Crude Pro Quo:
The Use of Oil Exchanges to Increase Efficiency

Prepared by Minority Staff for Ranking Member Lisa Murkowski
U.S. Senate Committee on Energy & Natural Resources
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Introduction

While the federal government and private sector continue examining the potential for crude oil exports, existing regulatory authorities unequivocally allow petroleum exchanges today, which may provide a very limited escape valve over the near-term. Light tight oil and condensate produced in shale plays could be transported to nearby nations in return for heavier crudes that could be processed in U.S. refineries. Neither a presidential finding nor a Commerce Department rulemaking would be required. Exchanges cannot solve the mismatch between refineries geared to process heavy crudes and record production of lighter grades of petroleum, but they would be a partial measure that could help alleviate some of the glut.[1]

This report summarizes the existing regulatory framework surrounding exchanges and offers precedent from the administrations of Presidents Richard Nixon, Gerald Ford, Jimmy Carter, Ronald Reagan, George H.W. Bush, and Bill Clinton.

The Regulatory Framework

The overall architecture of "the ban" on crude oil exports provides for numerous exceptions to the general prohibition, including (but not limited to) exchanges and temporary exports, which are consistently and explicitly described in the relevant statutes. The Mineral Leasing Act, for example, puts it this way:

> "except such crude oil which is either ***exchanged in similar quantity*** for convenience or increased efficiency of transportation with persons or the government of an ***adjacent foreign state***, or which is ***temporarily exported*** for convenience or increased efficiency of transportation across parts of an ***adjacent foreign state*** and reenters the United States."[2] [emphasis added]

The Short Supply Controls outline a complicated transaction that requires a three-part test as one potential exchange or "swap," but the exchanges envisioned above are actually

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[1] For a general discussion, see Phillip Brown, et al, "U.S. Crude Oil Export Policy: Background and Considerations," Congressional Research Service (R43442). See also Sen. Lisa Murkowski, *A Signal to the World* (January 7, 2014): http://1.usa.gov/1eiQ1es. For further details, also see *License to Trade: Commerce Department Authority to Allow Condensate Exports* (April 2, 2014): http://1.usa.gov/QDF1Tx; and *Past is Precedent: Executive Power to Authorize Crude Oil Exports* (March 3, 2014): http://1.usa.gov/1fC8fMJ.

[2] 30 U.S.C. 185(u). See Appendix A.

governed by other language in the regulations.[3] The Bureau of Industry and Security already has determined that these much simpler transactions – crude-for-crude, barrel-for-barrel exchanges with "adjacent foreign states" – are in the national interest. The regulations note that, in addition to several other exceptions described in the regulations, the Commerce Department will approve:

> "(ii) Exports involving temporary exports or exchanges that are consistent with the exceptions from the restrictions of the statutes listed..."[4]

Excerpts from the relevant laws are printed as a supplement to the Export Administration Regulations and available for review in Appendix A of this document.[5]

The Northern Tier Exchanges

Amid the extraordinary oil supply crisis of the 1970s, the National Energy Board of Canada announced that it would phase-out crude oil exports to the United States, reducing volumes from nearly 791,000 barrels per day in 1974 to exactly zero by 1982. A study by the U.S. Federal Energy Administration in 1976 noted:

> "These planned reductions, coupled with decreasing local crude production and projections for increased petroleum product demand in the Northern Tier, emphasize the need for alternative supplies of crude oil."

In short, refineries in the Northern Tier – Michigan, Minnesota, Montana, North Dakota, Washington, and Wisconsin – were losing an important source of crude. The federal government considered a variety of solutions, including the construction of additional pipelines to bring crude in from other parts of the country (e.g., Alaska). The FEA study also considered short-term approaches:

> "Another potential solution depends on the ability of U.S. refineries to negotiate exchange agreements with Canadian refineries…Exchanges appear on the surface to be an economic alternative that should prove to be beneficial to both the United States and Canada, because of the lower transportation costs."

This idea, earlier recommended by a bilateral working group organized by the U.S. and Canada in 1975, was implemented. The Canadian National Energy Board and the U.S. Departments of State, Commerce, and Energy (or its predecessor, the FEA) were all involved in the licensing process. A report by DOE noted in 1979:

[3] The three-part test is discussed at 15 C.F.R. §754.2(b)(2)(i).
[4] The simpler exchanges are discussed at 15 C.F.R. §754.2(b)(2)(ii).
[5] The complete Short Supply Controls are available online: https://www.bis.doc.gov/index.php/forms-documents/doc_view/425-part-754-short-supply-controls.

> "***These exchanges were developed without formal international agreements***; they are the product of commercial practicalities and the long-standing tradition of U.S.-Canadian cooperation." [emphasis added]

For example, crude produced in the U.S. or imported from abroad could be delivered to Ontario and Montreal in eastern Canada; in return, an equal volume of crude produced in Alberta could be delivered to the Midwest. Licenses were initially issued each quarter, but the program later adopted an annual system. Aggregate licensed volumes for these exchanges – typically in the 50,000-100,000 barrels per day range – exceeded actual shipments.

The program was initiated in August 1976 by the Ford administration and continued into the Carter and Reagan administrations. It was discontinued following President Reagan's national interest finding in June 1985 authorizing oil exports to Canada. Exact numbers are not available, but tens of millions of barrels were exchanged back-and-forth across the border during this nine-year period.

Excerpts from the FEA and DOE reports are available in Appendices B and C.

Temporary Exports to Central America

The Ford and Carter administrations considered additional measures in the short-term and long-term to alleviate the Northern Tier refinery problem. The discussion included the shipment of West Coast crude from Alaska or California down the Pacific Coast, either cutting across the isthmus of Central America or circumnavigating the entire South American landmass to reach the Caribbean or Gulf and East Coasts of the United States.

There were several options for traversing Central America. The Panama Canal is unable to accommodate supertankers, which are the most efficient way of transporting oil over the ocean. The Energy Department explained what was necessary in a study published in 1979:

> "Presently, virtually all of this crude oil is being shipped through the Panama Canal to U.S. ports via temporary transfer operations. Two Very Large Crude Carriers (VLCCs), anchored off the west coast of Panama, serve as floating storage and transferal facilities for moving Alaskan crude oil to smaller carriers capable of passing through the Canal."

U.S. companies eased this cumbersome process by building an onshore "transshipment terminal," where VLCCs could offload the oil for pickup by the smaller ships.

Pipelines were considered as another method for shipping oil from the Pacific to Atlantic coasts of Central America. An analysis produced for the Federal Energy Administration in 1976 suggested the construction of a new pipeline system within the Canal Zone, rather than co-opting existing military infrastructure. The report also considered a pipeline across Guatemala, which would include deep-water ports on either side.

The Energy Department examined an updated trans-Guatemala proposal in 1979. The study noted that the pipeline would serve mostly Alaskan crude, but also volumes from Indonesia and South America. The report noted:

> "To preserve the 'domestic integrity' of the U.S. crude oil, DOE [Department of Energy] proposes that both ports and the pipeline right-of-way be declared an international free trade zone under a 40-year lease agreement with Guatemala. The oil would be reloaded into U.S. tankers for delivery to U.S. Gulf and east coast refineries at the northern [i.e., Atlantic] end of the pipeline."

Earlier ideas for transporting Alaskan crude to the Atlantic Ocean, separate from the Northern Tier refinery issue, included pipelines across Costa Rica and Nicaragua.[6] Whether these received serious consideration by the U.S. government is unknown. Ultimately, a pipeline across Panama – outside the Canal Zone – was constructed in 1982. In any event, these onshore movements – whether by pipeline or for onshore transshipping – technically constituted "exports" of oil, but were of a temporary nature and therefore permissible by the Commerce Department regulations. Essentially, Panama is regarded as an "adjacent foreign state" for the purposes of shipping Alaskan crude to the East Coast.

Excerpts from the FEA-commissioned report and DOE study are available in Appendix D and E, respectively.

The Japan Proposal(s)

Exporting Alaskan crude oil to Japan was considered as early as the Nixon administration. In 1971, the Interior Department published an analysis of the Trans-Alaska Pipeline that concluded any foreign exports would be "temporary" as a result of rising California demand. The study described a potential transaction in the near-term, however:

> "Alaska oil exported to Japan at the market price could be exchanged for currently cheaper imported Middle East or Venezuelan oil delivered to the Gulf Coast or East Coast."

In 1977, the Federal Energy Administration published a study that analyzed various aspects of Alaskan North Slope crude production and sale. One possibility assessed in the report was a three-way exchange with Japan and the Persian Gulf. The report estimated significant potential savings in transportation costs. The proposal was later modified to include Mexico instead of the Persian Gulf. In April 1979, Energy Secretary James Schlesinger estimated "swaps" would increase federal revenue by $8.5 billion over 20 years and boost production by as much as 600,000 barrels per day. He wrote to Congress:

> "The Administration is not proposing that any U.S.-produced oil be exported, but rather seeking to assure that the President and the Congress are not unduly

[6] See, for example, "Panama, Costa Rica Fight for Pipeline," *Chicago Tribune* (February 14, 1971); and "Pipeline in Nicaragua Proposed As a Link in Moving Alaska Oil," *New York Times* (December 8, 1969).

> constrained in considering such action should it be in the national interest…Nonetheless, it is conceivable that swaps of Alaskan North Slope crude oil will become necessary at some time to induce additional Alaskan and West Coast production and to improve efficiency."

In May 1979, President Carter and Japanese Prime Minister Ohira created the Japan-United States Economic Relations Group, tasked with producing a set of recommendations for enhancing bilateral ties between the two countries. Published in January 1981, the Group's report included the following recommendation:

> "To improve the efficiency with which currently available petroleum supplies are transported and used, there should be a change in United States policy to allow Alaskan oil which is surplus on the United States West Coast to be exported to Japan in exchange for other oil already committed to Japan."

Ultimately, the Reagan administration issued a national interest finding in 1985 authorizing exports of oil from Alaska's Cook Inlet, and a broader exception for Alaskan North Slope crude was created in the 1994-96 period by Congress and President Clinton.

Excerpts from the Interior Department and FEA reports are available in Appendices F and G, respectively. Secretary Schlesinger's letter and the Economic Relations Group's report are available in Appendices H and I, respectively.

Conclusion

Vast historical precedent exists for the authorization of oil exchanges between the United States and nearby nations. An exchange program between the U.S. and Canada functioned for nearly a decade, supported by three administrations from both political parties. Temporary exports through Panama have been authorized by successive administrations from at least President Carter to President Clinton, and such exports are even occasionally authorized today. The term "adjacent foreign state" has typically included Canada, Panama, and Mexico, but the record suggests that a more flexible interpretation could include other Latin American and Caribbean nations – and multiparty transactions could incorporate exchanged crude oil from producers around the globe. A broader liberalization of the crude export regime would still be necessary to protect jobs and production, but exchanges are relatively simple measures that could be taken now to provide some relief.

Acknowledgments

Staff wish to thank the Senate Library and the Congressional Research Service for assistance with this report.

APPENDIX A:
The Regulatory Framework – BIS

SUPPLEMENT NO. 3 TO PART 754 - STATUTORY PROVISIONS DEALING WITH EXPORTS OF CRUDE OIL

[The statutory material published in this Supplement is for the information of the reader only. See the U.S. Code for the official text of this material.]

PUBLIC LAW 104-58

SEC. 201 EXPORTS OF ALASKAN NORTH SLOPE OIL

Section 28 of the Mineral Leasing Act (30 U.S.C. 185(s)) is amended by amending subsection(s) to read as follows:

"EXPORTS OF ALASKAN NORTH SLOPE OIL

(1) Subject to paragraphs (2) through (6) of this subsection and notwithstanding any other provision of this Act or any other provision of laws (including any regulation) applicable to the export of oil transported by pipeline over right-of-way granted pursuant to section 203 of the Trans-Alaska Pipeline Authorization Act (43 U.S.C. 1652), such oil may be exported unless the President finds that exportation of this oil is not in the national interest. The President shall make his national interest determination within five months of the date of enactment of this subsection. In evaluating whether exports of this oil are in the national interest, the President shall at a minimum consider--

(A) whether exports of this oil would diminish the total quantity or quality of petroleum available to the United States;

(B) the results of an appropriate environmental review, including consideration of appropriate measures to mitigate any potential adverse effects of exports of this oil on the environment, which shall be completed within four months of the date of the enactment of this subsection; and

(C) whether exports of this oil are likely to cause sustained material oil supply shortages or sustained oil prices significantly above world market levels that would cause sustained material adverse employment effects in the United States or that would cause substantial harm to consumers, including noncontiguous States and Pacific territories.

If the President determines that exports of this oil are in the national interest, he may impose such terms and conditions (other than a volume limitation) as are necessary or appropriate to ensure that such exports are consistent with the national interest.

(2) Except in the case of oil exported to a country with which the United States entered into a bilateral international oil supply agreement before November 26, 1979, or to a country pursuant to the International Emergency Oil Sharing Plan of the International Energy Agency, any oil transported by pipeline over right-of-way granted pursuant to section 203 of the Trans-Alaska Pipeline Authorization Act (43 U.S.C. 1652) shall, when exported, be transported by a vessel documented under the laws of the United States and owned by a citizen of the United States (as determined in accordance with section 2 of the Shipping Act, 1916 (46 U.S.C. App. 802)).

(3) Nothing in this subsection shall restrict the authority of the President under the Constitution, the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.), the National Emergencies Act (50 U.S.C. 1601 et seq.), or Part B of title II of the Energy Policy and Conservation Act (42 U.S.C. 6271-76) to prohibit exports.

(4) The Secretary of Commerce shall issue any rules necessary for implementation of the President's national interest determination, including any licensing requirements and conditions, within 30 days of the date of such determination by the President. The Secretary of Commerce shall consult with the Secretary of Energy in administering the provisions of this subsection.

(5) If the Secretary of Commerce finds that exporting oil under authority of this subsection has caused sustained material oil supply shortage or sustained oil prices significantly above world market levels and further finds that these supply shortages or price increases have caused or are likely to cause sustained material adverse employment effects in the United States, the Secretary of Commerce, in consultation with the Secretary of Energy, shall recommend, and the President may take, appropriate action concerning exports of this oil, which may include modifying or revoking authority to export such oil.

(6) Administrative action under this subsection is not subject to sections 551 and 553 through 559 of title 5, United States Code.

MINERAL LANDS LEASING ACT
30 U.S.C. 185(u)

Limitations on export

Any domestically produced crude oil transported by pipeline over rights-of-way granted pursuant to this section, except such crude oil which is either exchanged in similar quantity for convenience or increased efficiency of transportation with persons or the government of an adjacent foreign state, or which is temporarily exported for convenience or increased efficiency of transportation across parts of an adjacent foreign state and reenters the United States, shall be subject to all of the limitations and licensing requirements of the Export Administration Act of 1979 (50 U.S.C. App. 2401 and following) and, in addition, before any crude oil subject this section may be exported under the limitations and licensing requirements and penalty and enforcement provisions of the Export Administration Act of 1979 the President must make and publish an express finding that such exports will not diminish the total quantity or quality of petroleum available to the Unites States, and are in the national interest and are in accord with the provisions of the Export Administration Act of 1979: *Provided*, That the President shall submit reports to the Congress containing findings made under this section, and after the date of receipt of such report Congress shall have a period of sixty calendar days, thirty days of which Congress must have been in session, to consider whether exports under the terms of this section are in the national interest. If the Congress within this time period passes a concurrent resolution of disapproval stating disagreement with the President's finding concerning the national interest, further exports made pursuant to the aforementioned Presidential finding shall cease.

NAVAL PETROLEUM RESERVES PRODUCTION ACT
10 § 7430(e)

Any petroleum produced from the naval petroleum reserves, except such petroleum which is either exchanged in similar quantities for convenience or increased efficiency of transportation with persons or the government of an adjacent foreign state, or which is temporarily exported for convenience or increased efficiency of transportation across parts of an adjacent foreign state and reenters the United States, shall be subject to all of the limitations and licensing requirements of the Export Administration Act of 1979 (50 U.S.C. App. 2401 et seq.) and, in addition, before any petroleum subject to this section may be exported under the limitations and licensing requirement and penalty and enforcement provisions of the Export

Administration Act of 1979, the President must make and publish an express finding that such exports will not diminish the total quality or quantity of petroleum available to the United States and that such exports are in the national interest and are in accord with the Export Administration Act of 1979.

OUTER CONTINENTAL SHELF LANDS ACT
43 U.S.C. 1354

(*a) Application of Export Administration provisions*

Except as provided in subsection (d) of this section, any oil or gas produced from the outer Continental Shelf shall be subject to the requirements and provisions of the Export Administration Act of 1969. Note that the Export Administration Act of 1969, referred to in paragraphs (a) and (b) of the Supplement, terminated on September 30, 1979, pursuant to the terms of that Act.

(*b) Condition precedent to exportation; express finding by President of no increase in reliance on imported oil or gas*

Before any oil or gas subject to this section may be exported under the requirements and provisions of the Export Administration Act of 1969, the President shall make and publish an express finding that such exports will not increase reliance on imported oil or gas, are in the national interest, and are in accord with the provisions of the Export Administration Act of 1969.

(*c) Report of findings by President to Congress; joint resolution of disagreement with findings of President*

The President shall submit reports to Congress containing findings made under this section, and after the date of receipt of such reports Congress shall have a period of sixty calendar days, thirty days of which Congress must have been in session, to consider whether export under the terms of this section are in the national interest. If the Congress within such time period passes a concurrent resolution of disapproval stating disagreement with the President's finding concerning the national interest, further exports made pursuant to such Presidential findings shall cease.

(d) Exchange or temporary exportation of oil and gas for convenience or efficiency of transportation

The provisions of this section shall not apply to any oil or gas which is either exchanged in similar quantity for convenience or increase efficiency of transportation with persons or the government of a foreign state, or which is temporarily exported for convenience or increased efficiency of transportation across parts of an adjacent foreign state and reenters the United States, or which is exchanged or exported pursuant to an existing international agreement.

APPENDIX B:
The Northern Tier Exchanges – FEA

Crude Oil Supply Alternatives for the Northern Tier States

August 1976

FEA/G-76/350

Federal Energy Administration
United States
Office of Oil and Gas

Prepared for: The Committees on Interior and Insular Affairs of the Senate and the House of Representatives.

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FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

AUG 2 1976

OFFICE OF THE ADMINISTRATOR

Honorable Nelson A. Rockefeller
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

Enclosed is the report on the Crude Supply Alternatives for the Northern Tier States, as requested by the Senate Appropriations Committee in the Federal Energy Administration (FEA) budget appropriation.

The phaseout of oil exports from Canada will create a supply problem for the Northern Tier States which requires an early solution. Short-term solutions to the Northern Tier problem are the subject of an ongoing study by the FEA. The FEA allocation program, exchanges and expansion of current pipeline capacity into the Northern Tier appear to be the most viable solutions to the short-range problem. The FEA is encouraged by the proposals being made by private industry for supplying the area for the long term and believes that no legislation or Government involvement is necessary beyond the current crude oil allocation program.

This report has been developed with the cooperation of the States of Washington, Montana, North Dakota, Minnesota, Michigan and Wisconsin, as well as the Departments of the Interior and Transportation, the Environmental Protection Agency, and the National Oceanic and Atmospheric Administration.

I am also enclosing a copy of our contractor's report on this subject. The viewpoints, conclusions and recommendations of the contractor are not necessarily those of the FEA.

I hope you will find the report both useful and informative.

Sincerely,

Frank G. Zarb
Administrator

Enclosures

I. Introduction

The Subcommittee on Interior and Related Agencies Appropriations of the Senate Appropriations Committee included funds in the Federal Energy Administration's (FEA) Budget to finance a study to "assess the feasibility, cost, and environmental aspects of alternative petroleum sources and transportation systems for the Northern Tier States (Washington, Montana, North Dakota, Minnesota, Michigan, and Wisconsin) and to recommend steps the Federal government can take to assure uninterrupted oil delivery to these states...." The study was conducted by FEA in cooperation with the Departments of Interior and Transportation, EPA, NOAA and the states concerned.

The Northern Tier states have refineries which depend largely on Canadian crude sources. Declines in the production of crude oil from local sources as well as projected growth in the consumption of petroleum products emphasize the need for alternative supplies of crude oil.

The objective of this study was then to assess the feasibility, cost, and potential environmental, social, and economic impacts of various alternate supply sources and transportation systems for the Northern Tier area. With the projected advent of Alaskan North Slope crude, economic evaluations have included its introduction as a major source for the Northern Tier area and have examined the price implications of Alaskan crude oil. It should be emphasized that this study is to determine long-term supply alternatives for the Northern Tier area. An overall study of transportation and distribution alternatives for Alaskan oil is being conducted under the auspices of the Energy Resources Council and should be available for initial review in the fall.

This report describes the historical, current, and projected Canadian actions with regard to crude oil exports. It analyzes the petroleum supply structure for crude oil and finished products affecting the Northern Tier; projects demand forecasts for the U.S. and for each of the six Northern Tier States; and briefly discusses short-term supply solutions for the Northern Tier States.

Finally, the report discusses potential obstacles to implementation of each alternative with regard to (1) construction lead time, (2) environmental considerations, and (3) financial capability of private industry.

II. Canadian Actions

The need for this study stems from the implementation of announced plans by the National Energy Board (NEB) of Canada to systematically reduce and eventually eliminate Canadian exports of crude oil to the United States.

When the Canadian government announced its curtailment plans in late 1974, exports to the United States were averaging about 800,000 barrels per day. Many of the refineries using Canadian crude are located in Illinois, Indiana, and Ohio where supply alternatives exist through pipelines from the Midwest, Southwest, and Gulf Coast. In addition, refineries in Washington can receive crude oil by tanker to replace Canadian imports.

The refineries in the Northern Tier area which have no alternative sources of crude have been designated priority 1 recipients of Canadian oil under FEA's allocation program. These refineries now have a priority allocation of Canadian oil for about 264,000 barrels per day. Reductions in Canadian exports which have taken place and those projected in the future are depicted in the following tabulation. In making allocations decisions special attention will need to be given to the characteristics of individual crude oil streams available from Canadian producers.

