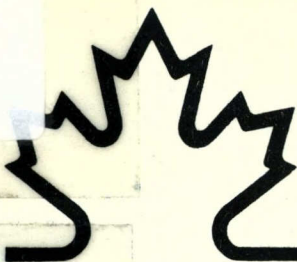


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CANADA'S SHIPBUILDING INDUSTRY PERFORMANCE, PROSPECTS, AND POLICY OPTIONS

The Honourable Edward Lumley
Minister of Industry, Trade and Commerce/
Regional Economic Expansion
1982

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Background Paper

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PURPOSE

The purpose of this paper is to examine the issues related to Canada's shipbuilding industry and to review alternative means of assistance to the industry, taking into account its future prospects.

BACKGROUND AND CONSULTATIONS

In January 1981, Cabinet directed that consultations be undertaken with industry, labour and interested provinces to develop a view of the likely future of the shipbuilding industry and to consider possible elements of a shipbuilding assistance program. For this purpose, an interdepartmental Review Group was formed in June 1981, led by the Department of Industry, Trade and Commerce with membership from the Departments of Regional Economic Expansion, Transport, Supply and Services and Finance. Annex "A" gives the schedule of consultations that took place throughout the summer and fall of 1981. Those consulted were the Canadian Shipbuilding and Ship Repairing Association (CSSRA), 12 member companies of the CSSRA, seven provincial governments (Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia), two groups representing organized labour (the Canadian Labour Congress and the Confédération des Syndicats Nationaux), four oil and gas companies and four shipping companies.

I Views of the Canadian Shipbuilding and Ship Repairing Association and Member Companies

In 1977 the CSSRA, in response to a suggestion by the then Minister of Industry, Trade and Commerce, prepared proposals for assistance that would not be in the form of a production subsidy. In the most recent version of these proposals there is, in addition, a "Reconfirmation of Accepted Recommendation" and an introductory paragraph which states that "(these) non-subsidy measures ... could initially permit a major reduction in direct subsidies and in due course probably permit their removal altogether". During the first phase of consultations, the CSSRA reaffirmed its wish to have its 10 proposals accepted, together with retention of the Shipbuilding Industry Assistance Program (SIAP) assistance, i.e., now a nine per cent cost subsidy and three per cent performance improvement grants.

The "Reconfirmation of Accepted Recommendation" referred to above concerns one of the recommendations of the Consultative Task Force on the Canadian Shipbuilding and Repair Industry (1978) that stated: "The federal and provincial governments including their agencies and Crown

Corporations (should) procure all ships from Canadian shipyards". The government's response to this recommendation was one of qualified acceptance; see Response of the Federal Government to the Recommendations of the Consultation Task Force on the Canadian Shipbuilding and Ship Repair Industry (February 1979).

The following are the 10 proposals of the CSSRA.

1. The investment tax credit (basic rate of seven per cent) for ships and offshore exploration and production platforms should be limited to Canadian built ships and offshore platforms.
2. The leased financing provisions withdrawn in the 1976 budget should be re-introduced for Canadian-built commercial ships.
3. Policies should be developed which would make Export Development Corporation equivalent loans available for domestic operators.
4. Removal of the customs duty exemption for foreign-built fishing vessels over 100 feet in length.
5. Removal of the special privilege of 10 per cent customs duties on offshore drilling ships and support vessels and re-introduction of normal 25 per cent duty.
6. Application of customs duties to British Commonwealth-built ships.
7. Ships imported temporarily for the coasting trade should be subject to payment of 1/60th (rather than 1/20th) of 25 per cent of the vessels fair market value per month.
8. Arctic vessels for natural resource transportation and exploration in Arctic regions should be built and registered in Canada.
9. Fishing vessels over five years of age should be prohibited from importation into Canada.
10. All other vessels over 10 years of age should be prohibited from importation into Canada.

Through consultations, the CSSRA and the industry made their views known on a number of matters. Some of these views are identified in later sections dealing with specific issues. Other more general concerns of the industry and its association are described below. Not

all points raised by the industry -- nor, for that matter, by other groups consulted -- are specifically identified. However, it should be noted that the information provided through consultations with all groups has been critically important to present shipbuilding policy work.

The general concerns of the industry pertained to the character of assistance provided, government-industry relations, the degree to which industry expansion should be pursued and Canadian content considerations.

A. Character of Assistance -- The SIAP, and other assistance through the capital cost allowance (CCA) system and Export Development Corporation (EDC) financing is generally available on a universal basis provided that certain basic criteria are met. These assistance instruments are also characterized by their predictability. These characteristics -- universality and predictability -- are viewed as important and desirable in any new program by the industry. In part, the desire for universality follows from a concern that assistance provided on a more targeted or flexible basis would upset existing competitive relationships. On the other hand, some shipyards acknowledged that subsidy assistance was not necessary in all cases and that a universal program could mean a less-than-optimum allocation of resources. The interest of the industry in predictability stems from the uncertainty introduced into the process of bidding for shipyard work if the support to be provided by the government was not known at an early stage.

B. Centralized Government Activity -- A further concern of industry related to the number of separate departments of the federal government that have influence upon this industry. The more obvious are the Departments of Industry, Trade and Commerce (ITC), Regional Economic Expansion (DREE), Transport, Supply and Services (DSS), Fisheries and Oceans (DFO), National Defence (DND) and the Export Development Corporation (EDC). With offshore developments emerging as the major determinant of the industry's future, mention should also be made of the Departments of Finance, National Revenue, and Energy, Mines and Resources (EMR) through its new Canadian Oil and Gas Lands Administration (COGLA) organization.

The view was expressed that because of the diffusion of responsibility the overall situation in shipbuilding and other marine industries is not fully appreciated. One industry suggestion was to provide a single point of

contact, as far as this was practicable, to ensure that the problems of these industries are understood at a sufficiently senior level in the bureaucracy. In addition, it was suggested that a joint industry-government board, involving leading figures in the commercial marine community, could be established to tender advice on possible and proposed shipbuilding-related measures.

C. Expansion of Capacity -- Views on this subject range widely. Some established companies are prepared to adjust to new market opportunities, e.g., the offshore requirements, but are not interested in expansion of capacity and employment per se. In these cases, the constraint appears to be concern about the availability of middle management and the reluctance of existing managements to change the essential character of their companies. Others, however, are advocates of a maximum expansion to take as much industrial benefit from offshore development as possible.

One expansion issue that invariably arose during consultations concerned plans for greenfield shipyards by potential new shipbuilding companies. A number of member companies of the CSSRA view these proposals with apprehension, fearing the impact on their work force, labour costs, and the available labour and management pool.

D. Canadian Content Considerations -- Under the SIAP, attention is paid to the issue of Canadian content in the construction of ships. The spokesman for the allied industries in the CSSRA, i.e., usually manufacturers of marine equipment as distinct from shipbuilders, recognized that if the shipbuilder did not win the shipbuilding contract there would be a much smaller probability of sub-contracts for any Canadian equipment manufacturer. Nonetheless, the provision in any assistance program of some encouragement for supply of Canadian equipment was a concern.

II Views of the Provinces

Attitudes of the provinces to their local shipbuilding industry varied. Some advocate a major expansion of shipbuilding capacity to exploit emerging offshore opportunities; others were reasonably content with things as they are. Some provinces criticized DREE assistance because of the effect it has on the balance of competition within the industry, but others welcome DREE initiatives. Provinces vary in their support of the CSSRA's 10 proposals but all advocate increased federal

government expenditures in support of the industry and are critical of the reversion of subsidy rate from 20 per cent to nine per cent. All provinces were supportive of capital assistance being provided to the industry and are positive about the performance improvement grants.

In discussion with a number of provinces, the Review Group heard complaints about certain provinces limiting competition to their provincial shipbuilding industry. These situations arise when provincial governments, through for example Fisherman's Loan Boards, can materially influence the award of a contract. One solution proposed was that the federal government, through the administration of the subsidy program, should insist, as a condition of assistance, that competition be genuine and not provincially limited.

