

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672
1541 SCOMM 57: SENATE SPECIAL COMMITTEE ON OIL & GAS, 1987-1988³³⁸

(h) Regulations adopted by the commissioner to implement this section shall be adopted in accordance with the Administrative Procedure Act (AS 44.62.010 — 44.62.650). (§ 1 ch 71 SLA 1971; am § 6 ch 104 SLA 1971; am §§ 34 — 36 ch 71 SLA 1972; am §§ 40, 41 ch 127 SLA 1974; am § 4 ch 175 SLA 1980)

Cross references. — For geothermal resources generally, see AS 41.06. For legislative policy with respect to geothermal resources, see § 1, ch. 175, SLA 1980 in the Temporary and Special Acts.

Effect of amendments. — The 1980 amendment rewrote the section.

Collateral references. — Construction and application of Geothermal Steam Act of 1970 (30 USCS § 1001 et seq.), pertaining to leases of government lands for development of geothermal steam resources, 40 ALR Fed 814.

Sec. 38.05.182. Royalty on natural resources. (a) Any royalty provided for in AS 38.05.135 — 38.05.181 may be taken in kind rather than in money if the commissioner determines that the taking in kind would be in the best interest of the state. However, royalties on oil and gas shall be taken in kind unless the commissioner determines that the taking in money would be in the best interest of the state.

(b) The commissioner shall submit a determination to take royalty in money to the legislature at the first opportunity during a current session or, if the legislature is not in session, at the next regular session. The legislature, within 60 days or by the adjournment of the session, whichever comes sooner, may revoke the determination by concurrent resolution. (§ 1 ch 56 SLA 1970; am § 7 ch 71 SLA 1971; am § 1 ch 9 SSSLA 1974; am § 5 ch 218 SLA 1976; am § 1 ch 146 SLA 1977; am § 8 ch 112 SLA 1980)

Revisor's notes. — Enacted as AS 38.05.362. Renumbered in 1970.

Effect of amendments. — The 1980 amendment deleted "(1)" following "in kind unless," and deleted "and (2) the Alaska Royalty Oil and Gas Development

Advisory Board approves the taking in money" following "best interest of the state," and in subsection (b), deleted "approved under (a) of this section" following "to take royalty in money."

NOTES TO DECISIONS

Quoted in *McKinnon v. Alpetco Co.*, Sup. Ct. Op. No. 2413 (File No. 5546), 633 P.2d 281 (1981).

Collateral references. — 38 Am. Jur. 2d, Gas and Oil, §§ 189-198.

58 C.J.S., Mines and Minerals, §§ 185 to 192, 213 to 219.

Acceptance of rents or royalties under oil and gas lease as waiver of forfeiture for

breach of covenant or condition regarding drilling of wells, 80 ALR 461.

Lessor's acceptance of royalty under gas and oil lease after lease has expired as precluding him from insisting upon expiration, 113 ALR 396.

What constitutes "royalty" on oil or gas production within language of conveyance, exception or reservation, 4 ALR2d 492.

Construction and effect of provision in mineral lease excusing payment of minimum rent or royalty, 28 ALR2d 1013.

Solid mineral royalty as real or personal property, 68 ALR2d 728.

Solid mineral royalty under mining lease as real or personal property for purpose of payment of damages in condemnation proceedings, 68 ALR2d 735.

Payment of shut-in royalties or annual rental lease as precluded forfeiture or abandonment, 1076.

"Shut-in royalty" on oil and gas leases, 96.

Rights of parties to royalty deed after expiration where production ten, ALR2d 885.

Sec. 38.05.183. Sale of royalty. (a) The sale, exchange or other disposal of a mineral obtained by the state as a result of AS 38.05.182, or the sale, exchange or other disposal in kind of a right to receive future mineral production under this chapter, shall be by competitive bid and tender. If competitive bidding is not required when the commissioner gives written notice to the Alaska Royalty Oil and Gas Advisory Board under AS 38.06.050, determines that the sale, exchange or other disposal of the state does not require it or that no competitive bidding is required.

(b) When competitive bids are required, the commissioner shall give prior written notice to the Alaska Royalty Oil and Gas Advisory Board, may reject all bids on a determination that the amount of the bids, the lack of responsibility of bidders, or for reasons consistent with the criteria in AS 38.06.070, the acceptance of the bids would not be in the best interest of the state.

(c) If the commissioner determines that a sale, exchange or other disposal of a mineral obtained by the state as a result of AS 38.05.182 or of a right to receive future mineral production under this chapter shall be made otherwise than by competitive bid, and the Alaska Royalty Oil and Gas Development Board has been notified in writing of that determination, the commissioner shall make public in writing the specific findings upon which that determination is based.

(d) Oil or gas taken in kind by the state as its royalty shall be sold or otherwise disposed of for export from the state if the commissioner determines that the royalty-in-kind oil or gas to the present and projected intrastate domestic and foreign markets. The commissioner shall make public, in writing, the findings and reasons on which the determination is based and the date of the convening of a regular session of the legislature showing the immediate and long-range domestic and foreign needs of the state for oil and gas and an analysis of how the needs are to be met.

2/3/87
3:40

BF	Brown	Tax Policy Committee
P. Fischer	Sund	
Mary Hallam	Kerhola	Bartender
Termy Martin	Coghill	Dave Rasch
<u>Murell Wright</u>	Dunne	George Nelson

Income tax — 3 structures

- 1) benchmark.
- 2) pigggy back to feds
tax tables, deductions, etc
- 3) flat tax —
some progressiveness. for equity.

1) Progressivity — equitable —
high income pay more.
#1 most progressive

2) Elasticity. —
more elastic, more unstable.
enhances peaks in income
#1 is most elastic

3) Inflation
= 400 million w/o index
300 w/indexing

4) Leakages.

- 1) deduct state taxes
transfer from fed → state
- 2) deduct property tax
leak from state → municipality

5) Link to other states

6) DEN — for or not?

- ④ administrative compliance cost.
most complicated, more cost

Gov. introducing bill by end of month.

SALES TAX

1% = 35 million

exemptions - for food, drugs -
for lower income -

2% - does not double revenue =
reduced consumption.

- 1) regressivity -
lower pay higher percentage of income
- 2) isolated -
catalogue sales not taxed
- 3) double taxation -
municipality tax too.
could credit community tax
- 4) not deductible from fed tax.
- 5) non-residents -
tax engine cards

advantages

- 1) elastic
- 2) easy to administer.
- 3) 45 states have it

49% of all tax collected.

Alternative —

①

excise —

alcohol
tobacco
fuel

1) not elastic → stable

2) administrative cost —
already are here

Cigarette.

16¢ = 10-11 million

Maine = 18¢ = 18 million = 7 million
extra

Alcohol —

equalize = 4.5 million more

Motor fuel —

refund + credits —

delete = would have to tax 2.2¢/gal^{addl.}
8¢/gal tax off highway, construction, 6¢/gal

②

fishery

① credits used to aid processors only anti

② tax linkage

③

45% assessment.

eliminate state subsidy

4.5 million

ELF — Malone wants approach
based on HB 545 — tax on oil field
heavier, marginal higher —
stimulate production in marginal fields
suspend for 5 years —
in such a way to limit output
production to be cut back.

Cumbe — 9 options
rejected 3 or 4.

* ① modify export
field rather than well production

Malin

Jones Act / Export of oil
major source of revenue.

Bran

ELF
asked a firm 10-15 years?

might = \$150 million / year
\$4/87 143
90

JOHN SUND, REPRESENTATIVE

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MEMORANDUM

2/3/87

TO: Members, Joint Special Committee on Tax Policy

FROM: Rep. John Sund, House Co-Chair
Joint Special Committee on Tax Policy

RE: Suggested changes to tax report

We have circulated the draft of the preliminary report of the Joint Special Committee on Tax Policy and are starting to get back comments and suggested changes.

The report, of course, should be viewed as attempting to briefly outline issues the Committee has considered. The actual Committee Report is due next year.

Based on comments received to date, I am suggesting the following changes:

- 1) Page 7, numbered paragraph 5: substitute "in addition to" for "rather than." This indicates that in an ELF proposal studied by OMB, field productivity would be used in addition to well productivity in calculating the ELF.
- 2) Page 7, where revenue estimates are used, use the 30% case instead of the 50% case.
- 3) On page 9 of the draft, first paragraph, delete the last two sentences and replace with:

"According to a January 1987 report from the Department of Revenue, substituting separate accounting for modified apportionment would increase FY 1988 revenues by almost \$100 million, assuming current oil prices [Graph II-9-1, page 95]. Little or no additional revenue would be gained, however, if the change to separate accounting were accompanied by the severance tax reduction called for under HB 353, again assuming no change in oil prices [Graph II-9-3, page 95].

The DOR study suggests that the crossover point, above which separate accounting by itself would produce more FY 1988 revenue for the state, is between \$5/barrel and \$7/barrel wellhead value. The current wellhead value is about \$8.75/barrel. The crossover point tends to increase in later years, as does the DOR forecast of wellhead value."

DRAFT TAX POLICY COMMITTEE REPORT
Volume I

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3. Revenue Projections by Tax Type
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6. Bibliography



Official Business

Alaska State Legislature

JOINT SPECIAL COMMITTEE ON TAX POLICY

Pouch V
State Capitol
Juneau, Alaska 99811

January 27, 1987

MEMORANDUM

TO: Members, Joint Special Committee on Tax Policy
FROM: Rep. John Sund, House Co-Chair
RE: Draft Committee Report

Attached please find a draft of the first report of the Joint Special Committee on Tax Policy. The report is limited in scope for three reasons: The committee took no votes and made no recommendations, the Senate Chairman resigned from the Legislature, and the House Chairmanship changed hands (from Rep. Grussendorf to Rep. Sund) at the final meeting, in December.

Please review the report and Table of Contents of materials to be attached to the final report and let me know any changes you might recommend.

A. Introduction

The purpose of this report is to outline briefly issues of Alaska tax policy considered by the Joint Special Committee on Tax Policy.

The Committee was created by the passage of Senate Concurrent Resolution 42, in May 1986. It is scheduled to dissolve on the 11th day of the second session of the Fifteenth Alaska Legislature, in January 1988.

Membership on the Committee includes three members from the House, three from the Senate, two from the Administration, and three public members.

The Committee has a comprehensive charge of examining all issues relating to tax policy in Alaska.

The Committee has met three times, in Anchorage (see minutes, attached).

B. Issues explored by the Tax Policy Committee

Before evaluating any specific taxes, it is important to establish criteria for evaluation. The Department of Revenue, in a memo given to the Committee on alternative means for increasing revenues, listed five criteria for evaluating tax policies.

The five are:

Economic Efficiency: What effect does the proposed tax law change have on incentives and economic decision-making which may alter consumption, production or resource allocation decisions?

Equity: Who bears the burden of the tax and how does that burden compare with ability to pay or benefits received? Is the tax progressive or regressive with respect to income and/or wealth?

Elasticity: What is the sensitivity of the tax revenue yield to changes in economic or demographic conditions? As income or population increase and decrease does tax revenue increase or decrease in greater, lesser or equal proportion?

Administrative Efficiency: How costly is the tax to administer in terms of resources devoted to administration and compliance relative to the revenue yield of the tax? Who bears the burden of administrative cost, the taxpayer, the State, or the tax collector if different from the state?

Political Feasibility: How acceptable is a proposed tax law change to the legislature and/or the electorate given the existing social, political, and economic conditions? Who benefits, who loses, and who has the most political power?

In addition to these, the Committee considered several other tax evaluation criteria:

Revenue raised for the state: How much revenue does the tax change raise for the State?

Employment Impact: What will be the impact on employment in the public and private sector?

Capital Impact: What will be the impact on investment capital availability in Alaska?

New Federal Tax Code: How does the proposed tax law change relate to the new Federal Tax Code?

For oil and gas taxes, the Committee looked at several additional evaluation criteria:

Impact on exploration, development and production.

Relative impacts on small and large fields.

Impact on secondary and tertiary recovery and recoverable reserves.

Possibility of premature shutdown of producing fields, and future oil and gas production loss.

Impact on Cook Inlet fields.

Impact on royalty income.

Impact on severance income.

Alaska Tax Policy

ELF

Much of the Committee's time has been spent on questions relating to the Alaska Severance Tax, in particular, the Economic Limit Factor (ELF). The purpose of the ELF is to provide severance tax relief to marginal oil fields in order to keep them in production, retaining economic benefits for the state. The ELF is calculated to be a number between zero and one and can be thought of as representing a percentage of the nominal severance tax rate (e.g. a field with an ELF of 0.6 means 60% of the nominal severance tax rate is applied to that field). The ELF is an issue at this time largely because an ELF provision that sets the ELF at 1.0 if the calculated ELF is greater than 0.7, expires after a field has been in production for ten years, and Prudhoe Bay will have been in production for ten years as of July 1987. When the ten-year exemption for Prudhoe Bay expires, and no changes are made to the law, the ELF for Prudhoe Bay will go to an estimated .82, reducing severance taxes by over \$100 million per year. The oil industry opposes any change to the ELF formula, saying that it will reduce producer revenues available for reinvestment in Alaska, reduce research and development in Alaska and may cause premature shutdown of producing fields.

Eight options were considered for the ELF:

1) Fix the per-barrel severance tax floor at \$.80 to which ELF does not apply.

	FY 88	FY 89	FY 88-2005
Revenue from this option:	30 M	20 M	210 M (50% case)

303

[Source: Dept. of Revenue]

2) Same as #1, plus set 300 bbl/day PEL (Production Economic Limit) in statute (now a rebuttable presumption), and repeal the ELF exponent.

3) Set the per-barrel floor at \$1.50 and index it with inflation. The \$1.50 figure was selected based on applying a CPI inflator to the original \$.80 floor. This option was rejected by the Committee based mainly on the fact that it would have a severe negative impact on oil production, [in Cook Inlet.]

4) Repeal the ELF entirely on all fields. This option was rejected as the Committee supported the policy of giving marginal oil fields a tax break as with the ELF.

5) Modify the exponent of the ELF formula and base the PEL on field production ^{in addition to} [rather than] per-well production. The modification of the ELF exponent would have the effect of giving additional tax relief to marginal fields while increasing the tax receipts from very large fields. The net result would be an increase in severance tax income over present law.

	FY 88	FY 89	FY 88-2005
Revenue from this option:	140 M	140 M	1,670 M (50% case)

306

[Source: Dept. of Revenue]

DRAFT

6) Include the provisions of option 5 with the addition of a floor which is not affected by the ELF. This option was rejected by the Committee based on the negative effects on Cook Inlet oil fields stemming from the floor change.

7) Extend the ten-year Prudhoe Bay exemption to fifteen years.

8) No change in the law, i.e. allow the scheduled application of ELF to Prudhoe Bay.

Oil and Gas Income Tax

The major issues considered regarding the Oil and Gas Income Tax revolve around the question of separate accounting of oil and gas income in Alaska versus that of apportioning Alaska income by formula. Present law uses the 'modified apportionment' approach. Separate accounting was used in Alaska for the years 1978-1981, but was repealed because the State was exposed to the possibility of large tax refunds if the courts had ruled for the oil companies who brought suit. The State Supreme Court and the U.S. Supreme Court ruled in favor of the state, holding that separate accounting is within the prerogative of the legislature as a method of determining Alaska income for taxation.

Separate accounting is generally considered to more accurately reflect oil and gas income earned in Alaska. Separate accounting has the disadvantage of being more volatile, that is state income closely follows the rise and fall of oil prices on the world

market. The oil and gas industry vigorously opposes the imposition of separate accounting in Alaska as they feel that it can expose them to taxation on more than 100% of their earnings. House Bill 353, which would have reinstated separate accounting was introduced in the Fourteenth Legislature, but did not pass either body. According to the most recent (January, 1987) report of the Alaska Department of Revenue, at current oil prices separate accounting would result in lower revenues for the state. They show a crossover point where separate accounting would result in more revenue for the state at \$14-16/barrel wellhead value.