YEAR	ACTUAL AND PLANNED CANADIAN EXPORTS TO UNITED STATES (Thousands of Barrels Daily)	
1974	791	Actual
1975	600	Actual
1976	465	Planned
1977	255	Planned
1978	166	Planned
1979	85	Planned
1980	55	Planned
1981	5	Planned
1982	0	Planned

These planned reductions, coupled with decreasing local crude production and projections for increased petroleum product demand in the Northern Tier, emphasize the need for alternative supplies of crude oil.

III. Short-Term Options

As indicated by the above table, Canadian crude export reductions for the short-term will result in product shortfalls as early as next year unless crude shortfalls from the present level are filled by crude exchanges and product shipments from other regions. One potential solution is an initial phase in the expansion of the Williams Pipeline system which delivers crude oil and petroleum products from Tulsa, Oklahoma to the Minneapolis/ St. Paul area. Williams Pipeline can expand existing facilities by late 1977 which will provide additional capacity up to 130,000 barrels per day into the Minnesota-Wisconsin area.

Another potential solution depends on the ability of U.S. refineries to negotiate exchange agreements with Canadian refineries. The Canadian Cabinet policy has been one of only accepting U.S. produced oil for Canadian oil. U.S. Government policy has been to remove disincentives to commercial exchanges. In this regard, FEA regulations now provide for waiver of the oil import fee when oil is imported from Canada pursuant to an approved exchange. In addition, the Department of Commerce, in conjunction with FEA, has developed standards and procedures for consideration of export applications. Exchanges appear on the surface to be an economic alternative that should prove to be beneficial to both the United States and Canada, because of the lower transportation costs. The amount of crude oil which is available as a result of exchange agreements is uncertain.

Other possible short-term options include the use of unit trains, barges and increased movement of crude oil petroleum products into the area.

IV. Long-Term Options

A. Description of Alternatives

There are a number of long-term supply solutions being proposed for the Northern Tier area. The most important of these are:

1. Trans-Provincial Pipeline

This proposal is for a new port at Kitimat, British Columbia and a new 30-inch, 780-mile pipeline to connect to existing pipelines at Edmonton, Alberta. U.S. refineries would be served through the Interprovincial-Lakehead Pipeline system and the Rangeland and Westspur pipelines which now move Canadian oil to U.S. refineries. Developers claim the pipeline could be initially operational with a capacity of 300,000 barrels per day within 16 to 22 months after the implementation permissions and decisions are finalized. The eventual capacity of the pipeline could be 650,000 barrels per day. The estimated cost of the pipeline as proposed by the sponsors is $418 million. The sponsors are most of the Priority 1 refiners in the Northern Tier and the two major Canadian pipeline companies.

2. Northern Tier Pipeline

This proposal is for a new 40/42-inch, 1,500-mile pipeline from Port Angeles, Washington, to Clearbrook, Minnesota, where it would connect to Minnesota Pipeline and the Lakehead Pipeline. Developers claim the pipeline system could be initially operational with a capacity of 600,000 barrels per day 24 months after the implementation permissions and decisions are finalized. Eventual capacity could be 800,000 - 1,200,000 barrels per day. The capital cost as estimated by the developers is about $868 million. The sponsors are a number of railroads, consulting firms and small oil companies.

3. Williams Pipeline Company

The Williams Pipeline Company, which operates an existing products pipeline system in the upper Midwest, has proposed a phased expansion program. The major expansion

would involve the construction of 500 miles of 24-inch pipeline from Oklahoma to Iowa and additional pumping stations at an estimated cost of $145 million. This pipeline could provide for 350,000 barrels per day capacity for crude oil from Oklahoma to Minneapolis, Minnesota. This expansion could be completed in 12-18 months. The proposed Williams Pipeline proposal could receive oil from existing Gulf Coast pipelines that connect to the proposed SEADOCK deepwater terminal near Freeport, Texas. It could also receive oil from pipelines which would connect to the proposed Sohio-El Paso Pipeline stretching from Long Beach, California, to Midland in West Texas.

4. Other Alternatives

Other long-term alternatives have also been considered. These are LOOP, SEADOCK, Trans-Guatemala, Trans-Panama, and the movement of products into the Northern Tier area from refineries elsewhere in the U.S. None of these other alternatives would provide crude oil directly to the Northern Tier area but would depend upon additional transportation systems to deliver crude oil or petroleum products to the region.

B. Economic Comparison of Proposed Projects

The chief difficulty in analyzing the various alternatives for supplying the Northern Tier area is the non-comparability of the alternatives. For example, the Northern Tier proposal calls for a larger pipeline than is required to supply the six states in the Northern Tier. It would potentially move crude oil to the Great Lakes area and replace oil now being received by Puget Sound refiners from Canadian pipelines and by tanker. This prevents a direct comparison with the Trans-Provincial Pipeline which is based on supplying only the states of Montana, North Dakota, Minnesota, Wisconsin and Michigan. The Williams Pipeline proposal would only supply Minnesota and Wisconsin.

As proposed by the sponsors, the Northern Tier Pipeline would have a tariff from Port Angeles, Washington to Clearbrook, Minnesota of $0.85 per barrel assuming a total project capacity of 1,200,000 B/D into Port Angeles. The Bonner and Moore study conducted for FEA calculates this tariff to be $0.92 per barrel. The sponsors of the Trans-Provincial Pipeline calculate a tariff of $0.66 from Kitimat, British Columbia to Edmonton, Alberta assuming a capacity of 400,000 B/D. The existing tariff from Edmonton to Clearbrook is $0.35 per barrel.

A comparison of the two proposed northern pipeline projects using these tariff calculations would yield the following results for delivery to Clearbrook, Minnesota.

	Northern Tier (1,200,000 B/D)	Trans-Provincial (400,000 B/D)
Additional tanker cost (distance between Kitimat and Port Angeles from Alaska)	$0.14/bbl	
Port Angeles to Clearbrook	$0.85-92/bbl	
Kitimat to Edmonton		$0.66
Edmonton to Clearbrook		$0.35
Total	$0.99-1.06/bbl	$1.01/bbl

These tariff calculations are subject to variation as volumes are adjusted and final engineering specifications are developed. The Trans-Provincial sponsors are presently considering a larger size pipe which would increase its potential capacity. The Northern Tier project might be scaled down if Puget Sound refiners are not served, or if volumes for delivery to the Chicago area are reduced.

C. Economic Comparison of Hypothetical Projects

A direct economic comparison of the two pipeline proposals which would serve the six Northern Tier States has required the use of hypothetical pipeline investments based upon a modification of each project's proposed specifications. When both pipelines are compared (1) on the basis of the same volume of 800,000 B/D at the port and 400,000 B/D to both the interior states of the Northern Tier and Puget Sound refineries, and (2) on similar pipeline investment estimates, the hypothetical Northern Tier pipeline has a tariff to Clearbrook, Minnesota of $1.11 as compared to $0.84 for a hypothetical Trans-Provincial pipeline. In addition, the tanker cost to Kitimat is about $0.14 per barrel less than to Port Angeles. These comparisons indicate the impact of economy of scale and demonstrate the importance of firm commitments for deliveries regardless of which alternative is considered.

D. Environmental Considerations

In comparing the various alternatives for supply oil to the Northern Tier area, it is difficult to differentiate the environmental impact of the alternatives. The report only addresses certain environmental aspects of the proposed projects. Specific environmental impacts will have to be evaluated by the appropriate regulatory bodies during the permitting process. All projects would involve a marine terminal either in British Columbia, Washington, California, Texas or Louisiana. The environmental impact at each terminal site would depend upon existing environmental conditions, adequacy of regulations, and the nature of the resources which might be affected. All of the projects involve the environmental effects of pipeline construction. The Northern Tier proposal would require 1,500 miles of new pipeline construction, some of which would be along railroad right-of-ways. Less disturbance due to pipeline reconstruction would occur with the SOHIO/Williams combination which would primarily utilize converted gas pipelines and existing crude oil pipeline routes. Finally, the level of operations associated with each proposal is subject to variation as related factors such as pricing of Alaskan oil and processing preferences of refiners become known.

A precise assessment of environmental impact will require specific knowledge of exact terminal location and pipeline route, both of which are subject to change as final engineering and permitting occurs.

The key environmental issue associated with the Northern Tier proposal concerns the construction and utilization of an oil receiving port at Port Angeles, as an alternative to current tanker deliveries in the inner Puget Sound. The issue of increased tanker traffic in Puget Sound and the potential for oil spills has been the subject of considerable attention from environmentalists, and the State of Washington. However, it is not clearly established that relocating the present oil receiving port to Port Angeles will result in an overall environmental improvement. In fact, the State of Washington has been opposed to the use of Port Angeles solely as a trans-shipment port for supplying oil to other Northern Tier states.

The environmental impact associated with the Trans-Provincial alternative is uncertain since a full assessment of the marine terminal site has not been undertaken. The

proposed oil terminal at Kitimat will be near a relatively small community which already has an aluminum plant. Selection of Kitimat appears to avoid spawning streams, nursery areas, and food supply. The waters are ice-free throughout the year, very deep, and limited currently to ore boat traffic for the aluminum plant.

Because the Sohio proposal includes the development of a tanker terminal in San Pedro Harbor, it must contend with the problem of an already heavily burdened environment, particularly with respect to hydrocarbon emissions. An environmental impact statement for the Sohio project is being prepared by the Department of the Interior. Draft environmental impact statements for LOOP and SEADOCK have been prepared.

E. Discussion of Inter-Relationship of Projects

A number of inter-relationships exist which can affect the success of any of the proposed business ventures. Chief among these are the obvious competitive market between the Northern Tier proposal and the Trans-Provincial proposal. The Sohio proposal is not considered to be in competition with the other proposals as its main market is not the northern states but the Gulf Coast states. The Williams proposal is mainly a short-term solution which would supplement in the long-term any northern crude oil pipeline route.

The price of Alaskan oil affects the relative economics of West and Gulf Coast alternatives. The higher the price, the more attractive Loop and Seadock become.

The timing for completion of construction projects in connection with crude oil supply alternatives for the Northern Tier is highly important chiefly because of the announced Canadian schedule for export reduction and curtailment. The following table shows the construction time estimates for the major facilities involved. Time estimates for terminal and pipeline are not cumulative, since these should be constructed in parallel. Therefore, the largest figure under either of the columns can be used as time to completion.

CONSTRUCTION TIME ESTIMATES

	TERMINAL & TANK FARMS TIME IN CALENDAR MONTHS	PIPELINE & PUMPING STATIONS TIME IN MONTHS	MILES OF PIPE
Trans-Provincial	18-24	12-18	780
Northern Tier	24-30	24-30	1,500
Sohio	24*	12	200
Williams		12-18	503
SEADOCK	32		
LOOP	34		

* Initial operation could begin in 12 months.

The permitting process can, depending on the alternative being considered, have a major impact on timing since conformity with the requirements of a large number of governmental agencies may be required. Estimation of permitting time is extremely difficult to predict.

Since Canadians appear to favor the Trans-Provincial alternative which will increase the flow through Canadian pipelines, the approval of this alternative may involve the least time delay. Permitting of the Trans-Provincial Pipeline by the Canadian NEB is expected to take 6 to 9 months.

The Northern Tier alternative could require the longest approval time in view of the present court challenge of the Washington State law regulating tanker size into Puget Sound, the possibility of a court challenge of the Port Angeles port site, and the probable need for a Federal Environmental Impact Statement (EIS). The time required for obtaining the necessary permits for the Northern Tier Pipeline proposal are very speculative, but would be at least 1 to 2 years.

The backers of the Sohio proposal have applied for all necessary permits and have agreed to finance the EIS that is being prepared by the Department of the Interior. The final EIS can be finished by early next year, and the decision on the permits will follow.

In summary, the earliest replacement of Canadian crude supply to some of the Northern Tier States would be by the Williams Pipeline extension which could provide 130,000 barrels/day by 1978. This crude would not be Alaskan. The earliest Alaskan crude could be transported into the Northern Tier would be in 1979 or 1980--through the Trans-Provincial pipeline or through the Sohio/Williams combination. The full expansion of the Williams Pipeline to 350,000 B/D, involving new pipeline construction, would be possible in the 1979 time frame. The Northern Tier pipeline route could be available in 1980-81 if permitting is completed in late 1978.

F. Review of Factors Effecting The Various Projects

The primary factors effecting the various alternatives are as follows:

- Trans-Provincial
  - -- Sponsor group includes most of priority 1 Northern Tier refineries who would be shipper/owners. Canadian pipeline companies are also sponsors. Financing would be through participant companies.
  - -- No apparent problems in siting of marine terminal.

-- Utilizes spare capacity in the Interprovincial pipeline and existing pipelines serving Northern Tier refiners.

-- Funding could be held up or stopped by possible action on vertical divestiture.

-- All permitting handled by Canadian NEB. Could be operating in 1979-80 if authoriza tion received by end of 1977.

-- Economic benefits to both Canadians and Americans due to fuller utilization of existing pipelines.

-- Could supply Puget Sound with crude through existing facilities of Trans-Mountain pipeline.

-- Could facilitate operation of exchange agree ments with Canada.

- Northern Tier Pipeline

-- Offers direct supply to all Northern Tier States.

-- Size exceeds needs of Northern Tier area and would require ability to market crude oil in the Great Lakes area in competition with crude oil delivered from the Gulf Coast.

-- Would require large capital investment currently estimated at almost $1 billion.

-- Requires port in Port Angeles area.

-- State of Washington control of tankers traffic is in litigation.

-- Refiners in the Northern Tier States are not announced supporters.

-- Could make use of railroad right-of-ways for a portion of route.

-- Multiple state permits required.

-- Could facilitate exchange agreements with Canada.

- Williams Pipeline

-- Refiners in the Northern Tier are not announced supporters.

-- Provides crude oil only to Minnesota and Wisconsin area refiners.

-- Financing has not been specified.

-- Could be operational before 1979 if action to implement undertaken now and no serious obstacles encountered.

-- Would have modest environmental impact since expansion would be along existing right-of-way.

-- No major permitting action required.

-- Full utilization depends upon ability to deliver additional crude oil to Tulsa area.

-- Could provide access to either Gulf Coast or West Coast sources of crude oil through Sohio-El Paso or SEADOCK proposals.

V. Recommendations

The Federal Energy Administration is encouraged by the various private industry proposals for transportation systems to provide alternate petroleum supplies to the Northern Tier area. In light of the serious supply problem which is expected to exist in the Northern Tier States, FEA feels that it is absolutely imperative that action be taken by the participants to resolve the problem.

Based upon the current proposals now being considered, a long-term solution for providing a supply of petroleum to the Northern Tier States appears to be possible. Environmental and socio-economic impacts appear to be within manageable proportions. A complete assessment of environmental considerations will need to audit final action by appropriate regulatory bodies.

Since the current FEA study analyzing short-term supply alternatives is not scheduled for completion until September, 1976, the FEA cannot presently determine whether any governmental action may be required to assure uninterrupted crude oil and refined product supplies to the Northern Tier.

Industry has indicated a willingness to commit capital to the various alternatives. The ability to actually implement any of the projects will be closely related to success in the permitting and approval process which each faces.

FEA recommends that there be no governmental intervention or governmental aid to effect a long-term solution other than prompt action by Federal, State and local officials responsible for permitting activities.

Crude Exchanges

An obvious method of delivering crude to the Northern Tier is the exchange of crudes between U.S. and Canadian companies. For example, a Canadian company could deliver a Western Canadian crude to a Northern Tier refiner via the Inter-Provincial Pipeline in exchange for an equal volume of U.S. domestic crude or equivalent for delivery to Ontario via the Lakehead Pipeline. Exchanges would be particularly effective as a short-term solution for Northern Tier refiners.

Three applications for crude exchanges have been approved by the NEB. They are for small volumes (less than four MB/CD) and short terms (less than three months, except one which is for one year). The companies involved are:

Koch and B.P. Canada

Ashland and Gulf Canada

Murphy and Gulf Canada

In the longer term, both the U.S. Department of State and the Federal Energy Administration favor exchange agreements for larger volumes and for longer terms.

U.S./Canadian Pipeline Treaty

Negotiating teams of both countries initialed a draft of a new treaty which has two objectives:

1) To assure the nondiscriminatory treatment of hydrocarbons owned by either nation flowing through pipelines of the other;

APPENDIX C:
The Northern Tier Exchanges – DOE

Div of State Energy Supply Transportation
Division

DOE/RA/0042-1
Vol. 1 of 2 Vols.

Petroleum Supply Alternatives For the Northern Tier and Inland States Through the Year 2000

Vol. I Executive Summary and Findings

U.S. DEPARTMENT OF ENERGY
Assistant Secretary For Resource Applications
Energy Supply Transportation Division
Washington, D.C.
October 31, 1979

7. CANADIAN IMPORTS AND EXCHANGES

7. CANADIAN IMPORTS AND EXCHANGES

The United States receives 355 to 395 MB/D of Canadian crude oil through direct imports, exchanges, and historic sales and uncontrolled sales. These transactions play an important role in providing petroleum supplies to the northern tier since in a number of areas they serve as the only supply addition to domestic stocks.

DIRECT IMPORTS

In 1974, the Government of Canada announced plans to reduce and eventually curtail exports of crude oil (then averaging about 800 MB/D) to the United States.

Many U.S. refineries that had used Canadian crude oil found alternative means of supply. Refineries in Illinois, Indiana, and Ohio turned to pipelines from the midwest, southwest, and Gulf coast. Those in the Puget Sound area of Washington turned to tanker deliveries to replace Canadian imports. Some refineries in the northern tier area, however, had no satisfactory alternative sources of crude oil. Consequently, the Federal Energy Administration (FEA) established an allocation program giving these refineries first priority to receive continuing Canadian shipments.

Table 7-1 lists actual Canadian crude exports to the United States for 1971 through 1978 and the anticipated export levels for 1979 through 1982. The anticipated levels are based on Canadian National Energy Board (CNEB) estimates of crude oil supplies and demands in Canada.

The Government of Canada presently exports 55 MB/D of light low-sulfur crude and 85 MB/D of heavier crude to U.S. northern tier refiners. The shipments of light low-sulfur crude will probably end by 1981, according to the Canadian plan to curtail exports. However, because of production constraints and requirements of Canadian oil fields, as well as the lack of alternative markets, some of the light crude (condensate) will probably continue to be exported to U.S. refineries, primarily in Montana. The projected level of condensate exports is projected at 20 MB/D by 1980.

Canadian exports of the heavier crude may vary between 85 MB/D and 150 MB/D. When the demand for heavier products, primarily heating fuel, is the greatest, exports to the northern tier refineries may increase. The export level is determined by the difference between established Canadian production levels and demands for that crude by Canadian refiners.

Table 7-1

ACTUAL (1971-78) AND ANTICIPATED (1979-90) CANADIAN CRUDE OIL EXPORTS TO THE UNITED STATES

(in thousand barrels per day--MB/D)

Year	Receipts
1971	755 Actual[a]
1972	939 Actual[a]
1973	1109 Actual[a]
1974	878 Actual[a]
1975	674 Actual[a]
1976	437 Actual[b]
1977	251 Actual[b]
1978	172 Actual[b]
1979	165 Anticipated[c]
1980	165 Anticipated[c]
1981	165 Anticipated[c]
1982-90	0[c] (85 to 150)[d]

a. U.S. Department of the Interior, Bureau of Mines.
b. U.S. Department of Energy, Economic Regulatory Administration.
c. CNEB, September 1978, pp. 202, 205. Estimates only, may be revised either upward or downward, depending on Canadian domestic demands.
d. Exports of heavy crude will probably continue for several years because Canadian suppliers have no other market. The range reflects seasonal changes in product states.

EXCHANGES

In addition to direct imports from Canada, northern tier refiners also receive significant quantities of Canadian crude through exchanges. These exchanges were developed without formal international agreements; they are the product of commercial practicalities and the long-standing tradition of U.S.-Canadian cooperation.

In a typical exchange, a refinery in Minnesota might order 5 MB/D of West Texas crude sent through midcontinent pipelines to Illinois. Because of transportation deficiencies from Illinois to Minnesota, the oil is shipped east, by prior agreement, in a Canadian pipeline to a Montreal refiner. Simultaneously, the Montreal refiner sends an equal shipment of Canadian crude out of Alberta through the underutilized Interprovincial-Lakehead Pipeline to the Minnesota refinery. DOE coordinates such exchanges to insure that U.S. shipments to Canada do not come from areas experiencing a shortage of crude.

Canadian Exchange Policy

The Government of Canada requires that all exchange crude sent to Canada from the United States must be either domestic oil or foreign oil that has entered the United States and become "nationalized."

The Government of Canada requires the United States to send exchange crude to Canada in two ways. First, the United States may deliver crude oil to Canada at Sarnia, Ontario, or at points further west. U.S. refiners move oil to Sarnia using midcontinent pipelines rather than the Portland (Maine)-to-Montreal pipline. During the first quarter of 1979, Canada and the United States exchanged 7,641,964 barrels of oil (about 84 MB/D); in 1978, total exchanges amounted to 32,751,880 barrels (about 93 MB/D) (U.S. DOC 1978).

The United States may also send U.S.-owned crude oil tankers directly to the Portland (Maine)-to-Montreal pipeline which delivers to eastern Canada. By this method, the United States and Canada currently exchange about 49 MB/D.

Table 7-2 shows total volumes of oil exchanged under U.S.-Canadian agreements.