III Views of Organized Labour

Labour spokesmen were concerned about the reduction of employment opportunities in certain shipyards and the harmful consequences of reliance on export markets. In addition, the Review Group heard that it was important to tie the continued well-being of shipbuilding to the creation of a Canadian merchant marine. Developing from this point, it was advocated that Arctic requirements should be reserved to Canada and that situations such as the Misener contract (a contract for three bulk carriers for Great Lakes operation to be built in Scotland) should not be allowed to recur. Generally, whenever natural resources of Canada are to be exploited, there should be an attendant requirement to use Canadian-built ships to service these developments. Also, shipbuilding employment opportunities need to grow and become more stable than has been the case in the past.

Labour spokesmen said that shipbuilding needs more protection, and that it should be delivered through the income tax system. They also expressed the view that the federal government, through its industrial development policies, is concentrating too much attention on high technology to the neglect of equally important sectors such as shipbuilding and fisheries development. This group was among those that identified a problem of diffused responsibility for marine matters in government.

Labour spokesmen were critical of shipyard management and also of training and education related to the needs of this industry. They indicated that support should be provided for both the shipbuilding and the marine equipment industry.

IV Views of Users

Spokesmen for the oil and gas industry were concerned that industrial benefit objectives might seriously interfere with the pace of energy exploration and development. They argued that such protective measures of assistance to shipbuilding as an increase in tariff protection and the reservation of marine requirements to domestic firms could add considerably to the cost of energy activities. Also, in the view of some oil and gas companies the government imposed burdensome requirements on the industry through its insistence on industrial benefits in technologically demanding fields in which Canada has yet to demonstrate competency. A frequent request from these companies was that close relationships be established between themselves, the shipbuilding industry and government to deal with these issues.

The marine transportation companies referred to the relatively poor assistance available to them in Canada, compared with other countries. Particular attention was drawn to their tax situation and arguments were made for increasing capital cost allowances (CCA) for Canadian-built ships. Another suggestion was that when CCA could not be used the government should provide equivalent grants.

FACTORS

I The International Environment

A. Economic Performance -- The demand for new ships is determined by a range of short- and longer-term factors. Among the short-term considerations entering into the purchasing decisions of fleet owners are freight rates, profitability, and the cost and availability of credit. The longer-term determinants of vessel requirements include the age of the existing fleet, technological change and, perhaps most basically, trends in seaborne trade.

Over the long run, the world shipping fleet has grown at roughly the same pace as international seaborne trade. These long-term averages, however, mask significant differences over time and by vessel type. As the following table suggests, total shipping capacity grew less quickly than the growth in seaborne trade between 1966 and 1970. This relationship was reversed in the early 70s in both the oil and dry cargo markets. The fact that cargo capacity grew more quickly than shipments between 1970 and 1973 led the Organization for Economic Co-operation and Development (OECD)¹ and other sources to suggest that the shipping market was headed toward over capacity prior to the oil crisis of 1973. Since then, the world fleet has grown considerably while virtually no growth in seaborne trade has been recorded.

The slower growth in shipments after 1973 can be attributed largely to escalating oil prices which began in October of that year. The consequent sluggish international demand for goods and increased costs of world shipping resulted in slower growth in international seaborne trade in 1974 and a decline of six per cent in the volume of this trade in 1975. The major adverse effects were registered in oil carriage with shipments of oil falling by eight per cent in that year. Dry cargo ton-miles also decreased, although by roughly half the percentage decline registered in oil shipments.

¹ Working Party No. 6 of the Council of Shipbuilding.

Table 1

A Comparison of Seaborne Trade and Fleet Capacity
Annual Average Growth Rates

	(in per cent)		
	<u>1966-70</u>	<u>1970-73</u>	<u>1974-79</u>
<u>Oil</u>			
Shipments ¹	12.8	10.3	- 0.2
Capacity ²	10.8	11.3	10.
<u>Dry Cargo</u>			
Shipments ¹	8.4	7.2	1.8
Capacity ²	25.1	18.5	9.
<u>Total</u>			
Shipments ¹	10.9	8.9	1.5
Capacity ²	8.2	9.1	8.

¹Based on metric tonne measurements.

²Based on gross register ton measurements.

Sources: United Nations Monthly Bulletin of Statistics
Lloyd's Register of Shipping

The growth in international seaborne trade remained slow in the latter half of the 1970s. Indeed, between 1976 and 1980, the total volume of international trade carried by ship remained virtually unchanged. Strictly limited growth characterized the shipments of most primary commodities. Only halting growth was recorded in the carriage of iron ore and coal, and an absolute reduction occurred over these years in the transportation of crude oil and oil products. Grain was the single commodity to register reasonably strong growth in seaborne shipments between 1976 and 1980, largely as a result of shortfalls in the grain production of the U.S.S.R. and East European countries. The somewhat soft economic conditions prevailing in most western trading nations suggest that total seaborne trade will at best remain static until economic conditions improve.

One affect of much slower growth in shipping volumes than in shipping capacity has been a dramatic increase in idle tonnage. In 1974, just prior to the downturn in international seaborne trade, total inactive tonnage stood at 9.3 million dead weight tons (dwt), or 1.9 per cent of the world fleet. In 1975, inactive tonnage

mushroomed to 60.0 million dwt, equal to 10.8 per cent of world fleet tonnage. Much of this excess capacity was in tankers although dry cargo and combined carrier capacity totalling 1.3 million dwt also lay idle in 1975. Except for a slight increase in 1977, inactive tonnage has declined from the maximum reached in 1975. Estimates indicate that total excess capacity in 1980 was some 18 million dwt, again with much of this idle capacity accounted for by tankers. Notably, however, excess capacity in 1980 remained at almost twice the level recorded in 1974, despite significant scrapping of surplus vessels.

A further effect of the reduced growth in international seaborne trade was the pronounced decline in the orders placed for new ships. As suggested by the data in the following table, particularly strong demand for new vessels, primarily tankers, was evident in the early 1970's culminating in a record level of new orders in 1973. Buoyed in part by moderate growth in seaborne trade, new demand remained relatively strong in 1974 but plummeted in subsequent years. As a result of the two to three year lead time then associated with ship acquisition, the heavy volume of new completions continued through 1977, adding further to excess shipping capacity.

Table 2
Orders and Completions in World Shipbuilding
(Millions of Gross Tons)

	<u>Orders Placed</u>	<u>Completions</u>
1970	41.0	21.0
1971	29.6	24.4
1972	30.4	26.8
1973	73.6	30.4
1974	28.4	33.5
1975	13.8	34.2
1976	12.9	33.9
1977	11.1	27.5
1978	8.0	18.2
1979	16.8	14.3
1980	19.0	13.1
1981(est.)	16.9	17.0

Source: Lloyd's Register of Shipping, Annual Report 1981

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A comparison of completions in recent years to the record level of ships completed in 1975 illustrates the shipbuilding capacity which has been idled with the recent downturn in the industry. According to the data in Table 2, world output in 1979 was roughly 40 per cent the 1975 level of production. The comparable percentages for OECD countries and the non-OECD world were 37 per cent and 62 per cent. Within the OECD, the shipbuilding industries of Germany, Norway, Sweden and the Netherlands were particularly hard hit. The industrializing countries have weathered the poor economic situation somewhat better than the developed countries and, in some cases, have expanded their production.

These data imply that there is a large proportion of world shipbuilding capacity now idle, but action has been taken by some governments to reduce this excess of capacity. Japan, for example, which specialized in the production of very large oil carriers, has reduced its capacity by some 35 per cent. A number of other countries have taken similar action. The United Kingdom intends to reduce capacity by 33 per cent below the 1975 levels and the Netherlands, Germany, France and Italy have scheduled cuts of 50 per cent, 30 per cent, 25 per cent and 25 per cent, respectively. Planned reductions in the industry have been spurred by recent economic events. However, the need to reduce world capacity was recognized well before the energy events of 1973 and was the subject of a General Arrangement signed in 1972 by the European OECD countries and by Japan.