Incorrect

Individual Income Tax

The State of Alaska is one of seven states without an individual income tax. The Committee requested a report from the Department of Revenue on the revenue potential and economic impacts of a personal income tax. The report was completed at the end of December, 1986, and is attached. The report examines three types of state income taxes and examines revenue potentials of each against two possible economic scenarios for the state's future. It is interesting to note that were the State to reimpose the individual income tax with the same rate structure as was in effect before it was repealed, the tax would yield between \$399 million (low economic scenario) and \$436 million (moderate economic scenario) for tax year 1988. These amounts exceed previous estimates by approximately \$100 million.

State Sales Tax

The State of Alaska is one of five states without a statewide sales tax. The Department of Revenue recently completed a study of the revenue potential of a statewide sales tax. The report concludes that in calendar year 1988, if sales of food are not exempted, a retail sales tax would yield \$38,355,000 per one percent tax. In addition, the service sector of the economy, could yield approximately \$14 million per one percent tax.

Issues to be explored by Committee

There are a great many tax issues which could be productively explored by the Joint Special Committee on Tax Policy. An outline of some of these issues is provided below.

1. Corporate Income Tax
 - a) Rates
 - b) Worldwide Combination
 - c) Separate entity
 - d) Waters' edge
 - e) Changes to Apportionment formula
2. Severance Tax
 - a) Definition of a marginal field?
 - b) Definition of Field, Unit
3. Motor Fuel taxes
4. Special tax incentives and credits
 - a) Exploration Incentive
 - b) Mining License 3.5-year moratorium

- c) Special Industrial Tax Credit
- d) Credits included in adoption of IRS code
- e) Investment Tax Credit
- f) Non-Highway Use refund
- g) Oil Gravity Adjustment
- 5. Oil and Gas Property Tax (ad valorem)
 - a) Municipal uniformity
- 6. Disputed taxes
 - a) DOR need for auditors, etc.
 - b) Taxpayer Confidentiality
 - c) Outlook for settlements
- 7. Lottery
- 8. Oil & Gas Reserves Tax
- 9. Tobacco Tax
- 10. Alcohol Tax
- 11. Gross Receipts Tax
- 12. School Tax
- 13. Fisheries Taxes

Conclusion The Joint Special Committee on Tax Policy has attempted to establish policy guidelines to examine Alaska's tax structure. The Committee has developed information regarding impacts of some proposed tax schemes. Other than rejecting certain proposals relating to the ELF, the Committee has reached no conclusions or recommendations regarding any specific tax proposal.

Introduced: 4/23/86
Referred: State Affairs

1 IN THE SENATE

BY THE STATE AFFAIRS COMMITTEE

2 SENATE CONCURRENT RESOLUTION NO. 42

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 FOURTEENTH LEGISLATURE - SECOND SESSION

5 Relating to a legislative committee to
6 study the state's tax policy.

7 BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

8 WHEREAS the State of Alaska has a tax structure that has not been
9 comprehensively reviewed for fairness and equity; and

10 WHEREAS it is in the state's best interest to have a long-term tax
11 policy that is broad, stable, and accountable; and

12 WHEREAS the State of Alaska lacks the necessary information to develop
13 a comprehensive approach to existing state taxes, tax credits, licenses and
14 user fees; and

15 WHEREAS an examination of the relationship between minimizing taxes
16 and fostering economic growth is critical to the understanding of the
17 state's tax structure;

18 BE IT RESOLVED by the Alaska State Legislature that under Uniform Rule
19 21 a joint special committee on tax policy is established consisting of
20 three members of the senate appointed by the president of the senate, three
21 members of the house of representatives appointed by the speaker of the
22 house, three ex-officio members from the private sector appointed by the
23 governor and one ex-officio representative each from the Office of Manage-
24 ment of Budget and the Department of Revenue to conduct research, hold
25 public hearings and take testimony and collect data on the state's tax
26 policy; and be it

• 27 FURTHER RESOLVED that before the committee dissolves on the 11th day
28 of the Second Session of the Fifteenth Legislature, it submit a written
29 report to the legislature that addresses the merits of and makes

- 1 recommendations concerning a long-term, broad-based and stable tax policy
- 2 to minimize taxes and foster economic growth.

JOINT SPECIAL COMMITTEE ON TAX POLICY

List of Members

Appointed

Abood

d Eliason

John Sund, Co-Chair

Kay Brown

Terry Martin

cio

Programs
Alaska

Operating Engineers, Local 302

Production Company

Ex-Officio

gh Malone
Revenue

ement and Budget

BIBLIOGRAPHY OF MATERIALS
JOINT SPECIAL COMMITTEE ON TAX POLICY
January, 1987

The following is a bibliography of research papers collected by the Joint Special Committee on Tax Policy as of January, 1987. A set of the materials is on file in the Office of Rep. John Sund, House Chair. (Rm 118, Capitol. 465-4919).

A. Individual Income Tax

1. Individual Income Tax Report, Mary Ellen Frank, Economist, et. al. State of Alaska, Department of Revenue, memo to Vince Wright, Chief of Research, State of Alaska, Department of Revenue, December 1986
2. Commuter Taxes as They Relate to Resident Hire, Memo to Rep. Mike Davis from Mary Jennings, Legislative Analyst, State of Alaska, House Research Agency, April 1986

B. State Sales Tax

1. Revenue Potential of a General Sales Tax, Vince Wright, Chief of Research, State of Alaska, Department of Revenue, December 1986

C. Oil Taxes - General

1. The Taxation of the Petroleum Industry Under Alaska's Corporate Income Tax: A Report Prepared for the Alaska Legislature and the Alaska Department of Revenue, Jerome Zeifman and Kenneth Ainsworth, January 1977
2. Alaska's Oil and Gas Tax Structure: A Study with Recommendations for Improvement. Alaska Department of Revenue, February 1977
3. Impact of Increased Taxation on Oil Exploration and Development in Alaska: A Report to the Alaska State Legislature, Tanzer Economic Associates, March, 1977
4. Recommended Changes in Alaska's Oil and Gas Production Tax Rates, A Report to Governor Jay Hammond, By the Alaska Department of Revenue, 1978
5. The History of Oil and Gas Taxation in Alaska, Thomas K. Williams, Commissioner of the Alaska Department of Revenue, 1978
6. Prudhoe Bay Field and Trans-Alaska Pipeline System: Comparative State Tax Burden Study, Arthur Anderson & Co. for the Alaska Oil and Gas Association, February, 1979
7. Historical Review of Alaska Petroleum Taxes, 1955-1978, Mike Bradner for the Alaska State Legislature, April 1979
8. Alaska Oil and Gas Income Taxation, John Messinger, Gregg Erickson, and Lawrence Eppenbach for the Alaska State Legislature Joint Gas Pipeline Committee, April 1981
9. A Sound Strategy for Protecting Alaska's Oil and Gas Revenues: an Analysis of the Backstop Tax Legislation, Preston Thorgrimson, Ellis & Holman (John Messenger) for the

Alaska State Legislature Joint Gas Pipeline Committee

10. Legislative History Materials, 1981 Corporate Income Tax Amendments, Volumes I & II
11. Alaska Petroleum Revenues: The Influence of Federal Policy, University of Alaska, Institute of Social and Economic Research, for the State of Alaska, Office of the Governor October 1984
12. Impact of Tax Simplification Proposals on Oil and Gas Production and the Economy - Alaska, Interstate Oil Compact Commission, February 1985
13. State, Federal and Industry Shares of Alaska Resource Income, Fiscal Years 1982-1985, State of Alaska, Office of the Governor, Office of Management and Budget, Tom Chester, April 1986

D. Severance Tax

1. Policy Considerations Behind the Severance Tax, Jon Tillinghast, Assistant Attorney General, State of Alaska, Attached to Memo to the Joint Special Committee on Tax Policy from Richard Monkman, Deputy Commissioner, Taxation, Department of Revenue, September 1986
2. History of Oil and Gas Tax Law, State of Alaska, Department of Revenue, September 1986

E. ELF

1. Transcript of Presentation on ELF given by Gregg Erickson State of Alaska, Office of the Governor, Office of Management and Budget, for the Tax Policy Committee Meeting, September 1986
2. Memorandum on Proposed Changes to the Severance Tax ELF, Memo from G.J. Abraham to George Nelson, Standard Alaska Production, October 1986
3. Analysis of ELF Alternatives, Charles Logsdon, Petroleum Economist, State of Alaska, Department of Revenue, December 1986
4. Alternative ELF, Thomas Chester, State of Alaska, Office of the Governor, Office of Management and Budget, 1986
5. Low (Oil) Prices and the ELF, Memo from Charles Logsdon, Petroleum Economist, State of Alaska, Department of Revenue to Vincent Wright, Chief of Research, April 1986
6. Letter from John R. Kemp, Division Manager, Conoco, Inc. to Senator Frank Ferguson, Senate Chair, Joint Special Committee on Tax Policy, September 1986
7. The Economic Limit Factor in Alaska's Oil and Gas Properties Production Tax, Thomas K. Williams for Standard Alaska Production Company, September 1986

F. Separate Accounting

1. Affidavit of Edward B. Deakin, CPA, Ph.D. In the Superior Court, State of Alaska, in ARCO v. State of Alaska, November 1981
2. Interim Report of the House Finance Subcommittee on Oil and Gas, Louann Cutler and Sharman Piper, Alaska State Legislature, January 1986
3. Analysis of HB 353, Alaska Department of Revenue, Memo from Vince Wright, Director of Research to Commissioner Mary Nordale, October 1985
4. Sensitivity Analysis of House Bill 353, Memo from John Larson, Economist, et. al. State of Alaska, Department of Revenue, to Vince Wright, Chief of Research, State of Alaska, Department of Revenue, December 1986
5. Overview of Issues Involved in Consideration of HB 353, Memo from Louann Cutler, Special Assistant to Rep. Al Adams, Chair, House Finance Committee, State of Alaska, Alaska State Legislature, October 1985
6. White Paper Report to the Alaska State Legislature on Alaska Oil and Gas Resources, Alaska State AFL-CIO and Alaska Teamsters, Local 959, January 1986
7. The Effects of State Income Tax Policy on the Development of Marginal Oil Fields: An Analysis of the Impact of House Bill 353, House Research Agency, Alaska State Legislature, January 1986
8. Revenue from Separate Accounting, Memo to Mary Halloran, Office of the Speaker, State of Alaska, Alaska State Legislature, Gregg Erickson, Senior Economist, State of Alaska, Office of the Governor, Office of Management and Budget, December 1986
9. Overview and Sectional Analysis of House Bill 353, Deborah Vogt, Assistant Attorney General, State of Alaska,

G. Oil and Gas Conservation Tax

1. Memo to Governor Bill Sheffield and attached Proposed Legislation on the Oil and Gas Conservation Tax, Harold M. Brown, Attorney General, State of Alaska, November 1986

H. Corporate Income Tax

1. Sujong v. State of Alaska, Department of Revenue Court Decision, Alaska, 622 P.2d 967
2. Income Tax in Alaska, Deborah Vogt, Assistant Attorney General, State of Alaska, July 1986
3. Research Regarding Other States' Corporate Income Taxes Memo to Deborah Vogt, Assistant Attorney General, State of Alaska, from Michael D. Lowe and Jeffrey Blattner, Rogovin, Hugel & Lenzer, November 1985

4. Container Corporation of America v. Francise Tax Board, U. S. Supreme Court Decision, June 1983

I. Tax Credits, Exemptions, and Deductions

1. "Special" Tax Credits, Exemptions, Deductions, Refunds provided by (Alaska) State Statutes, State of Alaska, Department of Revenue, September 1986

J. Misc. Taxes

1. Alternative Means of Increasing Revenues, Alaska Department of Revenue, Memo from Mary Ellen Frank, et. al. to Vince Wright, Director of Research, January 1986
2. Revenue Alternatives - Excise Taxes, Fisheries Taxes, Licenses and Permits, Vince Wright, Chief of Research, State of Alaska, Department of Revenue, December 1986
3. Alaska Mineral Taxation Compared to Taxes on Mines in Eleven States, Whitney & Whitney, Inc. for State of Alaska, Department of Commerce and Economic Development, Office of Mineral Development, January 1982

K. Disputed Taxes

1. Expedited Collections of Disputed Taxes, Memo to Rep. Al Adams, Chairman, House Finance Committee, State of Alaska, Department of Revenue, January 1986
2. Prepayment of Disputed Taxes, Memo to Rep. Al Adams, Chairman, House Finance Committee, State of Alaska, Department of Law, January 1986
3. Department of Revenue Accounts Receivable, Richard Monkman, Deputy Commissioner, Taxation, State of Alaska, Department of Revenue, July 1986
4. The Appeals Process and Disputed Tax Dollars, Memo to the JSPTP, Division of Audit, State of Alaska, Department of Revenue, September 1986
5. Memo to Rep. Ben Grussendorf on Cases in Appeal Status, Martin Richard, Division of Audit, State of Alaska, Department of Revenue, October 1986

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MEMORANDUM

2/2/87

TO: Senator Bettye Fahrenkamp, Chair,
Senate Special Committee on Oil and Gas

FROM: Rep. John Sund, House Co-Chair,
Joint Special Committee on Tax Policy

RE: Invitation to Meeting

Thanks very much for cancelling your committee meeting. I apologize for the conflict in scheduling.

As you know, the Joint Special Committee on Tax Policy has spent considerable time looking into issues relating to the oil industry in Alaska, for example the ELF issue. We would appreciate it very much if you could attend the Tax Policy Committee meeting Tuesday, at 3:30 in the House Finance Committee Room. We will be getting a presentation from the Department of Revenue and considering the Tax Policy Committee preliminary report.

2-5-87

State's
Comments on
1002 REPORT
(ANWR) - TELE-
CONFERENCE w/KATZ

STATE OF ALASKA



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SENATE SPECIAL COMMITTEE ON OIL AND GAS

MEMORANDUM

TO: Members, Senate Special Committee on Oil and Gas

FROM: Committee Staff

RE: Committee Meeting, February 5, 1987

DATE: February 4, 1987

On Thursday, February 5, at 3:30 pm in the Beltz Room, the Senate Special Committee on Oil and Gas will receive a presentation from the administration on the U.S. Department of Interior's Draft Coastal Plain Resource Assessment for the Arctic National Wildlife Refuge, Alaska. It is also known as the 1002 report. The state will provide specific comments and recommendations to the Secretary of the Interior. The final report will include all public comments and should be presented to Congress sometime in March.

Participants at the hearing will include representatives from the Governor's office, OMB, the Departments of Natural Resources, Fish and Game, and Environmental Conservation. In addition, John Katz from the Governor's office in Washington, D.C. will be participating via the teleconference network. The hearing will be teleconferenced for listening only to sites across the state.

In addition, Jim Hansen, Division of Geological and Geophysical Surveys will present a brief assessment of the petroleum potential of the coastal plain area of AMWR.

After the presentation, there will be discussion of the three different legislative resolutions regarding ANWR (HJR 7, HJR 9, and SJR 7)

The Senate Judiciary Committee has invited members of the Senate Special Committee on Oil and Gas to attend overview of major oil and gas litigation. This hearing will be held on Thursday, February 5 at 1:30 in the Butrovich Room.

STATE OF ALASKA



SENATE JUDICIARY COMMITTEE

SEN. JAY KERTTULA
SEN. ARLISS STURGULEWSKI
SEN. RICK HALFORD
SEN. JOE JOSEPHSON
SEN. PAT RODEY

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STATE CAPITOL
JUNEAU, ALASKA 99811
(907) 465-3717
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Feb. 4, 1987

Senator Bettye Fahrenkamp
Chair, Senate Oil and Gas Committee
Box V
Juneau, Ak. 99811

A handwritten signature in cursive script, appearing to read "Bettye".

Dear Senator Fahrenkamp:

On Thursday, February 5, at 1:30 in the Butrovich Room, the Senate Judiciary Committee will be getting an overview on all major oil and gas litigation from the Department of Law.

You and all the members of your committee are cordially invited to attend.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jay Kerttula".
Jay Kerttula

JK/bk

**SENATE SPECIAL COMMITTEE ON
OIL AND GAS
February 5, 1987
3:52 p.m.**

MEMBERS PRESENT

Senator Bettye Fahrenkamp, Chairman
Senator Jack Coghill
Senator Paul Fischer

COMMITTEE CALENDAR

Arctic National Wildlife Refuge - Resource Potential,
Department of Natural Resources and Teleconference with
John Katz, Washington, D.C.