The extent of Canada's willingness to increase crude exchanges is not known. Early indications are that increased exchanges would

Table 7-2

VOLUME OF U.S.-CANADIAN OIL EXCHANGES[a], 1977 AND 1978

(in barrels per day)

	Priority 1[c]	Priority 2[c]	Total
1977 average	21,861	33,198	55,059
1978			
January	44,304	30,475	74,779
February	50,044	30,794	80,838
March	58,389	25,348	83,737
April	44,089	20,760	64,849
May	52,998	25,928	78,926
June	60,499	36,067	96,566
July	55,704	31,384	87,088
August	64,015	44,650	108,665
September[b]	57,500	37,500	95,000
October[b]	60,500	43,892	104,392
November[b]	65,800	44,440	110,240

a. Preliminary licensed volumes
b. Embassy of Canada.
c. U.S. DOE Mandatory Canadian Allocation Program.

be possible, particularly if they meant greater use of Canada's underutilized pipeline systems. The primary limitation to expansion appears to be physical. Since the midcontinent pipelines are close to capacity, no significant increases in deliveries to Sarnia may be possible unless their throughput capacity is increased.

The factors favoring expansion of exchanges can be summarized as follows:

- Major new pipeline construction would not be necessary.
- Existing pipelines in the United States and Canada could be more fully utilized.
- Future U.S.-Canadian cooperation in energy matters would be encouraged.
- Environmental risks associated with a major new oil port on the Pacific coast could be avoided.

The factors against expansion include the following:

- Continued expansion of the midcontinent pipeline system would be required to make exchange volumes available in eastern Canada.
- Exchanges do not help solve the west coast oversupply problem.
- There has been a lack of Canadian cooperation to meet the petroleum needs of the northern tier States.

Import-Export Licenses

Exchanges of crude with Canada require licenses in both countries. Authority for granting licenses to export crude from the United States is vested in the Department of Commerce (DOC) under provisions of the Export Administration Act of 1969 (50 U.S.C. 2401). DOC issues export licences each calendar quarter to refiners whose applications for exchanges meet certain administrative criteria.

The most important criterion in determining whether an export license will be issued is the availability of other supply alternatives to the refiner applicant. If no other alternative is available to a particular refinery to meet specific operating levels, an exchange license is granted. Typically, licenses are issued to allow exchanges of far more crude from Canada than

actually is used. During the period January to October 1978, licenses for 51,100,000 barrels of exchange crude were authorized, but only 20,378,413 barrels were exchanged.

Import licenses are issued by the Economic Regulatory Administration (ERA), a component of DOE, in accordance with the Federal Energy Guidelines (Section 213.28(b)). These import licenses are valid for 1 year and are limited in total amounts by the export volumes authorized by DOC. Differences in the duration of licenses issued by DOE and DOC have created logistical difficulties for some applicants. An effort is being made to better coordinate this process though the joint official U.S./Canadian consultative group.

Import and export licenses in Canada are issued monthly by the Canadian National Energy Board.

Exchanges of crude with Canada and Mexico are specifically exempted from the general prohibition against exports of petroleum from the United States (Export Administration Act of 1969, Sec. 4, as amended by the Export Administration Act Amendments of 1977, Sec. 110).

SALES

In addition to direct exports and exchanges, smaller quantities of crude and other petroleum products are moving between Canada and the United States through historic sales and uncontrolled sales. Historic sales mainly involve the direct purchase of natural gas liquids (NGLs--propanes and butanes) and possibly other products. These also serve as refinery feedstocks in some instances. The purchases have occurred mainly in the States of Minnesota and Washington. Table 7-3 shows the imports of NGLs in March 1979, the last month for which data are readily available.

As table 7-3 shows, about 118 MB/D of NGLs are imported to the United States from Canada and most (about 80 percent) go to PADD-2 which includes most of the northern tier States.

Uncontrolled sales include such transactions as the purchase of gasoline by private citizens of the fueling of a U.S. jet airliner in Canada. Data are not available on the net effect of these transactions. These sales also serve as additions to the overall supply in the northern tier States.

Table 7-3

U.S. IMPORTS OF NGLs THROUGH SALES IN MARCH 1979
(in thousand barrels)

NGL type	PADD 1	PADD 2	PADD 3	PADD 4	PADD 5	Total
Propane (P)	162	1,639	0	173	48	2,022
Butane (B)	29	1,079	1	0	327	1,436
P/B mix	0	205	0	0	0	205
Total	191	2,923	1	173	375	3,663

SOURCE--U.S. DOE, Supply, Demand and Crude Oil Imports from Foreign Countries by PADD District.

In summary, Canadian exports and exchanges of crude to the United States represent a significant addition to northern tier crude supplies, as follows:

Type of transaction	Amount (MB/D)
Direct imports	
Light crude	55
Heavy crude	85
Exchanges	
Typical	84
New	49
Other	
NGLs	118
Total Canadian imports to U.S.	391

The light crude imports are being totally phased out by November 1979 and heavy crude imports will vary between 85 and 150 MB/D. All other oil supply is expected to continue, although unforeseen changes could occur to alter this pattern. Presently, DOE's best estimate of crude and other supplies being imported to the United States from Canada ranges from 355 to 395 MB/D.

Economics of Exchanges

The previous section described the process and quantity of crude oil exchanges with Canada. During this process, foreign or domestic crudes are delivered to the United States and then delivered to Canada in exchange for Canadian crudes through existing pipeline systems. Table 7-4 lists the costs associated with these movements.

Basically, an Arabian marker crude plus a quantity differential must be delivered to the Lakehead system with transportation differentials and other uncertainties being factored into the price.

Table 7-4

PROJECTED 1985 COST OF U.S./CANADIAN EXCHANGES
(BASED UPON COST OF ARABIAN LIGHT CRUDE)

(in 1980 U.S. dollars per barrel)

Cost Factor	Cost
Delivered price of Arabian light to Chicago	$23.04 - $23.52
Exchange incentive	.+0.22
Transportation to Sarnia from Chicago	+0.9
Price at Sarnia	23.45 - 23.93
Quality differential	+1.04
Delivered price	24.49 - 24.97
Cost to Michigan/Ohio	
Cost at Sarnia	24.49 - 24.97
Cost to New York	
Cost at Sarnia	24.49 - 24.97
Transportation to N.Y.	+.25 +.30
Cost at Buffalo, N.Y.	24.74 - 25.27
Cost to Wisconsin/Northern Minnesota	
Cost at Sarnia	24.49 - 24.97
Less IPL Sarnia to Superior	- 0.16
Cost at Superior, Wisconsin	24.33 - 24.81
Cost to Minneapolis, Minnesota	
Cost at Superior	24.33 - 24.81
Less Superior - Clearbrook	- 0.06
Plus Clearbrook to Minnesota	+ 0.17
Cost at Minneapolis, Minnesota	24.44 - 24.90
Cost to North Dakota	
Cost at Clearbrook	24.27 - 24.74
Less Clearbrook - Cromer	- 0.13
Plus Cromer - Mandan	+ 0.19
Cost at Mandan	24.33 - 24.79
Cost to Montana	
Cost at Cromer	24.14 - 24.60
Less Cromer to Edmonton	- 0.22
Plus Edmonton to Billings	+ 0.62
Cost at Billings	24.54 - 25.10
Cost to Washington	
Cost at Edmonton	23.92 - 24.38
Plus Edmonton to Anacortes	+ 0.44
Cost at Puget Sound	24.36 - 24.82

In summary, the average delivered cost of Canadian crude to U.S. markets in the exchange program for 1985 is projected as follows:

Delivery point	1980 U.S.$/Barrel
Chicago	24.54
Michigan/Ohio	24.73
New York	25.01
Wisconsin/Northern Minnesota	24.57
Lower Minnesota	24.67
North Dakota	24.56
Montana	24.82
Washington	24.59

APPENDIX D:
Temporary Exports to Central America – FEA

National Technical Information Service

PB-255 993

Crude Supply Alternatives for the Northern Tier States Volume II. Technical Report

Bonner and Moore Associates, Inc.

Prepared For
Federal Energy Admin.

July 25, 1976

CRUDE SUPPLY ALTERNATIVES FOR THE NORTHERN TIER STATES

Volume II

Technical Report

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Prepared for the
Federal Energy Administration
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The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies of the U.S. Government.

4.7 TRANS-GUATEMALA CONCEPT

The components of this supply alternative are:

1) A trans-Guatemalan pipeline with deepwater terminals on each coast.

2) A deepwater port at Port Angeles and pipeline to Anacortes to supply Puget Sound and Billings refineries.

3) Expansion of Capline plus a new line from Patoka, Illinois to Pine Bend, Minnesota, and/or other crude movement to Minnesota, Wisconsin, and Michigan.

4) Finished-product supply from other refining sources for North Dakota or long-term crude exchanges with Canadian refiners.

The Central American Pipeline Company (CAPICO) proposes to build deepwater ports and a connnecting pipeline to provide west-to-east crude movement without using the Panama Canal or voyages around Cape Horn. In terms of the Northern Tier crude problem, the CAPICO facilities would be an alternative to the Sohio Proposal.

The project proposes a 42-inch, 227-mile pipeline originating at a point on the Pacific Ocean east of Las Lisas and terminating near San Francisco del Mar on the Guatemalan side of the Gulf of Omoa in the Caribbean. The project would require various pump and booster stations, tank farm storage, and terminal facilities. Initial throughput capacity for the system was designed at 1,200,000 barrels per day, with adaptability to 1,600,000 barrels per day using looping.

The estimated construction period required for the project would be approximately 24 months. Assuming construction is completed by late 1978, engineering projections call for a throughput of 600,000 barrels per day in 1979, 900,000 barrels per day in 1980, and 1,200,000 barrels per day thereafter, or until capacity is increased.

As presented in the following discussion, crude from the Caribbean side of the trans-Guatemala line would be more economically moved by vessels which can land crude directly at existing Gulf Coast refinery docks than by VLCC through LOOP or SEADOCK. In either case, movement of Alaskan crude would require U.S.-commissioned vessels[30]. Even with the assumption that foreign vessels (with lower tariffs) might be authorized as a special exception to the law, the overlapping southern and northern movements plus the tariffs associated with the new facilities result in relatively high cost movement to the Gulf Coast.

This alternative presumes the development and construction of LOOP (in terms of economic assessment), not necessarily as an endorsement of LOOP versus SEADOCK, but solely to reflect the lowest tanker tariff into the Gulf Coast from the Caribbean. In fact, the relatively short haul from Central America might not support the cost of VLCC facilities compared to higher tanker rates for smaller tankers that can load and unload through conventional ports[31].

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[30] Title 46 of the Federal Code.

[31] The LOOP tariff, assumed at 31¢ per barrel, is equal to $2.22 per long ton; thus, VLCCs must save $2.22 per long ton over costs via smaller tankers.

Crude landed via LOOP (see subsection 4.9) would be moved north through an expanded Capline system to Patoka, Illinois. From there it could be moved to Chicago and Lima, Ohio and on into Michigan.

From Patoka, a new line would be required to serve the Minneapolis-St. Paul (and Wrenshall plus Superior) refineries. Although not currently being pursued, Williams Pipeline Company has reviewed the ROW and studied the installation of such a line.

The other parts of this alternative (items 2 through 4 above) have been described in the previous section. Their role in this alternative would be the same as in the other alternatives.

Construction activities in Central American countries have not (apparently) been restricted by environmental considerations, and it is presumed that Guatemala would be no exception.

Because this alternative does not supply the states of Washington, Montana, or North Dakota directly, a deepwater port at Port Angeles and a pipeline to Anacortes and to Billings would be required. Although North Dakota might be supplied by an additional line, product import appears to be more economical in the long run.

4.7.1 Investments, Tariffs, and Crude Costs - Trans-Guatemala

Table 54 summarizes the investment estimates for the components of this alternative.

Table 55 presents the cost of crude delivered to the major refining centers of each state via this alternative.

Figure 4-5 presents a tariff diagram for this alternative.

TABLE 54

INVESTMENT COSTS

TRANS-GUATEMALA

	MB/CD	MM$
PORT & TANK FARMS		
Latin American (Pacific & Caribbean)	1,200	507.0[1]
Port Angeles	420	78.0[2]
CRUDE PIPELINES		
Port Angeles - North Bend	420	70.0[2]
North Bend - Anacortes	350	37.1[2]
North Bend - Billings	70	95.0[2]
Trans-Latin America	1,200	135.0[1]
Expanded Capline	350	250.0[2]
Patoka - Pine Bend	248	151.0[2]
Buckeye - Tecumseh Exp.	70	50.0[2]

[1] Estimates supplied by CAPICO, The Central American Pipeline Company, were prepared by J. G. Mackin and Associates, Houston, Texas.

[2] Estimates based on Appendix B procedure and Fluor Ocean Services for marine terminal and pipeline expansion costs.

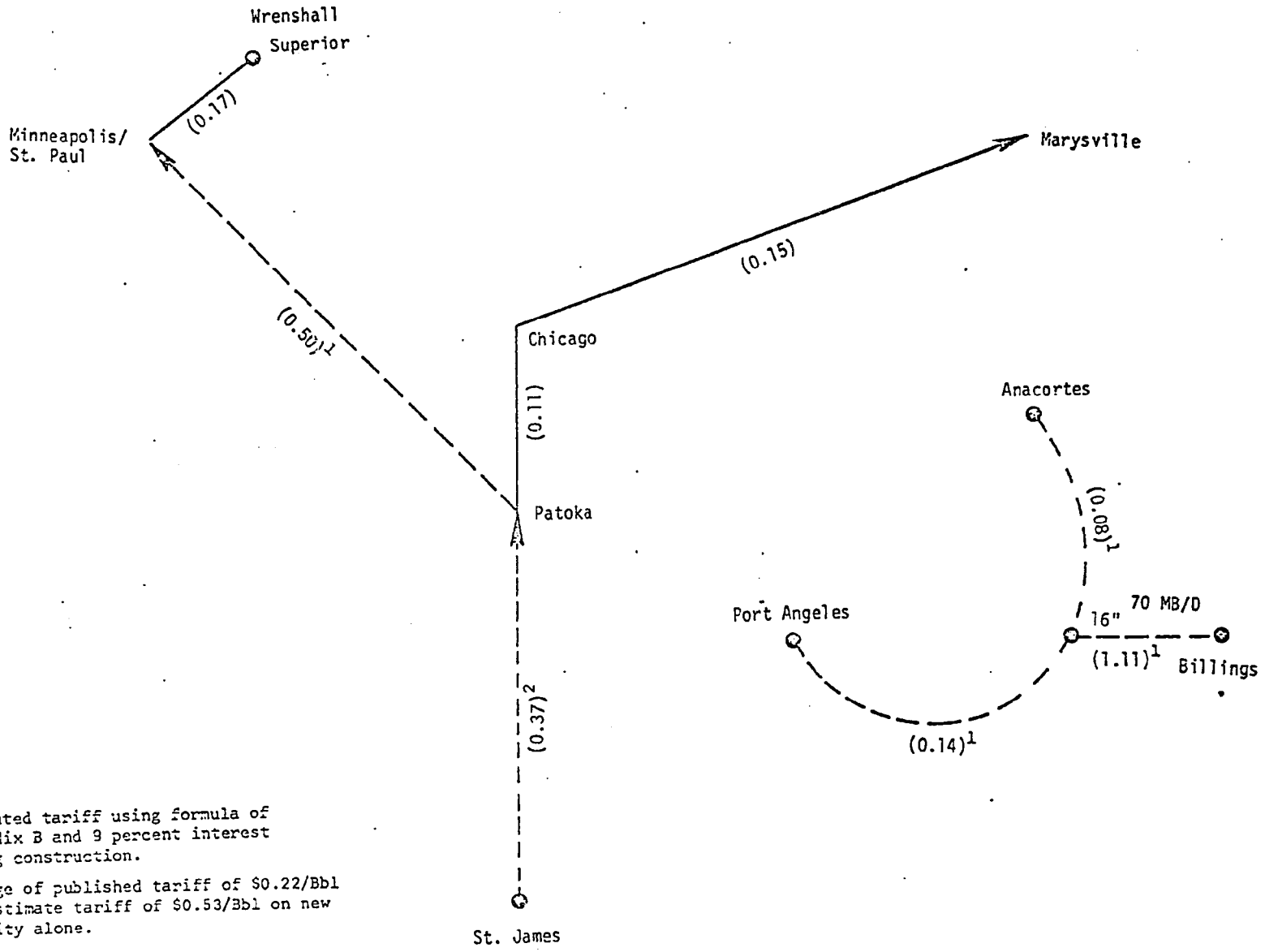
TABLE 55

DELIVERED CRUDE COSTS

TRANS-GUATEMALA[1]

	$/BBL	
	ALASKAN N.S.	INDONESIAN
Superior Wisconsin	15.26	15.62
Minneapolis Minnesota	15.09	15.45
Marysville Michigan	15.12	15.48

[1]Costs not shown here are the same as those for LOOP, Table 59.



[1]Estimated tariff using formula of Appendix B and 9 percent interest during construction.

[2]Average of published tariff of $0.22/Bbl and estimate tariff of $0.53/Bbl on new capacity alone.

Figure 4-5. Tariff Diagram for Trans-Guatemala Alternative

4.8 TRANS-PANAMA CONCEPT

The parts of this supply alternative are:

1) A trans-Panama pipeline with deepwater terminals on each coast,

2) A deepwater port at Port Angeles, a pipeline to Anacortes to supply Puget Sound refineries, and a line to Billings to supply Montana refineries,

3) Expansion of Capline plus a new line from Patoka, Illinois to Pine Bend, Minnesota, and/or other crude movement to Minnesota, Wisconsin, and Michigan, and

4) Finished product supply from other refining sources for North Dakota or long-term crude exchanges with Canadian refiners.

It has been suggested that unused and used existing military product pipelines cross the Isthmus of Panama, within the Canal Zone, could move Alaskan Crude into the Caribbean. The two lines currently operational are 20 and 10 inches in diameter, and are capable of carrying 170,000 barrels per day from the Pacific to the Caribbean. Two inactive lines of 20 inches and 12 inches are presumably capable of handling volumes in the order of 190,000 barrels per day. Twenty-eight small storage tanks on the Pacific side have a total volume of 877,000 barrels, and twenty-six small storage tanks on the Caribbean side have a volume of 925,000 barrels. Present vessel moorings are reportedly sized for small tankers; the moorings are in sheltered waters. On the Pacific side, siltation has reduced the allowable draft to a reported 31 feet. The docks are reportedly in poor repair.

Although it is conceivable that these facilities could be utilized for crude oil transfers--following perhaps a million dollars in dredging and some dock maintenance--the capabilities would be limited to vessels in the range of 60,000 DWT capable of single liftings of about 400,000 barrels. For efficient utilization of these vessels, discharge rates of 20,000 barrels per hour and 500,000-barrel storage tanks would be needed. This would require revamping all facilities.

A more practical arrangement to utilize the Canal Zone would be to construct a trans-Isthmus pipeline system which would include:

- 38 miles of overland pipeline
- 21 miles of submarine pipeline
- 4 single-point mooring buoys
- 3,000,000 barrels of storage
- 2 pump stations

Such a system would be sized for vessels up to 200,000 DWT which would be capable of lifting about 1,400,000 barrels. Capacity would be in the range of 1,000,000 barrels per day. Maximum annual throughput would be in the order of 350,000,000 barrels as limited by tanker arrival patterns.

As discussed in the previous section, crude from the Caribbean side of the trans-Panama line might be moved more economically by vessels which can land crude directly at existing refinery docks than by VLCC through LOOP or SEADOCK. In any

case, movement of Alaskan crude would require U.S.-commissioned vessels[32]. Even with the assumption that foreign vessels (with lower tariffs) might be authorized as a special exception to the law, the overlapping southern and northern movements plus the tariffs associated with the new facilities result in relatively high cost movement to the Gulf Coast.

The other parts of this alternative (items 2 through 4 above) have been described in the previous two sections. Their role in this alternative would be the same as in this alternative.

Construction activities in other Central American countries have not (apparently) been restricted by environmental considerations, and it is presumed that Panama would be no exception.

Because this alternative does not supply the states of Washington, Montana, or North Dakota directly, a deepwater port at Port Angeles and pipelines to Anacortes and to Billings are included. Although North Dakota might be supplied by an additional line, product import appears to be more economical in the long run.

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[32]Title 46 of the Federal Code.

4.8.1 Investments, Tariffs, and Crude Costs - Trans-Panama

Table 56 summarizes the investment estimates for the components of this alternative.

Table 57 presents the cost of crude delivered to the major refining centers of each state via this alternative.

The tariff diagram shown for Trans-Guatemala, Figure 4-5, is the same as for this alternative.

TABLE 56

INVESTMENT COSTS

TRANS-PANAMA

	MB/CD	MM$ [1]
PORT & TANK FARMS		
Latin American (Pacific & Caribbean)	1,000	87.0
Port Angeles	500	78.0
CRUDE PIPELINES		
Port Angeles - North Bend	420	70.0
North Bend - Anacortes	350	37.1
North Bend - Billings	70	95.0
Trans Latin American	800	13.0
Expanded Capline	350	250.0
Patoka - Pine Bend	248	151.0
Buckeye - Tecumseh Exp.	47	50.0

[1] Estimates based on Appendix B procedure and Fluor Ocean Services for marine terminal and pipeline expansion costs.

TABLE 57

DELIVERED CRUDE COSTS

TRANS-PANAMA[1]

	$/BBL	
	ALASKAN N.S.	INDONESIAN
Superior Wisconsin	15.09	15.44
Minneapolis Minnesota	14.92	15.27
Marysville Michigan	14.95	15.30

[1]Costs not shown here are the same as those for LOOP, Table 59.

APPENDIX E:
Temporary Exports to Central America – DOE

DOE/RA/0042-2
Vol. 2 of 2 Vols

Petroleum Supply Alternatives For the Northern Tier and Inland States Through the Year 2000

Vol. II Appendices

U.S. DEPARTMENT OF ENERGY

Assistant Secretary For Resource Applications
Energy Supply Transportation Division
Washington, D.C.
October 31, 1979

A 42-inch line would extend about 90 miles from the inland storage terminal site to Beaumont, California. There it would connect to a 30-inch natural gas pipeline now owned and operated by Southern California Gas Company, a subsidiary of Pacific Lighting Corporation. An additional 42-inch line would be constructed from Blythe, California, to Ehrenberg, Arizona. At Ehrenberg, the system would connect to a 30-inch, 670-mile natural gas pipeline (owned by the El Paso Natural Gas Company) extending to Jal, New Mexico.