The interest of the developed countries in restructuring their shipbuilding industries reflects, in part, the emergence of developing countries as powers in international shipbuilding. Most new greenfield yards put in place in recent years are located in these emerging nations. The ready transferability of the required technology, combined with cheaper labour, provides these countries with the necessary capabilities and a competitive edge over the established shipbuilders. At present, these countries include South Korea, Singapore, Brazil and Taiwan although a number of others -- China and some South American countries -- are expanding their shipbuilding industries.

The forecast level of newbuildings will be determined largely by the future growth in seaborne trade. One study undertaken for one of the major Canadian shipbuilding firms projected, in 1979, that seaborne trade volumes would increase by roughly 4.9 per cent per year to the middle of this decade, well above the average for the period 1975-1980. This forecast was based on a particularly optimistic projection of expected overall economic growth and appears to have overestimated the anticipated rate of expansion.

The demand for new vessels is expected to grow more slowly than the forecast rate of increase in seaborne trade due primarily to continuing heavy excess shipping capacity. However, the effective magnitude of this excess vessel capacity has been reduced by a sharp drop in the productivity of the existing fleet. Measured in terms of ton-miles per dead-weight ton, productivity in oil carriage fell by 27 per cent and in dry bulk shipping by 23 per cent between 1973 and 1979. A number of causes have been identified of which perhaps the most significant is slow-steaming as an energy conservation measure. Recent productivity in shipping, then, reflects the changed cost structure in shipping and is not expected to be entirely reversed. Accordingly, more shipping capacity per ton-mile will be required than previously and the dampening effect of existing idle capacity on newbuildings would be less than would otherwise be the case.

The following table presents the results of two projections of new buildings to 1985. These forecasts suggest that the annual average level of newbuildings will be roughly one-half to two-thirds the level achieved, on average, between 1975 and 1979. Particularly weak demand for oil tankers is expected to continue and will largely account for the poorer prospects of the industry to 1985. The Association of West European Shipbuilders (AWES) and OECD sources expect a slow recovery with growth well under two per cent per year to 1983, with the rate of expansion accelerating slightly to the middle of the decade. However, both these forecasts were made two years ago and they are now regarded as being overly optimistic.

Table 3

Newbuilding by Vessel Type
(Annual Averages in Millions of Gross Register Tons)

		<u>1980-1985</u>	
	<u>1975-1979</u>	<u>AWES</u> ¹	<u>SAJ</u> ²
Oil tankers	12.0	3.0	4.5
Bulk carriers	6.5	4.2	5.5
Other dry cargo	5.0	4.6	4.5
Gas carriers	.5	1.2	.5
Other vessels	2.6	1.5	2.2
Total	25.6	14.5	17.2

1 Association of West European Shipbuilders

2 Shipbuilding Association of Japan

B. Foreign Government Involvement -- Largely as a result of severe excess shipbuilding capacity and the lack of alternative employment, a number of countries stepped up their measures of support for this industry in the late 1970's. As a background study to the present review of Canadian shipbuilding assistance, A&P Appledore was commissioned to assess foreign government involvement in shipbuilding. According to that report, "in every traditional shipbuilding country, some form of assistance is available, no matter how well its application may be disguised, either in the form of a direct grant to reduce price, assistance for investment and restructuring, or cheap finance".

✓ According to A&P Appledore, approximately half of the major shipbuilding nations now provide a price subsidy. The use of these subsidies may have declined in the early 70s as a result of an OECD agreement in 1974 to control their use. However, the recent economic difficulties of shipyards have prompted a number of countries to provide short-term subsidy support. The United Kingdom, Germany, France and Norway are among the other countries which either introduced or re-introduced subsidy assistance for their shipbuilding industries in the latter half of the 1970s.

The provision of ship financing at preferential rates for exports has become a particularly attractive mechanism of shipyard support given prevailing high interest rates. This type of assistance was cited by Canadian yards in the consultations as being particularly damaging to Canada's ability to export and compete with imports. The Export Credit for Ships Understanding of the OECD limits member countries in the support that can be extended through preferential interest rates. According to this Understanding, no more than 80 per cent of vessel cost can be financed over no longer than eight and half years nor at less than eight per cent interest. This Understanding does not govern the terms on which domestic assistance can be given. The Appledore report notes that, in many cases, the guidelines associated with the Understanding, which are not legally binding, are bent or ignored.

The Appledore report indicates that assistance to domestic shipowners is usually at least as generous as that provided for ships to be exported. In Belgium, for example, financing at one per cent has been available to domestic buyers of ships with a two year moratorium on interest payments. A Canadian shipping firm took advantage of this level of assistance by forming a Belgian subsidiary company. This financing for domestic shipowners varies from one per cent to 11 per cent for up to 90-95 per cent of vessel cost and for as long as 15 years, according to the Appledore report.

A&P Appledore cite a number of countries that provide capital assistance to enhance the productivity performance of their yards. Measures used include the provision of cash grants for specific investments, tax exemptions for imported equipment used in these capital projects, and loans at preferential rates. A number of these schemes have been linked to the contraction of existing shipbuilding capacity. In these cases, assistance is directed toward restructuring existing yards on a smaller scale and encouraging shipbuilding firms to move into alternative industrial activities.

The recent round of increased international subsidization has had two effects. First, it has stimulated shipbuilding demand to some extent. However, the present overcapacity in shipping and the weak cashflow position of shipowners have closely limited the magnitude of this stimulus. To some extent, also, this form of assistance has "borrowed" from future demand. A recent OECD study cites the case of surplus bulk carrying capacity now on order and suggests that recent orders to be delivered within two years will not be employed before 1985. Second, and perhaps of greater significance, is the "beggar-thy-neighbour" effects of competitive subsidization which only alters the international distribution of shipbuilding activity. Much of the benefit in this case is reaped by the purchaser of ships. The Appledore report states, for example, that the world price for bulk carriers of approximately 25,000 dwt has remained below the "cost-based price" since 1976.

There are some signs that the magnitude of support for the shipbuilding industry internationally is reaching an upper limit. The volume of excess capacity which stimulated the recent round of subsidization has been reduced in a number of countries including Japan, the U.K. and the Netherlands, but additional capacity has been added, particularly in developing countries such as South Korea, Brazil, China and Taiwan. These factors, and the particularly sluggish growth in vessel demand forecast for the coming two or three years, will likely limit the rate at which industry support is reduced.

II The Recent Canadian Situation

Seaborne shipments from Canadian ports showed much the same growth pattern as international seaborne trade over the 1970s. In parallel with international events, tonnage shipped through Canadian ports, particularly to foreign destinations, grew sharply up to 1973 and then declined in absolute terms. Also, as occurred internationally, total tonnage handled at Canadian ports declined once again in 1978. Further, total shipments from Canadian ports grew more slowly in the latter half of the 1970s than during the first five years of that decade.

The slowdown in seaborne trade was less pronounced in Canada than that which occurred in total world shipping. Particular strength was evident in international shipments from Canadian ports. In contrast, almost no growth in Canadian coastal shipping activity was recorded in the latter half of the 1970s. More recently, total Canadian shipping activity rebounded somewhat. Tonnage handled at Canadian ports for international destinations increased by approximately 10 per cent in the first half of 1980 over the corresponding period of the previous year. Additionally, coastal shipping grew by almost five per cent in 1980, well above the annual average growth recorded in this trade over the past decade.

The Canadian shipbuilding industry during the 1970s has also fared somewhat better than the international competition, as illustrated by the following table.

Table 4

New Construction Output

<u>Year</u>	<u>Output</u> (\$ millions)	<u>Output</u> ¹ (1980 \$ millions)
1970	92	240
1971	120	304
1972	232	545
1973	226	496
1974	311	568
1975	392	646
1976	380	586
1977	421	608
1978	318	413
1979	427	483
1980	522	522

¹ Output adjusted by an Industry Selling Price Index (Manufacturing).

