CANADA

National Energy Board

Reasons for Decision

Amoco Canada Petroleum Company Ltd.

GH-3-89

May 1989

Gas Exports

National Energy Board

Reasons for Decision

In the Matter of

Amoco Canada Petroleum Company Ltd.

Application Pursuant to Part VI of the *National Energy Board Act* for a Licence to Export Gas

GH-3-89

May 1989

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Table of Contents

Appendix

Recital and Appearances

IN THE MATTER OF the *National Energy Board Act*, and the Regulations made thereunder; and

IN THE MATTER OF an application by Amoco Canada Petroleum Company Ltd. pursuant to Part VI of the *National Energy Board Act* for a licence authorizing the export of natural gas.

HEARD at Vancouver, British Columbia on 30 March 1989.

BEFORE:

K.W. Vollman	Presiding Member
J.-G. Fredette	Member
D.B. Smith	Member

APPEARANCES:

M.L. Pillman	Amoco Canada Petroleum Company Ltd.
R. Pepper	Alberta and Southern Gas Co. Ltd.
D.M. Masuhara	B.C. Gas Inc.; Inland Natural Gas Company Ltd.
J.H. Farrell	The Consumers' Gas Company Ltd.
W.L. Oostenbrink	Mobil Oil Company Ltd.
D. Rigby	Murphy Oil Company Ltd.
G.H. Giesbrecht	Northwest Pacific Energy Marketing Inc.
J.W. Gustafson	Washington Natural Gas Company
G. Toews	Western Gas Marketing Limited
P. McCunn-Miller	Alberta Petroleum Marketing Commission
R. Milner	British Columbia Petroleum Corporation
V. Black	Ontario Ministry of Energy
J. Robitaille	Procureur général du Québec
F.J. Morel	Board Counsel

Chapter 1
The Application

By its application dated 12 January 1989, Amoco Canada Petroleum Company Ltd. (Amoco; the Applicant) sought a licence to export natural gas at Huntingdon, British Columbia. Amoco will sell the gas to Washington Natural Gas Company (Washington Natural) for its system supply requirements in northwestern Washington.

The gas proposed for export would be produced in the Cypress field area of British Columbia at facilities currently being constructed by Amoco and other partners. The gas would be transported in British Columbia on the Westcoast Energy Inc. (Westcoast) system for export at Huntingdon, British Columbia. In the United States, the gas would be carried by Northwest Pipeline Corporation (Northwest) to the Washington Natural system which serves the cities of Tacoma and Seattle and the surrounding region.

Amoco applied for a licence to include the following terms and conditions:

Term	- 15 years commencing 1 November 1989 or once regulatory approvals are obtained and transportation arrangements finalized.
Point of Export	- Huntingdon, British Columbia
Maximum Daily Quantity	- 704 thousand cubic metres (25 MMcf)
Maximum Annual Quantity	-257 million cubic metres (9.1 Bcf)
Maximum Term Quantity	- 3 856 million cubic metres (136.9 Bcf)

Chapter 2
Reasons for Decision

In considering an application for a licence to export gas, section 118 of the *National Energy Board Act* (the Act) requires the National Energy Board (the Board; NEB) to have regard to all considerations that appear to it to be relevant. In particular, the Board is required to satisfy itself that the quantity of gas to be exported does not exceed the surplus remaining after due allowance has been made for reasonably foreseeable Canadian requirements, taking account of trends in discovery.

To comply with the requirements of section 118 of the Act, the Board utilizes its Market-Based Procedure. This procedure includes consideration of the following: complaints, if any, under the complaints procedure; an export impact assessment; and other factors which the Board considers relevant in its determination of the public interest including, net benefits to Canada, the applicant's gas supply as it relates to reserves and productive capacity, upstream and downstream transportation arrangements and markets.

2.1 Complaints Procedure

The complaints procedure provides an opportunity for Canadian gas-users to object to an export proposal on the grounds that they cannot obtain additional gas supplies under contract on terms and conditions, including price, similar to those in the export licence application.

Although no Canadian company opposed the Amoco export proposal, B.C. Gas Inc. (B.C. Gas) and Inland Natural Gas Co. Ltd. (Inland) stated that they are unable, at this time, to purchase gas such as Amoco's because of the exclusivity provision in the agreements that they have with their supplier, Westcoast. These agreements are in effect until 1991. Also, B.C. Gas and Inland's ability to purchase such gas supplies is further limited since self-displacement is not permitted on the Westcoast system.