From Jal, New Mexico, approximately 200 miles of a new 42-inch line would extend to Midland, Texas, where new terminal storage facilities would be constructed. The Midland terminal facility would contain four 500,000-barrel storage tanks along with metering and pumping equipment to deliver crude oil to interconnecting pipelines for distribution to the southwest, midwest, and/or Gulf coast. Present overall pipeline capacity for crude oil moving out of the Midland, Texas, area is approximately 2 MMB/D.

Although these systems are currently operating at or near capacity, projected declines in Permian Basin crude oil production suggest that existing crude oil pipeline capacity could handle the projected input from the PACTEX system. Some expansion of existing southwest and midcontinent crude pipelines may be necessary. The refinery centers that would receive crude transported by the PACTEX pipeline include the eastern New Mexico-west Texas region, the Gulf coast, and the midwest.

Project Status

Delays in obtaining the State of California Air Quality Permit, required by the California South Coast Air Quality Management District (SCAQMD), resulted in the cancellation of this project by SOHIO in March 1979. According to SOHIO, costs incurred since 1976 in obtaining necessary State and Federal permits and the impasses experienced in obtaining air quality permits made the project economically unattractive. Because the project is considered inactive, no cost analysis is given in this report.

TRANS-GUATEMALA PIPELINE PROJECT

The Central American Pipeline Company (CAPICO) proposes extending a 227-mile, 48-inch crude oil pipeline across Guatemala to facilitate the flow of crude oil from Indonesia, South America, and Alaska to

the U.S. Gulf and east coasts.* Alaskan crude oil is expected to comprise 60 to 75 percent of the throughput, Indonesian crude oil would comprise 15 to 25 percent, and South American crude oil would comprise 10 to 15 percent.

Physical Components

The CAPICO pipeline would extend north from the Las Lisas, Guatemala, area on the Pacific coast and follow the western boundary of Guatemala to San Francisco del Mar on the Caribbean Gulf of Omoa (figure I-2). The line would have an initial capacity of 1.2 MMB/D, which could be expanded to 1.5 MMB/D by adding an additional pumping station. The system would include two deep-water ports, pump and booster stations, and storage facilities. The facilities at the port of Las Lisas would include 14 million barrels of crude oil storage and pumping facilities for moving the crude oil to an elevation of 3,200 feet. Gravity flow would then move the crude oil the remaining 197 miles to the 17.5-million-barrel storage facilities at San Francisco del Mar.

ANS crude oil would be moved by a fleet of U.S. supertankers from Valdez, Alaska, to the new supertanker port and tank farm on Guatemala's Pacific coast. To preserve the "domestic integrity" of the U.S. crude oil, DOE proposes that both ports and the pipeline right-of-way be declared an international free trade zone under a 40-year lease agreement with Guatemala. The oil would be reloaded into U.S. tankers for delivery to U.S. Gulf and east coast refineries at the northern end of the pipeline.

Cost Analysis

Table I-1 presents estimates by CAPICO and A.D. Little of the capital investment and annual operating expense required for the proposed CAPICO system.

*Although this project has been altered to call for 48-inch pipe, CAPICO based its cost figures and design capacity on the 42-inch pipe originally specified. This analysis assumes the use of 42-inch pipe. At the same pipeline design pressure, 48-inch pipe would require approximately 30 percent more steel by weight than would 42-inch pipe.

Figure I-2. **Trans-Guatemala Pipeline Proposal**

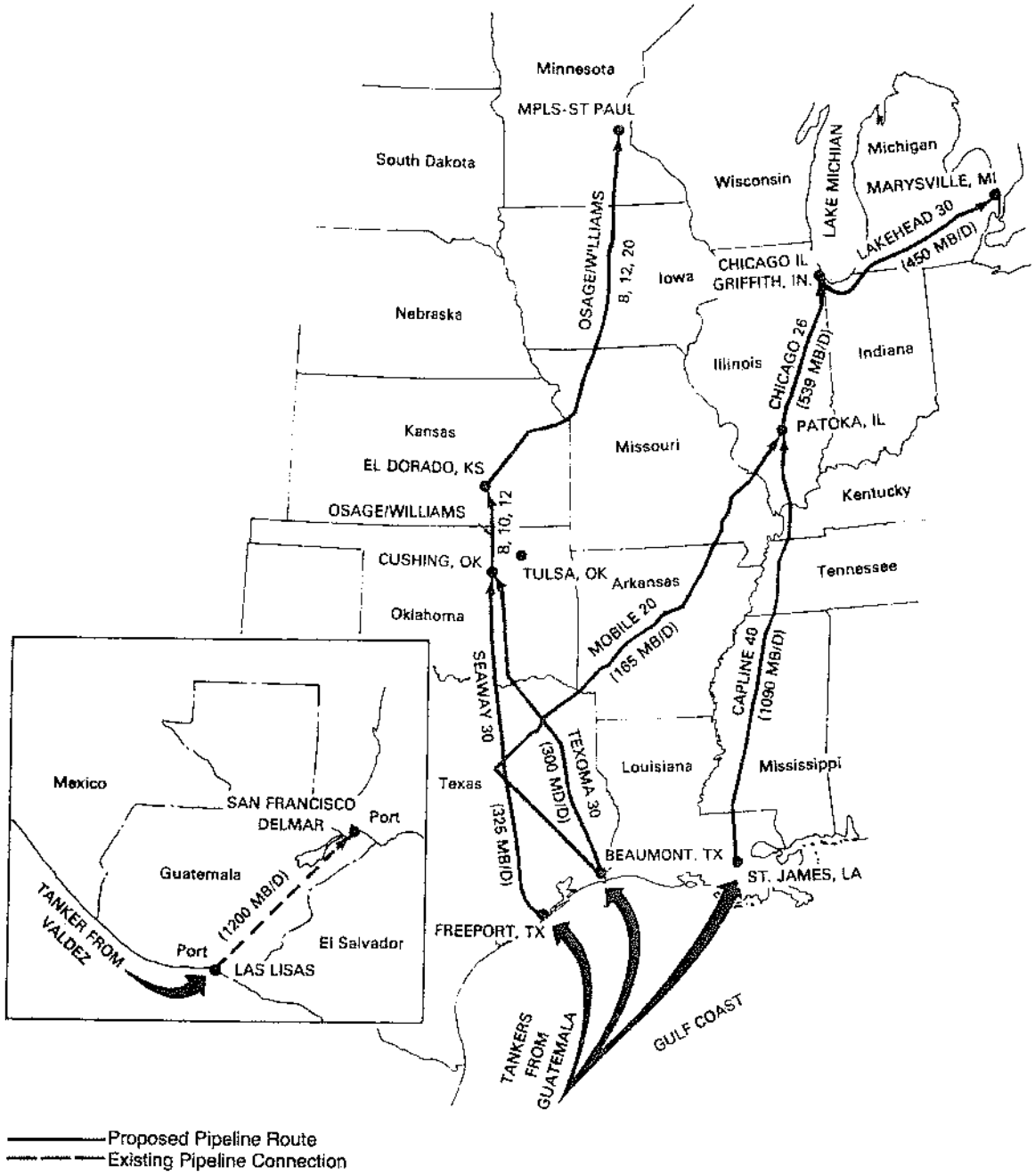


Table I-1

A. D. LITTLE AND CAPICO ESTIMATES: CAPITAL INVESTMENT AND ANNUAL OPERATING EXPENSES[a] FOR TRANS-GUATEMALA PIPELINE PROJECT

(in thousands of U.S. dollars[b])

Item	Estimates by A. D. Little	Estimates by CAPICO
Capital investment		
Pacific terminal and storage	$126,630	$138,051
Pipeline	237,107	182,626
Pump stations	52,152	48,464
Caribbean terminal and storage	223,130	220,859
Subtotal	639,019	590,000
Interest during construction	77,910	--
Total	716,929	590,000
Annual operating expense		
Terminals	13,740	d
Pipeline system	25,263	d
Subtotal	39,003	33,100
Land lease fees	c	21,900
Total	39,003	55,000

a. A. D. Little, 1977.
b. A. D. Little, 1976 U.S. dollars. CAPICO, year not stated.
c. See text for explanation of differences between A. D. Little and CAPICO assumptions.
d. Figure not given.

CAPICO's capital investment figure is lower, mainly because A. D. Little included almost $78 million for interest during construction. CAPICO states that, under multinational export credit guarantee financing, no interest payment during construction is contemplated. On the other hand, CAPICO's estimate of annual operating expense is higher than Little's, owing to the inclusion of almost $22 million for land lease fees to be paid to the Guatemalan Government. In keeping with its philosophy of comparing projects on a common basis, A.D. Little made certain assumptions that would not necessarily apply to a pipeline system being built in a foreign country.

A. D. Little estimated a tariff rate for the CAPICO system of $0.68 per barrel in 1981, assumed to be the first operating year. The Little report stated that the ICC method was used to arrive at this rate. It explained the assumptions used, but did not present details of the calculation.

CAPICO's presentation shows an estimated tariff rate of $0.45 per barrel, with no explanation given of the methodology or year of reference.

Table I-2 shows DOE's estimate of the annual revenue requirement and the tariff rate for the CAPICO system, using the same FPC cost-of-service approach employed in the cost analyses of the other crude oil transportation systems studied. Although this methodology may not be wholly applicable to a system in a foreign country, it offers a useful reference for comparing alternative systems.

DOE's calculations in table I-2 use both A. D. Little and CAPICO figures. The annual volume of crude oil delivered through the system is based on 1.2 MMB/D with 100 percent load factor operation. Deliveries at less than 100 percent load factor would require a higher tariff rate.

Although A. D. Little's practice of evaluating the transportation systems on a common basis is sound, this approach may impose unrealistic assumptions regarding a system to be built in a foreign country. Furthermore, the DOE-estimated costs of the various transportation systems are in 1977 dollars, whereas A. D. Little's estimated tariff rate of $0.68 per barrel reflects escalation of costs to the year 1981. The DOE cost-of-service calculation (table I-2) produced tariff figures even lower than CAPICO's. DOE therefore used CAPICO's estimate of $0.45 per barrel for the estimated tariff rate in 1977 dollars.

Table I-2

DOE ESTIMATES: ANNUAL COST OF SERVICE AND TARIFF RATE FOR TRANS-GUATEMALA PIPELINE PROJECT

(in thousands of 1977 U.S. dollars)

Item	Based on figures of A. D. Little	Based on figures of CAPICO
Capital investment (table I-1)	$716,929	$590,000
Working capital (1/8 of operating expense)	4,875	6,875
Initial rate base	721,804	596,875
Depreciation (4%)	28,872	23,875
Average first year rate base	707,368	584,938
Debt component (75%)	530,526	438,703
Equity component (25%)	176,842	146,235
Cost of service		
Depreciation (above)	28,872	23,875
Operating expense (table I-1)	39,003	55,000
Debt expense (9%)	47,747	39,483
Return on equity (15%)	26,526	21,935
Income tax (48% of return before tax)	28,486	20,248
Total	170,634	160,541
Daily delivery volume (bbl/D)	1,200,000	1,200,000
Annual delivery volume (MB/D)	438,000	438,000
Estimated tariff rate (dol/bbl)	0.38	0.37

Table I-3 shows the costs of moving ANS crude oil by tanker from Valdez, Alaska, to Guatemala and from Guatemala to Houston, Texas, as estimated by both A. D. Little and CAPICO.

Because CAPICO provides no documentation for its figures and the A. D. Little report gives great detail on its methodology. DOE considers the A. D. Little cost figures to be better estimates and has used them in this analysis.

Table I-4 shows the cost of transporting ANS crude oil from Prudhoe Bay, Alaska, to Houston, Texas, via the proposed CAPICO system. As in the cost analyses of the other proposals, DOE used $4.70 per barrel as the 1977 Alaskan pipeline tariff.

For this cost analysis, DOE assumed sufficient capacity in existing crude oil pipelines to move the oil from Houston, Texas, to refinery centers to the north and east. Tariff rates for existing pipelines for the year 1977 were obtained from the crude oil pipeline tariff files of the Federal Energy Regulatory Commission (FERC). If a rate changed during the year, the average of the rates at the beginning and end of 1977 was used. When more than one rate was listed to a particular destination, DOE analysts used the average of the listed rates.

Table I-3

A. D. LITTLE AND CAPICO ESTIMATES: COST OF SHIPPING ANS CRUDE OIL BY TANKER--FROM VALDEZ, ALASKA, TO LISAS, GUATEMALA, AND FROM GULF COAST OF GUATEMALA TO HOUSTON, TEXAS

Shipment	Valdez-Guatemala		Guatemala-Houston	
	A. D. Little	CAPICO	A. D. Little	CAPICO
Reference year	1977	Not stated	1977	Not stated
Tanker size (dwt)	225,000	165,000	60,000	90,000
Cost (dol/bbl[a])	$0.87	$0.93	$0.67	$0.45

a. A. D. Little, 1976 U.S. dollars. CAPICO, year not stated.

Table I-4

DOE ESTIMATE: TRANSPORTATION COSTS FOR CRUDE MOVED BY TANKER AND TRANS-GUATEMALA PIPELINE FROM PRUDHOE BAY, ALASKA, TO HOUSTON, TEXAS

(in 1977 U.S. dollars)

Item	Cost per barrel
Alaskan pipeline tariff	$4.70
Shipment from Valdez to Guatemala (225,000-dwt tankers)	0.87
CAPICO tariff	0.45
Shipment from Guatemala to Houston (60,000 dwt tankers)	0.67
Total to Houston	6.69

Table I-5 shows transportation costs from Houston, Texas, to selected refinery areas, along with the total cost of transportation from Prudhoe Bay to those refinery areas via the proposed CAPICO system.

Table I-5

DOE ESTIMATE: TOTAL TRANSPORTATION COSTS FOR CRUDE MOVED BY TANKER AND TRANS-GUATEMALA PIPELINE FROM PRUDHOE BAY TO SELECTED U.S. REFINERY AREAS

(in 1977 U.S. dollars)

Refinery area	Cost per barrel: Prudhoe Bay to Houston	Cost per barrel: Through existing pipelines	Total
Minneapolis, Minn.	$6.69	$1.08	$7.77
Wrenshall, Minn.	6.69	1.25	7.94
Superior, Wis.	6.69	1.25	7.94
Chicago, Ill.	6.69	0.56	7.25
Whiting, Ind.	6.69	0.56	7.25
Detroit, Mich.	6.69	0.71	7.40
Toledo, Ohio	6.69	0.68	7.37
Tonawanda, N.Y.	6.69	0.82	7.51
Warren, Pa.	6.69	1.03	7.72

Project Status

The proposed pipeline system would be owned and operated by Intermares, S.A. (a Guatemalan subsidiary of CAPICO, owned 55 percent by CAPICO and 45 percent by Guatemalan interests).

The President of Guatemala and his National Economic Council have approved the project and agreed to terms with the Ministers of Economy. The necessary approvals by the new Guatemalan Administration and sanction by the new Guatemalan Congress are likely to be given.

The Guatemalan Government has reached a tentative agreement with CAPICO for construction of the pipeline and harbor facilities. Signing of the final agreement is expected soon. The agreement provides that Intermares S.A., will build and operate the project at no cost to Guatemala--which would acquire ownership of the harbors--and that Intermares will pay right-of-way fees for 40 years.

J.G. Mackin & Associates of Houston, Texas, was hired to serve as managing engineers for CAPICO and Intermares, S.A. The Mackin Company sees no major obstacles to the project, since Guatemala can expect substantial revenues from it and the project could provide an added incentive for developing Guatemala's own oil reserves.

Project construction should begin in 18 months and take about 24 months to complete, once permits and financing have been obtained.

PANAMA TRANSSHIPMENT TERMINAL PROJECT

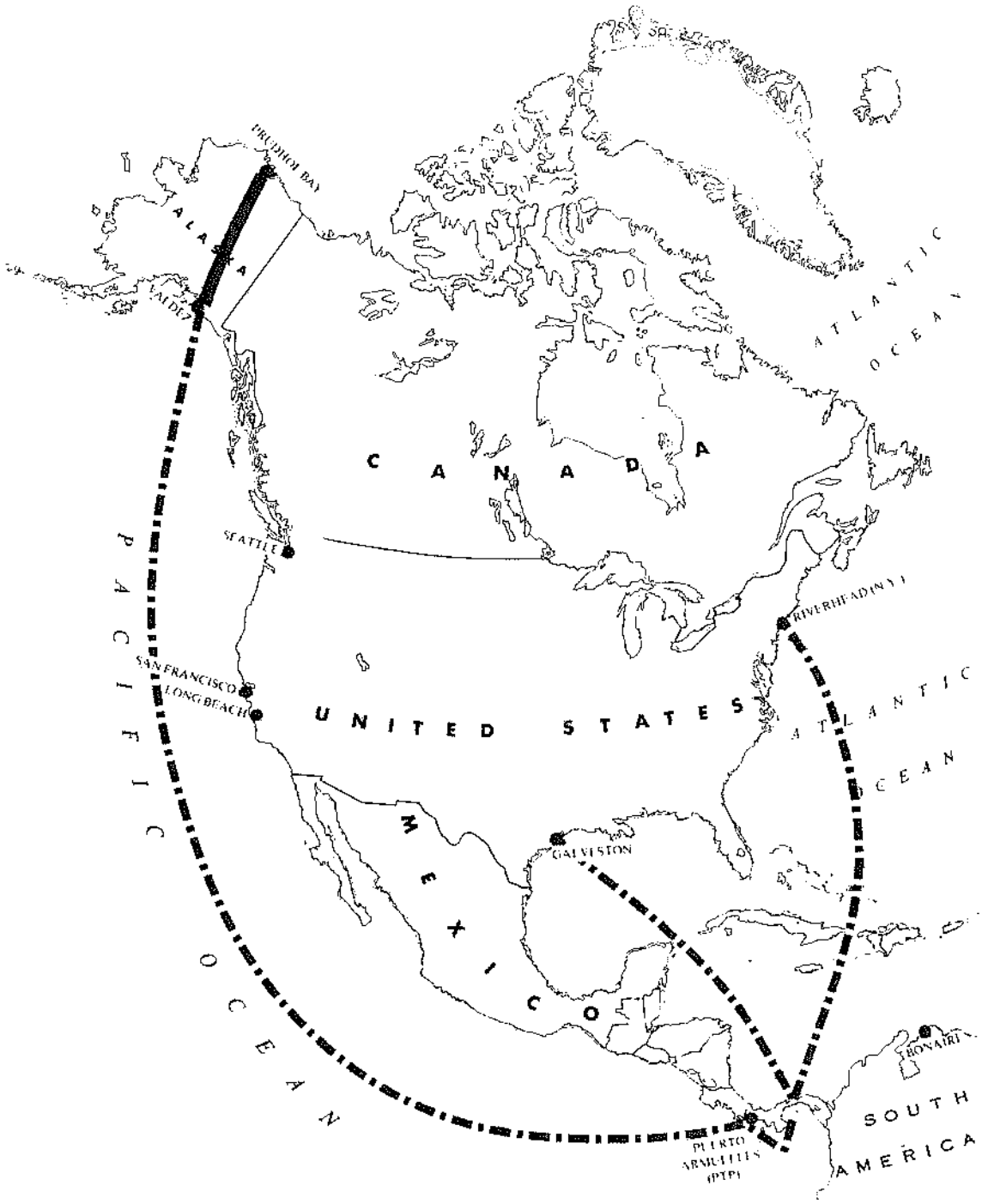
Petroterminal de Panama, S.A. (PTP), a Panamanian corporation, is constructing a crude oil transshipment terminal on the west coast of Panama to handle ANS crude oil shipments to Gulf ports (figure I-3). The size of the Panama Canal locks--about 1,000 feet long and 110 feet wide--places a limit of 65,000 dwt on vessels using them. Because of the cost savings from using much larger tankers to ship crude oil over long distances, most of the oil destined for the Gulf of Mexico is carried to Panama in vessels too large for the Canal.

Presently, virtually all of this crude oil is being shipped through the Panama Canal to U.S. ports via temporary transfer operations. Two Very Large Crude Carriers (VLCCs), anchored off the west coast of Panama, serve as floating storage and transferral facilities for moving Alaskan crude oil to smaller carriers capable of passing through the Canal. A permanent onshore PTP transshipment terminal is being constructed to replace the two VLCCs. This onshore facility, which will not be subject to the operational delays and environmental dangers inherent in ship-to-ship transfer, will speed crude oil transfers and reduce handling costs. Its storage facilities will enable PTP to overcome temporary supply gaps caused by interruptions in the Alaskan pipeline or weather problems in Valdez, Alaska.

Physical Components

The PTP transshipment terminal will be located near the town of Puerto Armuelles, Panama, about 300 miles from the Pacific entrance

Figure I-3. **Panama Transshipment Terminal Project**



to the Panama Canal. The terminal will have an initial throughput capacity of about 425 MB/D and will include two ship berths, 2.5 million barrels of storage, and complete ballast treatment/oil recovery systems. The terminal can be expanded to as much as 900 MB/D capacity by adding another ship berth and more storage capacity.

Cost Analysis

The PTP project is unique among the projects evaluated in this report. First, it is actually under construction and is expected to be operational in 1979. Second, the new facilities and associated capital investment required are minimal compared with those of the other projects. The sponsor estimated a total capital expenditure of $47.5 million, and latest reports indicate the actual figure probably will not exceed $50 million. Finally, the PTP project sponsors do not claim that their system is superior to, or even competitive with, the major U.S. pipeline proposals, such as the proposed PACTEX and Northern Tier Pipeline systems. The Panama transshipment terminal represents a real, almost immediate improvement over the present means of shipping ANS crude oil through the Panama Canal.

DOE therefore believes a definitive cost analysis of the PTP project is unnecessary. An analysis is, in fact, not possible, given the limited information made available by the sponsor.