WITNESS REGISTER

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James Hansen
Division of Oil and Gas
Department of Natural Resources
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Anchorage, Alaska 99510-0734

ACTION NARRATIVE

TAPE ONE SIDE ONE
February 5, 1987

Number 001

The Senate Special Committee on Oil and Gas meeting was called to order by Chairman Fahrenkamp at 3:52 p.m. She explained there were a lot of questions concerning what is happening with ANWR and conflicting information on the state's involvement, and she stated that John Katz of the Governor's staff in Washington, D.C. would be talking to

the committee via the teleconference network to clarify what is going on with ANWR and the state's participation.

Number 031

John Katz, speaking via the teleconference network, said there were literally five or six manifestations of ANWR policy, ranging from the introduction of legislation to the Congress, through the proposed land trades, to a caribou agreement between the U.S. and Canada.

Concerning the legislative process itself, he said, to his knowledge, only one bill has been introduced so far (HR 39) which would designate the coastal plain of the ANWR as wilderness. It is likely that additional bills will be introduced in the foreseeable future.

There are literally four committees of the Congress which will claim jurisdiction over the ANWR issue in one form or another. To date, there has been no action in the Congress, and he thought it was likely that any intense congressional consideration would be postponed pending the submission by the Secretary of the Interior of his final ANWR report (1002 Report).

Mr. Katz stated that to date, the state has not been particularly active on Capitol Hill. He felt it was necessary to crystallize a policy which would reflect the consensus of both the Legislature and the Governor, which he feels is evolving.

He thought it very important that the state put in place a self-contained, independent advocacy effort of its own which is capable of expressing our particular position on ANWR.

Referring to the 1002 Report, he said by virtue of the original lands legislation that was passed in 1980, the Secretary was obligated, as of last September, to submit a report on the coastal plain of ANWR to the Congress. Because of the filing of litigation, that report has been delayed. In the litigation, it was held that the Secretary was compelled to go through a public environmental impact statement process and that is what he is involved in now. He noted that February 6 would be the deadline for the submission of public comment to the Secretary, and he said the State Administration will be providing comments in that process.

Another area of activity has been the negotiation of land trades involving the Interior Department and several native corporations. Since last October, the state has been an active participant in those discussions. He said the last major series of meetings occurred in Washington early in

January and he said they would be meeting again that week. He then outlined three principal doctrines that the discussions would be devoted to. Mr. Katz said it was contemplated by all concerned that if any of any of the trades are consummated, they must be submitted to the Congress for approval, and in the case of any trades that might involve the State of Alaska, they would have to be submitted to the State Legislature for approval.

Outlining the position the state has been reflecting in those discussions, Mr. Katz said they have made it clear to both the native corporations and the Interior Department that they have not yet taken a position on the wisdom or lack of wisdom inherent in the trades themselves. That is a subject that is under active deliberation now within the Administration for the purpose of trying to come to a definitive conclusion as soon as possible. In the interim, they have been participating on what they feel is a constructive basis, both as sovereign and as land owner, trying to identify problems and also strengths in the various documents that are under consideration.

Another area that has been of great concern and interest to some legislators is the possibility of a caribou agreement between the U.S. and Canada. He thought the discussions which have occurred so far would lead to a bilateral agreement between the two governments. The last series of meetings, which occurred in Seattle, led ultimately to a draft agreement which was initialized by the parties but not finalized. The agreement has been circulated to all interested parties, including the State of Alaska, for comments. They have approximately 60 days to submit their comments. He said the caribou agreement does bear upon the ANWR issue because it does create a bilateral regime for the consideration of issues affecting the Porcupine Caribou herd, and it also deals with general mandates relating to habitat protection.

Number 217

Senator Coghill said he was concerned about the perception that was brought forth by the Governor's press conference wherein the state was not at the table and there were negotiations going on outside of the legislative authority. He asked Mr. Katz if he would address the question of revenue sharing and whether it could be negotiated along with the negotiation of the land swaps.

Number 235

Mr. Katz responded that negotiations were not going on outside of the authority of the State Legislature to approve them. They have made it clear that if they get to to the point of consummating a land trade with the Interior

Department, that trade must be submitted to the State Legislature for approval.

Concerning the 90/10 formula, they are contending that the 90/10 formulation is part of the solid compact between the people of Alaska and the Federal Government as embodied in the Statehood Act. They believe their best posture, both legally and strategically, is to argue strongly for the maintenance of the 90/10 formula, and if that changes by virtue of congressional action, then to examine what their options are at that point in time.

Number 302

Clarifying an earlier statement, Mr. Katz said he didn't think it was accurate to say that the state has been in the land trade discussions for the past two years. He thought the discussions began somewhere in that period with interest of the Kodiak Regional Corporation in exchanging their inholdings within the Kodiak Wildlife Refuge for lands and oil and gas interests within the coastal plain. The state's active involvement as a co-equal with the other parties at the table really began last October and was first manifested in concrete form in discussions that occurred in Washington in early December, 1986. Since then, they have been cognizant of what has been going on and have been permitted to represent themselves at the table.

Referring to when the Legislature should come involved, he said the AS 38.50 process affords that opportunity. He said they have been abiding by the Interior Department's rules in terms of how the discussions should be implemented and for that reason they have not been as forthcoming publicly as perhaps occurs on other issues. In that regard, they have kept confidential material that has been given to them by the Interior Department, but they have felt that under state law, any documents that they have submitted to the department are public record and they have made those letters available both to the press and to people who have requested them.

Number 340

Senator Fahrenkamp said she thought that was part of the confusion.

Mr. Katz explained there was a juncture in the process when the state felt that discussions were going on between the Interior and one or more native corporations that could clearly affect state sovereign interests. In addition, the state felt that in its own interest there might be some inholdings for the federal conservation system that it could put on the table in exchange for some possible rights

in ANWR. The amount they have on the table now is approximately 260,000 acres, almost exclusively located as state inholdings within federal wildlife refuges.

Senator Fahrenkamp asked, through lack of knowledge of what is happening, if we go in now with a resolution asking the Department of Interior, the Congress, etc. not to allow or to go ahead with land trades, and yet we have been working at the table offering a 260,000 acre exchange, doesn't that seem like a contradiction?

Mr. Katz responded that he didn't think so, but he agreed with the thrust of her question. If, for any reason, it is deemed that land trades involving native corporations are not in either the state interest or the federal interest, then those back there feel it would be hypocritical for the state to continue to pursue a land trade on its own with the federal government. It was his personal view that if for any reason the Legislature were to decide against native trades, then the state must walk away from the negotiating table with respect to that 260,000 acres as well.

Senator Fahrenkamp said it behooves the Legislature as they are looking at resolutions, to know a little more about the background than they have known to date.

Number 411

Senator Fahrenkamp noted that Senator Sturgulewski had joined the committee and would be participating in the meeting.

Number 418

Mr. Katz said he was in favor of a resolution and felt there would be therapeutic value in it in that it would reflect a consensus of the Governor and the Legislature early in the process about what policies to pursue.

Number 443

Senator Fahrenkamp inquired if he could be more specific on what he meant by "early."

Mr. Katz said, so far, what they have seen in the legislative area is just a little bit of preliminary skirmishing --- there really hasn't been any definitive action. He felt that the kind of guidance that would be embodied in that sort of resolution is needed relatively soon.

Number 455

Senator Coghill asked if Mr. Katz had a Memorandum of Understanding between the state and the Interior Department as to information pass-throughs on seismic work done in the area below the Kaktovik area.

Senator Coghill said the compact that was made between the federal government on the 90/10 really disturbs him. If they have privied information on the seismic work and they can select before the state selects, what is going to be the process there and should that be done before the Secretary issues his 1002 Report, Senator Coghill asked.

Number 471

Mr. Katz replied that there was a Memorandum of Understanding that was negotiated by the prior administration by the Department of Natural Resources and the Interior Department. It provided some ground rules for the exchange of information between the federal government and the state. The memo provided some deadlines and a process for the state's dissemination of its analysis of ANWR. Recently, the Secretary of Interior granted his permission for the state to release its findings publicly.

In terms of the 90/10, Mr. Katz said it applies in any situation involving leasing by the federal government under the Mineral Leasing Act of 1920. The Attorney General has ruled that the 90/10 would not apply if land trades occur because the lands involved would then no longer be subject to the Act. From what he knows, state geologists have had pretty equal access to the information that is available. To his knowledge, nobody in the government has information relating to the results of the well that was drilled on the Kaktovik lands.

Number 498

Senator Sturgulewski said there seems to be some confusion among some in the Senate as to the potential role of the state in the land trades, and she wondered if the state does not participate in trading of land, what role, other than advisory, we have.

Number 540

Mr. Katz responded that they have sought to play two roles in the discussions. One is the role of state as land owner and the other is the state is sovereign. At the first level, the Interior Department has been much more interested and accommodating to them when they appear as land owner, a little less accommodating when they appear as a sovereign. He thought that the step of litigation could be viewed as being toward the end of the process, and he saw

the Legislature having a role in providing guidance to the executive by either a resolution or organic legislation.

Senator Sturgulewski asked Mr. Katz if the Udall bill was moving forward, and in addition to the 1002 Report, what might the Legislature anticipate the Congress to do.

Mr. Katz responded that the Udall bill has not yet begun to move and he didn't expect much substantive consideration until the 1002 Report was completed. He said he suspected that the Secretary will submit legislative recommendations to the Congress accompanying the 1002 Report, probably in the form of legislation. In addition, he thought it was likely that one or more members of our congressional delegation will be considering the introduction of legislation. He knows for a fact that a group of other congressmen are considering a separate bill which might, in addition to other things, involve an attempted alteration of the 90/10 revenue formula.

Number 552

Senator Fahrenkamp said, in talking to the Interior Department, they indicated that in their legal sense, it was not necessary for this to go before the Congress, but was being done to meet a promise, and she asked if that had any bearing.

Mr. Katz replied that the Interior Department has promised the appropriate committees of Congress that it will not consummate these lands trades as a matter of administrative discretion, even if it has that discretion, but rather it will, in fact, submit the land trades to Congress for approval at the appropriate time. They have chosen, at least as a policy matter, to do so irrespective of what the legal requirements might be.

Number 568

Senator Fahrenkamp asked Mr. Katz what he saw at this stage as the position of union representatives, environmental groups, etc.

Mr. Katz said there is a coalition which has formed in Washington of groups and organizations which are interested in seeing ANWR opened subject to some set of stipulations. On the other hand, the environmentalists have formed an effective coalition of their own. He thought there were two maritime unions involved in the coalition to open ANWR. Many other unions are still on the sidelines pending some possible resolution of the local hire issue.

Number 594

Responding to a question from Senator Fahrenkamp, Mr. Katz said there is one school of opinion that feels that native land trades are very important to the opening of ANWR. The natives have about a million acres of inholdings on the table and some people feel that that will be very attractive to congressmen who are looking for good environmental reasons to support the bill. Secondly, the native corporations are good advocates and are well respected in the Congress.

Another school of opinion is that the existence of some land trades complicates an already very difficult issue and that it injects the concept of private ownership, even if it's just ownership of oil and gas rights.

Number 618

Rod Swope, Special Staff Assistant on Resources, Office of the Governor, related that the Administration's position would be ready the following day and they would come back and discuss that position with the committee, if desired.

Number 635

Senator Coghill added that public comment would close the following day, but as he understood it, the Secretary would continue to hear further comment from the legislative branch.

TAPE ONE SIDE TWO
February 5, 1987

Number 655

Mr. Katz, referring to his statement that discussions had really begun in earnest in October, said he didn't mean to imply that there had been no interaction with the Interior Department before that. He felt that in October, the state's role in the process was respected and they began to be treated as co-equals in all the discussions that occurred. Prior to that period of time, they had been exchanging, mainly through the Department of Natural Resources, information with the Interior Department. Since October, they have been at the table with the corporations and the department. He noted there was a documentary record that goes back considerably further than that, and said the committee may want to review that at some point.

Number 702

Senator Fahrenkamp stated that the interpretations they're getting from the Interior Department is that the chances of a 90/10 holding up on federal leases are not good.

Mr. Katz said he thought it would be necessary to fight for the 90/10 and explain the legal and policy justification. For a number of very different reasons, a lot of congressmen are coming to this issue with a predisposition to alter the formula, and we've really got our job cut out for us, he said. From what he can tell, the Interior Department will not be supportive of the the 90/10 in the congressional discussion.

Number 750

Senator Fahrenkamp thanked Mr. Katz for his participation in the meeting, saying not only did he and the Administration have their work cut out for them, but the members of the Legislature did as well. She said, as they are working on their revenue projections, she would appreciate him sharing that information with her.

Mr. Katz confirmed that they have been trying to work up some revenue projections which haven't been completed yet. The Interior Department's projections are confidential information and they have not been shared with anybody, to his knowledge.

Number 774

Senator Coghill noted that he and Senator Bennett would be in Washington, D.C. the following week and would be in contact with Mr. Katz at that time in order to further discuss ANWR.

Number 792

Senator Fahrenkamp, speaking to Rod Swope, noted there were a number of resolutions the Legislature was looking at, and she thought it was important that the Legislature and Administration work closely together. She asked what his advice was as to what a resolution should look like, and how should they try to coordinate and negotiate their position.

Number 810

Mr. Swope said he could offer some advice in terms of the Administration's position on some of the major policy questions. They support local hire to the extent that it is possible. Their position is that the 90/10 revenue share should be maintained. They still don't have a definitive position on land exchanges, so they can't speak to that issue. In terms of their position on the 1002 Report, the Administration has said they clearly would like to see exploration and development of the coastal plain in ANWR, provided it is done with the intent and the express purpose of the refuge. A major discussion they have had is

how to best protect the Porcupine Caribou herd and still allow exploration and development.

Number 902

Jim Hansen, Chief Petroleum Geophysicist for the Department of Natural Resources, gave a brief and detailed slide presentation on why they say the ANWR has the high potential it does. He said the information he was giving was all taken from nonconfidential data.

He noted that committee members had just received a public data file, 87-1, which was released the previous day.

The slides shown pertained to the location of ANWR; the key elements necessary in order to have oil; and geologic features. He also pointed out on a map where they think the oil is located.

Number 058

Concluding, Mr. Hansen said what they firmly believe that the ANWR area has the highest potential of any onshore, unexplored area in the North American continent. All the key ingredients necessary for oil accumulation are there, he said.

Number 083

A brief discussion followed on the seismic information on the KIC land and the one well there. It was noted that that information was not available and is being shared only by the oil companies and the native corporations.

Mr. Hanson said the state Oil and Gas Conservation Commission receives data from all wells in the state. They have those logs, but they are kept in a vault and no one is allowed to look at them.

Number 107

Mr. Katz said the Arctic Slope Regional Corporation, which drilled the KIC well with its oil company partners, is not a party in the land exchange discussions in Washington, D.C. He explained that the other native corporations, which are parties, do not have access to ASRC's information. ASRC is in a unique position under ANILCA in that they don't need trades. If the Congress authorizes drilling in the coastal plain, then they can go forward with oil and gas development on their lands without the benefit of another trade, he stated.

There being no further questions or comments, Senator Fahrenkamp adjourned the meeting at 5:07 p.m.

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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January 15, 1987

Representative Mike Davis
Pouch V
Juneau, Alaska 99801

Dear Representative Davis:

Per your request, I have enclosed three copies of U.S. Geological Survey map I-1791 that covers the Arctic National Wildlife Refuge. Your office said you would see that other members of the Interior delegation receive a copy. Unfortunately, the map is in short supply. I will be happy to forward additional copies when they become available.

I have also included 10 copies of DGGS Professional Report 90, 'Resource appraisal simulation for petroleum in the Arctic National Wildlife Refuge, Alaska.' Per our briefing last week, I thought it might be of interest to you and other members of the Interior delegation. The attached comments by Hansen and Kornbrath compare the results of the Department of Interior FAST study and DGGS RASP program.