Output in value terms was characterized by a strong upward trend until 1975, then a decline and growth since 1978. This performance was due to the fact that domestic yards had not been active in building the very large ships which were hardest hit by the slump in international demand. A second reason put forward by the industry is its greater flexibility: the point was made that the specialization of Japanese and Swedish yards in large ships, for example, left these yards with excess capacity ill-suited to the production of other vessels following the collapse of the market for these larger vessels. A third reason was that subsidy assistance was adjusted often during the 70s to support the industry.

An alternative measure of industry activity is the gross tonnage of vessels completed (see Table 5). The length of time required for ship construction introduces some imprecision but, according to this measure, industry output was increasing until 1976 when the trend became one of decline. Much of the decline can be attributed to reductions in the construction of tankers and container ships, the two types of vessels that dominated the industry's export production during the 1970s. However, the construction of vessels to meet domestic requirements also declined in the latter half of that decade.

In part, reflecting the more competitive international situation and poorer economic conditions, the volume of commercial work on order at Canadian yards dropped from a high of 691,000 gross tons in 1975 to a low of 250,000 gross tons in 1978. That year was particularly difficult for the industry with some firms out of forward orders. The industry as a whole incurred a net loss in excess of \$16 million in 1978. By comparison, average annual profits in the preceding four-year period were \$12 million. The volume of work outstanding rebounded in 1979 and 1980. The order book for the industry reached 312,000 tons in 1979 and 344,000 tons the following year.

In part as a result of the lead times associated with the construction of vessels, employment in the industry did not bottom out until 1979. Shipbuilding employment increased marginally in 1980 and again in 1981. Employment in CSSRA member yards averaged 11,900 during 1981. This level of employment was roughly 10 per cent below peak employment during the 1970s of 13,400 reached in 1975.

It was in the 1970s, that the Canadian industry became active in export markets. Exports in 1976 amounted to roughly 65 per cent of production but this proportion had slipped to 27 per cent by 1980. The poorer export performance of Canadian shipbuilders can be traced largely to dramatically reduced international demand and the increased subsidization provided by foreign governments to their shipbuilding industries. Notably, the absolute value of Canadian exports declined after 1976 despite the fact that the 20 per cent subsidy rate covered most of these contracts. The industry has been successful in obtaining some export orders since the subsidy rate reverted to nine per cent after June 30, 1980. These include two seismic vessels destined for the U.S., two tuna boats ordered for registry in the Philippines and three jack-up drilling rigs to be built by Davie.

Canada has tended to export new vessels and import old ones. Partly for this reason Canada has generally held a net surplus, in value terms, in vessel trade. Statistics Canada sources show a surplus in excess of \$160 million in 1975, declining to roughly \$110 million in 1979. In all years since 1972, this surplus has exceeded the total value of imports, in some years by a considerable margin. Another measure of volume of importations can be obtained from the following table, which shows the gross tonnage of foreign-built vessels registered in Canada. Tonnage entering Canada increased significantly after 1974, used vessels accounting for most of the registrations. After 1977, the volume of foreign-built registrations fell and was fairly stable in the 60-70,000 gross ton range. However, the volume of foreign-built registrations for 1981 will be 145,600 gross tons, including 31,640 gross tons for the new floating dock for Vancouver. This volume of foreignbuilt new registrations is equal to 82 per cent of the industry's volume of new construction deliveries for that year.

TABLE 5

VESSELS¹ COMPLETED BY CSSRA MEMBER YARDS

(In Thousands Gross Tons)

<u>Type of Vessel</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Tankers	128.40	66.90	148.00	115.31	87.06	62.70	37.40	24.20	46.40
Bulk carriers	22.75	-	17.35	71.44	86.83	79.10	66.30	22.50	64.50
Fishing vessels	1.77	-	2.83	2.25	1.22	1.60	6.40	2.20	4.60
Tugs	5.52	0.50	0.60	2.31	0.48	0.60	1.10	2.70	0.40
Cargo barge	16.32	17.97	9.67	4.92	0.08	16.90	14.10	16.60	34.70
Other cargo	42.40	59.60	33.60	56.00	11.20	66.10	21.00	21.20	-
Ferries	4.35	11.90	6.65	19.15	0.60	0.50	0.30	1.00	13.40
Government	4.60	11.00	10.93	0.50	2.55	5.90	6.50	0.50	0.30
Miscellaneous	<u>10.00</u>	<u>11.50</u>	<u>14.47</u>	<u>0.53</u>	<u>8.04</u>	<u>11.20</u>	<u>10.10</u>	<u>15.60</u>	<u>13.70</u>
Total	236.11	179.37	244.10	272.41	198.06	244.60	163.20	106.50	178.10

¹vessels over 100 tons

Source : Canadian Shipbuilding and Ship Repair Association
1981 Statistics; ITC Records.

Table 6

Foreign Built Vessels Registered in Canada
(measured in gross tons)

1974	77,000
1975	125,730
1976	103,367
1977	164,514
1978	67,275
1979	61,068
1980	70,549
1981	145,600 ¹

Source: Transport Canada, Steam and Motor
Vessels Registered in Canada

¹ Estimated

Most of the imported vessels have been smaller cargo carriers. The 41 carriers which entered Canada between 1976 and 1980 averaged 7,000 tons, roughly one-third the size of seaway-size lake vessels. Imports of fishing vessels increased in the latter half of the 1970s, particularly after Canada's fishing jurisdiction was extended to 200 miles. Between 1977 and 1980, fishing vessel imports increased from 2,600 to 6,800 gross tons per year. Imported barge tonnage also increased over this period reaching 38,000 tons in 1980.

The present situation in Canadian shipbuilding is summarized by the order books of domestic yards. The composition of the order books of shipbuilders, as of March 31, 1982, is described in Annex "B". Table 7 lists the planned delivery date of the last vessel to be completed by each of these yards. In the case of shipbuilders relying primarily on new construction, this represents the date on which the yard would run out of work, in the unlikely event that no new orders are received.

Table 7

Last Vessel to Be Completed

<u>Major Yards</u>	<u>Delivery Date</u>
Burrard Yarrows	Spring, 1983
Canadian Shipbuilding & Engineering	December, 1984
Port Weller	March, 1983
Versatile Vickers	primarily repairs (dry dock) 1983
Marine Industries	July, 1983
Davie Shipbuilding	November, 1983
Saint John	primarily repairs
Halifax	

Intermediate and Smaller Yards

B.C. Marine	September, 1985
John Manly	November, 1982
Vancouver Shipbuilding	1983
Purvis Navcon	primarily repairs (dry dock) 1983
Ferguson	November, 1982
Marystown	primarily repairs
Newfoundland Dockyard	April, 1982
Georgetown	July, 1982
Allied	

Overall, the industry's order book extends for in excess of a year. Generally, the shortest order books are held by firms which have been most closely involved with the construction of fishing vessels. Firms building bulk carriers and barges for the forestry sector have the most orders for future work.

With the SIAP subsidy rate reverting from 20 per cent to nine per cent on July 1, 1980, a rush of orders were placed to take advantage of the higher rate. Since then, however, some \$170 million of these orders (at 20 per cent) have been cancelled or withdrawn. More importantly, more than \$600 million of work has been booked at the nine per cent subsidy rate, approximately half of which can be attributed to Canadian offshore development requirements. In addition, the Nova Scotia dry dock contract has been awarded to Marine Industries and is valued at \$59.0 million, although no SIAP subsidy is being paid on this contract.