Without going into the total transportation cost from Valdez, Alaska, to the Gulf coast, PTP asserts that about $0.15 to $0.20 per barrel will be saved using its transshipment system compared to the lightering operation now in use. The sponsor states that the present cost of transferral is about $0.15 per barrel, which is comparable to the anticipated PTP transshipment terminal cost. PTP points out that demurrage costs associated with the lightering operation have equaled or exceeded the $0.15 per barrel lightering cost. Weather delays and operational disadvantages cause the added demurrage cost, which would not occur with the PTP project.

Passage of ANS crude oil through the Panama Canal began in September 1977. According to Alaska royalty reports, SOHIO's initial cost of transporting oil from Valdez to the Gulf coast was $3.83 per barrel. During the last quarter of 1977, the cost was down to approximately $3.32 per barrel, and recent reports indicate a current cost of about $3.00 per barrel. The decrease in cost is apparently due to the use of larger ships, establishment of a more efficient lightering operation, or both. For comparative purposes, shipment from Valdez to the Gulf coast via PTP transshipment is

estimated to cost $2.85 per barrel (PTP's estimated $0.15 saving deducted from SOHIO's current $3.00 cost). Although the PTP system offers a small improvement over the current transferral operation, its estimated cost per barrel exceeds that of any other pipeline or marine transportation proposal.

The $2.85 per barrel cost for the PTP project, although a realistic estimate, may not be directly comparable to the cost estimates for some other proposals analyzed in this study. Marine transportation costs for the other projects are based on 1977 estimates whereas the PTP cost is based on current marine shipment costs.

In the case of the CAPICO Trans-Guatemala Pipeline, for example, DOE used marine voyage costs from the A.D. Little report. A.D. Little based its estimates on an ideal situation in which the largest possible tankers are used, regardless of actual availability. Thus, their estimates are probably understated. As the actual mix of tankers currently employed by SOHIO is not as cost efficient as A.D. Little's assumed fleet, the difference between the PTP ($2.85) and CAPICO ($1.99) costs is greater than if they were compared on the same basis. Nevertheless, it appears that the transportation cost of the PTP system would be more than that of CAPICO, owing to the greater marine distances involved.

The total costs of transporting ANS crude oil from Prudhoe Bay to various refining areas via the PTP transshipment terminal are given in table I-6. As in the other cost analyses, DOE used $4.70 per barrel as the Alaskan pipeline tariff. Houston, Texas, is assumed to be the receiving Gulf coast port. Tariff rates for existing pipelines from Houston to the refining areas were obtained from FERC files and are the same figures used for the CAPICO cost analysis.

Project Sponsors

The onshore transshipment facility will be owned and operated by Petroterminal de Panama, S.A., a Panamanian corporation whose principal owners are Northville Industries Corporation, a New York marketing and terminaling company, and Corporacion Financier Nacional, an economic arm of the Republic of Panama. The terminal will speed shipment of ANS crude oil to refineries on the U.S. Gulf and Atlantic coasts and in Puerto Rico and the Virgin Islands.

Table I-6

DOE ESTIMATE: TOTAL TRANSPORTATION COST FOR CRUDE MOVED BY TANKER FROM PRUDHOE BAY, VIA PANAMA TRANSSHIPMENT TERMINAL TO SELECTED U.S. REFINERY AREAS

(in 1977 U.S. dollars)

Refinery area	Cost per barrel			
	Prudhoe Bay to Valdez	Valdez to Houston	Through existing pipelines	Total
Minneapolis, Minn.	$4.70	$2.85	$1.08	$8.63
Wrenshall, Minn.	4.70	2.85	1.25	8.80
Superior, Wis.	4.70	2.85	1.25	8.80
Chicago, Ill.	4.70	2.85	0.56	8.11
Whiting, Ind.	4.70	2.85	0.56	8.11
Detroit, Mich.	4.70	2.85	0.71	8.26
Toledo, Ohio	4.70	2.85	0.68	8.23
Tonawanda, N.Y.	4.70	2.85	0.82	8.37
Warren, Pa.	4.70	2.85	1.03	8.58

Potential Advantages (According to Sponsors)

Sponsors of the Panama Transshipment Terminal cite the following advantages:

- It will save producers of ANS crude oil $0.15 to $0.20 per barrel over present transferral costs.
- It will reduce discharge and loading time by up to one-third, thereby enhancing the ability of U.S. flag ships to handle surplus ANS crude.
- It will speed shipment of ANS crude to refineries on the U.S. Gulf and Atlantic coasts and in Puerto Rico and the Virgin Islands.

- It will encourage expansion of ANS production by facilitating the flow of crude oil from Valdez, Alaska, to U.S. markets.

- It will meet the congressional mandate that the benefits of ANS production be equitably shared by all regions of the country.

- It will avoid interruption of crude oil flow by making transferral available in the event of a temporary terminal breakdown or overload.

ARCO (FOUR CORNERS) PIPELINE

Four Corners Pipeline Co. operates a system that gathers crude oil in the Bisti, New Mexico, and Aneth, Utah, areas. Smaller gathering lines feed into a 12-inch pipeline running from Bisti to Red Mesa, Utah, and a 16-inch line that runs from Aneth to Red Mesa. Another 16-inch line runs from Red Mesa to the Long Beach area in California (figure I-4).

This system was constructed in 1957 by Shell Pipeline Company, acting as agent for Four Corners Pipeline Company, which was owned through stock participation by Richfield Oil Corporation (later Atlantic Richfield Company), Shell Oil Company, Gulf Oil Corporation, Southern California Gas (SOCAL), Continental, and Superior Oil Company. Shell Pipeline Company operated the system, which at one time had a capacity of about 90 MB/D.

Shortly after the other stock owners sold their interest to Atlantic Richfield Company in September 1976, Shell ceased to be the operator. At that time, the system was moving about 3.5 MB/D from the Four Corners area to California with a capacity of about 40 MB/D. Originally, there were pump stations at Aneth and Red Mesa, Utah, Cameron, Arizona,and Twenty-Nine Palms, California, with pressure reducing stations at Kingman, Arizona, and Corona, California. When the system was sold in 1976, only the Red Mesa pump station was operational on the line to California.

Physical Components

Atlantic Richfield Company (ARCO) spent approximately $12 million to convert and reverse the Four Corners system to pump California

APPENDIX F:
The Japan Proposal(s) – DOI

AN ANALYSIS

OF THE

ECONOMIC AND SECURITY

ASPECTS OF THE

TRANS - ALASKA PIPELINE

VOLUME 1 - SUMMARY

Office of Economic Analysis
Office of the Assistant Secretary - Program Policy
United States Department of the Interior
Washington, D. C. 20240

December 1971

An Analysis of the Economic and Security Aspects of the Trans-Alaska Pipeline

Statement of Findings

Dr. William A. Vogely, Director
Office of Economic Analysis
U.S. Department of the Interior
December 30, 1971

INTRODUCTION

The study of the Economic and Security Aspects of the Trans-Alaska Pipeline System was undertaken to explore these aspects pursuant and leading up to the decision by the Secretary of the Interior with respect to the application for a right-of-way for the trans-Alaska pipeline. The papers, studies, memoranda and letters which were involved in this review are contained in a series of 13 appendices arranged in two volumes and 6 appendices separately bound. The findings contained in this document are those of the author, based upon this supporting material.

MAJOR FINDINGS

I. NORTH SLOPE OIL DELIVERED TO THE UNITED STATES WILL REDUCE IMPORTS OF EASTERN HEMISPHERE OIL BY AN EQUAL AMOUNT.

II. NO TRANSPORTATION ALTERNATIVE IS ECONOMICALLY MORE EFFICIENT THAN THE TRANS-ALASKA PIPELINE SYSTEM; THE ONLY EQUALLY EFFICIENT ALTERNATIVE IS A PIPELINE THROUGH THE MACKENZIE VALLEY OF CANADA.

III. THE DEVELOPMENT OF NORTH SLOPE OIL IS AN IMPORTANT NATIONAL SECURITY OBJECTIVE: THE TRANS-ALASKA PIPELINE SYSTEM CAN DELIVER OIL SOONER THAN THE OTHER EFFICIENT MODE.

IV. FROM THE POINT OF VIEW OF ECONOMIC EFFICIENCY, NORTH SLOPE OIL SHOULD BE DEVELOPED AND TRANSPORTED TO THE UNITED STATES; DELAY IN SUCH DEVELOPMENT PLACES INCREASED COSTS ON THE NATION'S ECONOMY.

V. THE SHORT-RUN IMPACT OF THE TRANS-ALASKA PIPELINE SYSTEM ON THE STATE OF ALASKA WILL BE MIXED. THE LONG-RUN IMPACT WOULD BENEFIT THE STATE, THE SIZE AND PATTERN OF BENEFITS BEING DETERMINED BY FUTURE STATE ACTION.

DISCUSSION

I. Crude Oil Situation

Findings

1. At least to the period 1980-85 crude oil will be the preferred and necessary source of liquid fuels.

Oil and oil products are used in all sectors of the economy--in households, in industry, and in transportation. Although substitutes for oil in many of its uses can be and will be developed over time, within the next two decades, oil will remain as a preferred fuel for most of its current uses. Synthetic sources of oil will become important in the decades following the 1980's; they are not substitutes for natural crude oil within the time frame under consideration.

2. The demand for crude oil in the United States in 1980 may be as low as 20 million barrels per day, as high as 25 million barrels per day, and most probably will be 22 million barrels per day.

All known professionally competent forecasts of crude oil demand were systematically examined. There is a high probability that the demand for crude oil in the United States will be within the range indicated above.

3. The production of crude oil in the United States (without North Slope oil) in 1980 may be as low as 8.8 million barrels per day, as high as 11.9 million barrels per day, and most probably will be 10.4 million barrels per day.

All known professionally competent analyses of future oil production in the United States were examined to arrive at the above conclusion. There is a high probability that the actual production of crude oil will lie within the range stated.

4. The crude oil deficit for 1980 (without North Slope oil) may be as high as 16.2 million barrels per day, as low as 8.1 million barrels per day, and most probably would be 11.6 million barrels per day.

This follows from findings 2 and 3.

5. By 1980, the crude oil available through the proposed trans-Alaska pipeline system will be 1.5-2.0 million barrels per day.

This finding is based upon the project description, the proposed construction schedule and the anticipated buildup to capacity of the line. It assumes that construction of the line will be initiated in the early 1970's.

6. The crude oil deficit with North Slope oil available in 1980 may be as high as 14.7 million barrels per day, as low as 6.1 million barrels per day, and most probably will be from 9.6-10.1 million barrels per day.

This follows from findings 4 and 5.

7. The Western Hemisphere will provide oil to the United States by 1980 in quantities as high as 4.85 million barrels per day or as low as 2.95 million barrels per day.

This finding is based upon an examination of the capacity for crude oil production within the Western Hemisphere and the demand for crude oil in the countries where it is produced. There is a high probability that the availability of crude oil to the United States from these sources will be within the range indicated.

8. Imports from the Eastern Hemisphere and North Slope crude oil are the only sources available to meet the deficit between demand and U. S. production (without North Slope oil) plus other Western Hemisphere availability.

This finding flows from finding 1 above.

9. Without North Slope oil, imports of Eastern Hemisphere oil will range from a lowest probable figure of 16% to a high of 53% of demand.

This range is calculated from the above findings.

10. With the availability of North Slope oil, in 1980 the Eastern Hemisphere imports would be reduced to a low of 6%-9% and a high of 45%-47% of demand.

This is based on the above findings.

II. Transportation Alternatives

Findings

1. On the basis of costs of transportation and value at destination, the trans-Alaska pipeline system and a MacKenzie Valley pipeline system are the top most efficient alternatives for bringing oil from the North Slope to the Continental United States.

The knowledge of the costs of a trans-Alaska pipeline system is much firmer than the knowledge of the costs of any other alternative system. The above finding is based upon detailed cost estimates for the trans-Alaska system, grosser estimates for the MacKenzie Valley system, and scanty estimates for other transportation systems. Data does not exist to definitely state the relative efficiencies of TAPS and MacKenzie Valley pipeline system.

2. The MacKenzie Valley pipeline system would, on economic considerations, supply oil to the Mid-Continent (Chicago) area of the United States.

It would be technically feasible to deliver oil both to Chicago and to the West Coast, or to transship the oil from Chicago to the East Coast. An examination of the economics, however, indicates that the preferred market for a MacKenzie Valley system would be the Chicago market.

3. The trans-Alaska pipeline system would deliver oil to the West Coast.

This is the project objective. See also Finding VI-4.

4. North Slope oil delivered to Chicago via MacKenzie Valley pipeline system as compared with North Slope oil delivered to the West Coast via trans-Alaska pipeline system is a matter of indifference with respect to the price paid for oil products by consumers and the value of crude oil at the field in the North Slope.

Incremental supplies of crude oil from the North Slope to either district will not change the price of oil in these districts, under the existing institutional arrangements affecting crude oil prices, or even if the complex of policies affecting pricing of crude oil are changed. The availability of North Slope oil will not, in itself, change either the level of consumer prices or their geographic structure. The price of

crude oil delivered in Chicago is higher than the price of crude oil delivered in the West Coast. The estimated transportation charge to Chicago through the MacKenzie Valley pipeline system is higher than that of the Trans-Alaska pipeline system by about the same amount as the price differential between the West Coast and Chicago, resulting in equivalent field netbacks with either system.

III. National Security Aspects

Findings

1. From a national security point of view, it is important to get North Slope oil to the lower 48 states as soon as possible so as to lessen our dependence on potentially insecure foreign sources of petroleum.

This is the finding of General George A. Lincoln, Director, Office of Emergency Preparedness, following review specifically requested through the National Security Council.

2. The Alaska pipeline gives promise of bringing in a significant quantity of North Slope oil to the lower 48 states by 1975, earlier than the MacKenzie Valley pipeline system alternative.

There is no formal application by any source for a MacKenzie Valley crude oil pipeline. No detailed engineering plans or design work has been done. The Canadian government has legislation similar to the National Environmental Policy Act, which would require comprehensive consideration of any such line. Extensive negotiations would have to be undertaken between the governments for such a line.

The pre-construction planning of the trans-Alaska pipeline and the actual construction of portions of the associated marine transportation system, place this system in a higher degree of readiness.

General Lincoln estimates that the Alaska pipeline could bring the oil to market three years earlier than any alternative.

3. Early completion of the Alaska pipeline must be considered an important national security objective.

This is the finding of General George A. Lincoln, Director, Office of Emergency Preparedness, following review specifically requested through the National Security Council.

4. The Secretary of Defense finds no distinct preference from a national security standpoint for any particular mode of transportation.

Based on Lincoln letter of November 30.

IV. Economic Efficiency Considerations

Findings

1. North Slope oil can be found, produced, and delivered to the Continental United States at substantially less cost than oil imported from the Eastern Hemisphere.

This finding is based upon the conclusion of the Chairman, Council of Economic Advisers that, "the value of labor and capital resources the Nation would have to utilize to obtain crude oil from the North Slope via the trans-Alaska pipeline would be substantially less than the claims against domestic resources the Nation would have to give up to obtain an equal amount of oil from abroad." Chairman McCracken estimated that the savings would be from $15 to $17 billion over the life of the Prudhoe Bay field.

2. The resource savings to the Nation are independent of security and other oil pricing policies.

This finding follows from the calculation of the resource savings to the economy. This calculation is based on the actual cost of producing and transporting North Slope oil as compared to the actual cost acquiring imports from the cheapest world sources. Both of these are independent of oil pricing policy decisions. The resource savings would accrue without oil import quotas or state prorationing actions.

3. A year's delay of delivery of North Slope oil forfeits the possible resource cost saving of $1.50 to $1.70 per barrel, or $1.1 - $1.25 billion in resource costs.

The loss is based on the amount of crude oil forgone during the buildup of the pipeline system to a 2 million barrels per day capacity. Such loss of throughput would only be recovered at the extreme end of the field life, and would have near zero present value.

V. Economic Impact on Alaska

Findings

1. Trans-Alaska pipeline system construction will have a major impact on the level of civilian employment in Alaska, strongly concentrated in specific sectors and regions.

This finding is based upon the project description and estimated indirect impacts. It indicates that over a three-year period from 20,000 to 30,000 workers will be employed both directly and indirectly on the production and transportation of crude oil.

2. Constructing the trans-Alaska pipeline system probably will not lower unemployment in Alaska.

This finding is based upon experience with the modest oil boom in the Kenai-Cook Inlet area, and is the consequence of free immigration from the south 48 to Alaska. It is expected that the influx of job seekers, with skill levels higher than those currently unemployed in Alaska, will cause the impact on unemployment to be small.

3. Constructing the trans-Alaska pipeline will not, in a major way, reduce the existing barriers to native employment.

This finding flows from the disadvantages that the natives currently have in competing for employment, their isolation from centers of employment, and the existence of a large job pool from immigrants.

4. Constructing the trans-Alaska pipeline will create a significant temporary growth in state personal income.

This finding flows from an analysis of the payrolls and new employment created by the constructing of the trans-Alaska pipeline.

5. Constructing the trans-Alaska pipeline system will probably increase prices and cost of living in Alaska.

This finding follows from examination of divergent positions taken by several scholars who have examined the problem. It is clearly possible that the impact could be opposite to that stated. However, the State of Alaska estimates that prices and cost of living will increase. This is found to be the more probable outcome.

6. After the period of construction of the trans-Alaska pipeline system, the Alaskan economy may experience a significant downward readjustment.

This finding is based upon the fact that the State of Alaska has already increased its expenditures, out of the bonus money received from the lease sales. The studies which draw the conclusion that the impact after construction would not be major, base their argument on increasing State expenditures to offset the decreasing expenditures for the construction of the pipeline. Since the State has already increased its expenditures, the above finding appears the probable outcome, unless the State undertakes deliberate stabilization action.

7. The State of Alaska will receive very substantial revenues from the development of North Slope oil.

The estimated royalty and tax revenue from North Slope oil to the State is about $300 million per year at full pipeline capacity. The amount of State revenue will not differ significantly under either the trans-Alaska pipeline system or a MacKenzie Valley pipeline system, as alternative transportation modes, assuming a 2 million barrel per day throughput of Alaskan oil through either system.

8. The long-run impacts of development of North Slope oil on the State of Alaska are dependent upon the policies and actions of the State and its spending decisions with respect to the State revenue.

This finding simply states that the additional income to the State offers an opportunity to move in many alternative directions. The direction actually chosen will determine the final impact on the State.

VI. Other Considerations

Findings

1. The impact on the balance of payments of the development of North Slope oil will be positive; the size of the positive impact is uncertain.

This finding is based upon the conclusion that North Slope oil will displace an equal amount of imported oil and therefore reduce the outflow of payments for oil imports. Such a reduction will also tend to reduce United States exports as it reduces the amount of dollar

exchange available to the rest of the world. In the first instance, the impact is positive through the direct reduction of import expenditures. The final size of the impact depends upon the timing and size of the return dollar flows. This is uncertain, and no more precise finding is possible.

2. The trans-Alaska pipeline system will use United States bottoms for its tanker segment to U.S. ports.

This finding flows from the application of the Jones Act.

3. Construction of the 33 new tankers required in the United States shipyards will generate substantial employment and income to those shipyards.

This finding is based upon the announced plans of the Alyeska Company and the analysis of the Department of Commerce.

4. Any diversion of oil shipped from the trans-Alaska pipeline to other than West Coast ports will be temporary in nature.

This finding is based upon the growth of demand for crude petroleum on the West Coast of the United States and on the economic considerations for the destination of North Slope oil through the trans-Alaska pipeline. If the trans-Alaska pipeline is built and goes to full capacity during the first few years of its operation, there may be oil available which is surplus to West Coast needs. The plans under this eventuality are to ship the oil either to the Gulf and East Coasts of the United States by transshipment at Panama, or to an export market, presumably Japan. The growth of demand on the West Coast indicates that by the early 1980's, a crude oil deficit will exist in excess of 2 million barrels per day. Because of the relative prices of crude oil on the West Coast and in Japan, and because of the transportation cost of transshipment through Panama, the West Coast destination is clearly preferred on economic grounds. Therefore, any diversion of trans-Alaska pipeline oil from West Coast destination will be temporary in nature.

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APPENDIX C

ANALYSIS OF TRANSPORTATION ALTERNATIVES

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Whatever mode is chosen for transportation of gas, it is probable that economies of transportation cost and environmental impact will result from moving oil and gas through a common corridor (possibly but not necessarily through the same pipe or concentric pipes). The extent of such economies is not estimated in the present analysis.

Potential for Export of North Slope Oil

Questions have been raised concerning the possibility that North Slope oil would be exported to Japan. 40/ Japan is heavily dependent on imported oil. In 1965, 56% of Japan's total energy consumption was of liquid fuels; this ratio is expected to climb to 80% by 1980; production was less than one percent of consumption. In 1968, its imports amounted to 15 percent of the world's inter-area oil trade. Japan is the world's largest oil-importing country, and is expected to remain so through 1980. Japan imports over 85% of its oil from the Middle East, and thus faces greater external dependence and greater concentration of that dependence, than does the United States. 41/

Whether such delivery would take place depends on economic considerations. A comparison of netback at Valdez is based on the prices quoted earlier in this appendix and tanker charges quoted in Appendix K, Part 2:

	Los Angeles	New York	New York	Japan
Delivered price	$3.29-3.33	$3.63-3.74	$3.63-3.74	$2.38-2.80 42/
Less: Transportation	.30	.70*	1.90*	.20
Tariff	--	--		.28 42/
Netback at Valdez	$2.99-3.03	$2.93-3.04	$1.73-1.84	$ 1.90

* Panama Canal pipeline ** Small conventional tanker

Shipment to New York via large tankers and a Panama Canal pipeline would yield almost the same netback at Valdez as shipment to Los Angeles, and could yield up to $1.00 per barrel more than shipment to Japan.

Costs of a pipeline across Panama, however, would be based on the usual lifetime of a pipeline--20 to 30 years or longer. Construction of such a pipeline would be justified on the basis of continuing throughput at maximum capacity. If the North-Slope-to-district V excess were to evaporate in less than ten years (as currently suggested) then it is unlikely that volume would be available for such a pipeline throughout its life. Tanker routes from the Middle East could go to either Coast at roughly the same price so, unless the Peru, Ecuador, or Gulf of Alaska regions yield substantial production for U.S. markets, there is no incentive to build the Panama pipeline for crudes other than those from the North Slope.