Sincerely,



Cheri L. Daniels, Chief
Resource Information Section

CLD/ram

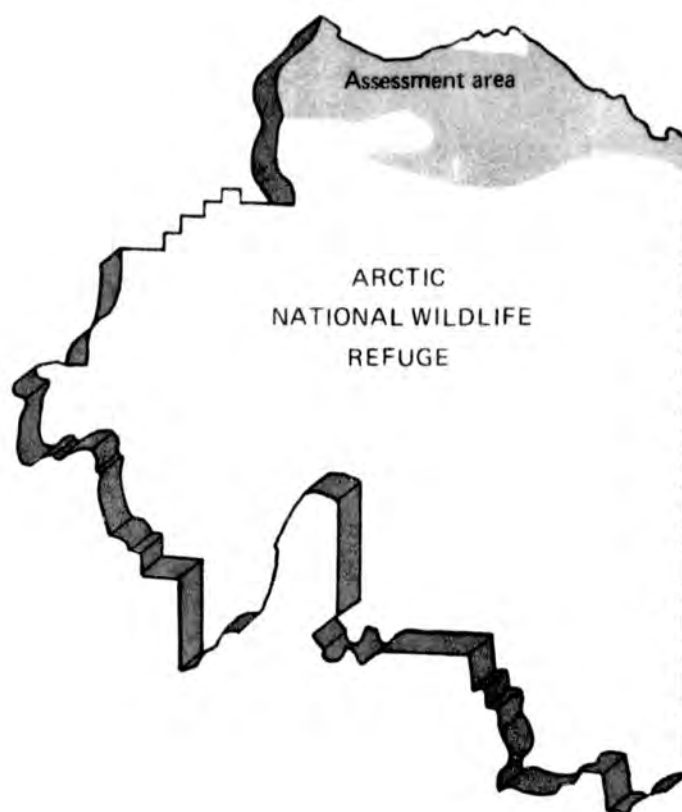
Enclosures

cc: Laurel Murphy
Dick Reger
Sally Wells

~~Fahrenkamp~~ Fahrenkamp

RESOURCE APPRAISAL SIMULATION FOR PETROLEUM IN THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

Compiled by J.J. Hansen and R.W. Kornbrath



PROFESSIONAL REPORT 90

Published by

State of Alaska
Department of Natural Resources
Division of Geological & Geophysical Surveys

1986

RESOURCE APPRAISAL SIMULATION FOR PETROLEUM IN THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

Compiled by J.J. Hansen and R.W. Kornbrath

Division of Geological & Geophysical Surveys
Professional Report 90

Fairbanks, Alaska
1986

STATE OF ALASKA

Bill Sheffield, Governor

**Esther C. Wunnicke, Commissioner,
Department of Natural Resources**

Ross G. Schaff, Director and State Geologist

This report was prepared at the request of the U.S. Department of the Interior by the State of Alaska Department of Natural Resources according to the Memorandum of Understanding signed by both agencies in 1985. DGGs publications are available at: Alaska National Bank of the North Bldg. (2nd floor), Geist Rd. and University Ave., Fairbanks; 3601 C St. (10th floor), Anchorage; 400 Willoughby Center (4th floor), Juneau; and the State Office Bldg., Ketchikan. Mail orders should be addressed to DGGs, 794 University Ave. (Basement), Fairbanks, AK 99709. Cost \$2.

FOREWORD

In 1985, the Secretary of the U.S. Department of the Interior and the Commissioner of the Alaska Department of Natural Resources signed an agreement to share geologic and geophysical data collected from the Arctic National Wildlife Refuge (ANWR). Scientists of the Department of Natural Resources analyzed these data and prepared estimates of the oil-and-gas potential of the coastal plain of ANWR, as stipulated in the agreement. These estimates are reported in this document.

*Ross G. Schaff
Director and State Geologist*

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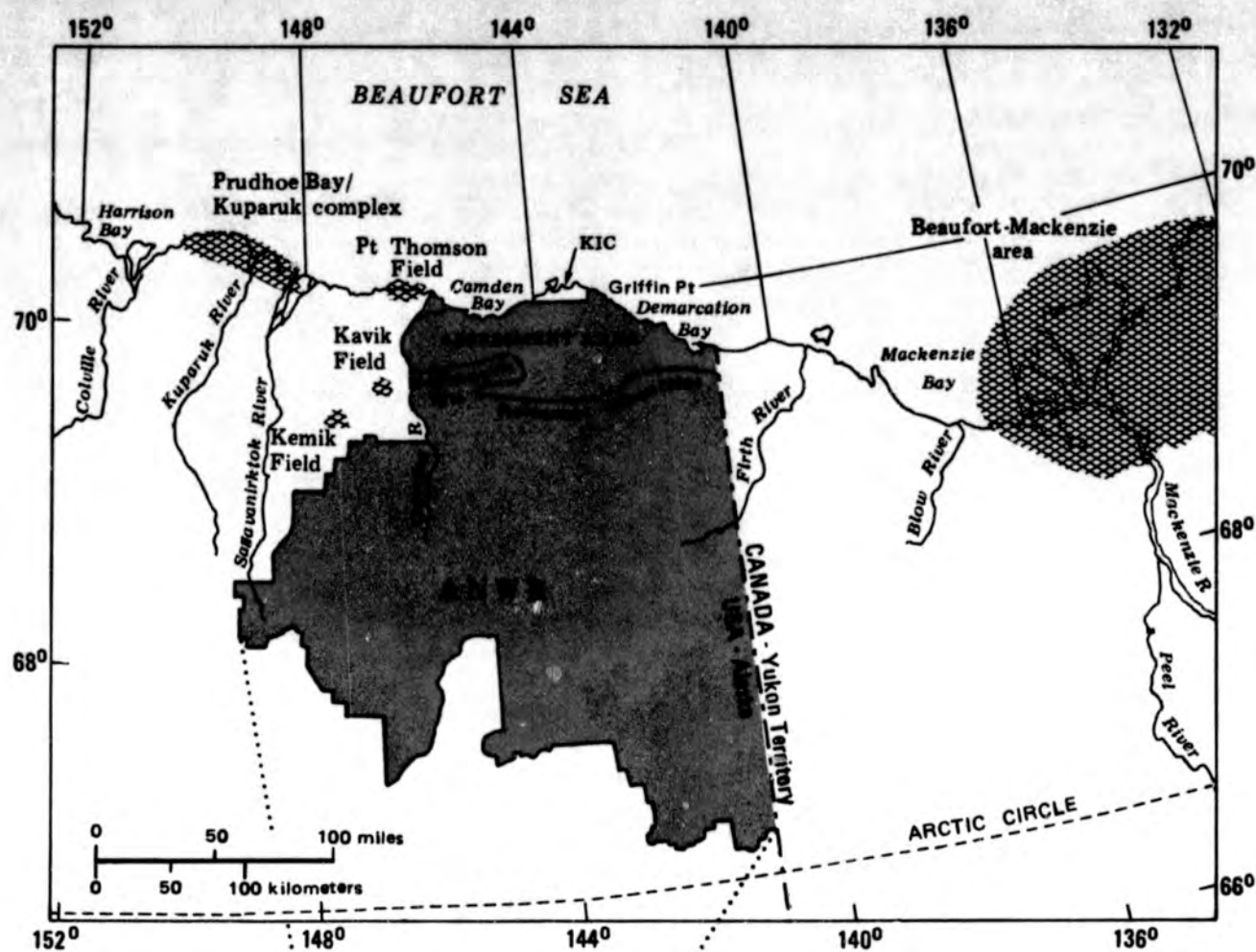
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PROFESSIONAL REPORT 90



Location map of the assessment area in the Arctic National Wildlife Refuge. The North Slope of Alaska contains nine known significant oil-and-gas fields with proven and inferred original recoverable reserves of about 15.4 billion barrels of oil and 32.0 trillion cubic feet of gas. The Beaufort-Mackenzie area of Canada contains 39 oil-and-gas fields with proven and inferred original recoverable reserves of about 8.5 billion barrels of oil and 65.0 trillion cubic feet of gas. KIC denotes land owned by the Kaktovik Inupiat Corporation.

RESOURCE APPRAISAL SIMULATION FOR PETROLEUM IN THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

Compiled by J.J. Hansen¹ and R.W. Kornbrath¹

INTRODUCTION

This report presents the results of the State's preliminary appraisal of the potential for undiscovered petroleum resources on the coastal plain of the Arctic National Wildlife Refuge (ANWR), Alaska. The assessment area is located north of the Sadlerochit and Romanzof Mountains between the Canning River and the Canadian border. The study area does not include that portion of the coastal plain from eastern Camden Bay to Griffin Point (owned by the Kaktovik Inupiat Corporation²) or state-submerged lands offshore from ANWR.

Members of the appraisal panel from the Alaska Department of Natural Resources include C. Arie, J.E. Decker, J.J. Hansen, R.W. Kornbrath, D.L. Krouskop, C.G. Mull, G.H. Pessel, M.S. Robinson, T.N. Smith, and S.M. Weum. B.H. White and R. Anderson (U.S. Bureau of Mines) and E.L. Phillips (Alaska Department of Natural Resources) assisted in the computer analysis of the data.

A resource appraisal of ANWR was completed in 1980 by the U.S. Geological Survey. At that time, the available data consisted of limited gravity and aeromagnetic surveys augmented by some geologic mapping. Since then, additional geologic studies, two proprietary gravity surveys, and two seismic surveys have been conducted. Interpretation of this new information has resulted in revised hypotheses about the geologic evolution of the coastal plain.

The methodology used to assess the resource potential of the coastal plain of ANWR is the Resource Appraisal Simulation for Petroleum (RASP), which was developed by the U.S. Department of Interior Office of Minerals Policy and Research Analysis. RASP is a simulation (or modeling) procedure that geoscientists use to assess the undiscovered oil-and-gas potential of frontier basins. The basic unit of analysis is the geologic

play, which is defined as a stratigraphic unit in a relatively homogeneous geologic setting. A basin will normally consist of one or more plays of interest; the geologic plays for this appraisal are presented in figures 1 through 7 (app.).

Resource estimates are presented as probability distributions that reflect the uncertainty inherent in appraising undiscovered resources. The resources estimated to exist in each play are combined to produce an estimate of the total 'undiscovered, conditional resources in place' as barrels of oil, cubic feet of gas, and barrels of oil equivalent for the study area. In addition, a probability distribution of the deposit size is generated for each play and for the total resources in place. Deposit size is important for economic considerations; for instance, less than 350 million barrels of recoverable oil in ANWR may not be commercially viable. A more detailed discussion of the RASP methodology is included on page 3.

ASSESSMENT RESULTS

The results of the petroleum-resource assessment are summarized in tables 1 through 4. Probability distributions for total oil, total gas, total barrels of oil equivalent, and oil-and-gas deposit sizes are presented at various fractiles that range from 0.99 to 0.01. The distribution values may be interpreted as follows. The 0.95 fractile means that there is a 95-percent chance that at least that amount of the associated resource is present. For oil, there is a 95-percent chance that ANWR contains at least 80 million barrels of oil. Similarly, there is a 1-percent chance that ANWR contains at least 45.78 billion barrels of oil. The 0.50 fractile is not the most likely case of occurrence. Rather, it is the median of the distribution and indicates a 50-percent chance that the quantity of resource present could be greater or less than its associated value.

The results in tables 1 and 2 show that in the range between the 95th and 5th fractiles, the resource potential of ANWR ranges from 0.08 to 26.52 billion barrels of oil (BBO) and from 0.71 to 43.62 trillion

¹Alaska Division of Geological and Geophysical Surveys, P.O. Box 7028, Anchorage, Alaska 99510.

²An additional assessment that includes the KIC lands was performed by the Alaska Department of Natural Resources.

Table 1. Total oil, ANWR petroleum-resource assessment.

Fractile	Billion barrels
0.99	0.00
0.98	0.00
0.97	0.01
0.96	0.04
0.95	0.08
0.90	0.33
0.75	1.28
0.50	3.77
0.25	9.18
0.10	17.94
0.05	26.52
0.04	29.68
0.03	34.14
0.02	38.94
0.01	45.78
Minimum simulated oil	Maximum simulated oil
0.00	81.77
Average oil	Standard deviation
7.22	9.66

Table 2. Total gas, ANWR petroleum-resource assessment.

Fractile	Trillion ft ³
0.99	0.08
0.98	0.26
0.97	0.40
0.96	0.56
0.95	0.71
0.90	1.42
0.75	3.74
0.50	8.64
0.25	17.77
0.10	31.94
0.05	43.62
0.04	46.65
0.03	52.67
0.02	62.26
0.01	76.24
Minimum simulated gas	Maximum simulated gas
0.00	159.92
Average gas	Standard deviation
13.69	15.76

Table 3. Total deposit size, ANWR petroleum-resource assessment.

Fractile	Conditional, 100% oil (million barrels)	Conditional, 100% gas (billion ft ³)
0.99	3.202	5.797
0.98	6.115	10.252
0.97	8.766	14.854
0.96	11.154	19.368
0.95	14.556	23.382
0.90	30.865	45.115
0.75	102.155	143.645
0.50	354.131	509.171
0.25	1173.606	1721.490
0.10	3440.368	4846.398
0.05	6277.965	8912.465
0.04	7313.133	10861.937
0.03	8898.691	13492.098
0.02	11821.965	18052.875
0.01	18272.949	26867.359
Minimum simulated deposit	0.10	0.40
Average	1459.56	2143.70
Maximum simulated deposit	76941.38	125833.06
Standard deviation	3762.19	5768.84

Table 4. Total resources, ANWR petroleum-resource assessment.
(barrels of oil equivalent, BOE)

Fractile	Billion BOE
0.99	0.05
0.98	0.17
0.97	0.25
0.96	0.35
0.95	0.47
0.90	0.96
0.75	2.54
0.50	6.05
0.25	12.42
0.10	22.50
0.05	31.54
0.04	35.56
0.03	40.15
0.02	44.75
0.01	53.01
Minimum simulated BOE	Maximum simulated BOE
0.00	89.93
Average BOE	Standard deviation
9.64	11.06

cubic feet of gas (TCFG) in place, with an average value of 7.22 BBO and 13.69 TCFG. The median value (the 50th fractile) is 3.77 BBO and 8.64 TCFG (tables 1 and 2).

The resource distributions are strongly skewed toward the low-probability, high-resource values, as indicated by the difference between the average and median values (tables 1 and 2). This indicates that while only small quantities of resources are assured, there is a small chance that very large quantities of resources exist in ANWR.

Deposit-size estimates are equally important. For oil, the potential deposit sizes at the 1-percent confidence level range up to 18.27 BBO in place, with an average value of 1.46 BBO and a median value of 0.35 BBO. For gas, the potential deposit sizes at the 1-percent confidence level range up to 26.87 TCFG in place, with an average value of 2.14 TCFG and a median value of 0.51 TCFG (table 3).

In summary, the results of this evaluation indicate that the ANWR coastal plain may contain large petroleum deposits. On the basis of current data, large quantities of resources and large individual deposit sizes may occur within the coastal plain of ANWR. There is a 1-percent chance that the requisite parameters of source rock, timing, migration, reservoir rock, and trapping mechanisms have combined to generate up to 45.78 BBO and 76.24 TCFG in place in ANWR (tables 1 and 2). Assuming a recovery factor of 35 percent for oil, up to 16 billion barrels of recoverable oil may be present. This compares favorably with the original recoverable oil reserves of about 10 billion barrels in the Prudhoe Bay field.

GEOLOGIC PLAYS

The geologic play is the basic unit of analysis for resource assessment using the RASP methodology. Reservoir-quality rocks, known production, and trapping mechanisms are the most important parameters used to define specific plays in this assessment. Parameters such as thermal maturity, source-rock distribution, and timing are also requisite for a successful play. Specific plays used to assess the resource potential of ANWR include Kekiktuk (fig. 1), Lisburne North and South (figs. 2 and 3), Permian-Triassic Clastics North and South (figs. 4 and 5), Kemik-Thomson (fig. 6), and Post-Albian Clastics (fig. 7). A stratigraphic column and oil-and-gas summary for these plays are shown in figure 8 (app.).

The sandstone, conglomerate, and carbonate lithologies of these plays have produced large quantities of oil and gas on the North Slope and in the Mackenzie Delta area of Canada. The combination of generation and migration of hydrocarbons from source shales and timing of trap formation has produced large fields. On the basis of surface studies and geologic modeling, similar favorable conditions may be present in the subsurface of ANWR.