The Amoco/Washington Natural gas sales contract permits Amoco to make third party off-sales up to the maximum daily contract quantity once it has met Washington Natural's daily nomination. B.C. Gas and Inland commented that they may, at some later date, be interested in having access to supplies such as Amoco's off-sales and suggested that the Board consider some type of reporting or monitoring so that parties would be aware of any off-sales that take place.

The Board expects that Amoco would make these third party off-sales to the highest bidder, either in Canada or the United States. Such off-sales exports are normally made under short-term orders issued pursuant to the Board's Part VI Regulations. All applications for short-term export orders are filed with the Board and are in the public domain with the exception that the export price is confidential for a period of 90 days following the issuance of the order. As well, the Board releases data detailing the volumes of exports made pursuant to each order on a monthly basis.[1]

The Board is satisfied that no party objected to the Amoco proposal under the complaints procedure. The Board takes note of the comments made by B.C. Gas and Inland. In this regard, the Board notes

[1] NEB's monthly: Natural Gas Exports and Imports.

that the issue of self- displacement is to be considered at the next Westcoast toll hearing scheduled to commence 12 June 1989. The Board also notes that Amoco is prepared to sell gas to Canadians on the same terms and conditions included in Amoco's sale to Washington Natural.

2.2 Export Impact Assessment

In its export impact assessment, Amoco concluded that the proposed incremental exports to Washington Natural would not impair the ability of Canadian gas producers to satisfy domestic and export requirements. Amoco does not expect the export to affect natural gas prices in Canada and, as a consequence, there would be no impact on conservation or substitution patterns. The Board concurs with this assessment.

2.3 Gas Supply

Amoco has dedicated the reserves of the Cypress field Baldonnel A pool to the Washington Natural export. Table 1 compares Amoco's and the Board's estimates of remaining marketable gas reserves for this pool with the proposed maximum term quantity and expected exports to Washington Natural based on a 70 percent load factor.

The Board's estimate of remaining marketable gas reserves is lower than Amoco's based on a different interpretation of structure and a more conservative mapping of the reservoir which result in a lower estimate of rock volume and net pay for the pool.

Amoco presented data demonstrating its ability to maintain deliverability at or above the contracted maximum daily authorizations throughout the entire term of the export by scheduling the completion of additional wells and the addition of compression.

The Board's analysis of Amoco's productive capacity is presented in Table 2.

Table T1
Comparison of Estimated Remaining Marketable Gas Reserves with the Maximum and Expected Export Volumes
(10^6m^3)

Amoco Reserves Estimate[1]	NEB Reserves Estimate[1]	Proposed Maximum Term Volume	Expected Export Volume[2]
4 008	3 194	3 856	2 700

1. At December 1988
2. 70 percent load.

Table T2
NEB Estimate of Amoco's Supply to Meet Requirements
(10^6m^3)

Contract Year	Proposed Maximum Annual Volumes		Expected Export Volumes at a 70 Percent Load Factor	
	Supply[1]	Shortfall	Supply[1]	Shortfall
1989	257	0	180	0
1990	257	0	180	0
1991	257	0	180	0
1992	257	0	180	0
1993	257	0	180	0
1994	257	0	180	0
1995	257	0	180	0
1996	257	0	180	0
1997	257	0	180	0
1998	257	0	180	0
1999	220	37	180	0
2000	184	73	180	0
2001	154	103	180	0
2002	78	179	180	0
2003	0	257	180	0

1. Lesser of productive capacity or annual requirements.

Table 2 shows that, based on the Board's estimate of reserves and productive capacity, the annual licensed volumes would be met for ten years after which the productive capacity declines sharply. However, at the expected 70 percent load factor, Amoco's requirements can be met for the entire term of the contract.

The Board's estimate of productive capacity and reserves is lower than the maximum volumes requested. Amoco stated that there were no backstopping arrangements in place for the proposed export to Washington Natural. However, based on the expected 70 percent load factor for Amoco's exports to Washington Natural and considering the fact that Amoco has other holdings in both British Columbia and Alberta, the Board is satisfied with the adequacy of Amoco's supply arrangements.

2.4 Energy Removal Authorization

Amoco holds Energy Removal Certificate ERC-37 (8806) which allows it to remove the applied-for gas volumes from the Province of British Columbia for sale to Dome Petroleum Corp. Amoco has applied for a modification of this certificate to adjust the term of the permit to reflect the applied for export licence and change the importer from Dome Petroleum Corp. to Washington Natural.