If a Panama pipeline were not built, the table suggests that the costs of shipment in small tankers capable of negotiating the Panama Canal might be such as to make sale to Japan preferable to shipment to New York. Even at $1.90 per barrel in Valdez, it would probably still be possible

for the shipper to make a small profit--with TAPS charges of $.70, production costs of $.30, and royalties and lease costs of perhaps $.66 (see Appendix H)--a total of $1.66.

SUMMARY

In 1980, the crude oil deficit in either district I (East Coast) or district II (Midwest) would be adequate to absorb 2 million barrels per day of North Slope production by displacing non-Canadian foreign crudes. Under low-deficit assumptions, delivery of 2 million barrels per day to district V (West Coast) would displace all imports (including those from district IV) and still have 420,000 barrels per day excess to go to district I or foreign users. In the middle deficit case (or in the low-deficit case if North Slope production were only 1.5 mb/d), Canadian imports would be displaced from district V to district II, but no further surplus would result.

A central assumption of the present analysis is that mechanisms will be available to maintain prices at their current levels, so that delivery of low-cost North Slope crude will not depress prices in the district to which it is delivered. Under that assumption, delivery of North Slope crude to Los Angeles via the trans-Alaska pipeline and tankers, and delivery to Chicago via a MacKenzie Valley pipeline, yield essentially identical netback values at the wellhead; i.e., these alternatives have the same cost. Other alternatives, including the use of these transportation methods to other destinations, have substantially lower netback values (higher cost).

Alternatives other than TAPS would delay development of the resource; for each year's delay, the forfeit of resource cost saving is of the order of $.1 to $1.26 billion. Whatever alternative is chosen, it is clear that economies of transportation cost and environmental impact will result from moving oil and gas from the North Slope through a common corridor. The extent of such savings is not estimated in the present analysis.

Finally, it is possible that North Slope deliveries via TAPS will exceed the capacity of district V to absorb them in 1980. If this excess prevails for only a brief period, and if no other major sources of throughput for a pipeline through Panama are available for the longer term, it is possible that some North Slope crude will be exported to Japan.

In arriving at the trade deficit applicable to pipeline transportation costs, the report estimated that 50 percent of the total charges would be returned to the U.S. as dividends and payments on principal and interest. Actually, the dollar outflow for crude shipment would be the same as payment for imports and would be subject to return flow analysis as was the capital investment. Furthermore, the Canadian petroleum moved through the pipeline would be an export to the U.S. and respond to the international trade relationship already mentioned. The Alyeska study needs to reexamine all factors involved in the balance of payments impact of the trans-Canada pipeline. In every instance, the analysis must include the higher order return flows as well as the first round dollar returns.

EXPORT OF NORTH SLOPE OIL

Although the U.S. West Coast and the Mid-Continent are considered the prime markets for Alaska oil production, export opportunities appear attractive.

A possible plan for North Slope production, if available at the two million barrels per day rate, is for 25 percent of the oil to be shipped to markets beyond the West Coast by 1980. 32/ This volume, approximately 500,000 barrels per day, would be available for movement to the U.S. Gulf Coast, East Coast or export to foreign markets. Alyeska Pipeline President, Mr. Edward L. Patton, has indicated crude sales to Japan could amount to 100,000 barrels per day by 1980. 33/

Final distribution of the crude transported through the pipeline rests with the oil producing companies or the crude purchasers. One such company is British Petroleum Co., Ltd. of London, a foreign based company, who through subsidiaries and associated companies, controls approximately 50 percent of the estimated Prudhoe Bay field reserves. 34/ Currently, this company does not have marketing or refining facilities on the West Coast and it should be assumed that initially crude volume would be exchanged or sold to willing buyers either foreign or domestic. As a forerunner of possible transactions, British Petroleum signed an agreement in September 1970 with a group of Japanese oil companies which would include marketing an undisclosed amount of crude oil in Japan. 35/ Regardless of the final disposition of British Petroleum's production, some portion of income derived from Alaska oil will be repatriated by the parent company and become a dollar outflow for balance of payment purposes.

Point of delivery is another major determinant for export consideration. North Slope oil delivered to an Alaskan port or the U.S. West Coast offers a greater opportunity for entry into the export market with the balance of payment implications determined by the exported crude volume, with respect to domestic petroleum demand, and the U.S. trade position with the importing country. In contrast, North Slope oil delivered to the Mid-Continent region would more than likely remain in the domestic market. The balance of payment impact would be determined by the dollar outflow for transportation through a foreign pipeline or benefits

attributable to reduced imports from Canada. Balance of payments benefits from lower Canadian oil imports would be far less than from other oil-exporting countries. As previously stated, Canada is the only crude import source having excess production capacity. It also has the highest propensity to import from the U.S.

The competitive participation of Alaska crude with the world oil markets has improved as a result of the 1971 price increases under the Organization of Petroleum Exporting Countries Agreement. In addition, worldwide pollution awareness has placed a premium on low sulfur content crude stock.

Exporting Alaska production is further enhanced because international oil movements are not subject to the Jones Act. 36/ This Act stipulates that U.S. built, registered and manned tankers be used in U.S. coastwide trade. Estimates are that crude movement costs are about one-third less in foreign constructed and registered tankers than in U.S. vessels. 37/

From the balance of payment viewpoint, exporting U.S. crude oil in foreign tankers creates the same dollar outflow to third-country tanker owners as is found in importing oil. However, the export action itself provides a direct inflow of dollars or an offset to other balance of payment transactions between nations involved, depending upon the normal trade posture.

Exporting oil to a country such as Japan provides an opportunity to enhance the U.S. balance of payments structure because dollar return for oil imported is not likely to displace other trade patterns. Therefore, the propensity to import from the United States would improve with higher first round dollar returns.

Carried one step further and considering balance of payment aspects only, an import-for-export program could work to the advantage of the overall U.S. balance of payments. Alaska oil exported to Japan at the market price could be exchanged for currently cheaper imported Middle East or Venezuelan oil delivered to the Gulf Coast or East Coast. The advantage gained would be diminished if both exported and imported oil were moved in foreign tankers.

A reduced rate of deliverability or an extended delay in providing North Slope production to either foreign or domestic markets will have an adverse impact on U.S. balance of payments. The extent of the impact can only be determined by identifying the sources and volumes necessary to satisfy the increased petroleum demand.

In the absence of increased domestic production, synthetic fuels or alternative energy sources, the added demand must be satisfied by foreign imports. Imports from the exporting countries which have granted concessions to U.S. oil companies may have even larger adverse balance of payments impacts than those previously mentioned. Beyond the recent price increases negotiated, some countries are now moving to

participate directly in oil company concessions. Other countries have announced concession take over upon expiration of existing agreements. The dollar value of foreign country participation in concessions will eliminate repatriation of that amount directly to the U.S. and subject it to the normal balance of payment trade pattern of the country involved.

Of greater concern is the adverse effect of the increased capital investment necessary to supply increased import capacity without North Slope oil. The capital outlay and balance of payment position will be along the lines previously discussed, but will depend upon the exporting countries involved and the production capacity desired. At least part of this foreign investment will displace funds available for domestic petroleum exploration in both Alaska and the lower 48.

11/12/71
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APPENDIX F

BALANCE OF PAYMENTS CONSIDERATIONS

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APPENDIX F

BALANCE OF PAYMENTS

SUMMARY

Balance of payments impact is derived from total dollar outflow compared to cumulative dollar return over time. Outflow accounts, for foreign oil imports, include initial capital investment and transportation costs in foreign tankers. Annual dollar outflows to the exporting country comprise the retained value, consisting of oil production payments from taxes, royalties and local payments for wages, utilities and other local expenditures. Dollar outflow varies for each exporting country; approximate retained value ranges from $1.30 for Venezuela to $.89 for Kuwait.

Return dollar flows to the United States are the first-round direct trade with the exporting country and the higher order return flow from cumulative third-country purchases from the U.S.

Direct trade return flows are considered to take place in the same period as the dollar outflow. The magnitude of the dollar return is dependent upon the propensity to import (inclination to buy) from the U.S. by the oil-exporting countries. The propensity to import changes continually depending upon the trade pattern between the two countries. Average propensities for oil-exporting countries range from a high of .514 for Venezuela to a low of .062 for Algeria.

Higher order return flow of dollars is available over time from imports by third party countries. These countries are trading partners of oil-exporting countries but they also buy from the U.S.

The impact of Canadian oil imports differs from other oil-exporting countries because of the complex ownership of Canadian industry--about one-third of all Canadian manufacturing is owned by U.S. companies. Based on the historical average, Canada's propensity to import from the U.S. is approximately 71 percent.

The impact of Alaska crude oil production on the United States balance of payments has been covered in many reports on the Trans Alaska Pipeline issue. The balance of payments analysis in each study was based upon data and methodology introduced in the Cabinet Task Force Study on import controls. That study examined quite extensively the balance of payment ramifications of increased oil imports from various oil-exporting countries. Variations in selection and interpretation of the Task Force report data resulted in major differences found in conclusions of the individual pipeline studies.

The Department of Interior Environmental Impact Statement for the Trans Alaska Pipeline estimated the balance of payment benefits from North Slope production over oil imports to range from $470 to $680 million per year in 1980. Furthermore, another $500 million would be saved if capital outflows for foreign production were not necessary.

Charles J. Cicchetti and John V. Krutilla, in reply to the Environmental Impact Statement, contended that over the long term, 95 percent of the dollar outflow for foreign production would return to the U.S.. As a result, the annual benefits for the Trans Alaska Pipeline would be limited to $36.5 million.

The Environmental Impact data indicate the maximum balance of payment annual benefits accruing to North Slope oil production would be $.65 to $.94 per barrel. The Cicchetti and Krutilla analysis proposed an annual benefit of $.05 per barrel. A third report by Dr. Burgess arrived at an annual benefit of $.78 per barrel. Department of Commerce did not provide an analysis because they felt that recent international monetary problems and changes in U.S. import patterns would make any estimates extremely speculative. An Alyeska report on a trans-Canada pipeline assumed that only 50 percent, or one million barrels per day, of pipeline capacity would be available for Alaska production (the remaining 50 percent would be used to import Canadian oil). Therefore, Alyeska asserts that a balance of payment deficit of $4.11 per barrel would result.

The final destination of North Slope oil may become a major issue in balance of payment impact. An estimated 25 percent of North Slope production delivered by a trans-Alaska pipeline may move to markets beyond the West Coast, including possible export to foreign buyers. Oil delivered to the Mid-Continent would likely remain in the domestic market but it would be moved through a trans-Canada pipeline and transportation costs would become a dollar outflow.

Actually, establishment of an export-for-import program could be favorable from an overall balance of payments position. Higher priced Alaska oil could be exported to Japan in exchange for Middle East or Venezuelan petroleum imported to the East Coast or Gulf Coast. Oil moved between U.S. and foreign ports would be carried in foreign tankers and would represent an outflow for balance of payments purposes. However, foreign tanker costs are about one-third less than for U.S. built, registered and manned vessels.

Recent increases in foreign crude prices, royalties and taxes plus changes in concession agreements will reduce the dollar repatriation directly to the U.S. Also, in the absence of North Slope production greater capital investment will be needed to increase foreign production capacity. All of these actions will have an adverse impact on the U.S. balance of payments.

APPENDIX G:
The Japan Proposal(s) – FEA

PRESIDENT'S APRIL 15, 1977 REPORT TO CONGRESS
ON THE PRICING OF
ALASKA NORTH SLOPE (ANS) CRUDE OIL

TABLE OF CONTENTS

C. Exchanges With Japan

An alternative to selling ANS crude oil in the U.S. is to exchange it with a Japanese refiner in return for, say, Persian Gulf oil.

In general, an exchange may permit a reduction in total transport costs of the two parties to the exchange. Or, by providing each party with a different crude than he would have without the exchange, it may provide the two parties together with a net increase in crude oil value. There will be a net change in crude oil value for the two parties together if the relative values of the two crude oils in the two different markets differ because of differences in processing costs, product slates, and product demands. Should an exchange permit a reduction in total transport costs, but at the same time involve a net reduction in crude oil values to the parties taken together, the exchange will still generate a net increase in total value if the savings in transport costs exceed the reduction in oil values.

The sections below discuss the component calculations involved in an exchange between an ANS crude oil owner and a Japanse refiner. In addition to components associated

with transport costs and quality costs or benefits (crude oil values to the two refiners), calculations include a duty incurred on Persian Gulf crude landed in an exchange on the U.S. Gulf Coast.

As parties to an exchange, both the ANS crude owner and the Japanese refiner might be better off. Or, one party, say the ANS owner, might be made better off without the other party, the Japanese refiner, being made worse off. The extent to which each party gains by exchanging varies with the terms of the exchange. Regardless of the terms and the relative benefits to each party that result, the total net benefits are the same, given the transport costs, quality allowances, and applicable duties if any.

However, calculations in scenarios IV-VII in Chapter IX hypothesize that in an exchange total net savings to the two parties result in higher wellhead prices for the ANS crude. This allocates all the gain from the exchange to the ANS crude owner, none to the Japanese refiner. It should be noted, however, that it may be necessary, in order to induce a foreign party into an exchange, that some of the net transportation savings be shared with it, thus reducing the benefits to the U.S. party. It should also be noted that not all of

88-088 O - 77 - 6

ıe U.S. cost savings from an exchange need accrue to the enefit of the ANS producers. It is possible, through djustments in the entitlements program, to pass those avings on to refiner-purchasers and theoretically to con- umers. In either event, wellhead prices would be lower ıan indicated in this analysis.

Finally, it should be emphasized that in an exchange in- olving domestic crude, the foreign crude received in exchange s ordinarily treated under the entitlements program exactly s the domestic crude would have been treated. Although ransport costs, quality adjustments, and incurred duties may e different, there is assumed to be no difference in net ıtitlement benefit to domestic refiners who purchase the NS crude if delivered to the U.S. Gulf Coast, or, lternatively, the Persian Gulf light when landed on the ulf Coast in an exchange. The oil used in the U.S. is reated either as import tier or as upper tier for entitle- ent purposes, regardless of whether it is ANS crude or ersian Gulf light received under an exchange.

. Transportation Costs

In the absence of an exchange, crude is shipped from aldez to the U.S. Gulf Coast and Japan imports light crude rom the Persian Gulf. For 1977, estimates of tanker costs re, respectively, $2.70 per barrel and $0.75 per barrel,

the latter based on AFRA. This is a total of $3.45 incurred by both parties. The Valdez-U.S. Gulf tanker cost includes a $0.20 Panama Canal toll and a $0.20 lightering cost for passage through the Canal. In addition, for crude shipped from Valdez to the Gulf Coast there are two unloading losses of $0.07 per barrel for each unloading and an unloading fee of $0.04 per barrel at the destination. On the delivery from the Persian Gulf to Japan there is a $0.07 per barrel unloading loss. Total transport costs to both parties, the sum of tanker rates, unloading losses, and unloading fees, are $3.45 + $0.18 + $0.07 = $3.70.

With exchange, the estimated tanker cost for shipping crude in U.S. flag tankers from Valdez to Japan is $1.25 per barrel. (All transport cost estimates are subject to error and this estimate especially because it depends upon U.S. flag tanker deployments in the West Coast, Gulf Coast, and Japan trade simultaneously). The AFRA-based rate from the Persian Gulf to the U.S. Gulf, including a $0.20 per barrel transshipment charge in the Caribbean, is $1.35 per barrel. The total for the two parties is $2.60. Adding $0.18 per barrel unloading losses and unloading fee on the shipment landed at the Gulf Coast and $0.07 per barrel on the shipment landed in Japan, brings total transport costs up to $2.85.

Thus, the net reduction in transport costs for both parties in an exchange is estimated at $3.70 - 2.85 = $0.85 per barrel. (See Table VII-4 on page 46).

3. Quality Adjustments

In an exchange, a Japanese refiner accepts a crude oil, ANS, that is worth $0.20 per barrel less to him, in these calculations, than Persian Gulf light. At the same time the ANS crude owner lands Persian Gulf light in the U.S. Gulf that is $0.10 more valuable to him there than the ANS crude.

Thus, there is a net reduction in crude oil values to the two parties, taken together, of $0.10 per barrel.

4. U.S. Duty

In the current analysis, the foreign barrel entering the U.S. is assumed to incur the full $0.21 import fee. This becomes a factor that reduces the total gain from exchange.

4. Gain From an Exchange

In an exchange, total transport costs would be reduced by $0.85 per barrel. This gain is partially offset by a net reduction in crude value to the two refiners of $0.10 per barrel and a U.S. import charge of $0.21 per barrel.

The net total gain to the two parties is $0.85 - $0.10 - $0.21 = $0.54 per barrel. If a foreign tanker rate estimate of $0.45 per barrel is applicable for a Valdez to Japan delivery, the total gain in an exchange is increased by $0.80 to $1.34 per barrel.

5. The Effective Exchange Rate: Allocating Gain Entirely to the ANS Owner

The division of the net total gain varies with the effective terms of the actual exchanges the two parties settle upon.

In scenarios IV-VI, all the gain is enjoyed by the ANS owner, although a Japanese refiner is left no worse off. It is as if the ANS owner offers an exchange in which he takes delivery at the Persian Gulf, and offers each Japanese refiner a delivery in Japan of ANS crude. It would pay each Japanese refiner to offer a crude oil exchange rate up to the rate that would be equivalent to a landed cost per barrel to him not greater than what he

:an land Persian Gulf light for with his appropriate
quality adjustment. If there is sufficient competition
among Japanese refiners to yield this result, all gains
iccrue to the ANS owner.

In scenarios IV and V, the effect for the exchanged
art of ANS crude is a $0.54 higher Valdez or wellhead
et back price for the ANS crude in 1977 than realized
y marketing on the Gulf Coast under the same entitlements
reatments. In scenarios VI and VII, in which foreign flag
ankers are used to Japan, the effect is a $1.34 higher well-
ead price.

The computation under scenarios IV and V is as follows:

Without exchange

Costs of transportation to the Gulf Coast
s $2.70 + $0.18 = $2.88.

With exchange

Transportation cost from the Persian Gulf to the
.S. Gulf Coast is $1.35 + $0.18 = $1.53 per barrel. Add $1.25
$0.07 = $1.32 in cost from Valdez to Japan. In Japan, get
n effective crude oil exchange rate from a Japanese refiner
hat leaves him no worse off. He settles on a rate such
hat the ANS owner's total effective costs are (1) reduced
y $0.75 + $0.07 = $0.82 per barrel because of transport
osts avoided by the Japanese refiner; and (2) increased by

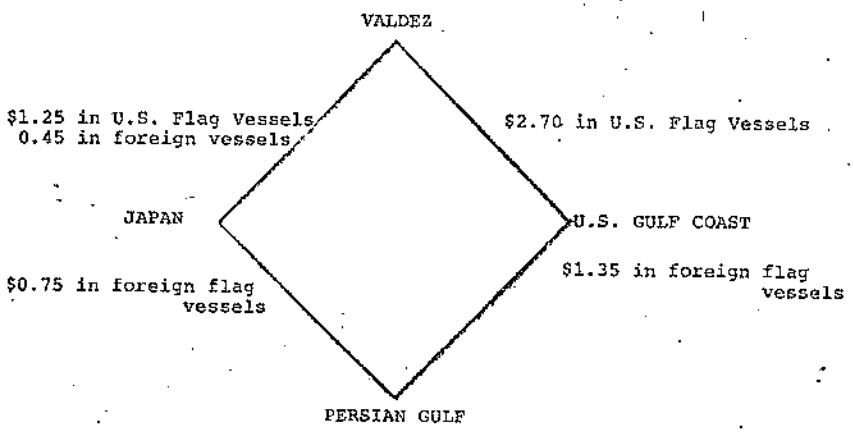
$0.20 per barrel because of a quality reduction incurred by the Japanese refiner. Finally the ANS owner pays $0.21 per barrel import charge at the U.S. Gulf. The algebraic sum or net cost to the ANS owner is:

$$\$1.53 + \$0.21 + \$1.32 - \$0.82 + \$0.20 = \$2.44.$$

The net gain to the ANS owner is $2.88 - $2.44 + $0.10 = $0.54 which is measured as an increase in his realized netback. Under scenarios VI and VII, the same calculation is made except that $0.45 is used as the Valdez to Japan transportation charge, in which case the net gain at the wellhead is $1.34.

TABLE VII-4

Potential Ocean Tanker Cost Savings of an Exchange with Japan (1978)



Combined tanker costs of delivering a barrel of crude to the U.S. Gulf coast and a barrel of crude to Japan.

1. Direct Shipment		$3.45
Valdez to U.S. Gulf	$2.70	
Persian Gulf to Japan	.75	
2. Exchanges with Japan		
A. Using U.S. Flag vessels from Valdez to Japan		$2.60
Valdez to Japan	$1.25	
Persian Gulf to U.S. Gulf	1.35	
B. Using foreign flag vessels from Valdez to Japan		$1.80
Valdez to Japan	$0.45	
Persian Gulf to U.S. Gulf	1.35	

Tanker cost savings from the exchange

1. Using U.S. Flag vessels from Valdez to Japan		$0.85
Direct Shipment	$3.45	
Less exchange	- 2.60	
2. Using foreign flag vessels from Valdez to Japan		$1.65
Direct Shipment	$3.45	
Less Exchange	- 1.80	

CHAPTER VIII

ENTITLEMENT TREATMENT

Under FEA price regulations adopted to implement the statutory crude oil composite price regulations, domestic crude oil is classified as lower tier (about 50 percent of total production), upper tier (about 36 percent) and stripper well (about 14 percent).

Stripper well crude oil, which is production from properties which have declined to a level of 10 barrels per day per well or less for a 12 month period, is permitted by statute to be sold at market price levels in order to provide incentives to prolong production of marginal properties.