III Market Prospects of Canada's Shipbuilding Industry

A. Oil and Gas Developments -- Energy developments off the Atlantic Coast and in the Beaufort Sea are likely to dominate the prospects of Canada's shipbuilding industry. It is expected that huge sums will be spent on these developments over the course of the 1980s and 1990s. Another characteristic of these expenditures, particularly in the case of Arctic requirements, is their uncertainty. It is impossible at this point to forecast such determinants as future energy prices, the costs of resource extraction, political decisions that will have impact on the commercial viability of oil and gas reserves, or the success of efforts to master the technical difficulties associated with drilling and producing in the ice conditions prevailing off the coasts. Also uncertain is the timing of resource development and the resulting schedule of demands for ships and equipment. Indeed, it is in the nature of this activity that forward planning is particularly difficult. With these caveats, the following sections describe the potential opportunities which may become available to Canadian shipbuilding due to oil and gas exploration and production.

The East Coast: Much of the activity on this coast centres around the Hibernia find and Sable Island explorations. The commercial viability of major gas finds in the latter area are now being assessed and a judgment is expected sometime in 1982 or 1983. It does not appear that major spin-off benefits from these Sable Island discoveries will be available to Canadian shipbuilders. The water conditions around Sable Island are such that, most likely, the gas taken from these reserves will be pipelined rather than shipped to the mainland for processing. There may be opportunities for the construction of supply vessels to operate between the mainland and the production platforms.

It is anticipated that drilling activity in the Atlantic offshore, particularly Hibernia, will increase although when is not clear. It is also anticipated that at least some of the production facilities for the ice infested and deep waters of this area will be floating rather than gravity structures resting on the ocean floor. Floating production platforms have been estimated, by Mobil and others, to cost over \$450 million each. If such platforms are used exclusively for production then at least four will be required for each producing field.

Associated with each exploration and production semi-submersible or gravity platform are a number of auxiliary vessels which could be several types: vessels for towing and anchor handling; for carrying supplies and for safety and maintenance; and possibly in the production phase storage vessels and tankers. All of these would be ice-strengthened and have larger than usual horsepower per foot of length. A Mobil study suggests that the storage vessels would have a capacity of one million barrels and cost approximately \$300 million each. The approximate cost of the smaller auxiliary vessels is in the range of \$15-\$25 million each and the eventual requirement could be for about 70 ships.

These opportunities imply more than potential orders for Canadian shipbuilders. They hold the promise of increased R&D and the enhancement of the technological capabilities of Canadian shipbuilding firms. Development of these capabilities in Canada is the key to long-run economic benefits to the shipbuilding industry from resource exploitations. It has been suggested, for example, that the South China Sea and the West African Coast will be the next areas for offshore energy development. It is unlikely that Canadian firms' ability to construct vessels and equipment for offshore oil and gas work will guarantee them a share in that business. In addition to the ability to build, domestic companies will need the associated technological capabilities to design and engineer equipment suitable for particular environments to capture future opportunities outside Canada.

Arctic Developments: More speculative and dependent upon major technological breakthroughs, but possibly of greater long-term significance for the shipbuilding industry are oil and gas activities in Canada's Arctic. Most of the marine requirements projected for this area are unique and no vessels existing elsewhere in the world are suitable. For example, Gulf has committed \$675 million for capital equipment for its Beaufort project, primarily for marine equipment with all major items new construction.

As an indication of the type of equipment that may be required, in its publication "Industrial Benefits to Canada of Beaufort Sea Development", Dome Petroleum has set out its views of the expected demand by type of vessel to support Beaufort oil development.

- Arctic Crude Carrier -- this type of vessel would be capable of carrying up to 200,000 tons of oil and would be some 1,200 feet long. By comparison, seaway-size Great Lakes vessels are 730 feet long and carry approximately 30,000 tons of cargo.
- AML-6 Icebreaker -- the Arctic Marine Locomotive would be capable of pushing or pulling other ships through six feet of ice.
- AML-3 Icebreaker -- this vessel is essentially an ice-breaking work boat which can operate through winter.
- Supply Vessel - Class 2 -- this vessel would perform much the same functions as the AML-3 but would be limited to the non-winter months.
- Dredge - Class 6 -- It is anticipated that much of the Beaufort Sea winter drilling will take place from man-made islands. This vessel, also capable of travelling through six-foot ice, would dredge and transport material for the construction of these islands.
- Round Drill Ship -- Drilling activities will also use ships of this shape which allows the vessel to withstand ice pressures from any direction.
- Accommodation Barges -- throughout the pre-production and production phases, several thousand workers will be employed in the Arctic and will be housed in these barges.
- Storage Barge -- these barges would be of a size sufficient to store several days production.
- Process Barge -- Prior to transporting, dissolved gas and water would be processed out of the oil on these barges.
- Drilling Barge -- This barge would be used during the development stage.

Many of these vessel requirements could not be built by Canadian yards, as is discussed in a later section. In addition, there is considerable skepticism about the total volume and timing of activity that will follow from Beaufort developments and, as a result, the timing of vessel purchases. The National Energy Board, in its study "Canadian Energy: Supply and Demand" predicts that the Beaufort will enter the production phase in 1990, not in 1985 as was suggested by Dome, and at a much slower pace of development. Considerable slippage has already

occurred in vessel acquisition plans for the Beaufort. There is also debate about whether delivery of oil will be by pipeline or by ship.

The Arctic Pilot Project (APP) is designed to bring Arctic energy resources to southern markets. The project is led by Petro Canada although Dome is actively involved. It involves the construction of a pipeline from the gas field to a shore facility comprised of a gas liquefaction barge, storage and accommodation barges and vessel loading equipment. The liquified natural gas would be carried to a southern terminal by two 140,000 cubic metre Arctic Class 7 LNG carriers. These two ships would be approximately 1,300 feet in length and capable of operating year round in the Arctic.

The liquefaction barge would be some 400 feet by 100 feet, and would contain particularly complex processing equipment. The storage and accommodation barges would be somewhat larger but less complex and, at least in the case of the storage barge, would be "specifically designed to be constructed in Canadian yards", according to Petro-Canada sources.

The total cost of this project for ships and floating equipment is of the order of \$1.3 billion. However, the timing of this project has slipped significantly from earlier predictions and there is now no firm indication of when the decision to proceed will be made.

International Markets for Oil and Gas Equipment: Davie Shipbuilding has had particular success in exporting jack-up drill rigs for use in offshore oil exploration. Since the jack-ups' basic design limits them to water depths of approximately 200 hundred feet, the future demand for these rigs will depend upon exploration activity relatively close to shore. The level of this activity is particularly difficult to predict and will depend ultimately on a complex of economic, political and geological factors. At present there is a fairly strong international demand with some 160 units on order world wide. This volume represents more than one-half of the fleet of jack-ups operating in 1980.

B. Tankers -- As of year-end 1980, 39 tankers were registered in Canada, of which 32 operated out of Atlantic ports, six travelled inland waterways and one was located on the Pacific coast. Between 1976 and 1980, Canada's tanker fleet declined from 49 to the present 39 vessels as a result of a reduction in the number of tankers plying inland waters. The reduction resulted primarily from the introduction of larger vessels.

Between 1961 and 1980, total annual inland tanker shipments per tanker in use have increased more than threefold. Marginal increases in the number of tankers in the Atlantic fleet were recorded in the latter half of the 1970s. The number of tankers operating on the West Coast has fluctuated somewhat over time but has not exceeded two in the recent period.

Most of Canada's tanker fleet is involved in the carriage of refined oil products. Crude oil imports are usually delivered to Atlantic refineries by foreign vessels much larger than those of the Canadian tanker fleet. Smaller Canadian tankers deliver the output of these refineries and, at times, crude oil to other Canadian locations. Accordingly, the fortunes of the tanker fleet are determined in large part by the level of oil imports and, following from that, the output particularly of refineries located in Atlantic Canada. This output has grown quite modestly, increasing by only four per cent in total between 1972 and 1980, or roughly one-half of one per cent on an annual average. Shipments of petroleum products through the Great Lakes have fluctuated widely but have shown no trend growth over the last two decades.