2.5 Market

Amoco stated that Washington Natural intends to purchase its exports for firm system supply requirements during the 15-year period to 2004. Washington Natural distributes natural gas to 61 communities in northwestern Washington including the cities of Seattle and Tacoma. Its total annual current market area requirements are approximately 2.3 billion cubic metres (80 Bcf). The residential and commercial sectors make up about 75 percent of these requirements. These requirements are forecast to increase approximately three percent per year during the period to 1994/1995. The industrial sector, which currently totals approximately 570 million cubic metres (20 Bcf) annually, is forecast to grow at approximately two percent annually during this same period. Amoco indicated that the majority of Washington Natural's industrial market is being served through the spot market, either through direct purchases by Washington Natural or by the end-users themselves.

Washington Natural intends to purchase approximately 850 million cubic metres (30 Bcf) or one third of its forecast annual requirements from Canada. The proposed exports of 257 million cubic metres (9.1 Bcf) would represent one-third of these Canadian purchases. Washington Natural's non Canadian requirements will be purchased from Northwest and other U.S. suppliers. Washington Natural is also currently reviewing the Pacific Gas Transmission Co. expansion proposal and some of its requirements in the mid-1990's may come from Alberta.

Amoco indicated that Washington Natural had applied on 30 March 1989 for the appropriate import authorizations.

2.6 Gas Sales Contract

Amoco indicated in its application that both it and Encor Energy Corporation Inc. (Encor) would be selling natural gas to Washington Natural. Encor has appointed Amoco as its agent to apply for and hold in its name all Canadian authorizations and to make all transportation arrangements. Amoco included in its application a copy of the Encor/ Amoco 7 November 1988 Agency Agreement which documents its agency relationship with Encor effective throughout the duration of the Amoco/ Washington Natural gas sales contract.

As part of its 12 January 1988 application, Amoco also filed a copy of the Amoco/Washington Natural 18 November 1988 gas sales contract. This contract provides for the sale of up to 26 823 gigajoules (GJ) (25 000 MMBtu) per day over a 15-year period commencing upon the start-up of Amoco's required processing facilities. Amoco can ship to third parties provided it first meets Washington Natural's daily nomination.

The minimum annual contract quantity is set to equal 60, 65 and 70 percent annual load factor amounts during successive five-year periods of the contract. As well, Washington Natural is required to pay Amoco a non-refundable gas inventory charge (GIC) on volumes not taken below the above-noted minimum annual contract quantity. During the first year of the contract, the GIC rate is $Cdn 0.23 per GJ ($U.S. 0.25/MMBtu). Following the first year, the GIC rate will be 20 percent of the applicable commodity charge. The Amoco/Washington Natural gas sales contract provides for a two-part export price consisting of a demand charge and a commodity charge.

The demand charge component of the export price will be the $U.S. equivalent of the prevailing Westcoast tolls for gathering, treatment, exclusive of the liquids recovery charge and transportation of 26 823 GJ per day (25 000 MMBtu/day) for firm longhaul subzone A plus export services. Amoco indicated that this charge was currently $Cdn 0.466 per GJ ($Cdn 0.50/MMBtu). The commodity charge component of the export price is set to equal the $U.S. equivalent of the difference between a negotiated reference export price and the prevailing demand charge based on load factors of 60, 65 and 70 percent during successive five-year periods of the contract. The reference export price will be renegotiated annually based on competitive market factors. Currently, the reference export price during the summer period April through October is $Cdn 2.14 per GJ ($Cdn 2.30/ MMBtu). The reference price for the winter period November through March is $Cdn 2.33 per GJ ($Cdn 2.50 /MMBtu). Therefore, the current commodity rates would be the $U.S. equivalent of $Cdn 1.56 per GJ ($Cdn 1.67/MMBtu) and $Cdn 1.37 per GJ ($Cdn 1.47/MMBtu) in the winter and summer periods respectively. Amoco indicated that the netbacks for its sale to Washington Natural would be greater than the applicable commodity charge rate because its gathering and processing costs for the Cypress facilities would be less than the demand charges which were set to equal the Westcoast charges for similar services.

The Board believes that the Amoco/Washington Natural gas sales contract includes terms and conditions which ensure cost recovery and flexibility over the duration of the contract. The reference export price and commodity charge are renegotiable annually. Assurance of take is addressed by the minimum annual take obligations, the third party sales provision, and the inclusion of both the gas inventory charge provision and demand charge component in the export pricing terms and conditions. Producer support is demonstrated in the Encor/Amoco Agency Agreement and is presumed once Amoco has obtained its amended removal permit from the Province of British Columbia. Based on these factors, the Board is satisfied with the terms and conditions of the Amoco/Washington Natural gas sales contract.

2.7 Transportation Arrangements

British Columbia gas to be exported by Amoco to Washington Natural will be processed in the new Cypress field facilities which are currently under construction and will be owned by Amoco and other partners. The gas will be transported in British Columbia on Westcoast's facilities to the Huntingdon, British Columbia export point for delivery into the Northwest system. Northwest will transport the gas to Washington Natural's system. During the summer months gas exported to Washington Natural may be put into storage for redelivery to Washington Natural during the winter.