Upper tier crude oil generally includes production from properties which began production after 1972, plus incremental production from older properties which exceeds a certain base production level. The upper tier price (which averaged $11.64 per barrel at the wellhead at the end of 1976, or roughly $2.00 below the delivered cost of imports) is generally designed to stimulate additional production from older properties and to encourage further exploration and development of new domestic crude oil resources.

APPENDIX H:
The Japan Proposal(s) – Secretary Schlesinger

U.S. EXPORT CONTROL POLICY AND EXTENSION OF THE EXPORT ADMINISTRATION ACT

HEARING

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL FINANCE

OF THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

NINETY-SIXTH CONGRESS

FIRST SESSION

PART III

S. 737

TO PROVIDE AUTHORITY TO REGULATE EXPORTS, TO IMPROVE THE EFFICIENCY OF EXPORT REGULATION, AND TO MINIMIZE INTERFERENCE WITH THE RIGHT TO ENGAGE IN COMMERCE

S. 977

TO AMEND THE EXPORT ADMINISTRATION ACT OF 1969, AS AMENDED, AND FOR OTHER PURPOSES

MAY 3, 1979

Printed for the use of the
Committee on Banking, Housing, and Urban Affairs

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1979

45-897 O

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PAUL FREEDENBERG, *Minority Professional Staff Member*

DEPARTMENT OF ENERGY,
Washington, D.C., April 23, 1979.

Hon. JONATHAN B. BINGHAM,
Chairman, Subcommittee on International Economic Policy and Trade, Committee on Foreign Affairs, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: At the President's request and in consultation with Secretaries Kreps and Vance, I am taking this opportunity to present the Administration's position on Congressman McKinney's bill, H.R. 3301, which would amend Section 4(l) of the Export Administration Act (EAA) as amended by the Export Administration Amendments of 1977. As you know, the Administration has already transmitted a bill which would extend and amend the Export Administration Act without section 5(l). This bill is now before your Subcommittee.

The Administration is opposed to any extension of Section 4(l) of the EAA which expires in June 1979, or any new legislative proposals which would further restrict the President's authority to authorize swaps of Alaskan North Slope (ANS) crude oil. It is the Administration's position that H.R. 3301 is unnecessary and could prevent the President from acting in the national interest. Although the crude oil export restrictions in the EAA expire in June of this year, Section 28(u) of the Mineral Lands Leasing Act of 1920, as amended by the Trans-Alaska Pipeline Authorizatien Act, would remain intact and would prohibit any exports of ANS crude unless the President made a finding that such action did not diminish the total quantity or quality of petroleum available to the United States and that it was in the national interest.

The Administration is not proposing that any U.S.-produced oil be exported, but rather seeking to assure that the President and the Congress are not unduly constrained in considering such action should it be in the national interest. The regional "surplus" of crude oil on the west coast should be eliminated through refinery retrofits on the west coast and by transportation to inland States over efficient west-to-east pipelines. Any decision to authorize swaps would have to take into account the circumstances prevailing at that time, including such factors as the impact of swaps on the U.S. balance of payments and the U.S. maritime industry, the costs and benefits of such a decision to oil producers, consumers, the State of Alaska and the U.S. Treasury. Nonetheless, it is conceivable that swaps of Alaskan north slope crude oil will become necessary at some time to induce additional Alaskan and west coast production and to improve economic efficiency.

Our objections to the McKinney Amendment are discussed in more detail below:

Increasing Alaska and California crude oil production

Oil fields in Alaska and California provide over 22 percent of all U.S. crude oil production and in the next 10 years, these two states' production will continue to increase substantially. We should strive to eliminate the risks for the producers that militate against the exploration and development activities that will increase long run production of Alaska and California crude oil. Failure to eliminate these disincentives could mean a loss of as much as 600,000 barrels per day of domestic crude oil production in the post-1985 period because of lower wellhead values and reduced oil and gas leasing.

As long as the apparent regional surplus persists, considerable local opposition to expanded leasing and development in areas such as offshore Southern California and the Beaufort Sea off of Alaska can be expected. Local cooperation is essential if we are to expand successfully development in these areas.

Economic efficiency

It is our expectation that west-to-east pipelines will be built; however, if one or more such pipelines are not constructed, the Department of Energy estimates swaps of ANS crude could improve the transportation and crude oil production efficiency of the U.S. economy by as much as $800 million per year or a total of $10 billion over 20 years. Tax revenues to the Federal Government could increase by as much as $680 million per year or a total of $8.5 billion over the same period as a result of higher wellhead values due to more efficient transportation systems. Furthermore, any resulting production increase would reduce net imports and improve the U.S. balance of payments. The maximum increase in production of 600,000 barrels per day would improve the U.S. trade balance by as much as $3.9 billion per year. In addition, under many circumstances, increased crude oil production can restrain or moderate potential increases in the world price of crude oil. Any restraint on world crude oil prices provides significant benefits to the U.S. because of our dependence upon large volumes of foreign crude imports.

Security of supply

Under the Agreement for an International Energy Program (IEP), the amount of oil which would be available to the U.S during an embargo or other crude supply interruption would not be affected if the United States were to swap crude oil. The amount available to the United States would be determined by historic consumption and net import volumes which would remain unchanged if the United States engaged in export swaps.

In the worst case scenario, in which the U.S. were suffering a severe shortfall and for some reason the IEP system were not activated, export contracts could be interrupted and Alaskan crude shipped to U.S. Gulf or East Coast markets. This would be possible because swaps would only be permitted under contracts which could be interrupted if U.S. crude oil supplies were threatened and under export licenses subject to revocation were that to happen. In an embargo, there would be sufficient United States and foreign flag VLCC's to bring Alaskan oil to Gulf and East Coast refineries capable of processing it.

International commitments

The proposed McKinney Amendment may not adequately allow the United States to meet two important international commitments—our oil supply commitment to Israel, and our obligations under the emergency oil sharing system of the International Energy Agency (IEA) developed pursuant to the IEP. Mr. McKinney's proposed amendment provides for exports to Israel pursuant to our bilateral agreement, but such exports would be limited to 180 days and could be terminated at any time during that period by vote of either House. We urge full clarification of our authority to back up our commitment.

This commitment was an essential element in the negotiations leading to the conclusion of the Peace Treaty between Israel and Egypt, and we are very concerned that we be able to live up to the obligations that we have undertaken.

In addition, the McKinney Amendment does not provide for fulfilling our obligations under the IEP emergency oil sharing system. The authority to export U.S. oil under the IEP system, granted by Congress in section 251 of the Energy Policy and Conservation Act of 1975, could be interpreted as being limited by Section 4(l) of the Export Administration Act. Therefore, even if we never use our emergency sharing authority, we need to make our authority to export under emergency conditions absolutely clear to our IEA partners and thus demonstrate to them that we are fully committed to the sharing system.

It is virtually impossible that the U.S. would ever be a net exporter of oil under the IEP sharing system. If in a crisis we were obligated to supply oil to other IEA countries, we would normally do so by diverting imports. However, it is conceivable that for maximum efficiency and effective distribution, we would want to swap U.S. oil for other oil under the sharing system, without changing the total amount of oil to which the United States would be entitled.

Legal concerns

The McKinney amendment, as currently drafted, poses a real danger of frustrating the will of Congress and the President by requiring that several legally ambiguous standards be met. In our opinion, adherence to the standards may either be impossible due to unforeseen conditions or be interpreted by a court in a different manner than the Congress or the President intended. It must be recognized that such a result would prevent Congress, as well as the President, from fulfilling a stated course of action which both felt was in the national interest.

With these considerations in mind, I ask that you allow the existing EAA export restrictions to expire and grant the President the flexibility to consider export options if he concludes that they are in the national interest. The Department of Energy has been advised by the Office of Management and Budget that the views herein stated are in accord with the President's program.

Sincerely,

JAMES R. SCHLESINGER, *Secretary.*

ANSWERS TO QUESTIONS FROM THE DEPARTMENT OF ENERGY

Question 1. What is the present production of the Alaskan pipeline? How much of Alaskan oil is shipped to the West Coast, and how much passes through the Panama Canal to the Gulf and East Coast?

Answer. The present production of the Trans-Alaska Pipeline is 1.2 million barrels per day. Of this amount, 800,000 b/p/d are refined on the West Coast and roughly 400,000 b/p/d are shipped by tanker to Gulf and East Coast markets.

APPENDIX I:
The Japan Proposal(s) – Economic Relations Group

REPORT OF THE JAPAN-UNITED STATES ECONOMIC RELATIONS GROUP

Prepared for
the President of the United States
and the Prime Minister of Japan

January 1981

The Japan-United States Economic Relations Group

Foreword

The Japan-United States Economic Relations Group, consisting of eight private citizens of the two countries, was established pursuant to a joint communique of May 2, 1979 from the late Prime Minister Ohira and President Carter. The purpose of the Group is to examine factors affecting the bilateral economic relationship over the longer-run and make recommendations to the President and the Prime Minister designed to strengthen it.

The Group's chairmen are Ambassador Nobuhiko Ushiba, former State Minister for External Economic Affairs, and Ambassador Robert S. Ingersoll, former Deputy Secretary of State. Other members are Akio Morita, Chairman, Sony Corporation, Shuzo Muramoto, President, Dai-Ichi Kangyo Bank, Ltd., Kiichi Saeki, Chairman, Nomura Research Institute, A. W. Clausen, President, Bank of America, Hugh T. Patrick, Professor of Economics, Yale University, and Edson W. Spencer, Chairman, Honeywell, Inc. Joint consultations among all members took place in Washington in December, 1979, Tokyo and Oiso in May, 1980, Honolulu in August, and San Francisco in November. The Group was substantially aided by small and effective staffs and a series of commissioned background studies in both countries.

During the past year, the Group examined a broad range of bilateral and multilateral issues relating to Japan-United States economic relations. The members have consulted with a wide segment of organizations, private and official, and with many individuals in both Japan and the United States so that their views could be considered in the discussion and recommendations. The Group came away from its work with a strengthened conviction that the bilateral economic

relationship is of tremendous importance to the future security and welfare of both countries, and indeed to the world. The Group believes that the current economic and political relationship between the two countries is, in general, healthy and mutually rewarding. To enhance the relationship and improve the two countries' ability to meet shared global challenges, however, the Group has addressed a broad set of problems. These include such matters as inadequate consultative mechanisms between the two governments, mistaken or outdated perceptions of each country in the other country, inadequate American economic performance, lagging liberalization of the Japanese market, unresolved energy issues, and the politicization of economic and trade disputes. All too often, both governments and their respective private sectors have failed to face up to difficult problems.

Given its purposes, most of the Group's recommendations are addressed to the President and the Prime Minister and directly concern the two countries' relations. Others, such as those on improving United States productivity and on the internationalization of Japan, are directed primarily to just one government and appear more domestic in nature, but will have an important beneficial effect on United States-Japan economic relations. Still other recommendations are addressed to the private sector since in the market oriented private enterprise system of both countries, it is consumers, management, and labor that ultimately determine the success of the economic relationship. The Group believes that implementation of all its recommendations, while some are politically difficult, is in the long-term national interests of both countries and will enhance the relationship between them.

Executive Summary

Over the past year, the Japan-United States Economic Relations Group has examined a broad range of bilateral and multilateral issues relating to the two countries' economic relations. We have found that a generally healthy economic and political relationship exists between Japan and the United States, but that a number of problems need to be addressed to improve the bilateral relationship and enhance the effectiveness of the two countries in cooperatively dealing with global challenges. These problems included inadequate consultative mechanisms between the two governments, mistaken or outdated perceptions of each country in the other country, inadequate American economic performance, lagging liberalization of market access in Japan, and, all too often, a failure by the governments and private sectors in both countries to face up to difficult problems.

I. THE UNITED STATES–JAPAN ECONOMIC RELATIONSHIP IN A GLOBAL CONTEXT

Because of their broad international ramifications, many of the problems affecting United States-Japan economic relations are not amenable to bilateral solutions. Progress in solving these broader economic problems, however, rests heavily on a close, effective, and comprehensive partnership between Japan and the United States, the two largest market economies in the world.

This partnership should be based on three principles:

- The relationship between Japan and the United States involves shared responsibilities for the management of the international economic and political order.
- Japan needs to develop and articulate a new, more active international role.
- The United States needs to recognize more fully the implications of the postwar diffusion of power and the demands of a more interdependent world.

In implementing these basic principles, it is important to adhere to guidelines such as those provided by GATT and similar existing national agreements.

Close intergovernmental relations are the key to developing a ıger sense of global responsibilities and addressing interrelated :ts of bilateral and global issues.

- A review of existing consultative mechanisms shows the need for closer and more regularized consultations at all levels.
- Beginning in 1981, there should be periodic joint meetings of cabinet officials of the core departments and ministries dealing with foreign relations, trade and industry, energy, agriculture, and financial and monetary issues.

To improve the effectiveness of their bilateral cooperation and gthen their ability to work together on global problems, both ı and the United States need to develop new international roles o "internationalize" their societies.

- In order to make more reliable and effective the cooperation and coordination between Japan and the United States with regard to security as defined by the terms of the Japan-United States Security Treaty, Japan should clarify its defense role, strengthen its self-defense capabilities, and shoulder a more equitable burden with the United States in attaining comprehensive security. Japan must contribute to both regional and world security, specifically by augmenting economic cooperation with Third World countries, and undertaking diplomatic and political initiative and leadership.
- The United States must improve the quality of its consultations with its allies, including Japan. Because domestic political considerations often put a premium on prompt, decisive, and unilateral presidential action, it will require strong leadership and some political sacrifice to forego unilateral policy decisions in favor of increased consultation with allies.
- Both governments should improve training in international affairs for civil servants (especially those in more domestically oriented ministries and departments).
- Encouragement should be given to increased and even more intensive and effective contacts and communications among business leaders in Japan and the United States through existing mechanisms and economic organizations as well as through new channels as appropriate.
- There should be increased joint policy research activities and intensified exchange programs for legislators, business and labor leaders, and others in the public and private sectors.

II. BASIC ELEMENTS OF THE ECONOMIC RELATIONSHIP

The United States-Japan economic relationship is of substantial benefit to both countries by stimulating competition, expanding product choices, adding to available capital and technology in each country, and increasing overall economic efficiency. At the same time, there are inevitable frictions over such matters as changing patterns of competition in particular industries, bilateral merchandise trade and current account imbalances, the handling of foreign exchange rate fluctuations, and efforts to coordinate macroeconomic policies. The President and the Prime Minister should play a more active role in improving public understanding of the causes and implications of bilateral and global economic interdependence.

- In particular, there needs to be a better understanding of the reasons for trade and current account imbalances. There have been serious adverse consequences of a continued, narrow Unites States focus on the bilateral trade imbalance.
- The trade imbalance reflects structural differences between the two countries and would exist even if there were perfect

access to the Japanese market for American products or if American economic policies were well managed. It reflects an efficient allocation of resources for the two countries.

- Current account balances are affected by many factors, including changes in energy costs, the interaction of domestic demand and world business cycles, and differences between domestic savings and investment rates.
- Better criteria than trade and current account balances in evaluating a nation's economic policies and performance include stability and predictability of its macroeconomic policies, its avoidance of unfair trade practices, access to its markets, its avoidance of using exchange rate policies to promote its exports and its trade, worker retraining, and other positive adjustment measures to solve domestic problems of adjustment to the system of international competition.
- Because savings in Japan seem likely to remain relatively high compared to domestic investment demand, it is likely that Japan will have a long-run tendency to run a current account surplus and thus be a capital exporter.
- While Japanese capital exports will benefit the world, the United States will continue importing large amounts of manufactured goods from Japan. Japan should avoid sudden surges of exports in specific products which cause serious injury to American or other foreign firms.

Exchange rate fluctuations have been particularly wide in recent ars. The efficient operation of the floating exchange rate adjustment chanism requires a well balanced, long-rate perspective within vernment monetary institutions.

- Japan should continue its trend toward greater responsibility for the maintenance of the international financial system by further improving capital liberalization and sharing the responsibilities of a key currency country.
- Exchange rate stability requires also stable, predictable macroeconomic policies, control of inflation and improved productivity performance in the United States.

Attempts to tightly coordinate macroeconomic policy and set

bilateral macroeconomic targets have proved inffective in the past as well as politically controversial.

- The United States and Japan should consult closely on macroeconomic policies, but avoid attempts at tight coordination.
- There need to be new forums for macroeconomic consultation at both the cabinet and working levels.

III. THE IMPACT OF ENERGY ON THE RELATIONSHIP

Cooperation or conflict in energy policies may well be the most important test of the viability of the American-Japanese partnership. A high degree of energy interdependence requires more intense consultations on all aspects of the energy problem.

- A ministerial level joint committee should be established to meet at least once a year on a regular basis to review and coordinate the disparate consultations now carried out in various other forums and address energy problems in a comprehensive manner.

One of the most critical threats to the security and economic well-being of both countries is the possiblity of a major interruption in petroleum supplies. The two governments are simply not prepared to deal with this threat.

- It is imperative that the two governments immediately undertake a crisis management study and formulate specific measures to be taken in the event of a large-scale supply interruption.
- Contingency planning should be expanded as quickly as possible to other major petroleum consuming countries.
- The United States and Japan should take the leadership in strengthening the capacity of the International Energy Agency to deal with both large-scale and small-scale supply interruptions and coordinate stockpiling policies.
- To improve the efficiency with which currently available

petroleum supplies are transported and used, there should be a change in United States policy to allow Alaskan oil which is surplus on the United States West Coast to be exported to Japan in exchange for other oil already committed to Japan.

To develop alternative supplies of energy supply, there needs to be ery substantial research and development in energy related technolo- es.

- Both governments, but especially Japan, must make a much greater effort in energy research and development. A substantially augmented Japanese program would not only help equalize the burden, but be an important contribution to meeting Japan's global responsibilities.
- No alternative source of energy can be overlooked. Both governments and their private industries should accelerate nuclear power development, including the use of the fast breeder reactor as it becomes economically feasible.

Because of vast United States coal reserves, coal offers a particu- ry attractive basis for substantially augmented United States-Japan ergy cooperation. Both countries can benefit from further develop- ent of United States mines and exports to Japan.

- The two governments should foster an environment that will encourage investment by the private firms of both countries in coal development, including mining, transportation facilities, and coal gasification and liquefaction in the United States.
- The two governments should explore possibilities for bilateral arrangement embodying secure access to markets for American coal in Japan and American assurance of coal supply to Japan.

Increased United States exports of oil, coal, and nuclear energy terials will improve the bilateral trade balance between Japan and United States.

IV. AMERICAN PRODUCTIVITY AND THE MANAGEMENT OF THE UNITED STATES ECONOMY

As long as the United States economy suffers from inflation, low savings rates, low rates of capital formation and investment, inadequate expenditure on research and development, burdensome regulation, and low productivity growth, the United States-Japan economic relationship will face severe strains. Improved United States management and strengthening of the supply side of its domestic economy could be one of the most important factors in improving United States-Japan economic relations.

To improve productivity, the following steps should be taken by the American government:

- Productivity should be a major focus of United States economic policy. To do this, the President should convene a White House National Productivity Conference.
- Economic policies should foster a non-inflationary, stable economic climate, conducive to investment and improvements in productivity.
- The President and Congress should develop specific longer-term programs to improve savings and investment rates such as investment tax credits, the reduction of personal and corporate and capital gains taxes in a non-inflationary manner, and the shortenings of depreciation schedules.
- The President and Congress should adopt new programs to stimulate research and development and innovation.
- The American government should reduce the regulatory burden and make productivity a principal consideration in the formulation and implementation of regulations.
- The United States government should sponsor a comprehensive research program on the measures Japan and other foreign countries have taken in the public and private sectors to increase productivity.

Given the proper economic environment, it is the primary responsibility of the private sector to improve productivity performance. The following steps should be taken in the private sector:

- United States corporate management should make long-term productivity improvement a principal objective, building productivity considerations into corporate objectives, management attitudes, and management compensation programs.
- Management and labor should consult closely on productivity trends and problems and on opportunities for improving productivity performance.
- Corporate and labor leaders in both countries should establish joint programs to enhance productivity and increase bilateral understanding of shared problems.

V. JAPAN'S MARKET: OPEN OR CLOSED?

The American perception of the Japanese market as closed to oreign business has contributed to tensions in the bilateral relationship.

- In terms of tariffs and quotas, the Japanese market is as open as the American market for comparable manufactured goods.
- In terms of government procurement practices, foreign investment rules, entry of services, and procedures for standards, inspections, and testing, Japan's market is not as open as the American market and more needs to be done to liberalize market access in Japan's own national interest.
- There are special difficulties for foreign business in Japan from more intangible factors such as administrative procedures, traditional business customs and mores, and cultural and social barriers to foreign influence.

To improve market openness in Japan and the foreign perception f the Japanese market as open, the following measures should be .ken:

- The recently enacted, more liberal Foreign Exchange and Foreign Trade Control Law should be implemented by the Japanese government in ways fully consonant with the principle of freeing foreign transactions from restraint. Exceptions to this principle allowable in the new law should be

invoked only in genuine emergency situations.
- Both governments should implement the GATT government procurement code and cooperate in seeking to increase its coverage in later renegotiations of the code.
- The Prime Minister should establish a powerful central office for the consideration and resolution of trade and investment issues. This office should deal with broader policy issues as well as company-specific complaints.
- The two governments should provide support and financial assistance to the Trade Study Group, a voluntary group of American and Japanese governmental officials and businessmen in Tokyo who have played a major role in identifying trade barriers and bringing together foreign and Japanese business and Japanese governmental authorities to resolve trade problems.
- Japan should make its economic decision-making processes more publicly visible, like those of the United States. There should be additional opportunities for private sector access to these processes.
- American businessmen need to improve their efforts to gain access to the Japanese bureaucracy.

