natural gas resources, which are sufficient to cover this 16-tcf deficit. In particular, the NPRA portion of the North Slope is estimated to contain between 40 to 85 tcf of technically recoverable non-associated gas resources and 7 to 17 tcf of technically recoverable associated-dissolved gas resources.¹⁹ The NPRA is already being leased for oil and gas development, with the eastern portion of NPRA under an active exploration program.

¹⁷ Deutsche Bank, *Picking the winners from the liquid gas boom*, May 2, 2003, Figure 6, page 8.

¹⁸ Based on a presentation prepared by BP, ConocoPhillips, and ExxonMobil entitled: "Alaska Producer Pipeline Update," May 2002, Slide 16. Includes natural gas volumes required as lease, pipeline, processing, and electricity generation fuel.

¹⁹ United States Geological Survey, *U.S. Geological Survey 2002 Petroleum Resource Assessment of the National Petroleum Reserve in Alaska (NPRA)*, USGS Fact Sheet 045-02, Table 1, and personal communication on March 1, 2004, with Emil Attanasi, Ph.D., U.S. Geological Survey, Reston, Virginia. Estimates include NPRA, native lands, and adjacent offshore areas within a 3-mile boundary surrounding NPRA. The USGS mean gas resource estimates for NPRA are 61 tcf for non-associated gas and 12 tcf for associated-dissolved natural gas. The NPRA figures cited in the text represent the 95-percent and 5-percent probability gas resource estimates, respectively. Associated-dissolved natural gas is co-located with crude oil in a reservoir, while non-associated gas is found without any crude oil in a reservoir.

In contrast, the USGS estimates that the technically recoverable non-associated natural gas resources available in the ANWR coastal plain are between 0 and 11 tcf, with a mean estimated value of 3.8 tcf.²⁰ An additional 2.3 to 5.2 tcf of technically recoverable associated-dissolved natural gas is estimated to exist in the ANWR coastal plain, with a mean estimate of 3.6 tcf.²¹ So, under the mean gas resource estimates, total associated and non-associated ANWR coastal plain gas resources are estimated to be 7.4 tcf, which is less than half of the 16 tcf necessary for the gas pipeline. Even the 5-percent probability estimates (a 1-in-20 chance) for associated-dissolved and non-associated gas resources just barely cover the 16-tcf gas resource deficit. Consequently, opening the ANWR coastal plain to petroleum development might reduce the resource risk associated with an Alaska natural gas pipeline, but only marginally, because the expected size of the NPRA gas resource base is so much larger and because NPRA is already under an active leasing and exploration program.²²

²⁰ U.S. Geological Survey, *The Oil and Gas Resource Potential of the Arctic National Wildlife Refuge 1002 Area*, Alaska Open File Report 98-34, Table AO3. Gas resource estimates include Federal lands, Native lands, and the State offshore area within the 3-mile limit.

²¹ Ibid. Table EA3. These associated-dissolved gas figures are for the Federal lands portion of ANWR only (ie, the 1002 Area) and do not include the Native lands and the 3-mile offshore portions of the ANWR coastal plain. The more inclusive gas resources estimates were not available from USGS at the time of publication.

²² The phrase "might reduce" is used in this context because this resource risk is only reduced if large volumes of natural gas are, in fact, found in ANWR. However, the finding of such resources can only occur if ANWR is opened to exploration and development. If ANWR is opened to petroleum development and no large gas deposits are found, then the pipeline's resource risk remains unchanged.