Geologic field studies conducted by DGGS indicate the existence of complex relationships between various rock groups that comprise the geologic plays in the subsurface of the ANWR coastal plain. Simple structural closures, thrust-fault repetitions of rock units, and complex folds could provide mechanisms to structurally trap hydrocarbons. Truncation of rock units and facies changes could also result in stratigraphic traps.

Plays of the Kekiktuk, Kemik-Thomson, and Post-Albian Clastics (figs. 1, 6, and 7) are broad in scope and are anticipated to be present throughout the study area. However, based on possible truncation of the rock units by a major unconformity, plays of the Lisburne North and Permian-Triassic Clastics North (figs. 2 and 4) are less likely to occur in the study area.

PROCEDURES FOR OIL-AND-GAS RESOURCE APPRAISALS

The procedure for the Resource Appraisal Simulation for Petroleum (RASP) incorporates a 'play' approach to petroleum-resource assessment. The methodology focuses on the concept of a geologic play as the basic unit of geologic analysis. The play is defined as a stratigraphic unit in a relatively homogeneous geologic setting.

A play approach to resource assessment of large basins or regions was chosen for the following reasons:

- The approach provides a direct assessment of the geologic characteristics—and their uncertainty—for the area of interest.
- The level of geologic detail provided by the play approach is sufficient to support a meaningful analysis.
- The approach does not require explicit identification and substantial detail for individual prospects.
- The approach recognizes regional trends within a play that enable prospects to be geologically correlated.

In essence, the play approach divides the traditional dry-hole risk factor into two components. The first component is the risk that is common to all prospects in the play because they share a common potential for source material, migration, timing, and reservoir rock. The second component is the risk that an individual prospect may have a geologic flaw specific to it and independent of other prospects in the play. Finally, the approach does not require actual discoveries in a play for assessment purposes. Judgments may be based on existing data and can explicitly reflect the uncertainty in those data.

Geoscientists familiar with the geology are asked to make three sets of probability judgments for each play.

CORRECTION

**THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY**

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Geoscientists familiar with the geology are asked to make three sets of probability judgments for each play.

The first set of judgments concerns the individual probabilities that each of four regional geologic characteristics common to the play area is favorable for the existence of petroleum accumulations. These regional characteristics are the existence of a petroleum source, favorable timing, potential migration paths, and reservoir rock. The product of these four probabilities is the marginal-play probability, that is, the joint probability that all regional geologic characteristics necessary for the accumulation of petroleum in the play area are simultaneously favorable. The existence of each geologic characteristic is necessary, but not sufficient to forecast the existence of oil or gas deposits in the play. If oil or gas have been found in a particular play, the marginal-play probability is 1.0. If none have been discovered in a play, additional probability judgments are necessary to determine the existence of hydrocarbon deposits.

The number of potentially drillable prospects in the play area, reservoir lithology (sandstone or carbonate), and petroleum mix (proportion of deposits within the play that are anticipated to be oil rather than non-associated gas) are also needed to evaluate each play. The RASP program assumes that petroleum accumulations exist only as gas deposits below 15,000 feet.

The second set of judgments is a set of probabilities that concerns the presence of three geologic characteristics that are common to the individual prospects within each play:

- Trapping mechanism. This defines the method that restricts hydrocarbon migration, which can be related to structure or stratigraphy, or both. A trap must have an areal extent of at least 600 acres with vertical closure of at least 5 feet.
- Effective porosity. The interconnected void space that may hold hydrocarbons must be equal to or greater than 3 percent.
- Hydrocarbon accumulation. Oil and gas must exist in at least 1 percent of a trap. This expresses the favorable relationships of source rock to reservoir rock and timing of hydrocarbon generation to trap formation.

The probability judgment is conditional on the existence of these three geologic characteristics. The product of the three attribute probabilities is the conditional-deposit probability, that is, the probability that a particular prospect is an actual accumulation of oil or gas, given that all play attributes are favorable. The familiar dry-hole risk factor is equal to one minus the product of the marginal-play probability and the conditional-deposit probability.

The third set of probability judgments involves the geologic parameters of the reservoir that determine the size of the potential deposits. These reservoir characteristics are area of closure, reservoir thickness, effective porosity, trap fill, reservoir depth, reservoir lithology, and hydrocarbon mix. Jointly, these parameters determine the potential reservoir volume for a deposit.

These three basic sets of judgments—geologic characteristics common to the play area, geologic characteristics common to the individual prospects within each play, and geologic parameters that determine the size of the potential deposits—are made for each identified play and comprise the basic geologic data necessary for a resource appraisal.

The probability distribution for each characteristic is randomly sampled to simulate one possible state of geologic nature. For example, the probability distribution for the number of potentially drillable prospects is sampled to determine the number of prospects that will be simulated for the play. The marginal-play probability is then sampled to determine whether the play will be simulated as unproductive or potentially productive. For each simulated prospect in a productive play, the conditional-deposit probability is sampled to determine whether that prospect will be treated as dry or as a deposit. The petroleum-mix probability is sampled for each deposit to simulate whether it contains oil or gas, but not both. All prospects in an unproductive play are automatically simulated to be dry. Each reservoir-parameter distribution is sampled for each deposit to simulate its volume and reservoir characteristics. This sampling procedure is repeated 3,000 times in a typical Monte Carlo method, and the results are combined to develop probability distributions for oil, gas, barrels of oil equivalent in place, and deposit size.

APPENDIX

Areal distribution, input parameters, and
resources in place for geologic plays

Gas fraction = 0.40 Conditional resources in place			
Fractile	Oil (million barrels)	Gas (billion ft ³)	BOE (million)
0.99	0.00	0.00	0.00
0.95	0.00	0.00	0.00
0.90	0.00	0.00	0.00
0.75	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.10	0.00	0.00	0.00
0.05	0.00	75.28	48.54
0.01	234.23	670.64	325.42

Deposit size Conditional, 100% oil		Deposit size Conditional, 100% gas	
Fractile	(million barrels)	Fractile	(billion ft ³)
0.99	3.720	0.99	15.887
0.95	9.020	0.95	25.298
0.90	17.780	0.90	73.341
0.75	42.483	0.75	146.806
0.50	95.310	0.50	292.110
0.25	234.471	0.25	617.343
0.10	461.101	0.10	1723.089
0.05	536.209	0.05	1832.462
0.01	3207.997	0.01	4330.336

Attribute		Probability that attribute is favorable or present							
Play attributes	Hydrocarbon sources	1							
	Timing	1							
	Migration	0.8							
	Potential reservoir facies	0.5							
	Marginal-play probability	0.4							
Prospect attributes	Trapping mechanism	0.3							
	Effective porosity (>3%)	0.1							
	Hydrocarbon accumulation	0.4							
	Conditional-deposit probability	0.012							
Hydrocarbon-volume parameters	Reservoir lithology	Sand	0						
		Carbonate	1						
	Hydrocarbon mix	Gas	0.4						
		Oil	0.6						
	Fractiles Attribute		Probability of equal to or greater than						
			1.00	0.95	0.75	0.50	0.25	0.05	0
	Area of closure (x10 ³ acres)		0.6	3	10	12	15	30	100
	Reservoir thickness/vertical closure (ft)		5	50	125	200	350	500	750
	Effective porosity (%)		3	3	4	4	5	6	10
	Trap fill (%)		1	5	25	50	75	95	100
	Reservoir depth (x10 ³ ft)		6	9	11	13	19	23	29
	Number of drillable prospects (a play characteristic)		2	4	4	5	8	10	20

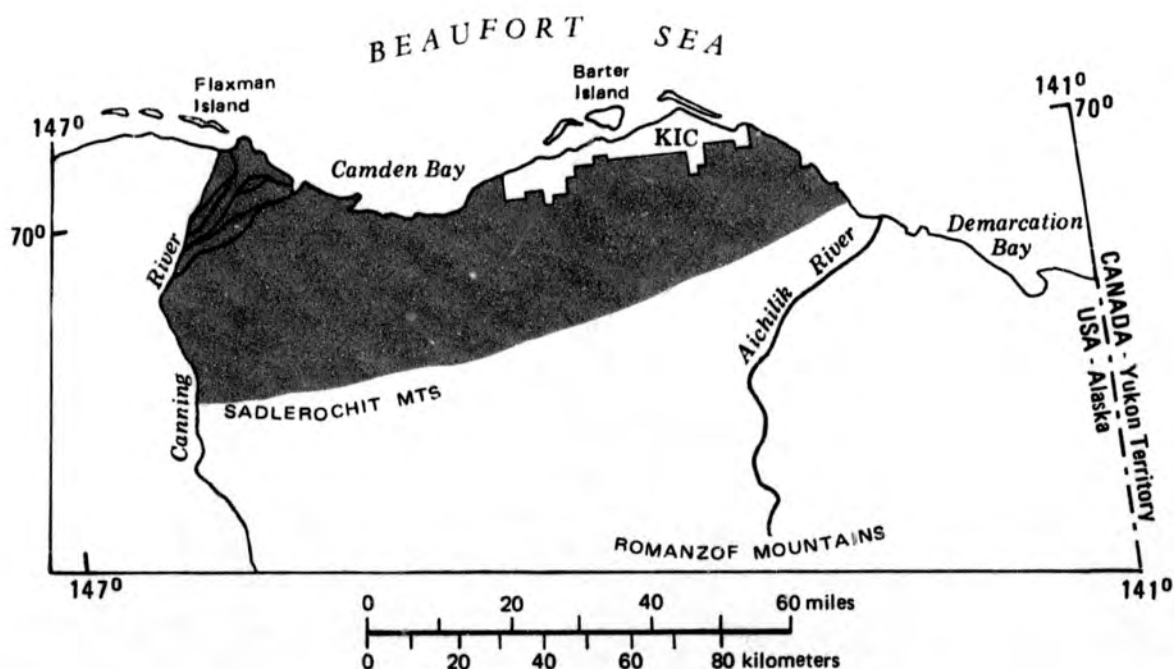


Figure 2. Areal distribution, input parameters, and resources in place for the Lisburne North Play, Arctic National Wildlife Refuge, Alaska.

Gas fraction = 0.40 Conditional resources in place			
Fractile	Oil (million barrels)	Gas (billion ft ³)	BOE (million)
0.95	0.00	0.00	0.00
0.90	0.00	0.00	0.00
0.75	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.10	0.00	13.85	10.04
0.05	64.03	170.30	129.34
0.01	624.02	1021.80	777.91

Deposit size		Deposit size	
Conditional, 100% oil		Conditional, 100% gas	
Fractile	(million barrels)		(billion ft ³)
0.99	3.812		2.779
0.95	11.388		9.681
0.90	19.488		17.355
0.75	54.967		56.067
0.50	163.679		172.416
0.25	406.565		454.902
0.10	796.095		1280.341
0.05	1536.064		2064.430
0.01	2277.339		5454.289

Attribute			Probability that attribute is favorable or present						
Play attributes	Hydrocarbon sources		1						
	Timing		1						
	Migration		1						
	Potential reservoir facies		1						
	Marginal-play probability		1						
Prospect attributes	Trapping mechanism		0.25						
	Effective porosity (>3%)		0.1						
	Hydrocarbon accumulation		0.4						
	Conditional-deposit probability		0.01						
Hydrocarbon-volume parameters	Reservoir lithology	Sand	0						
		Carbonate	1						
	Hydrocarbon mix	Gas	0.4						
		Oil	0.6						
	Fractiles Attribute		Probability of equal to or greater than						
			1.00	0.95	0.75	0.50	0.25	0.05	0
	Area of closure (x10 ³ acres)		0.6	1	3	5	10	30	100
	Reservoir thickness/vertical closure (ft)		5	100	225	350	425	600	1200
	Effective porosity (%)		3	3	4	4	5	6	10
	Trap fill (%)		1	5	25	50	75	95	100
	Reservoir depth (x10 ³ ft)		2	5	7	9	12	14	20
Number of drillable prospects (a play characteristic)			1	5	8	10	15	25	100

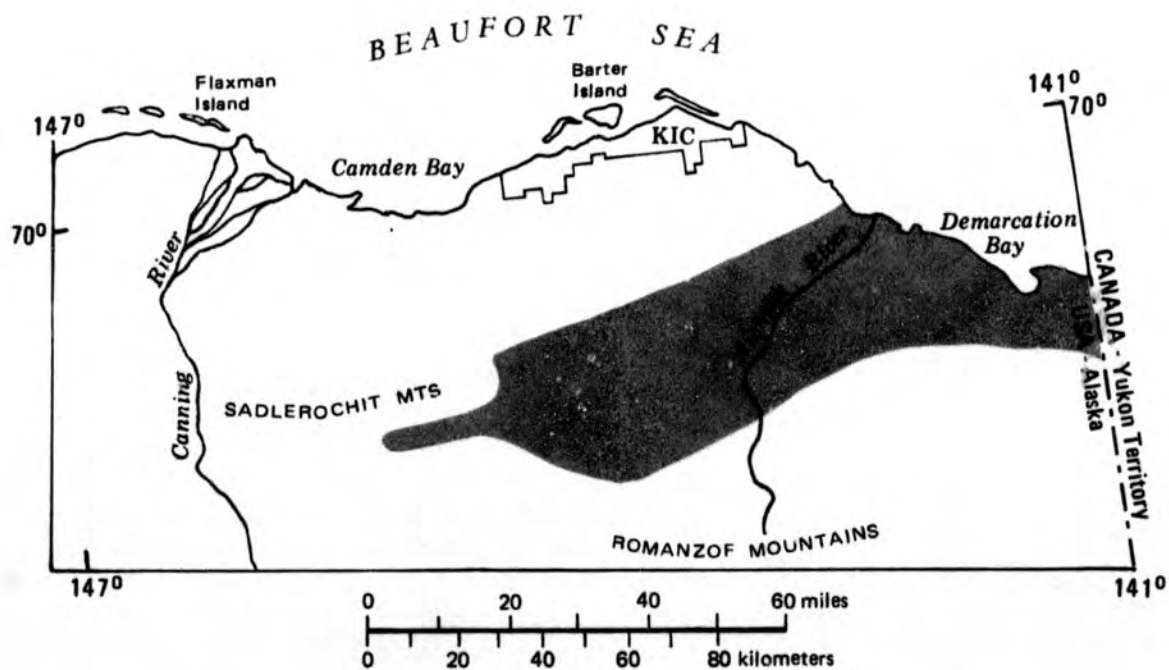


Figure 3. Areal distribution, input parameters, and resources in place for the Lisburne South Play, Arctic National Wildlife Refuge, Alaska.