Amoco filed a letter of intent dated 12 December 1988 from Westcoast indicating that, upon Amoco receiving the necessary authorizations and entering into the appropriate service agreements, Westcoast would provide the long-term transportation required by Amoco in British Columbia.

Amoco also included in its application a copy of a 9 December 1988 Amending Agreement between Washington Natural and Northwest which extends the firm transportation service it provides to Washington Natural to 31 October 2004 and on a year-to-year basis thereafter unless terminated at the request of either party.

The Board notes that transportation on the Northwest system is based on a postage stamp rate as approved by the Federal Energy Regulatory Commission (FERC). In this regard, Canadian gas supplies are disadvantaged compared to U.S. supplies since Washington Natural's market is located considerably closer to Canadian sources of gas than it is to other U.S. domestic sources on the Northwest system.

2.8 Benefit-Cost Analysis

In support of its application, Amoco submitted the benefit-cost analysis which is summarized in Table 3. This analysis indicates that the applied-for exports would yield net benefits to Canada ranging from approximately $25.33 million (1988$) to $61.72 million (1988$) in the Applicant's high and low world oil price cases respectively, with all project benefits and costs discounted at 8 percent real.

The Applicant's high and low world oil price scenarios are distinguished only by different assumptions about future natural gas demand and supply costs. The same projection of gas export prices was used in both the high and low world oil price scenarios. These projections of gas export prices were based on the negotiated average price for 1989, $2.29/GJ, which was assumed to increase at 2 percent per year, in real terms, over the life of the contract.

Table T3
Amoco's Benefit-Cost Analysis of Its Proposed Export to Washington Natural (millions of 1988 $, discounted at 8%)

	High World Oil Price	Low World Oil Price
Export Revenue	129.45	129.45
Sulphur Revenue	1.09	1.09
Less:		
Transportation Costs	1.02	1.02
Field Production Costs	17.83	17.83
Net	111.69	111.69
Less:		
User Costs	86.37	49.97
Net Benefits	25.32	61.72

The Applicant estimated the user costs associated with the applied-for export volumes based on the supply cost estimates and domestic natural gas demand projections outlined in the low and high world oil price scenarios of the Board staff's September 1988 report, Canadian Energy, Supply and Demand 1987-2005. However, in forecasting annual exports, Amoco used the lesser of a February 1988 Independent Petroleum Association of Canada (IPAC) forecast or currently licensed export volumes. Because licensed export volumes in effect at the time of Amoco's application drop off sharply after 1993, the Applicant's methodology results in a forecast in which exports decline continuously after 1993 reaching 288 PJ by 2000.

The Applicant maintained that its methodology was appropriate because it focussed the analysis on the user cost that would be attributable to its export application using as a base the current level of export authorizations. Amoco maintained that its approach correctly treated its application as incremental to existing authorized exports and stated that it would be unfair to include exports that have not yet been licensed or to try to speculate what short-term exports might be.

In summary; Amoco argued that its applied-for exports would provide net benefits to Canada. No intervenors disputed the reasonableness of the submitted results and none argued that the proposed exports would not yield net economic benefits to Canada.

The Board finds that the Applicant's projection of likely natural gas export prices is inconsistent with the unit supply costs it has used in the user cost calculation. In its own analysis, the Board has used prices consistent with the unit supply costs and with the projected domestic demand for Canadian natural gas which were adopted by the Applicant from the Board's Supply/Demand Report. As shown in Table 4, this results in a higher projection of export revenues than included in Amoco's analysis.

The Board does not agree that the methodology used by the Applicant in calculating user costs is appropriate.

User cost arises because increased production from existing reservoirs brings forward the time at which higher cost reservoirs must be exploited. Thus, user cost depends upon the gas production profile over time. It follows that the export profile used in the user cost calculation should represent a quantity of gas which may reasonably be expected to flow, i.e. it should allow for a projection of the volumes of exports likely to flow in the absence of the applied-for export.

In the Board's view, the Applicant's forecast of export demand in the absence of its proposed exports appears to severely understate the exports that are likely to flow during the forecast period. Indeed, the Applicant's forecast assumes that pipeline facilities would become under-utilized as existing licences expire and that alternative export market opportunities for Canadian natural gas are non-existent. This assumption would appear questionable given the number of export applications coming before the Board and the range of current industry forecasts for natural gas exports. For example, the Applicant cited an IPAC forecast which shows exports reaching 2 526 PJ in 2000 and only falling to 1 789 PJ by 2005. Use by the Applicant of only currently licensed exports delays the time at which Canadians will be required to move to higher cost gas resources and reduces estimated user costs below what would be estimated if a more reasonable projection of exports were employed over the full forecast period.