Appendix A

Request Letter from Representative Pombo

RICHARD W. POMBO, CA
Chairman
DON YOUNG, AK
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JIM SAXTON, NJ
ELTON GALLEGLY, CA
JOHN J. DUNCAN, JR., TN
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GREG WALDEN, OR
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J.D. HAYWORTH, AZ
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JEFF FLAKE, AZ
DENNIS R. REHRING, MT
MICK RIZZO, AZ
TOM COLE, OK
STEVEN FRANK, NM
BOB BISHOP, UT
JIMMIE NUNES, CA
RANDY NEUGEBAUER, TX

STEVEN J. DEMO
Chief of Staff



U.S. House of Representatives
Committee on Resources
Washington, DC 20515

February 23, 2004

NICK J. RAHALL II, WV
Ranking Democrat Member
DALE E. KLEDER, NM
ERIK F.H. FAUPELMAHAR, AS
NICK ANSCHUTZ, WI
SOLIMON P. ORTIZ, TX
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JAMES H. ZOW
Democratic Staff Director

Mr. Guy F. Caruso
Administrator
Energy Information Administration
U.S. Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585

Dear Mr. Caruso:

On February 2, 2004, Senator John Sununu requested that EIA provide information regarding the impact of certain provisions of the conference report of the Energy Policy Act of 2003. Last week, the EIA produced an analysis of those provisions using the National Energy Modeling System (NEMS).

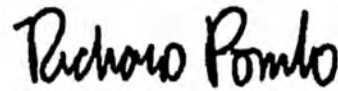
I ask that you perform a similar analysis for the potential impacts of Division C, Title III of the H.R. 6 as it passed the House. These Sections, 30401 through 30412, authorize the leasing of the Coastal Plain of the Arctic National Wildlife Refuge in Alaska for oil and gas exploration and development. I am particularly interested in the impact of these Sections compared to EIA's 2004 annual energy outlook. I would ask that you use as appropriate, EIA's May, 2000, analysis regarding potential oil production from the Coastal Plain (SR/O&G/2000-02).

If possible in the time allotted, I am also interested in EIA's assessment of whether there may be significant synergies involved between ANWR development and other Alaska North Slope development, including the impact of possible additional natural gas discoveries on the economics of a proposal to build a natural gas line to the lower 48 States. In other words, does EIA's analysis of the scenarios for ANWR development suggest that Alaska's North Slope could be a major contributor to domestic production of oil and natural for decades into the future?

Mr. Guy Caruso
February 23, 2004
page 2

I would appreciate receiving your analysis as soon as possible, but in any case by March 8, 2004.
If you should have any further questions regarding this request, please do not hesitate to contact
my Committee office.

Sincerely,

A handwritten signature in dark ink, reading "Richard W. Pombo". The signature is written in a cursive, slightly stylized font.

Richard W. Pombo
Chairman

Alaska Sets the Standards

The 49th State issues this challenge: Compare your state's oil and gas industry environmental standards with Alaska's. **How does your state measure up?**

Arctic Alaska oil expert Roger Herrera says:

"Even operating in the most challenging conditions on the planet, no one can beat us. Our oil development is so clean we ought to call it 'organically produced' and charge \$5 more a barrel for it!"

More than 13 billion barrels of oil have traveled from Alaska's North Slope to tidewater via the Trans-Alaska pipeline. Here are some of the practices that protect humans, wildlife and the environment. They represent the "culture" prevalent in all North Slope activities.

Animal/human interactions: All North Slope workers undergo mandatory training in wildlife/human interactions. With exceptions for safety considerations, animals have the right of way over equipment, vehicles and humans. Airplane takeoffs and landings are generally prohibited if animals are on or near runways. No interaction — feeding, touching, harassing or shooting of wildlife — is allowed. Driving or walking in flyway areas when birds are present is prohibited, as is any disturbance of nests.

Caribou movement in most fields is free and unencumbered with 5-7 foot elevated pipelines and gravel ramps. Where wildlife experts recommend, lines are elevated 12 inches to allow drainage and movement by flightless waterfowl. Dumpsters are bear-proofed, and once-abandoned gravel pits are now flooded to provide overwintering habitat for fish. Wildlife populations are routinely monitored; studies document many population increases and no population decreases.

Vehicle handling: Some 1500 vehicles operate at Prudhoe Bay. Vehicles are "diapered" or modified to contain oil and antifreeze leaks. All slope commercial operators are trained, licensed, and undergo random drug testing. Vehicles receive strictly-scheduled preventive maintenance, inspections and repairs.