It is not anticipated that the growth prospects for refined oil products will be more favourable in the first half of the 1980s than over the past decade. Indeed, the output of Atlantic refineries may increase less quickly over the coming years as a result of the National Energy Program and the objective of encouraging the use of alternative forms of energy. The success of this program implies reduced demand for new tankers. This demand may strengthen later in the decade if, as appears likely, tankers are chosen to transport Atlantic offshore oil. As noted in an earlier section, approximately three tankers per field would be required for this purpose, but these tankers would likely be larger than any yet built in Canada. Hibernia will be the first field to reach the development stage -- forecast for 1987 -- in which tankers would be required.

A second factor affecting the demand for tankers is the need to replace older ships in the existing fleet. Vessels operating in seawater have an effective life of little more than 25 years. Five tankers in the Atlantic fleet are now at least this age or will be by 1985. This would imply replacement demand of roughly one tanker per year on average to the middle of this decade. Adding replacement demand to new requirements suggests that approximately two new vessels per year will be needed. This requirement equals the tanker output of the Canadian industry over the last two years but falls considerably

short of the four to six tankers constructed per year in the mid-1970s. Total tanker requirements would increase in the latter half of the 1980's as offshore Atlantic oil reserves are exploited.

C. Dry Bulk Carriers -- Roughly 85 per cent of the dry bulk carriers registered in Canada operate on the Great Lakes system. A substantial proportion of Great Lakes freight is grain, iron ore, coal and stone. The lakes fleet comprises approximately 300 ships, equally divided between Canadian and United States registry, the majority of which are bulk carriers. The number of Canadian-registered vessels has remained relatively constant at 150 to 155 over the past decade, although the gross register tonnage of these ships has increased steadily at approximately two to three per cent per year over this period.

Virtually all new Canadian bulk carriers are being built to the maximum 730 foot length set by the capacity of the current lock system. There seems to be general agreement that the Seaway system, which has operated in its current state since 1959, will eventually require locks of sufficient size to accommodate vessels of 1,000 feet and more. The economics of ship operation, particularly given the increased cost of oil, are such as to favour these larger ships. However, it is unlikely that this decade will see large scale upgrading given the lead times associated with a project of this magnitude.

The industry maintains that gearing up for the construction of 1,000-foot ships only would not be economical. Additional construction and repair work would be required to justify any expansion. It is believed that the three U.S. yards with 1,000-foot capability are adequate to meet the demand for the small number of ships of this size which will be required over this decade.

The future demand for new lake vessels will be determined largely by the cost savings associated with the operation of modern lakers and the growth in lake shipments, particularly of the primary commodities identified above. The growth in iron ore shipments is closely related to steel production and is expected to remain sluggish. The prospects for coal shipments are somewhat brighter as a result of greater interest in the U.S. in coal as an energy source. The international demand for grain, and as a result the volume of grain shipments, has been particularly strong since 1976 and is expected to continue at least over the short term. At present, the Canadian Wheat Board has requirements for between nine and 12 ships and has let contracts to carry the wheat to Patterson, Algoma Central, Canada Steamship Lines and Misener Transportation.

Industry sources estimate that annual newbuildings of Great Lakes vessels into the mid-1980s will average four per cent of fleet tonnage, or a total of between three and four vessels of maximum seaway size each year. These vessels are valued at roughly \$30-\$40 million for a bulk carrier and \$50-\$70 million for a self-unloader. At present prices, then, this demand amounts to approximately \$200 million per year. The volume of newbuilding for use on the Lakes is roughly equal to the anticipated output of Collingwood, Port Arthur and Port Weller. Collingwood with some sub-contracting to Port Arthur has the capacity to build two to two-and-a-half vessels per year whereas Port Weller can construct one to one-and-a-half of these ships annually. Two other shipyards Saint John and Davie-- have built lakera in the past but have not participated in this newbuilding demand in recent years. Since 1962, all new construction demand for this type of vessel has been satisfied domestically. Since 1977, only one bulk carrier has been imported into Canada.

This apparently captive market resulted largely from the availability of support under various subsidy programs. Recently, with the reversion of the SIAP subsidy to nine per cent and the increased availability of cheap financing from foreign sources, ship owners have been looking offshore for vessels. Misener Transportation placed an order with a Scottish yard for three vessels, with a total value of \$130 million, to be operated under contract to the Canadian Wheat Board. Under present legislation, these ships can be imported duty-free. The industry is concerned that the Misener arrangement may portend a loss of market to offshore suppliers. The structure of the industry may limit the magnitude of these losses. Particularly, it is not readily apparent that shipping firms owning shipbuilding capacity would source their requirements offshore to the point that the economic health of their shipbuilding subsidiaries is jeopardized. However, Port Weller and Collingwood are both owned by shipping companies that have lost grain contracts to Misener and therefore will need fewer new ships.

Into the longer term, it is not clear that the capacity of the Great Lakes fleet can continue to expand more quickly than shipments. In addition, only limited growth is expected in total bulk freight on the Lakes. As a result, some interest has been shown in increasing the flexibility of Great Lake vessels, particularly strengthening the ships sufficiently for ocean operation. At present, lakera are not permitted in the Gulf area of the Atlantic Coast east of Anticosti and are thereby excluded from the coastal trade in and around Atlantic ports. Reinforcing these lakera would allow year-round

use and spread the overhead cost over a longer period. On the other hand, these vessels are heavier than standard lakers which affects their efficiency and initial cost. Port Weller currently has one such vessel on its order book and sees a moderate growth in this type of ship.

D. Fishing Vessels -- The Atlantic and Pacific fishing industries are quite dissimilar, differing in the fish caught, the markets in which the catch is sold and the type of fishing vessel employed. The Atlantic industry is the larger of the two and accounts for roughly four-fifths of the total number of Canadian seawater fishing vessels. The Atlantic fishing fleet comprises over 33,000 boats, of which roughly 450 are offshore fishing vessels over 65 feet in length. The Pacific fleet consists of 7,700 fishing boats including 375 which are 65 feet or more in length.

The extension of Canada's fisheries jurisdiction to 200 miles in 1977 significantly increased the fish resource available to Canadian fishermen. The consequent demand for new fishing vessels from Canadian yards was particularly buoyant. In addition to this new construction, a number of used vessels were imported to meet the demand.

The potential created by limiting the catch of foreign vessels has not been fully exploited by the Canadian fishing industry. One constraint has been the prohibition on the use of factory freezer trawlers and the limitation of freezer trawlers to non-conventional species. This prohibition results from a policy decision taken by the Department of Fisheries and Oceans as a measure to protect both the fish stocks and fisheries related shore employment. It would appear that, with the present policy environment, the current Canadian share of roughly 80 per cent of the total is approaching its upper bounds and the benefits associated with an increasing share will be limited. An analysis by the Department of Fisheries and Oceans suggests that the Canadian catch will increase by approximately 6.5 per cent per annum between 1980 and 1985. Average annual growth in the Canadian catch over the preceeding five-year period exceeded 14 per cent. It is expected that the demand for new fishing vessels will grow less quickly over this period as a result.

Given a continuation of the current policy environment, the expected sluggish demand for fish products, approaching limits on the further displacement of the foreign fishing efforts and the ready supply of used vessels now lying idle, the anticipated demand for new

fishing vessels to operate on the Atlantic coast appears to be particularly soft. Atlantic Coast yards, particularly Halifax Industries, Ferguson Industries, Marystown and Georgetown, which have been involved most heavily in the construction of fishing vessels will be most affected.

The demand for new fishing vessels for operation off the Pacific coast is largely determined by the buoyancy of markets for salmon and herring, which account for much of the West Coast fishing catch. In response to strong demand for these fish products, a number of new vessels were added to the West Coast fishing fleet in the 1970s. These new vessels are considerably more efficient than boats only a few years older: during fishing "seasons" in certain areas quota limits have been reached in hours rather than in weeks as in the past, according to participants in the discussions.

Due to this over-capacity and less buoyant demand for West Coast fish products, it is expected that the demand for fishing vessels on the West Coast will be flat at least over the short term. Much of the demand to the middle of this decade will be for the replacement of existing vessels, although the large number of new boats recently added to the fleet will strictly limit the volume of replacement.