The Board is also of the view that an undesirable implication of using only licensed volumes in effect at the time of the application in the calculation of the user cost is that the benefit-cost results for a given application would be different depending on the timing of the application. For example, proposed exports identical in all aspects to an earlier licensed proposal could be found to yield negative benefits. These anomalous results are possible because the evaluation yardstick (the volume of licensed exports) changes over time. As new licences are granted they would be included in the demand projection to calculate the user cost. Since the higher is the base demand, the higher is the user cost, there would be a clear bias in the benefit-cost results favouring those applications which are heard first by the Board.

Further, the Applicant's approach lacks consistency in its treatment of domestic and export natural gas demand. While export demand is constrained by licensed volumes existing at the time of the application, a reasonable projection of domestic demand taken from the Board's Supply/ Demand Report is used over the study period. Moreover, the Board's projections of domestic and export demand were derived by allowing natural gas prices to change as required to maintain an equilibrium between supply and demand. Replacing one component, natural gas exports, by a significantly lower value, as in Amoco's analysis, results in an inconsistency within the projections. If the projection had been derived using the Applicant's lower value for exports, natural gas prices and domestic demand would have differed from the projections shown in the Supply/Demand Report and used in the Applicant's analysis.

For the purposes of determining user cost, the Board employed two base cases, both including a projection of likely exports at 1.5 E.J per year less the applied-for exports. To this export projection were added scenarios for domestic demand corresponding to the high and low world oil price cases of the Board's 1988 Supply/Demand Report. This methodology yielded significantly higher user costs than estimated by the Applicant and, in the Board's view, it better reflects the true costs associated with a more rapid depletion of the existing reservoir base.

The results of the Board's analysis, summarized in Table 4, show that, under the most likely assumptions, Amoco's export would yield net economic benefits to Canada even with the higher user costs discussed above.

Table T4
NEB Benefit-Cost Analysis of Amoco's Proposed Export to Washington Natural (millions of 1988 $, discounted at 8%)

	High World Oil Price	Low World Oil Price
Export Revenue	179.37	137.30
Sulphur Revenue	1.09	1.09
Less:		
Transportation Costs	1.02	1.02
Field Production Costs	17.83	17.83
Net	161.61	119.54
Less:		
User Costs	143.51	92.35
Net Benefits	18.10	27.19

Chapter 3
Disposition

The Board has decided to issue a gas export licence to Amoco. Governor in Council approval of the new licence is required before this decision comes into effect. Appendix I contains the terms and conditions of the proposed licence including a requirement that exports under the licence must commence on or before 1 November 1990. Should this condition not be met, the licence will terminate.

In arriving at its decision, the Board considered a number of factors. Of note was the absence of opposition to the proposed export. Amoco submitted an Export Impact Assessment which showed that the proposed export would have little impact on total production, gas prices or Canadian consumption patterns. As a result of its review of these matters under its Market-Based Procedure, the Board is satisfied that the proposed export is surplus to reasonably foreseeable Canadian requirements.

The Board is of the view that the proposed export would be in the Canadian public interest. In determining this, the Board reviewed Amoco's British Columbia reserves dedicated to the Washington Natural export and is satisfied with the adequacy of Amoco's gas supply arrangements. As well, the Board believes that the sale to Washington Natural under the terms of the gas sales agreement will be at a fairly high load factor and that the export will yield net benefits to Canada.

K.W. Vollman
Presiding Member

J.-G. Fredette
Member

D.B. Smith
Member

Ottawa, Canada
May 1989

Appendix 1
Terms and Conditions of the License to be Issued to Amoco Canada Petroleum Company Ltd.

1. The term of this Licence shall be for the period commencing on the date on which approval by the Governor in Council is received and ending on 31 October 1990, at which time, provided that exports have commenced hereunder, the term shall extend to 31 October 2004.

2. The quantity of gas that may be exported under the authority of this Licence shall not exceed:

   (a) 704 000 cubic metres in any one day;

   (b) 257 000 000 cubic metres in any consecutive 12-month period ending on 31 October; or

   (c) 3 856 000 000 cubic metres during the term of this Licence.

3. As a tolerance, the volumes the Licensee may export in any 24-hour period under this Licence may exceed the daily limitation imposed in condition 2 by two percent.

4. Gas exported under the authority of this Licence shall be delivered to the point of export near Huntingdon, British Columbia.