Materials and waste handling: All batteries used on the North Slope are shipped south and recycled. Chemicals, paint, biocides, natural gas derivatives and tarring substances are stored in secure buildings to prevent exposure to wildlife. Underground confined disposal of drilling fluids and other process wastes is subject to strict permitting requirements that protect human health and the environment. Anything that can be recycled is recycled, including wastewater.

Air Quality: Monitoring conducted since oil production began shows air pollutant measurements well below applicable environmental standards. Except for nitrogen oxide, which generally measures 15-20% below allowable levels, pollutants are normally at minimum detec-



Central Arctic Caribou Herd

tion levels of testing instruments. Pollutant effects on vegetation are minimal. To reduce emissions, minibuses transport most oil field workers between sites. During cold weather above -30 degrees, vehicle engines are not allowed to idle where plug-ins are available.

Spill Prevention: In spite of strict prevention procedures, spills of seawater, produced water, oil or chemical substances occur. Between 1995 and 2000, 62% of all spills were between 7 tablespoons and 10 gallons; 25% between 11

(continued on next page)

JOBS AND ENERGY FOR AMERICA

and 100 gallons; 10% between 101 and 1000 gallons, 3% more than 1000 gallons. Brine, or seawater, represented 85% of spills; crude and refined oil 9%; other substances 6%. Each spill is reported, cleaned up by 24/7 spill response crews, and inspected by industry officials and government regulators. Although 96% of crude oil spilled has been recovered, industry's goal is 100%.

An oil spill response cooperative, Alaska Clean Seas (ACS), is staffed by experienced technicians who also train operating company and contractor personnel. ACS maintains cleanup materials and equipment and continually seeks new and better technology. Spill contingency plans provide blueprints for responding to any size spill on land or water. New technology, such as the military-designed forward-looking infrared scanner, is used to detect and define pipeline damage or spills from the air. Most spills never reach the tundra due to built-in containment and secondary containment measures. Rehabilitation techniques for impacted tundra successfully restore wildlife habitat.

Drilling Impacts: If built today, the 5600 acres occupied by Prudhoe Bay development would shrink to 1500 acres. New production well pads are as much as 75 percent smaller than older pads. This resulted from a commitment to consolidated contractor facilities, closer well spacing and more compact building designs. Increased automation and remote-control operations have reduced the need for road connections to many sites.

Drilling innovations continue to allow for smaller land surface impacts. Ice roads and pads provide the foundation for exploration and drilling activities without leaving a trace after thawing. New "through-tubing rotary drilled" wells are now penetrated through pre-existing tubing, eliminating the need for removing tubing with drill rigs. Coiled tubing units, long used for well maintenance, are now used to penetrate down-hole directional equipment.

"Designer wells" are made possible with 3-D and 4-D seismic, allowing reservoir engineers to plot

Alpine oil field: technological advances shrink the footprint of development.



faults and small oil traps to within 100 feet of accuracy. This non-invasive seismic visualization dramatically reduces the numbers of future wells, pads and roads required. Onshore seismic work is done on frozen ground with air-cushioned rubber-tracked vehicles to lessen tundra scarring; offshore work is timed to avoid whale migration. New "multilateral" wells drill a main surface trunk to enable tapping into different reservoirs without cementing off the older well. This allows sharing above-ground facilities and building less infrastructure.

North Slope horizontal production well technology has developed rapidly since first used in 1990. Nearly all wells are now horizontally drilled. Today more than 8,000 feet of reservoir can be horizontally penetrated. Major side benefits are fewer opportunities for spills.

These high standards resulted from industry working hand in hand with local citizens and government. Skills gained by applying new technology and human ingenuity to North Slope environmental concerns are now readily exportable and in considerable demand as more remote global frontiers are explored.