E. Tugs and Barges -- At year-end 1980, slightly more than 250 tugs and 1,350 barges were registered in Canada. Most of these vessels were used to haul forest products on the west coast and supplies for northern settlements along the Mackenzie River. The requirement for these vessels, then, is largely determined by the level of activity in the British Columbia forest industry and in Arctic development. Despite the downturn in forest products, the Canadian order book for barges is fairly healthy, largely as a result of forward orders placed to take advantage of the 20 per cent subsidy. As of the end of September, 1981, orders for 17 barges were outstanding. In line with the slow-growth prospects of the B.C. forestry industry, it is anticipated that few additional orders will be received up to 1985. Some additional demand may follow from increased oil and gas activities in the Arctic. A similar pattern of demand for tugs is expected.

F. Ferries -- The ferries on the West Coast are operated by B.C. Ferries, a crown corporation. Two ferries, with a total cost of \$61 million, were delivered by Burrard Yarrows to the corporation in the first half of 1981. The sourcing policy of the B.C. Ferries Corporation dictates that this work will be given to B.C.

yards. Most ferries on the East Coast are operated by CN Marine. The five-year plan of this company includes the acquisition of up to six vessels at a total estimated cost of \$270 million. Included in this total are two Gulf Span ships of 15,000 gross tons originally estimated at \$90 million each, a ferry estimated at \$55 million similar to the one now being built at Saint John and three vessels, two at \$15 million and one at \$4 million, to operate off the Newfoundland coast. This company has chartered European built tonnage to service Atlantic coast requirements.

G. Federal Government Procurement -- In addition to oil and gas developments, federal contracts for the construction and repair of government vessels will be of particular economic importance to Canadian yards. The most significant procurements are expected to be made for defence purposes.

The Department of National Defence: This department has identified three main thrusts in its planned expenditures on naval vessels. First is a ten-year plan to refit the major warships of the Canadian fleet. Much of this work will be done in commercial yards as a result of existing agreements which limit the proportion of total defence work that can be done in-house. Indeed, these limits were largely responsible for the decision to refit the Mackenzie class vessels in commercial yards. The schedule of planned expenditures-- not necessarily approved by the government -- is shown in the following table.

Table 8

Major Naval Vessel Refits in Commercial Yards
(\$ Million)

	<u>Dollar Value</u>	<u>Number of Units</u>
1982	\$ 98	6
1983	\$116	7
1984	\$ 96	5
1985	\$ 93	7
1986	\$ 66	4

Source: Department of National Defence.

In addition to these major vessel refits, some 60 or 70 auxiliary vessels are refitted annually at a total cost of some \$7 to \$10 million. Much of this work is done under contract by commercial yards.

A second major thrust is to update selected naval vessels. One element recently approved under this thrust is the Destroyer Life Extension program. Through this program, \$133 million will be expended to maintain the capabilities of Canada's 16 destroyer escorts. Yet to be approved is a \$400 million program to update Canada's Tribal Class vessels. It is anticipated that of the total costs of both update programs, roughly 25 per cent would be incurred for shipbuilding charges.

The third thrust, and largest in terms of total planned cost, is ship replacement of which a major component is the Canadian Patrol Frigate program to replace Canada's six oldest destroyer escorts. The total cost of this program is placed at \$1.6 billion (1977 dollars) to be spent over the period to FY 1991/1992. This total cost includes contract development, the design of an industrial benefits package, life-cycle support as well as the costs of ship acquisition. These latter costs are expected to amount to more than half of total project costs, or roughly \$800 million in 1977 dollars or \$1.3 billion in 1980 dollars. Each of the frigates is expected to take over two years to construct: the program as a whole would require some 7,500 person-years of shipyard work, distributed by year according to the following table.

Table 9

Shipyard Man-Year Requirements of CPF Program

1984	55
1985	270
1986	693
1987	1,485
1988	1,992
1989	1,952
1990	895
1991	158

Source: Department of Supply and Services.

It would appear that the beginning of construction, should the government decide to proceed, is approximately two and one-half years away. Two other elements under the ship replacement thrust are programs to acquire new submarines and replacements for older auxiliary vessels. Resources for these programs have yet to be approved.

Transport-Canadian Coast Guard: The Canadian Coast Guard has two programs under way which require expenditures for shipbuilding and ship repair. Under its five-year fleet capital investment plan, the Coast Guard has received Cabinet approval in principle for the expenditure of up to four per cent of the present value of the fleet, or \$80 million, for upgrading and new construction. Specific expenditures to be made under this program must obtain separate Cabinet approval. All approved expenditures, however, can be considered captive to the Canadian industry. The fleet is ageing with a number of vessels coming due for mid-life refits. As a result, expenditures for this purpose are expected to increase over the amounts spent in recent years. Aside from these sums, the Coast Guard spends some \$15 million on maintenance and ship repair annually.

A final Coast Guard program involves the design and construction of a Class 8 Polar Icebreaker. The development of this vessel is currently in the design stage which is expected to be completed in seven or eight months. Total cost of the vessel is expected to be approximately \$400-500 million and construction will take five years. Depending upon the eventual design, the construction phase would require 2,700 to 3,600 person years in total, with 540 to 720 person years annually in the shipyard over the five years.

Department of Fisheries and Oceans: The five-year plan of the department includes expenditures of some \$75 million to 1984/85 for the purchase of new ships. Now under construction are a 165-foot vessel and a 160-foot fisheries research ship. Planned for 1981/82 are the acquisition of an 80-foot and a 180-foot vessel. The Department intends to purchase two 120-foot ships, one 220-foot vessel and a 230-foot trawler in 1983/84 and a 205-foot ship to replace an existing vessel in 1984/85. Canadian content in these vessels is anticipated to equal roughly 80 per cent or \$60 million.

Summary of Federal Procurement: A partial summary of forecast shipbuilding-related expenditures of federal departments is presented in the following Table 10. Excluded from these data are major acquisitions such as the CPF and the Class 8 icebreaker. The forecast totals are considerably higher than the expenditures of \$149.5 and \$93.6 million made in 1979/80 and 1980/81. However, actual expenditures will likely be lower than the above forecasts since Cabinet approval has yet to be obtained for a portion of those expenditures. Overall it appears that moderate growth may be expected in "normal" government business with shipyards. If approval is given for the CPF and the Class 8 icebreaker, the impact on these yards of government expenditures will be dramatically greater.

Table 10
Forecast Shipbuilding Expenditures of Federal
Government Departments
(Millions \$)

	<u>81/82</u>	<u>82/83</u>	<u>83/84</u>	<u>84/85</u>
<u>MOT</u>				
New construction	54.2	58.8	43.0	57.4
Refit/repair	.8	9.9	20.4	17.5
<u>F&O</u>				
New construction	11.5	14.2	19.3	30.1
Refit/repair	11.5	19.8	19.6	5.6
<u>DND¹</u>				
New construction	0.4	10.0	0.0	0.0
Refit/repair	98.0	116.0	96.0	93.0
<u>Sub-Totals</u>				
New construction	66.1	83.0	62.3	87.5
Refit/repair	110.3	145.7	136.0	115.1
 Total	 176.4	 228.7	 198.3	 203.6

¹ Calendar year basis.

Source: Department of Supply and Services.

H. Other Shipbuilding and Related Activities --

Aside from the types of vessel discussed above, the Canadian registered fleet includes approximately 30 general cargo ships, two-thirds of which operate out of Atlantic ports and all but one of the remainder in the Great Lakes. Future demand for these vessels, which carry a wide range of goods for which specialty ships are not required, will depend largely upon the overall volume of shipping business and ultimately upon general economic growth. The anticipated slow growth in the demand and their relatively small numbers suggest that requirements for general cargo vessels will contribute little to future overall vessel demand.