VI. INDUSTRIAL TRADE ISSUES

Competition in industries such as textiles, automobiles, steel, and electronics products has been a major source of controversy in United States-Japan trade relations. Trade protection is not an appropriate remedy for industrial trade problems. In general, it delays economic adjustment and hurts the ability of the protected industry to meet the demands of international competition. It also can seriously injure the overall competitiveness of an economy by increasing rates of inflation. Protectionist measures are also contrary to consumers' interests in lower prices, wide choice of designs, quality, and services.

The following basic principles should govern industrial trade relations:

- The two governments should foster a stable, non-inflationary investment climate which encourages economic growth and

facilitates adjustments.

- Both governments should maintain policies promoting a world free trade and investment environment.
- Both governments should adhere to the principle of equal national treatment in programs relating to industries.
- There should be a clear understanding in both countries of foreign industrial policies and specific industrial problems. There should be periodic bilateral discussions between Japanese and American governments on trade and investment restrictions, liberalization programs, implementation procedures, and industrial programs.
- There should be bilateral business, labor, and government dialogues, consonant with law, to identify and discuss potential industrial trade issues before they become major disputes.
- Both governments need to be more conscious of the international implications of domestic economic policies.
- Corporations, especially in the United States, need to have a longer-term, more internationally oriented perspective.

Free trade and investment policies should be maintained for all ndustries, including the steel, automotive, and semiconductor ndustries.

VII. AGRICULTURAL TRADE ISSUES

Mutually beneficial economic interdependence is nowhere more vident than in the case of agricultural trade, but steps need to be taken o further open the Japanese market to foreign agricultural products, estructure Japanese agriculture to make it more efficient and competitive, and to improve food security for Japan.

- Japan should continue to shift away from the use of quantitative restrictions on agricultural imports and to ultimately eliminate them by redirecting support policies so that international prices are more adequately reflected in determining the level of domestic price supports.
- Japan should continue to encourage the expansion of the land rental market to help increase the average size of farms and strengthen the position of full-time farmers.
- The fear of food shortages in Japan is very real, but food security cannot be guaranteed through high protection of inefficient agriculture except at extremely and unacceptably high social and financial costs.
- To increase food security, Japan should establish a more adequate wheat and feedgrains reserve.
- The United States and Japan should enter into negotiations leading to medium-term supply and purchase arrangements.

VIII. PROBLEMS IN U.S. TRADE LAW AND THE UNITED STATES-JAPAN ECONOMIC RELATIONSHIP

There is concern in Japan that recent changes in American trade laws have moved in some areas in a protectionist direction and may act as a non-tariff barrier to trade. At the same time, many Americans believe that these laws are fully consistent with international codes, provide legitimate defense for domestic industries against unfair trade practices, and are needed to support an overall liberal trade policy.

- Because of the differences of opinions in this area, both governments should undertake an examination of American and Japanese trade laws and practices.
- Similar efforts should be carried out on a private basis among specialists in both countries.
- As a long-term measure, the two governments should provide leadership in further strengthening international codes dealing with injurious trade practices.

IX. ECONOMIC DISPUTES AND POLITICAL FRICTION

United States-Japan economic and trade issues have often become serious political issues in both countries, jeopardizing valuable cooperation in non-economic as well as economic arenas. Both governments

uld make strong efforts to contain politicization of inevitable tances of economic friction.

- Officials in both countries should improve their knowledge of and sensitivity to the domestic political situation of the other country in order to avoid highly visible political conflict.
- Especially on the United States side, there is a need to discard misleading images, such as that of "Japan, Inc."
- On the Japanese side, there is a need for government, media, and other leaders to put American political statements and Congressional actions in a broader perspective.
- Americans must be sensitive to the use of what appear to be heavy-handed pressuring tactics. Japan should respond earlier to "softer" signals and not invite pressure.
- Each side should avoid using the other as a scapegoat despite the short-run political benefits of sometimes so doing.
- United States officials should beware of intruding too deeply into Japanese economic decision-making, particularly on issues normally considered domestic in nature.
- Japanese negotiators should speak up more, countering American criticism as squarely as possible, to minimize misunderstandings or misperceptions of their position.
- A cardinal principle in American-Japanese diplomacy in the future should be an effort to negotiate on the basis of mutual and reciprocal benefit.

X. CONCLUSION

The sheer size of the United States-Japan share of the global econ- y and world trade requires the maintenance of a close, mutually arding economic relationship. It is vital to both countries and the ld. Yet, in any bilateral relationship as encompassing, intense, and irse as that between Japan and the United States, there will inevi- ly be some differences in national interest and, therefore, occasions bilateral tension. What is essential is that these occasional differ- es be viewed in a broader, long-term perspective, addressed directly resolved in a mutually beneficial manner, and not be permitted to eril the overall relationship.

In its work, the Group could not examine all of the many challenges the two countries face in their economic interactions with each other and the rest of the world. We chose to give attention first to those issues which have been most visibly troubling the United States-Japan economic relationship. We feel that a number of potentially important problems need further attention. These include not only issues of trade relations and differences in the structure of the two economies, but also those involving the shared global responsibilities of a more comprehensive United States-Japan partnership. Continuing attention to these issues in both countries is the best guarantee of a healthy long-term United States-Japan economic relationship.

economic policy officials in a non-political forum for the exchange of views.

The Group recommends that in addition to these meetings:

(1) there should be annual meetings of the ranking authorities in both governments who formulate and implement macroeconomic policy. Sub cabinet meetings should be held on a regular basis. While their focus will undoubtedly continue to be on current issues, opportunities should be sought for frank exchanges on longer-range issues.

(2) there should be more frequent working level consultations between the professional staffs of the governmental organizations responsible for economic policy. Where appropriate, these consultations should be expanded to include experts from the private sector and academic community.

CHAPTER III

The Impact of Energy on the Relationship

The importance of energy issues in the United States-Japan relationship can hardly be overstated. Since the two countries are the largest consumers and importers of petroleum in the free world, the actions of each have a direct impact on the other and on the rest of the world. Because energy plays such a crucial role in the economies and societies of both countries, in instances of rapid price increases of threats of supply interruption, there are strong economic, political, and psychological incentives for each country to act hastily and independently. The resentments which can arise in such cases constitute a serious threat to the overall strength of the bilateral relationship. Indeed, the most important test of the viability of the United States-Japanese partnership may well be the two countries' ability to sustain strong, effective, and cooperative measures in dealing with current and future energy problems.

It has been estimated that for every $1 per barrel increase in the price of crude petroleum, United States real GNP growth will be reduced by 0.1 percent and Japanese growth by 0.2 percent. A significant interruption of supply would, of course, have a far more devastating impact.

Both Japan and the United States, therefore, have a vital common stake in securing adequate and stable supplies of reasonably priced energy. Attaining this objective is a major challenge to the industrialized democracies, particularly in the coming decade. While projections of future energy supplies and consumption are often highly speculative, it is likely that future oil supplied will be tight. Oil supplies could be further jeopardized by political change in one or more export-

ing countries, and the shift to non-petroleum energy sources will take time. Energy, therefore, will remain a critical security and economic issue during the 1980s.

If the United States and Japan handle energy issues poorly, major tensions could be introduced into the relationship. Properly handled, energy represents a significant opportunity to deepen United States-Japan cooperation. For these reasons, the Group believes it essential that Japan and the United States try to anticipate potentially serious problems, such as supply interruptions or large price increases, and plan coordinated approaches to deal with such problems. For the longer-term, they should work together to eliminate the threat of energy crises by increasing production, especially from alternative energy sources, and improving energy conservation.

ENERGY INTERDEPENDENCE

The United States and Japan consume approximately half (30 percent and 20 percent respectively) of the 26.5 million barrels of petroleum which the advanced industrialized countries of the OECD (Organization for Economic Cooperation and Development) import each day. Given their size in energy markets, there is a high degree of interdependence between them and with much of the rest of the world. Energy interdependence has many different dimensions, including energy prices, supplies, domestic energy policies, and foreign political and economic policies. American decontrol of domestic petroleum prices, for example, has been welcomed in Japan as a step toward increasing domestic American production and reducing consumption, thus reducing American pressure on world oil markets. Speculation by some Japanese companies in spot market purchases of Iranian oil in late 1979 following the taking of American hostages in Iran was severely criticized in the United States on both economic and political grounds. A failure of American policies in the Middle East could have a strong influence on energy supplies in Japan. If Japan fails to curb its energy imports, this would increase its need to export manufactured goods, affecting American industry and United States-Japan economic relations. If the United States fails to curb petroleum imports, its growing dependency could weaken its overall international credibility and its value as an alliance partner for Japan. Indeed, there is virtually no

significant policy issue relating to energy that can be considered as purely domestic by either country. Each country has a very high stake in the energy and energy-related policies of the other.

The United States and Japan have similar or complementary interests on many energy issues, such as avoiding oil supply disruptions, maintaining the political stability and the international security of petroleum exporting countries, building up petroleum stockpiles, stimulating development of new energy sources, and diversifying sources of supply. But they often have different approaches to the achievement of these objectives, in part because of their different energy situations and resulting different priorities. As a country far more dependent on external energy sources, Japan has less flexibility and gives energy security issues an even higher priority than the United States. This has led to misunderstandings and controversy in the past, on, for example, the two countries' different postures in the Middle East and different approaches toward the development of nuclear energy, and could do so again. Consequently, a high degree of interdependence requires more intense consultations on all aspects of the energy problem.

The Group believes that it is important for the two countries to enhance the frequency, quality, and scope of inter-governmental consultation on energy policy and policy implementation. We recommend the establishment of a ministerial level joint committee to meet at least once a year on a regular basis to review and coordinate the disparate consultations now carried out in various other forums and address energy problems in a comprehensive manner.

These meetings might be timed to coincide with present International Energy Agency (IEA) ministerial meetings and the cabinet level consultations we recommend in Chapter I.

We also recommend that a small standing committee be established to provide backup for the ministerial committee and assure that energy issues are addressed in a long-range and broad context.

Inter-government work on energy issues should be complemented by broad programs of private level policy research on all aspects of energy interdependence. **We recommend that both governments increase their funding for joint energy policy studies to be carried out in private institutions.** Such joint research will reinforce habits of cooperation on energy issues consistent with an age of increasing energy interdependence.

ENERGY SUPPLIES: A CRITICAL SECURITY ISSUE

One of the most serious threats to the security and economic well-being of both the United States and Japan as well as to their close relationship is the possibility of a major interruption in petroleum supplies. As the 1979 Iranian crisis demonstrated, a political change in even a medium-sized exporter can have a significant impact on supplies and prices of petroleum in the industrialized world, affecting rates of growth, inflation, and employment. A study by the United States Congressional Budget Office estimates that just for the United States, a year-long supply interruption of 3.5 million barrels per day in 1984 would cause real GNP in the United States to drop by 6.6 percent ($272 billion), while unemployment would increase by 2 percentage points and inflation by 20 percentage points.

A supply interruption of this magnitude would have a much more shattering effect on Japan. The United States depends on petroleum for only half its total energy requirements, and half of that is derived from domestic wells. Fifteen percent of United States petroleum needs are supplied by Persian Gulf oil producing countries. In contrast, petroleum accounts for 75 percent of Japan's total energy requirements and virtually all has to be imported. Almost 78 percent of Japan's petroleum needs are supplied by the politically fragile Persian Gulf region.

In any consideration of American-Japanese energy cooperation, the importance of Japan's much greater degree of energy vulnerability must be fully recognized. For Japan, the threat of an interruption of petroleum supplies is the emotional equivalent of the Soviet threat for the United States. American policies regarding petroleum, coal, and nuclear energy development as they relate to Japan have not been sufficiently sensitive to this Japanese energy concern, creating apprehensions in Japan about United States policy in a serious energy emergency. On the other hand, Japan's energy policies have often been too exclusively focused on its own national oil supply interests to the detriment of a more encompassing sense of international responsibilities, including broader political and security issues and considerations.

The Group is deeply concerned about the failure of both governments to adequately and comprehensively address energy security and supply issues. We believe several steps should be urgently undertaken:

(1) **The President and the Prime Minister should exercise strong leadership in stressing to their citizens the seriousness and fragility of the world energy situation.**

(2) **It is imperative that the two governments immediately undertake a crisis management study and jointly formulate specific measures to be taken in the event of large-scale supply interruptions.** A wide range of emergency scenarios should be considered, including the possibility of a prolonged interruption of Persian Gulf petroleum. The Iran-Iraq war, although apparently limited in nature, illustrates the urgency of carefully planned and multilaterally coordinated steps, agreed to ahead of time, to cope with supply emergencies. Prior planning will strengthen the effectiveness of countermeasures and help defuse what would undoubtedly be very strong domestic pressures for independent action at the time of an energy emergency. The danger of a catastrophic supply interruption is so serious that we believe the governments of Japan and the United States should undertake planning immediately on a bilateral basis and expand emergency planning as quickly as possible to include other major petroleum consuming countries.

(3) **As the two largest energy consumers, Japan and the United States should take the initiative in strengthening the OECD/IEA framework to address broad aspects of energy security in a more comprehensive and effective fashion.** Current multilateral and bilateral discussions have tended to focus almost exclusively on petroleum, but should be expanded to include other energy sources as well. **There also needs to be improved coordination of stockpiling policies.** At the present time, stockpiles vary widely in different consuming countries; Japan's of about 100 days of consumption is considerably larger than the United States Strategic Petroleum Reserve of only 15 days of imports plus company-controlled stock of 25 days of imports. Larger stockpiles will not only help in coping with a prolonged crisis, but will also help in ameliorating the initial psychological impact of a large-scale supply interruption. More evenly distributed stockpiles would help prevent charges of unfairness that could be raised during an emergency.

The Group is also concerned that the IEA emergency sharing program does not deal sufficiently with small-scale interruptions of supply. The Iranian oil crisis of 1979–80 showed that even relatively small-scale interruptions can have a significant effect on worldwide petroleum prices, causing political concerns, economic distress, and international tensions.

We recommend, therefore, that the two countries continue their efforts to improve the capability of the IEA to deal with interruptions

of less than the 7 percent figure that now triggers the petroleum sharing plan. Both countries should also improve domestic mechanisms for prompt implementation of policies adopted in emergency situations.

OTHER PETROLEUM POLICIES

Aside from the above steps, there are other ways in which Japan and the United States can increase the efficient use of currently available petroleum supplies and maximize energy conservation.

One of the most obvious of these relates to Alaskan North Slope petroleum. Alaskan oil can now be made available to the West Coast of the United States in quantities exceeding refining capabilities in that region, but it cannot be efficiently transported to the East Coast and mid-sections of the continental United States. Current American law and policy prevent the export of Alaskan oil to other countries, like Japan, where it could be transported economically, even in return for other petroleum that could more cheaply be transported to the eastern parts of the United States. Energy economists have estimated that significant efficiencies could be achieved through swapping arrangements, beneficial to consumers in both the United States and in Japan.

(1) We recommend the United States modify its petroleum export policy to permit the sale of Alaskan oil to Japan in return for the sale (or swap) of other petroleum now committed for export to Japan. A change of American legislation or an exercise of the waiver authority in current legislation permitting swapping would have an important symbolic effect on American-Japanese relations, give credibility to the concept of petroleum-sharing, help reduce the bilateral imbalance of trade, and represent a more efficient and less expensive use of Alaskan oil by cutting transportation costs.

Both governments should intensify their effort to conserve the use of all energy, especially petroleum. From 1973 to 1979, crude oil imports of the United States increased from 3,244,000 barrels a day to 6,397,000 barrels a day. During the same period, Japan's crude oil imports decreased slightly from 4,992,000 barrels a day to 4,846,000 barrels a day. The per capita total energy requirements of the United States remain almost three times those of Japan. While the economic structure, geographic size, and lower population density of the United States make continued higher per capita energy and petroleum use

very likely for a long time to come, there is clearly much additional room in the United States for petroleum conservation measures. Japan also can augment its conservation programs, particularly in the case of its highly energy-intensive agricultural sector.

(2) We applaud the commitments to conservation made during the past two Economic Summit Conferences. In addition, the Group recommends that the United States learn from Japan's progress in developing an effective petroleum conservation program. Recognizing the importance of competitive market forces, the United States and Japan should develop annual industry-by-industry comparisons of energy use and savings, and draw from each other's experiences in promoting conservation in industrial processes through existing or new private binational industrial organization.

ENERGY RESEARCH AND DEVELOPMENT

Effective solutions to the energy problem in the long-term require the United States and Japan to diversify their sources of energy and, particularly, to develop non-petroleum energy sources and related technology. Before discussing specific alternative energy sources, it should be emphasized that the development of all alternative sources will require very substantial funding. Both governments have increased their support for energy research and development and related technology, but the American government is currently making a much more substantial effort. IEA statistics for 1979 shows that the United States government spent $3.7 billion in energy research and development, while the Japanese government spent $0.9 billion, about half the American amount on a per capita basis.

The Group recommends that both governments, but especially Japan, make a much greater effort in energy research and development. A substantially augmented Japanese program would not only help equalize the burden, but also be an important contribution to meeting Japan's global responsibilities.

A maximum effort should be made to coordinate American and Japanese energy research and development programs, although a certain degree of duplication is not only inevitable but also desirable. Given their different energy situations, the two countries have different priorities in terms of alternative energy sources, and research and

development cooperation should be developed with complementary priorities in mind.

Energy research and development inevitably involve both the government and the private sector. The nature of the relationship between the government and the private sector varies in the two countries, particularly at the commercialization phase of new technologies. **The two governments should discuss with each other and with their respective private industries means of developing compatible structures of government-private industry energy cooperation to facilitate efficient use of the private sectors of both countries in joint or complementary research and development projects.**

NUCLEAR ENERGY

Japan's energy policy gives a high priority to the development of nuclear power as an alternative source of energy. Indeed current government plans anticipate that nuclear energy will supply 14 percent of Japan's energy needs by 1995, making nuclear energy the third largest source of energy after petroleum and coal. Japan's ambitious nuclear fuel cycle, must be understood in light of Japan's higher degree of energy vulnerability. For Japan, nuclear energy provides the energy source least dependent on other countries.

A major and unfortunate dispute occurred in 1977 when the United States, because of a general policy of discouraging nuclear processes which might result in nuclear weapons proliferation, refused to export material for Japan's almost completed pilot reprocessing plant at Tokaimura. Japan has a strong policy in support of non-proliferation and there is no quention of Japan using plutonium to acquire a nuclear weapons capability; rather it was a question of whether American worldwide restrictions would be credible if an exception were made for Japan. Eventually a compromise was reached allowing the Tokaimura facility to start up on a limited basis.

Japan has also been concerned about the basic health of the American nuclear energy industry which has played a major role in the development of Japan's nuclear energy program. There is a fear in Japan that American government restraints on domestic development of nuclear energy will affect the industry's ability to assist in Japan's program.

The Group strongly believes that in the current energy situation, neither country can afford to overlook the efficient development of any alternative energy source. We recommend that both governments and their private industries move forward to fully utilize the potential of nuclear energy. We recommend that the President and the Prime Minister accelerate nuclear power development, including use of the fast breeder reactor when it is economically feasible. The two governments should work together to demonstrate the feasibility of permanent disposal of nuclear wastes to answer questions of legitimate public concern. In both countries, cooperation should be intensified on improved reactor safety systems. In addition, Japan and the United States should continue to strengthen national, bilateral, and multilateral safeguards as part of their common objective to prevent nuclear weapons proliferation.

COAL AND OTHER ALTERNATIVE FUELS

Coal offers a particularly attractive basis for reducing dependence on Middle East petroleum supplies, expanding alternative energy sources, and improving the bilateral trade balance. Both countries intend to increase their use of coal as an energy source, but Japan has limited coal reserves, while the United States produces half of the coal in the non-communist world. Both countries can very substantially profit from further exploitation of the reserves of the United States and exportation of coal to Japan. Because coal development requires large-scale investments, this will be furthered by assurances to American coal producers of secure access to the Japanese market and by Japanese coal consumers of a secure source of supply from the United States. At the same time, such arrangements must take into account Japan's desire to purchase coal from a diversity of sources (Australia currently is Japan's major supplier) and at competitive prices.

(1) **Both governments should take steps that would facilitate substantial and profitable private investment in mines, transportation, and utilization facilities. Substantial Japanese private investment in the further development of the American coal industry would be very desirable. Governments have a direct obligation to improve harbor facilities.** As a first step, the United States should expeditiously resolve environmental and transportation issues relating to coal. Japan should

resolve environmental issues related to its expanded use of coal.

(2) **Both governments should also seek to develop new forms of coal gasification and liquefaction through innovative technological development.** The jointly sponsored SRC-II liquefaction project is a useful model for further cooperation by government and private industry in synthetic fuel development. It should be recognized that rapid commercialization of such technologies will depend on market forces and prevailing energy prices.

(3) **The United States and Japanese governments should explore possibilities for bilateral agreements combining secure access to markets for coal in Japan with American assurances of supplies.**

Given the critical nature of energy supply problems, no alternative source of energy can be neglected. While we believe that nuclear energy and the expanded use of coal represent the most feasible alternatives to petroleum in the nearer-term, a wide range of other energy sources — geothermal, hydroelectric, oil shale, tar sands, biomass, and solar — deserves careful attention from both governments.

CHAPTER IV

American Productivity and the Management of the United States Economy

As long as the United States economy suffers from inflation, low rates of savings and capital formation, inadequate attention to research and development, and an overly burdensome regulatory environment, low productivity growth will continue to cause serious strains to the United States-Japan economic relationship. One of the most important factors in improving our bilateral relationship could well be a fundamental strengthening of the "supply side" of the United States economy.

Recently, there has been a growing interest in the United States in improving United States productivity growth and reinvigorating the industrial base of the American economy. As the national debate in the United States develops, we will be supporting efforts in the Executive Branch and Congress to achieve these goals. Our own recommendations highlight those areas which have a special impact on United States-Japan economic relations, and more broadly, United States global economic performance.

UNITED STATES PRODUCTIVITY AND ECONOMIC PERFORMANCE

The health of United States economy can be measured in a general way by "productivity," or the efficiency with which an economy produces goods and services. Productivity, often expressed in terms of output per manhour or real GNP per worker, is a common statistical indicator used to compare economic performance over time, or between