Arctic Power is a grassroots organization advocating jobs and energy for Americans through responsible development of resources in the coastal plain of ANWR. For more information on this topic, contact Arctic Power at
PO Box 100220 • Anchorage, AK 99510 • Phone 907.274.2697 • Fax 907.274.2706 • or visit <http://www.anwr.org>



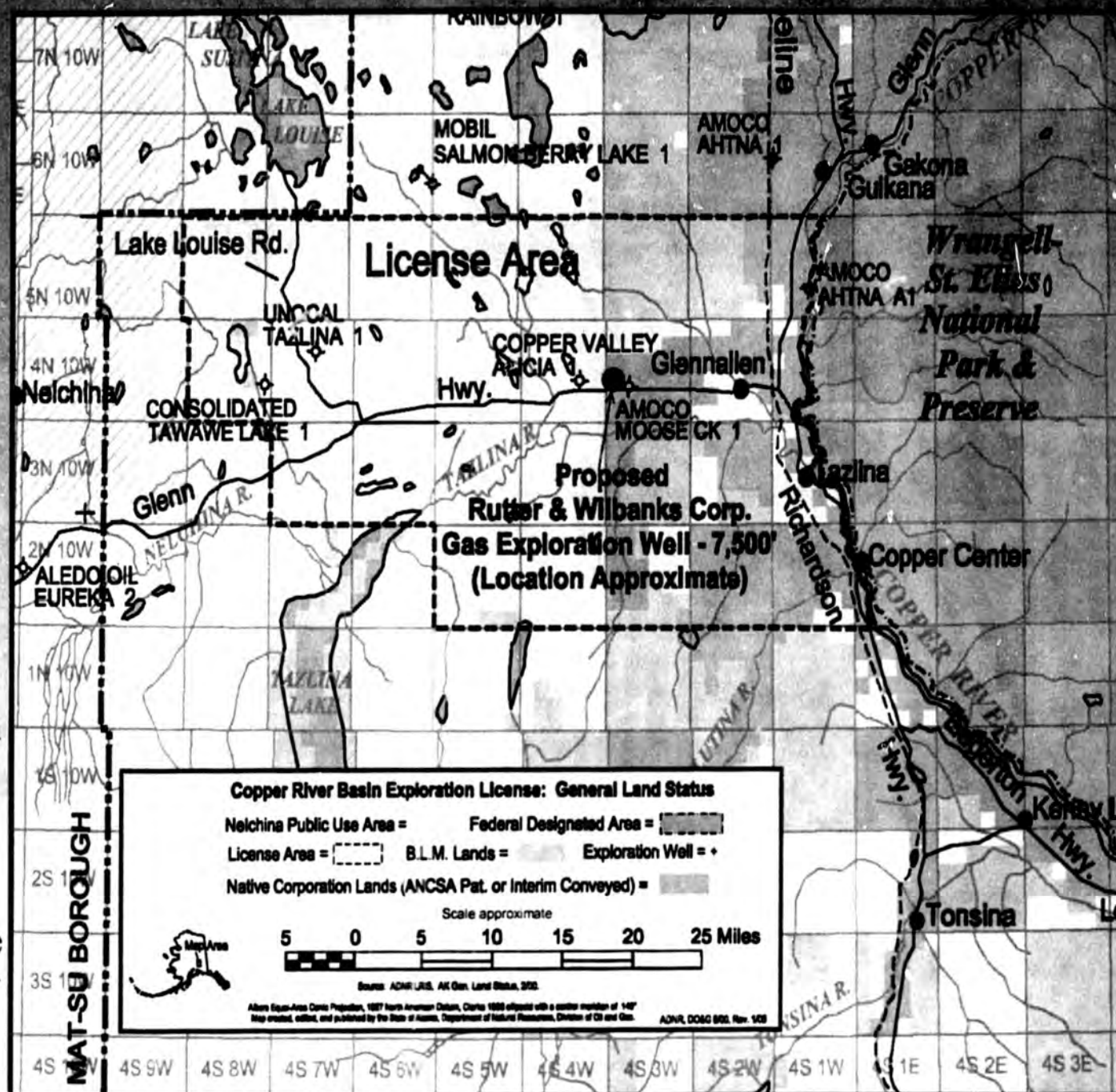
<u>CURRENT INCENTIVES</u>	<u>CONVENTIONAL LEASES</u>	<u>UNLEASED STATE LAND</u>	<u>LICENSED LAND</u>	<u>SNG LEASES</u>	<u>FEDERAL & PRIVATE LAND</u>
Exploration Incentive Credits (EIC)					
AS38.05.180(i)	up to 50% of drilling costs	up to 50% of seismic costs	N/A	up to 50% of drilling costs	N/A
AS41.09.010 -- expires 7-1-2007	N/A	up to 50% of drilling & seismic costs	up to 50% of drilling & seismic costs	N/A	up to 25% of drilling & seismic costs
Exploration Tax Credit					
AS43.55.025 -- expires 7-1-2007 (SB185)	20% of drilling costs or 40% of drilling costs if >25 mi of a unit plus 40% of seismic costs	20% of drilling costs or 40% of drilling costs if >25 mi of a unit plus 40% of seismic costs	20% of drilling costs or 40% of drilling costs if >25 mi of a unit plus 40% of seismic costs	20% of drilling costs or 40% of drilling costs if >25 mi of a unit N/A	20% of drilling costs or 40% of drilling costs if >25 mi of a unit plus 40% of seismic costs
AS43.20.043 -- expires 1-1-2013 (HB61) for below 68° latitude*** (see note at bottom)	10% of capital investment 10% of annual cost	10% of capital investment 10% of annual cost	10% of capital investment 10% of annual cost	10% of capital investment 10% of annual cost	10% of capital investment 10% of annual cost
Royalty Reduction					
AS38.05.180(j) (HB28)	as low as 5% if new production as low as 3% if producing or shut-in	N/A	(Applies after conversion to Lease) (Applies after conversion to lease)	as low as 5% if new production as low as 3% if producing or shut-in	N/A