Gas fraction = 0.40 Conditional resources in place			
Fractile	Oil (million barrels)	Gas (billion ft ³)	BOE (million)
0.99	0.00	0.00	0.00
0.95	0.00	0.00	0.00
0.90	0.00	0.00	0.00
0.75	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.25	0.00	689.02	292.14
0.10	948.85	2927.37	1339.20
0.05	1927.34	5123.80	2619.52
0.01	5981.70	11366.90	7005.12

Fractile	Deposit size Conditional, 100% oil (million barrels)	Deposit size Conditional, 100% gas (billion ft ³)
0.99	11.112	15.476
0.95	41.465	53.727
0.90	70.171	148.026
0.75	174.012	417.946
0.50	538.918	1163.055
0.25	1323.921	2905.923
0.10	2925.320	5803.098
0.05	4333.508	7478.438
0.01	9932.547	14709.691

Attribute		Probability that attribute is favorable or present							
Play attributes	Hydrocarbon sources	1							
	Timing	1							
	Migration	1							
	Potential reservoir facies	0.5							
	Marginal-play probability	0.5							
Prospect attributes	Trapping mechanism	0.3							
	Effective porosity (>3%)	0.8							
	Hydrocarbon accumulation	0.4							
	Conditional-deposit probability	0.096							
Hydrocarbon-volume parameters	Reservoir lithology	Sand	1						
		Carbonate	0						
	Hydrocarbon mix	Gas	0.4						
		Oil	0.6						
	Fractiles		Probability of equal to or greater than						
	Attribute	1.00	0.95	0.75	0.50	0.25	0.05	0	
	Area of closure (x10 ³ acres)	0.6	3	10	12	15	30	100	
	Reservoir thickness/ vertical closure (ft)	5	50	125	200	350	500	750	
	Effective porosity (%)	3	7	13	15	18	23	30	
	Trap fill (%)	1	5	25	50	75	95	100	
	Reservoir depth (x10 ³ ft)	5	8	10	12	18	22	28	
	Number of drillable prospects (a play characteristic)		2	4	4	5	8	10	20

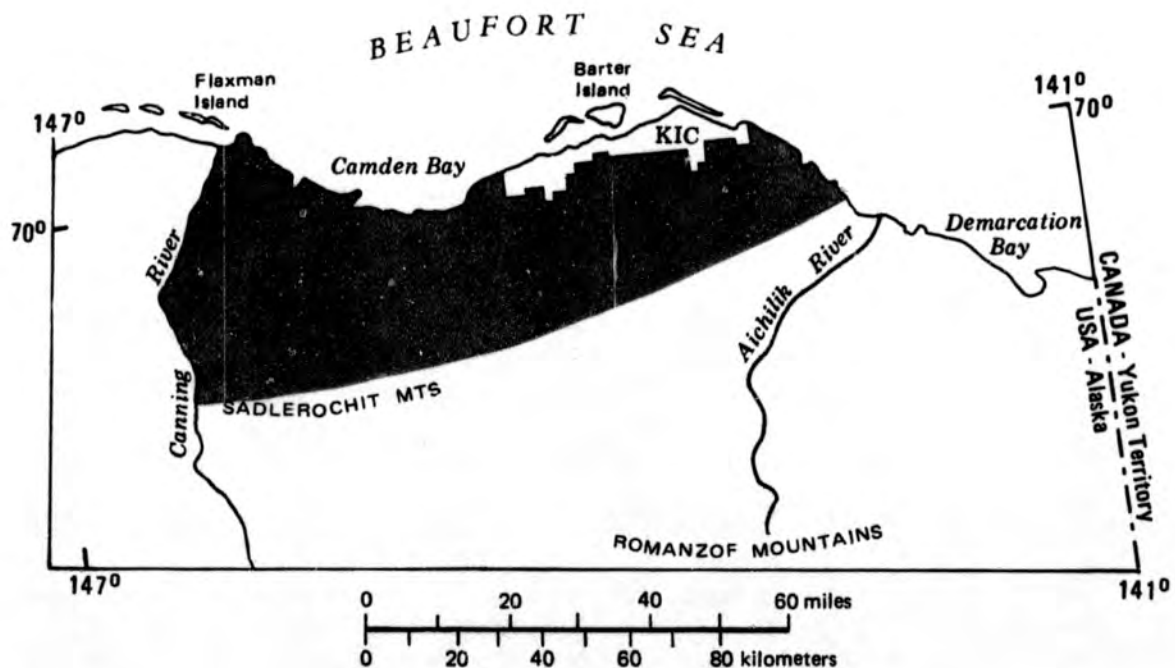


Figure 4. Areal distribution, input parameters, and resources in place for the Permian-Triassic Clastics North Play, Arctic National Wildlife Refuge, Alaska.

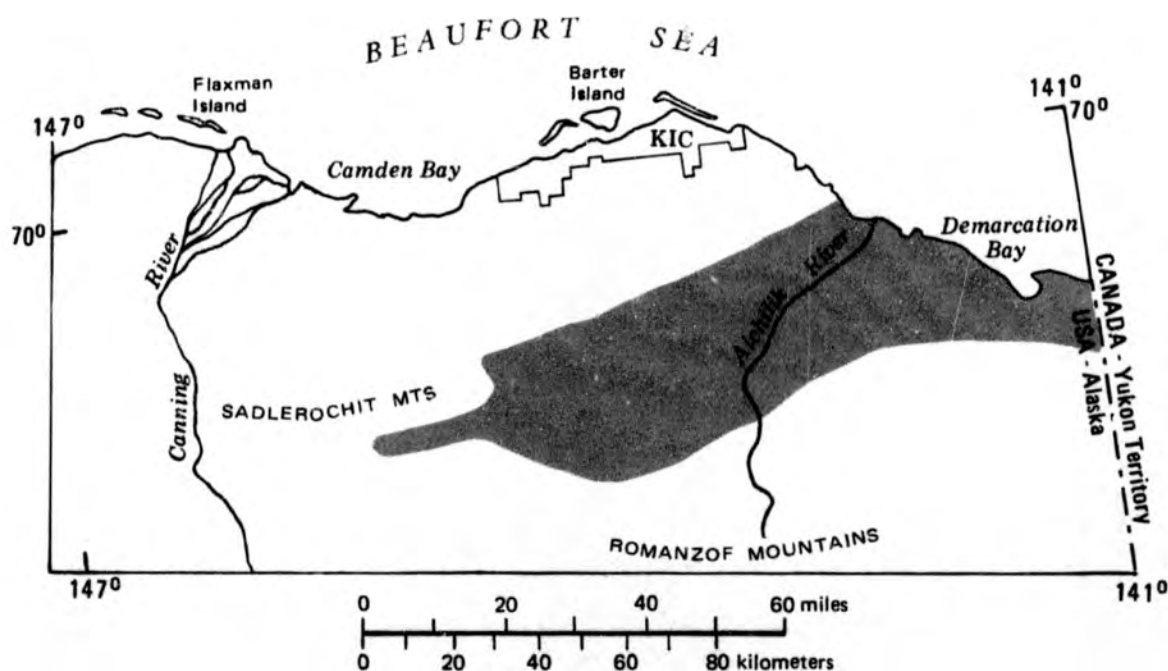
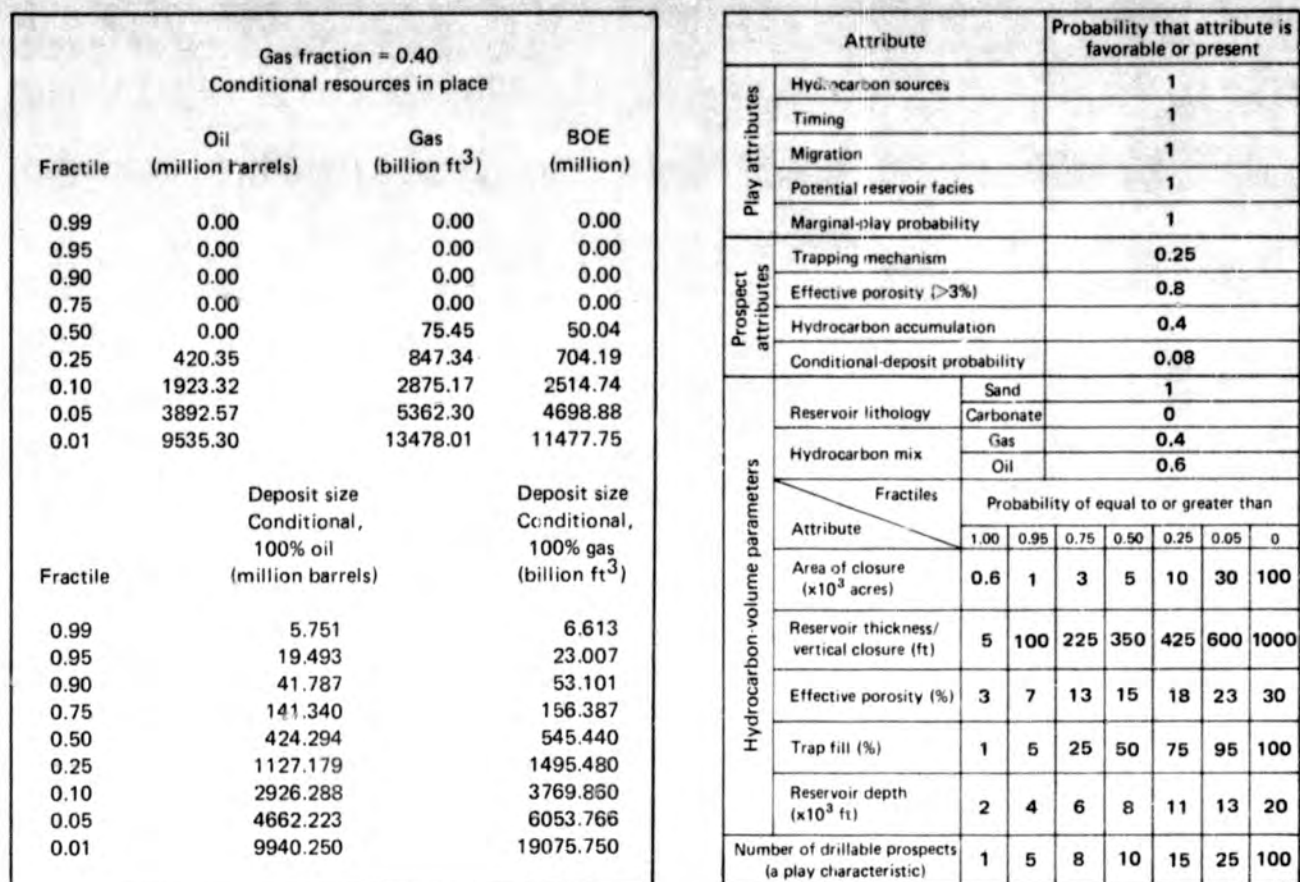


Figure 5. Areal distribution, input parameters, and resources in place for the Permian-Triassic Clastics South Play, Arctic National Wildlife Refuge, Alaska.

Gas fraction = 0.40 Conditional resources in place			
Fractile	Oil (million barrels)	Gas (billion ft ³)	BOE (million)
0.99	0.00	0.00	0.00
0.95	0.00	0.00	0.00
0.90	0.00	0.00	0.00
0.75	0.00	0.00	0.00
0.50	0.00	124.91	77.60
0.25	327.71	1075.43	654.49
0.10	1607.76	3468.63	2248.06
0.05	3122.80	5929.73	4097.80
0.01	7838.41	15008.58	9200.97

Fractile	Deposit size Conditional, 100% oil (million barrels)	Deposit size Conditional, 100% gas (billion ft ³)
0.99	1.902	3.359
0.95	7.342	14.279
0.90	14.607	28.752
0.75	47.014	88.333
0.50	163.259	283.541
0.25	523.658	891.588
0.10	1602.893	2668.084
0.05	2813.698	4705.582
0.01	7445.875	14078.285

Attribute		Probability that attribute is favorable or present							
Play attributes	Hydrocarbon sources	1							
	Timing	1							
	Migration	1							
	Potential reservoir facies	1							
	Marginal-play probability	1							
Prospect attributes	Trapping mechanism	0.25							
	Effective porosity (>3%)	0.9							
	Hydrocarbon accumulation	0.4							
	Conditional deposit probability	0.09							
Hydrocarbon-volume parameters	Reservoir lithology	Sand	1						
		Carbonate	0						
	Hydrocarbon mix	Gas	0.4						
		Oil	0.6						
	Fractiles Attribute		Probability of equal to or greater than						
			1.00	0.95	0.75	0.50	0.25	0.05	0
	Area of closure (x10 ³ acres)		0.6	2	3	5	15	40	100
	Reservoir thickness/vertical closure (ft)		5	25	50	100	200	350	600
	Effective porosity (%)		3	5	10	15	20	25	30
	Trap fill (%)		1	6	30	60	80	96	100
	Reservoir depth (x10 ³ ft)		2	5	8	10	15	20	25
	Number of drillable prospects (a play characteristic)		2	3	6	12	25	50	100

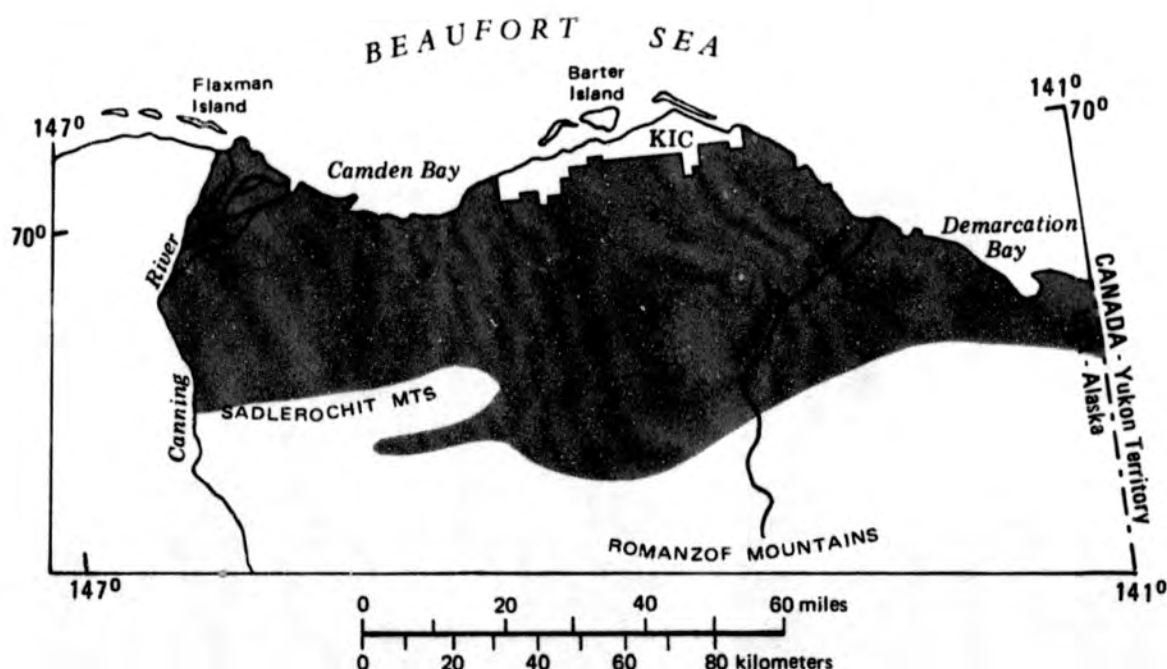


Figure 6. Areal distribution, input parameters, and resources in place for the Kemik-Thomson Play, Arctic National Wildlife Refuge, Alaska.