AS38.05.180(f)(5) (SB185)	As low as 5% for oil production from CI platforms if production falls below specified levels	N/A	N/A	N/A	N/A
Discovery Royalty					
AS38.05.180(f)(4) for Cook Inlet only	5% royalty for 10 yrs	N/A	(In limited area after conversion: T18N)	(Applies to limited area: T18N)	N/A
for pre-1969 leases only, statewide	5% royalty for 10 yrs	N/A	N/A	N/A	N/A
AS38.05.180(f)(5) for following fields only: Falls Creek, Nicolai Creek, Starichkof, North Fork, Redoubt Shoals, & West Foreland field must be in production by 1-1-2004	5% on 1st 25 MM bbls for 10 yrs 5% on 1st 35 BCF for 10 yrs	N/A	N/A	N/A	N/A
Economic Limit Factor -- AS43.55.013	Yes	N/A	(Applies after conversion to Lease)	Yes	Yes
Contract Gas Price With a Utility vs Royalty Value -- AS38.05.180(aa)	Value of state's royalty share equals gas contract price	N/A	(Applies after conversion to Lease)	Value of state's royalty share equals gas contract price	Value of state's royalty share equals gas contract price
Value of state's royalty gas used for ag products -- AS38.05.180(ee) (HB57)	Negotiated Value	N/A	(Applies after conversion to Lease)	Negotiated Value	Negotiated Value
*** If requesting this credit, not eligible for any other tax credits or royalty modifications					

<u>INCENTIVES AS PART OF A PROGRAM</u>		<u>CONVENTIONAL LEASES</u>	<u>UNLEASED STATE LAND</u>	<u>LICENSED LAND</u>	<u>SNG LEASES</u>	<u>FEDERAL & PRIVATE LAND</u>
Exploration Licensing	AS38.05.132	N/A	N/A	Up to 500,000 acres per license One-time \$1/acre license fee No bonus bid No annual rental sole right to covert to O & G leases	N/A	N/A

Copper River Basin Exploration License Area

Proposed Rutter & Wilbanks Corp. Gas Exploration Well

- Plans to drill in February 2005 to 7500 feet.
- The first gas exploration well in the Copper River basin in more than 20 years.
- The Exploration License expires Oct. 2005. It may be converted to leases at licensee's option.



Well location from Dwight's Alaska Report; Section 19, Twp. 4N, Rge. 3W, Copper River Meridian.