Gas fraction = 0.50 Conditional resources in place			
Fractile	Oil (million barrels)	Gas (billion ft ³)	BOE (million)
0.99	0.00	0.00	0.00
0.95	0.00	12.35	9.06
0.90	0.00	224.04	146.23
0.75	326.40	1498.50	1044.79
0.50	2097.78	5544.16	3785.89
0.25	6972.20	13623.56	9514.61
0.10	15625.20	28032.78	19546.79
0.05	24230.45	38904.07	29454.32
0.01	43382.48	74349.25	48926.22

Deposit size Conditional, 100% oil		Deposit size Conditional, 100% gas	
Fractile	(million barrels)	Fractile	(billion ft ³)
0.99	5.803	0.99	7.255
0.95	22.006	0.95	28.025
0.90	44.099	0.90	54.634
0.75	137.593	0.75	171.947
0.50	462.298	0.50	603.463
0.25	1542.427	0.25	2044.293
0.10	4489.004	0.10	5808.051
0.05	7927.445	0.05	10985.301
0.01	24037.582	0.01	32045.930

Attribute		Probability that attribute is favorable or present							
Play attributes	Hydrocarbon sources	1							
	Timing	1							
	Migration	1							
	Potential reservoir facies	1							
	Marginal-play probability	1							
Prospect attributes	Trapping mechanism	0.25							
	Effective porosity (>3%)	1							
	Hydrocarbon accumulation	0.5							
	Conditional-deposit probability	0.125							
Hydrocarbon-volume parameters	Reservoir lithology	Sand	1						
		Carbonate	0						
	Hydrocarbon mix	Gas	0.5						
		Oil	0.5						
	Fractiles		Probability of equal to or greater than						
	Attribute		1.00	0.95	0.75	0.50	0.25	0.05	0
	Area of closure (x10 ³ acres)	0.6	1	2	4	12	30	75	
	Reservoir thickness/ vertical closure (ft)	50	100	200	300	800	1200	2000	
	Effective porosity (%)	3	5	10	15	19	23	30	
	Trap fill (%)	1	6	30	60	80	96	100	
	Reservoir depth (x10 ³ ft)	2	3	4	6	9	12	20	
	Number of drillable prospects (a play characteristic)		5	10	25	40	70	100	200

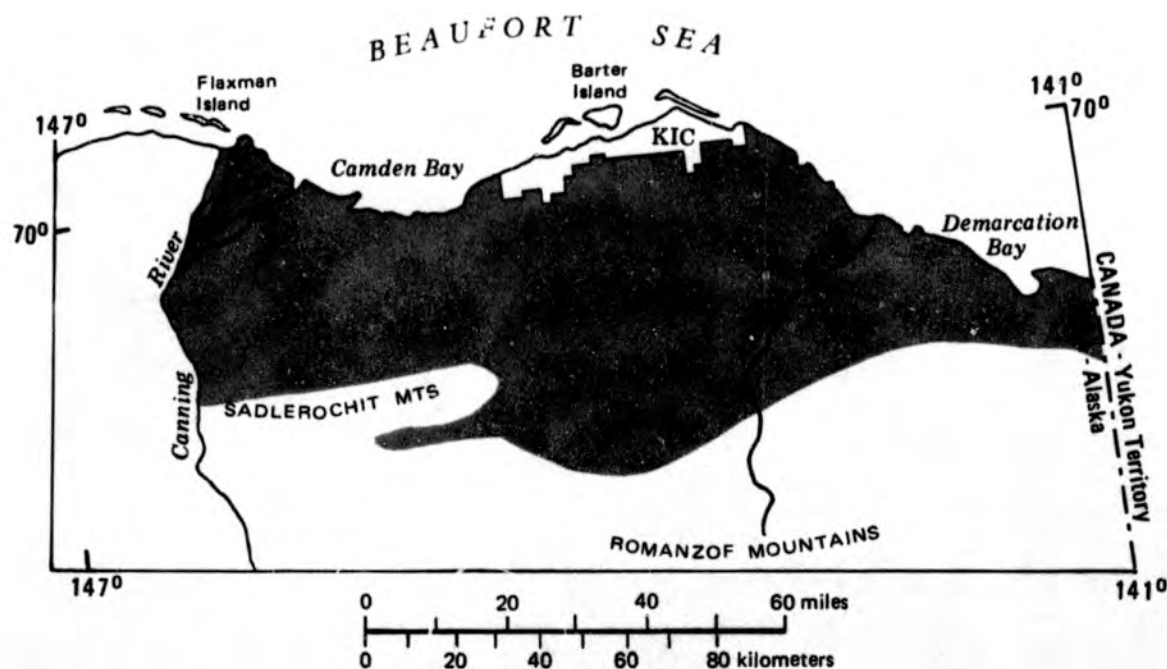


Figure 7. Areal distribution, input parameters, and resources in place for the Post-Albian Clastics Play, Arctic National Wildlife Refuge, Alaska.

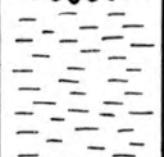
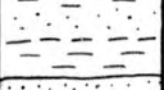
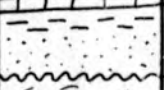
PLAY	AGE	LITHOLOGY	OIL SHOWS IN ANWR	KNOWN ACCUMULATIONS
		 Sandstone  Shale  Limestone  Dolomite	 Seeps  Oil staining	 Gas  Oil  Oil and gas
Post-Albian Clastics	Pliocene to Upper Cretaceous			Mackenzie Delta, Canada  West Sak  Ugnu  Umiat  Flaxman Island  Beaufort-Mackenzie area, Canada  Prudhoe Bay complex 
Kemik-Thomson	Lower Cretaceous			Kuparuk 
	Jurassic			Point Thomson  Milne Point 
Permian-Triassic Clastics (North & South)	Triassic			Prudhoe Bay complex  Kavik  Kemik  Gwydyr Bay  Seal Island 
	Permian			
Lisburne (North & South)	Pennsylvanian			Prudhoe Bay complex 
	Mississippian			
Kekiktuk				Endicott 
	pre-Mississippian			

Figure 8. Stratigraphic column and oil-and-gas summary for plays in the Arctic National Wildlife Refuge, Alaska.

STEVE COWPER, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

PO BOX 7016
ANCHORAGE, ALASKA 99510

DIVISION OF MINING & GEOLOGY

**A Comparison of State and Federal Appraisals of
the Arctic National Wildlife Refuge Coastal Plain**

by

James J. Hansen
Richard W. Kornbrath

The Alaska Department of Natural Resources Professional Report 90 presents the State's preliminary appraisal of the petroleum resource potential in the coastal plain of the Arctic National Wildlife Refuge (ANWR). The results of this study are compared with the resource estimates in the Department of Interior draft report titled "Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment", which was issued for public review and comment on November 24, 1986.

To assess the potential for in-place oil and gas in this frontier area each study uses the geologic play as the basic unit of analysis. A geologic play is an area which can be viewed as an aggregate of prospects (areas of potential hydrocarbon accumulation) that have similar geologic characteristics and share common geologic elements. In analyzing the hydrocarbon potential of geologic plays, geoscientists familiar with the regional geology make three sets of probability judgments concerning the geological characteristics of these plays. These judgments comprise the basic geologic data necessary for a resource appraisal.

The first set of judgments concerns the individual probabilities that each geologic characteristic common to the play area is favorable for petroleum accumulation. These characteristics are: petroleum source, favorable timing of oil generation and migration, availability of potential migration paths, and reservoir rocks in which to retain the oil. These individual probabilities are multiplied together to arrive at the "marginal-play probability".

The second set of judgments involves probabilities that concern the presence of three geologic characteristics common to the individual prospects within each play area: trapping mechanism, effective porosity of the reservoir rock and hydrocarbon accumulation. The product of these probabilities is the "conditional-deposit probability".

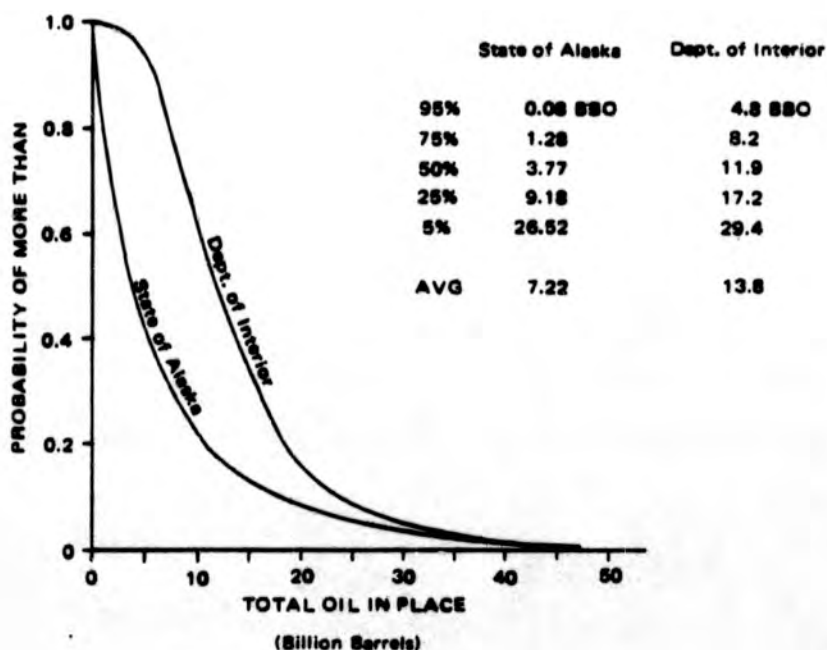
The "success factor", which gives the probability of a well encountering commercial accumulations of oil, is a product of the marginal-play probability and the conditional-deposit probability.

The third set of judgments involves the geologic parameters that determine the potential reservoir volume for a deposit. These reservoir characteristics include area of closure, trap fill, reservoir depth, reservoir lithology, and relative hydrocarbon mix (oil vs. gas).

Once a range of values for each of these characteristics is determined, computer simulation programs are used to analyze these characteristics and to arrive at a probability distribution for in-place oil and gas for each play, and for the frontier area as a whole. The State uses the Resource Appraisal Simulation for Petroleum (RASP) program, which employs a Monte Carlo method of randomly sampling probability distributions for each geological characteristic as many as 3,000 times. The Interior study uses Fast Appraisal Simulation for Petroleum (FASP), which utilizes a statistical approach to probability theory. The FASP method is based on a seven-point probability distribution for each geologic characteristic (i.e., a 95% probability of a given sandstone having 10 feet of net pay, a 90% probability of it having 15 feet of net pay, etc.). FASP computes a mean and the standard deviation from each distribution, then combines these figures to arrive at the oil in-place for each probability level.

Both RASP and FASP simulations yield lognormal distributions that show the probability of these being a given quantity of in-place oil or gas. The lognormal distribution, when plotted as a "bell type" curve, is skewed to the right. This means that the simulation processes result in the generation of many small values for oil in-place and relatively few large ones. Mathematically, the generation of a lognormal distribution is the result of a multiplicative relationship of the input parameters and of the random sampling that is conducted. The effect of the multiplicative relationship is that small variance in the input parameters can result in significant changes in the final numbers.

The following figure compares the probability distribution curves for in-place oil from the two appraisals:



The Department of Interior distribution curve is right-shifted relative to the State curve, meaning that for any given probability, Interior estimates that there is more oil in-place. Alternately, Interior estimates that there is a higher probability for a given amount of oil to be in-place, relative to the State estimate. Geoscientists make subjective judgments to select the geologic characteristics that are input into these two modeling programs. Because there are limited subsurface data in ANWR, there will understandably be differences in the geologic characteristics input into each modeling program. In comparing the two studies conducted, there are four main differences concerning the input data that can account for the divergence between these two distributions:

1. Difference in Geologic Plays

With the exception of the Kemik-Thomson Sand Play, the two studies analyzed different geologic plays. For example, the State's Post-Albian Play encompasses Interior's Topset, Turbidite, and Imbricate Fold Belt plays.

2. Appraisal of Ellesmerian sequence rocks

The Interior appraisal attributes approximately 50% of the oil to Ellesmerian rocks, with an average estimated oil in-place of 7.2 BBO. The State's appraisal only assigns a small probability of there being a significant quantity of this rock sequence in the subsurface; the average estimated oil in-place is 1.13 BBO. At probability levels above 25% the State appraisal exhibits little confidence of there being any Ellesmerian rocks; the federal report indicates that above this probability level there could exist Ellesmerian rocks capable of containing up to 9 BBO. However, the Interior report does state that if most of the Ellesmerian rocks are missing in most of the 1002 area, their assessment number would be reduced considerable (DOI Report, p. 54)

3. Success factors

The State's success factor varied from 8% to 1% for the Ellesmerian rocks, was 9% for the Kemik-Thomson Sand Play, and was the highest, at 12.5%, for the Post-Albian Clastics Play. Though the success factors are not presented in the Interior appraisal, it can be inferred that their percentages were considerably higher (on the order of 10 - 25%) for all plays, since assigning higher success factors will shift the distribution curves further to the right.

4. Appraisal of pre-Mississippian rocks

State geologists disagree with Interior geologists as to the contribution of pre-Mississippian rocks for oil accumulation. Though they have little effect on the distribution curve, Interior's appraisal includes these rocks, while the State appraisal does not.

Volumes of yet undiscovered petroleum resources in frontier areas are extremely difficult to estimate with a high degree of reliability. In the case of ANWR, the lack of sufficiently detailed subsurface geologic information results in a wide variance in the geologic characteristics that form the framework for the resource appraisal methods. In fact, geoscientists will differ in their opinion as to what should constitute a geologic play. It is not surprising (in fact, it should be expected) that these somewhat subjective scientific judgments, based on limited geologic data, will vary from group to group.

In addition to the variance in geologic input, inherent problems exist in the applied methodology and presentation of the resulting data. Lognormal distributions are the result of the multiplicative relationship of the input data; small variances in these input parameters can result in large differences in the resulting totals. It is important to note the fact that both probability distributions show the possibility for a wide range of resources. This is simply a reflection of the high uncertainty in the input data, and it should not be interpreted in a negative manner.

A comparison of the results of the two studies reveals the following:

1. Both reports conclude that the key elements requisite for petroleum accumulations have been demonstrated to be present beneath the coastal plain of ANWR.
2. Both reports conclude that there is a small possibility that significant and unusually large petroleum resources are present beneath the coastal plain.
3. Both reports conclude that there is a greater likelihood that the resources present are smaller in size. However, prior to its discovery, some industry officials had estimated that there was only a two percent probability that the Prudhoe Bay area contained two billion barrels of oil. They did not anticipate the twenty three and a half billion barrels of oil that are now calculated to have been initially in-place.
4. While the State study indicates smaller resources at the higher probability levels relative to the Interior study, there is close agreement between both studies at the lower probability levels.
5. Neither study can be labeled right or wrong. Both studies are valid professional estimates of resource potential under ANWR's coastal plain. Exploratory drilling will ultimately determine which estimate was more accurate.

3:50
2/5/87

BF
Coghill
Fischer.

O+G

BF

to Katz.

participation in land swaps -

1) HR 39 only bill -

not much presence on bill -

2) 1002 report -
delayed by suit

3) land trades. -

1) state as sovereign -
views should be considered

2) as land owner.

260,000 acres to trade.

4k at table w DOI & Natives

Threat selection. -

must be ~~sen~~ approved by Cong.

Not taken a position

4) Carbon Treaty w/ Canada
will lead to B. lateral agreement
creates regime for discussion of
habitat protection.

90-10 - is part of salmon compact
between State -

compensates for not participating in
fed reclamation.

The discussion for last 2 years?

began last October - ~~last~~ December.
promised to be at table.

→ 38.50

→ look at land exchange documents

260,000 acres.

Supports resolution -

reflect consensus of leg + gov.

no action until 1002 report to Congress

late March + Early April.

Cog
to Matt
get copy of
on seismic data?

10.10 - any leasing order - mineral leasing
not apply if we Act of 1920

Role of state in trades —

DOI has promised ~~an~~ sees it will
submit to Congress

COALITION ^{pro} < 30 members

ENVIRONMENTAL -

State separate -

Maintain unions support. - others on side.

1) Natives trades - give Congress reason to support
ANWR.

2) Native - effective lobbying

3) Premature to consider land trades until
after ANWR is open.

Legislative committee still open! (Cognill)

Daniel dept has some revenue projections

2-10-87

State's

Comments on

1002

REPORT (ANWR)

SENATE SPECIAL COMMITTEE ON
OIL AND GAS
February 10, 1987
3:30 p.m.

MEMBERS PRESENT

Senator Bettye Fahrenkamp, Chairman
Senator Jack Coghill

MEMBERS ABSENT

Senator Paul Fischer

CALENDAR

State's comments on U.S. Department of Interior Draft 1002
Report on Arctic National Wildlife Refuge

WITNESS REGISTER

Rod Swope
Special Assistant for Resources
Office of the Governor
P.O. Box A
Juneau, Alaska 99811

Kurt Fredriksson,
Project Analyst, Governmental Coordination
Office of Management & Budget
P.O. Box AW
Juneau, Alaska 99811

Norman Cohen Acting Deputy
Commissioner
Department of Fish & Game
P.O. Box 3-2000
Juneau, Alaska 99802

Lou Pamplin
Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Dennis Kelso, Commissioner
Department of Environmental Conservation
P.O. Box O
Juneau, Alaska 99811

Bob Butts
Division of Oil & Gas
Department of Natural Resources

P.O. Box M
Juneau, Alaska 99811

ACTION NARRATIVE

TAPE ONE SIDE ONE
February 10, 1987

Number 001

The meeting was called to order by Senator Fahrenkamp at 3:30 p.m. She stated the committee would be hearing the state's position on the 1002 Report.

Number 014

The first person to appear before the committee was Rod Swope, special staff assistant to the Governor for resources. Mr. Swope discussed how they developed their position on the 1002 Report. When first received, they immediately requested each of their resource agencies to look at the information relative to their particular expertise and establish a department position. That began the process whereby departments began to formulate a position on the report and worked collectively to resolve the different issues that were involved. The issues that they weren't able to reach some consensus agreement on, or for which they required some higher policy direction, were directed to the director level. Remaining issues were eventually given to the Commissioners of the three resource agencies to try to resolve.

He added that throughout their own process, they also took a look at any public comments that were provided to the state by any interested person, public sector or state government.

Number 077

Senator Fahrenkamp asked if after the position is finally arrived at, is it again reviewed by various commissioners or does it go directly from the Office of Management & Budget, and the Governor's office without further review.

Number 085

Kurt Fredriksson, project analyst in the Office of Management and Budget, responded that there had been two commissioner meetings. Based on their first meeting another draft was circulated to the commissioners which led to a final meeting between the commissioners and the Governor. Following that meeting, a final paper was put together and again directed back to the commissioners for approval.

Number 100

Rod Swope continued by saying that the state has recommended to the Secretary of Interior that Congress immediately open up the 1002 area to oil and gas leasing, with exception of the area described by the U.S. Fish & Wildlife Service as the "core" caribou calving area. The state recommended that leasing in the "core" calving area be deferred (that is, no leasing occur for a 10-year period). During that period the Department of Interior would work to establish some sort of caribou impact assessment study group that they feel would be composed of federal, state and private sector researchers to further study the potential impacts of oil and gas activities in the calving area on the Porcupine Caribou herd. It would also include impacts from oil and gas activities on other caribou within the United States as well as the Canadian Arctic.

Number 130

Senator Fahrenkamp referred Mr. Swope to his statement regarding the Department of Interior establishing a caribou impact assessment study group, and asked if that was agreed upon between the state and the Department of Interior before the state arrived at its decision. Mr. Swope responded it would only be their recommendation to them.

Number 135

Mr. Swope recommended the study be done over a 7-year period following the commencement of the first exploration well and it would probably result in a report that would document the effects of oil and gas activities on caribou, including any information they might gather on potential impacts to the Porcupine herd. Based on the information provided in the report, they would recommend that both the Governor and the Secretary collectively provide a recommendation to Congress as to whether or not leasing should go forward in that core calving area. If Congress did not act on the joint recommendation by the Governor and Secretary of Interior within a 10-year period, then that recommendation would go into effect.

Number 154

Senator Coghill inquired as to when the staff level started to generate their position on ANWR.

Number 168

Mr. Swope responded that specifically with the 1002 Report staff started working on it when they received it approximately at the end of November or the first week of December 1986.

Number 195

Senator Coghill said he was concerned with their recommendation for a seven-year study on the calving area because there had been so many studies done earlier on that herd.

Number 230

Lou Pamplin of the Department of Fish & Game said that most of the detailed study analysis that has been done from the mid-seventies to the present time is work that has been done on the central Arctic herd. There has been some intermittent work done by the state and U.S. Fish and Wildlife Service on the Porcupine Caribou herd, but not with any consistency.

He said in regard to Senator Coghill's question concerning when the state had started formulating their response, that a couple of years ago Fish & Game had tried working with Fish & Wildlife Service to initiate more detailed studies on the Porcupine Caribou herd. The state did not have the funding, but Fish & Wildlife did some census work. They attempted getting draft copies of their report and preliminary input from Fish & Wildlife and the Department of Interior and they were denied. He added that the same thing had occurred on ANWR land exchanges.

Number 270

Senator Fahrenkamp asked if the state was working in any way with Canada during those periods of time. Mr. Pamplin responded that the way the state worked with Canada primarily was to get data from them on the winter use of habitat in the Canadian portion of the range.

Number 294

Senator Coghill inquired if the department had the consultant information from the consortiums of the pipeline, to which Mr. Pamplin replied that staff had seen the data but he did not know if they had exact copies. He said the final data in the 1002 Report on caribou is a composite of consultant data, state data, and Fish & Wildlife Service data.

A discussion followed on the migration and overlap of the Porcupine herd and the 40-Mile herd.

Number 406

Dennis Kelso, Commissioner of Environmental Conservation, said his department's approach to 1002 was to see how adequately it had dealt with basic issues of air, land and water quality as well as how well the document positioned

the state in order to promote its policy objectives in Washington, D.C. He said their position is that it can be done right as far as environmental protection is concerned, and the state should take the steps to assure that it happens.

Number 495

Mr. Kelso said that his department thinks the experience in Prudhoe and in other North Slope development provides a valuable stepping stone and a point to learn from. He said their criticism of the 1002 Report is that the Interior Department has not done an adequate job of laying the ground work and it leaves many questions unanswered. He continued by saying that Interior needs to go back and look at the major areas it has not addressed in the 1002 Report and the state can take its own steps to make sure that those gaps don't swing around and end up costing the state an important policy decision when Congress takes up the matter. He said the Governor's supplemental budget request includes funding to provide appropriate representation in Washington, D.C.

representation.

Mr. Kelso concluded by saying that there has never been the opportunity to pull all the existing information together. Industry has not been able to do so and had no reason to do so. The state has never been staffed to do that kind of bringing together of existing data and identifying whether there are gaps that need to be addressed. He suggested the first thing the state needs to do is pull that data together in consultation with industry.

Number 570

Kurt Fredriksson, governmental coordination, said the 1002 Report speaks to the requirement for a plan of operation to be submitted to the Federal government. He did not know if they will require an environmental impact statement. He said with respect to state authorizations, there would not be a requirement for an EIS.

Number 578

Bob Butts, Department of Natural Resources, said the state doesn't have an environmental impact statement requirement, but the Federal government does if there are federal permits involved, even on state land. He said it would be necessary to do an EIS for the bigger projects. One was done on Endicott and it looked like there would have to be one done for the Lisburne project. He was reasonably sure that there would have to be one done for ANWR. In answer

to a question from Rod Swope, he said that development on private land would probably also require an EIS. Lou Pamplin added that there would probably be a NEPA statement required also.

TAPE ONE SIDE TWO
February 10, 1987

Number 675

Bob Butts of the Department of Natural Resources, said first that it was important to the department that the state's position be consistent with the policies in existence on state land. A second important part was that provisions be made by the Federal government and by Congress to allow the siting of onshore support facilities for offshore development. He said another general concern was that the total package was not so restrictive that oil and gas development and production in ANWR was uneconomical. He concluded by saying that it was clear to the department that opening ANWR has benefits in terms of making existing marginal fields and potential marginal fields offshore ANWR economical.

Number 738

Norman Cohen, Acting Deputy Commissioner, Department of Fish and Game, said that the department attempted to inventory the resources of concern in the coastal plain and come up with mitigation measures for specific resources and address them individually. After that they then went through the process with DEC and DNR to come up with a package that was consistent with the Governor's position of going forward in an environmentally safe manner.

Number 790

Senator Fahrenkamp commented that in the past there has been implied difficulties between the Department of Interior and the State and asked if that was a fair statement and, if so, what process are we going through now to try and improve that.

Number 811

Rod Swope responded that, in his perspective, in the time that he has been involved, he thought they have had good cooperation from the Department of Interior. He said although they had asked for them to try to hold hearings in several areas, and which they were not able to accommodate the State, they did provide some additional time in which to review and respond to the 1002 Report. He felt that generally they have tried to keep the lines of com-

munication open with the Administration as well as their offices in Washington, D.C.

Number 825

Senator Fahrenkamp noted that the Resources Committee would be holding hearings in other areas of the state. She also asked what was being done to make sure that the state is working with the Canadian government on ANWR.

Number 848

Norman Cohen responded that in December 1986 there was a meeting between representative of the U.S. Government and the Canadian Government to discuss an agreement for the conservation of the Porcupine Caribou herd. The agreement was initialed by the representatives of each country and has been under review by the Administration, user groups, industry, the Department of Interior and the State Department. He said that over the next few months people will be able to make recommendations to the State Department as to whether this initial document should be signed by the United States.

Number 868

Senator Fahrenkamp asked if there were conflicts in that area, to which Mr. Cohen responded that at this time there were not conflicts with Canada over issues dealing with the Porcupine herd.

Bob Butts agreed that there hadn't been any disagreements in that area. However, the Canadian government did oppose the recommendation in the 1002 Report because of perceived concerns over caribou. They felt the Department of Interior did not adequately consult the Canadian government prior to making the decision.

Number 895

Senator Fahrenkamp said although there doesn't appear to be a great deal of conflict right now, there has been some in the past. Mr. Butts said that in the context of the 1002 Report, the Canadian government does not believe adequate protection for the caribou will be made under the Interior's chosen alternative. He said the state has provided some additional protection and because of the Canadian concerns.

Number 917

Senator Fahrenkamp closed by saying she was disappointed that the state is getting in the "loop" a little late and

hopes that everyone can work together. She adjourned the meeting at 4:40 p.m.

OIL AND GAS COMMITTEE

FEBRUARY 10, 1987

STATE'S COMMENTS ON THE DEPARTMENT OF INTERIOR'S DRAFT 1002 REPORT
TO TESTIFY:

Rod Swope, Special Assistant to the Governor

- Commissioner Judy Brady, DNR

Commissioner Denny Kelso, DEC

Norm Cohen, Department of Fish and Game

STATE'S RECOMMENDATIONS:

Fully supports opening of the coastal plain subject to appropriate and effective mitigation.

Governor should work closely with Interior. Not enough of that has been done.

Defer leasing in the core calving area for at least 10 years.

Establish ANWR Caribou Impact Assessment Study Group.

Governor and Secretary make recommendations after 7 years.

Implement recommendations if Congress fails to act within 10 years.

Based on 1) high level of protection of fish and game mandated by Congress

2) not enough information about Porcupine Caribou

3) concern for Canadian interests

Recognized FISH and WILDLIFE, SUBSISTENCE, and OIL AND GAS as important national resources there.

Encourage use of best and latest technology.

DOI should establish formal consultation process with the state for planning and resolving disputes.

Identified 8 topics that need further discussion.

HAVE EACH COMMISSIONER REVIEW THEIR COMMENTS.

DNR and FISH AND GAME

REVIEW COMMENTS ON STIPULATIONS (ENCLOSURE A)

SUBSISTENCE Implementation of ANILCA requirements

DEC

ENCLOSURE B STATE AUTHORITIES PERTINENT TO ANWR

.QUESTIONS:

* / In the past there seems to have been a lack of coordination between the state and Department of Interior. HOW DO YOU EXPECT TO IMPROVE THAT PROCESS IN THE FUTURE?

* The comments mentioned a concern for our Canadian neighbors. DO YOU HAVE ANY SPECIFIC RECOMMENDATIONS FOR RESOLVING THESE CONFLICTS?

STATE OF ALASKA

OFFICE OF THE GOVERNOR
JUNEAU

STEVE COWPER
GOVERNOR

NEWS RELEASE



FOR INFORMATION CONTACT
David Ramseur
Press Secretary
Office of the Governor
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Bus. Phone (907) 465-3500

FOR IMMEDIATE RELEASE
February 6, 1987
No. 87-11

Report from DNC
" " *Fish + Game*

STATE URGES EXPLORATION IN ANWR MORATORIUM IN CARIBOU "CORE" CALVING AREA

JUNEAU--Oil and gas exploration should be permitted in the Arctic National Wildlife Refuge, but delayed in the "core" caribou calving area for at least 10 years pending a study of the impact of exploration on the Porcupine caribou herd, according to the state of Alaska's response to a federal report on ANWR.

In a nine-page letter to the U.S. Interior Department, the state says oil and gas potential in the refuge is extremely promising and therefore, exploration should proceed. At the same time, the state says not enough is known about the potential impact exploration may have in the area of most concentrated caribou calving.

As a result, the state proposes creation of a group composed of federal, state, university and private researchers to study the issues and offer recommendations to the Interior secretary and Alaska's governor about future exploration in the core calving area.

The proposal is contained in the state's formal response to the Interior's Draft Arctic National Wildlife Refuge Coastal Plain Resource Assessment 1002 report. The response, delivered to Interior officials in Washington, D.C., today, details the state's concerns with the draft report.

-MORE-

The comments follow testimony offered by the state in Anchorage on Jan. 5 in which Gov. Steve Cowper said he supports exploration in ANWR with the proper environmental protections.

"Alaska's coastal plain contains the best prospects in this country for a significant oil and gas find," Cowper said, upon release of the state's comments. "I think we can go after it responsibly and with a minimum of disruptions if we follow the guidelines outlined in our response to the federal report."

The state says two key facts are at issue in the debate over development of the coastal plain: (1) ANWR is home to fish and wildlife resources which are of significant national and international importance as well as necessary to the subsistence way of life of those who live in and near the refuge, and (2) the area contains the most outstanding oil and gas frontier remaining in the U.S.

State officials point out that Alaska has more than two decades of experience with oil exploration and that, using the best and latest technology, safe development of the coastal plain is possible. One way to ensure minimum disruption of the caribou is a thorough report on the potential impacts of the core calving area.

After seven years of careful study, the Interior secretary and governor would submit a report to Congress for a decision on whether to open or defer leasing in the core area, under the state's proposal. That study would seek to document the biological importance of the core calving area, the effects of oil and gas activities and the effectiveness of mitigation measures.

-MORE-

The state's comments are the result of months of discussions among state resources agencies, the oil industry and environmental groups. A final 1002 report is expected to be delivered in April to Congress, which then begins debate on opening ANWR to exploration.

-30-

(A copy of the state of Alaska's response to Interior's 1002 report is attached.)

STEVE COWPER
GOVERNOR



STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

February 6, 1987

The Honorable Donald P. Hodel
Secretary
Department of the Interior
Interior Building, Room 6151
C Street between Eighteenth
and Nineteenth Streets, NW
Washington, DC 20240

Dear Mr. Secretary:

I wish to take this opportunity to thank you for providing the state with the additional two weeks to review and comment on the draft Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment. The additional time enabled us to conduct a more thorough and useful review of this important document. Enclosed is a copy of the state's comments on the draft assessment.

Like you, I feel it is extremely important that Congress be persuaded to open the coastal plain to oil and gas leasing consistent with the purposes of the refuge to preserve its fish and wildlife values. The state is committed to this objective and with your cooperation will work to see that it is accomplished. I look forward to reviewing the final report to Congress and hope to meet with you in the near future to discuss how we might best advance a cooperative effort to move forward with oil and gas leasing in the Arctic National Wildlife Refuge.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steve Cowper".

Steve Cowper
Governor

Enclosure

The Hon. Donald P. Hodel

-2-

February 6, 1987

cc/enc: Senator Ted Stevens
Senator Frank Murkowski
Representative Don Young
William Horn, Department of
the Interior, Washington, DC
John Katz, Office of the
Governor, Washington, DC
Alaska Senate Resources Committee
Alaska House Resources Committee

STATE OF ALASKA

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET DIVISION OF GOVERNMENTAL COORDINATION

STEVE COWPER, GOVERNOR

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675 SEVENTH AVENUE
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PHONE: (907) 456-3084

February 6, 1987

Mr. Robert Gilmore
Regional Director
U.S. Department of the Interior
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Dear Mr. Gilmore:

The state has reviewed the Draft Arctic National Wildlife Refuge (ANWR), Alaska, Coastal Plain Resource Assessment 1002(h) Report. We appreciate the additional time granted the state to review this important report. Based on our review of the substantial amount of information contained in the draft 1002(h) report, we strongly support the conclusion that oil and gas exploration be allowed in ANWR consistent with the chief purpose of the refuge to preserve its unique wildlife values.

The State of Alaska recommends that Congress immediately open the 1002 area to oil and gas leasing, with the exception of the area described by U.S. Fish and Wildlife Service (USFWS) as the "core" caribou calving area. The state strongly recommends that leasing in the "core" calving area be deferred for a ten-year period. During this ten-year period, the Department of the Interior (DOI) should establish an ANWR Caribou Impact Assessment Study Group composed of federal, state, university, and private researchers to further study the potential impacts of oil and gas activities in the calving area on the Porcupine Caribou Herd. The study should be conducted over a seven-year period following commencement of the first exploratory well and result in a report to the Secretary of the Interior and Governor of Alaska. The report would seek to document the biological importance of the core calving area, the effects of oil and gas activities in the 1002 area on the Porcupine Caribou Herd, and the effectiveness of mitigation measures employed in the 1002 area to minimize adverse impacts to caribou. Based on the report findings, the Governor and Secretary would recommend to Congress to extend the deferral or open the core calving area to oil and gas leasing. If