On the strength of industry performance over the 1970s, it would appear that ship repair will be an important source of growth for shipbuilding firms into the medium term. The industry has been increasingly successful in responding to the repair requirements of domestic vessel traffic and securing export business. Burrard Yarrows, for example, has won business from U.S. sources despite

a 50 per cent U.S. tariff on this work. Increased ship repair activity was identified as an objective by a number of companies in the consultation process to enhance their profitability and stability. Diversification into heavy industrial fabrication was also suggested to be of particular interest to some firms.

I. Summary -- The demand for new ships is tied to general economic growth and increases in goods shipments as well as to the fish harvest, logging activity and oil and gas developments. Additional requirements follow from the commercial and defence objectives of federal government departments. Forecasts point to a continuation of fairly steady demand for bulk carriers, reasonably strong growth in ship repair and for moderate increases in "traditional" government procurement of ships. Soft economic conditions in the Atlantic fishery and overcapacity in the fishing fleet on both coasts indicate limited demand for new fishing vessels at least to the mid-1980s. Similarly, slow growth in the British Columbia forest industry will result in soft demand for tugs and barges. The requirement for new tankers also appears limited as a result of slackening demand for refined oil products. Later in the decade, additional tanker capacity may be needed to transport oil from offshore fields.

Very sizeable increases in demand are associated with mega-projects involving the construction of ships and such other items of equipment as semi-submersible drill rigs for offshore oil and gas exploration and production. Primary among oil and gas projects are Hibernia and the Beaufort. It is estimated by Dome Petroleum that the marine construction requirements of the latter could be \$2.6 billion to 1985. By comparison, the present level of shipbuilding activity is roughly \$500 million per year. Other mega-projects involve government procurement of six patrol frigates and the Class-8 icebreaker.

All of these mega-projects are to some degree uncertain. Neither the CPF nor the Class-8 ice-breaker has received government approval for construction work to begin. It is expected that a decision on the Class-8 will be taken within the year, whereas approximately two and one-half years will be required to move the CPF project to the point where building could begin. The pace of offshore development will depend on a number of factors, including economic, offshore jurisdiction, and solutions to technical problems. Particularly in the case of the Beaufort development, it is questionable whether marine construction can take place at the pace that some oil industry sources have indicated.

IV Limits on Canadian Capabilities

The ability of the Canadian shipbuilding industry to seize these market opportunities involves three factors: the size of present capacity and limits on future levels of investment; the productivity and competitiveness of the Canadian industry relative to foreign suppliers, and related to that, the impact of competitive subsidization. These three factors are discussed below.

A. Capacity Constraints -- Capacity constraints could take one of two forms. One would be an inability to build particular ship types in Canadian yards. The second would relate to the ability of the industry as it currently exists to accept the volume of business potentially available. Regarding the former, the upper physical bound on Canadian capabilities appears to be vessels of something over 80,000 dwt. This roughly equals the tonnage of the largest vessel which has been constructed in Canada and follows from limits on steel through-put and launching capacity. By this criterion, Canadian yards could not build the LNG carriers for the Arctic Pilot Project, nor the ice-breaking tankers and storage vessels for Beaufort Sea development. In the area of oil and gas equipment, Davie's ability to build jack-up drill rigs has been demonstrated and Saint John's capacity appears sufficient to build semi-submersible exploration rigs. Saint John has an order for one semi-submersible and is the only Canadian yard actively engaged in building semi-submersibles, although Davie and other Canadian firms are poised to enter this market.

Canada's ability to build most other vessel types is suggested by the data in Table 11. Indeed, the Canadian industry appears to have virtually a captive market in some types of vessels. This is the case with defence procurement and most other government purchases. Missing from the table, in addition to government-owned vessels, is information on fishing vessels although Canada's capabilities in this area are clear.

Table 11

The Canadian Merchant Fleet as of
December 30, 1980, by Origin of Build

	<u>Canadian Built</u>	<u>Foreign Built</u>	<u>Percent Canadian</u>
Tankers	34	5	87.2
Dry Bulk Carriers	94	35	72.9
Tugs	198	54	78.6
Barges and Scows	1,248	107	92.1
General Cargo	16	13	55.2
Ferries	47	8	85.5

Source: Canadian Transport Commission.

Following from the conclusions presented in the summary, it would appear that the Canadian shipbuilding industry has the capacity in place or in the planning stages to meet the "normal" volume of business for commercial and government vessels expected to materialize over the first half of this decade. However, the demands of mega-projects will not be met without capital investments beyond the levels traditionally associated with the industry.

An Industry, Trade and Commerce supply-demand analysis suggests that to capture all opportunities presented by a maximum rate of offshore oil and gas development and high traditional demand (a total expenditure of \$31 billion with associated employment of 256,000 man-years over the decade), the industry would have to expand well beyond its present capacity. Existing shipyards would have to be developed and totally new (greenfield) shipyards established. A number of factors could limit this expansion, including the perceived economic environment, the pace of offshore oil and gas development and the amount of capital investment required. However, in more realistic demand situations (total expenditures ranging between \$9 to 22 billion and associated employment ranging between 75 to 181,000 man-years over the decade), the industry would either prove adequate or have to expand to increase output some 20 per cent, excluding any expansion to permit building of the very largest vessels.

A number of reasons may be cited, indeed were during consultations, for the industry's limited response to increasing its capacity. Aside from productivity and competitiveness considerations described in a subsequent section, a first factor is that relatively few orders have been received for the main components in the acquisition plans of firms active in oil and gas development, particularly in the Beaufort. Given prevailing interest rates, and slippage in plans for Beaufort development, shipbuilding firms show no inclination to expand their facilities on speculation.

A second factor is that a new facility rather than the expansion of existing yards may be more appropriate for the construction of some vessels. Dome Petroleum has proposed a greenfield shipyard on the East Coast with perhaps a second shipyard to be built on the West Coast. With these yards, the percentage cited above of total shipbuilding activity that could be carried out in Canada would increase considerably. Whether due to differences in cash-flow position, interest in a continuing business rather than a fixed-term project, skepticism about demand, or concern about world over capacity, established shipbuilding firms have not expressed any significant desire to invest in a greenfield yard to build "traditional" types of vessels. However, many of the existing shipyards have plans in various stages of development for expansion or adjustment of their capacity to service emerging offshore requirements.

The hesitation of firms to commit sizeable resources to meet offshore demands follows, in large part, from the risks involved. In addition, it may be traced to the attitude of some parts of the industry: production, technology and quality standards seem to be of greater concern than marketing or investigation of new business ventures compatible with the existing shipbuilding base. The industry as a whole appears to be headed toward a future in which many of the opportunities holding the most promise will be outside traditional shipbuilding. Present perspectives in the industry may limit the degree to which new opportunities are seized.

As well, it has been suggested that Canadian firms lack the technical expertise required in these new areas. To gain the necessary talent, some Canadian shipbuilders have entered into consortia agreements to build semi-submersible drill rigs. One such consortium is CANRIG, a group including AMCA, Marine Industries and others. AMCA also has plans to joint venture with a U.S. company to build semi-submersible rigs at a location in Nova Scotia. Davie has entered a consortium with Akers and Crosby interests, although this partnership has been inactive recently.

A further factor cited by the industry for not gearing up for future demand is the impermanence of the opportunity. Oil and gas reserves are non-renewable and government procurement of the ice-breaker and frigates are possibly single programs rather than continuing business. Closely related to this is the role of overhead in the cost structure of shipbuilding firms. Because of the historical boom-bust cycle in shipbuilding there is concern that the greater overhead associated with new investment could not be carried through less buoyant periods. A final factor cited was that significant increases in capacity would involve a major change in the management and structure of a firm which, perhaps due to conservatism or perceptions about the permanence of the opportunity, a firm would be unwilling to undertake.

Nevertheless, estimates have been prepared indicating that, over the next five years, investment to service conventional markets may total \$350 million (includes \$150 million for ship repair facility investment now underway). In addition, to pursue new business, much of which would be derived from offshore requirements, an additional \$300 million of investment may be committed. This total of \$650 million would represent investment in the established companies wishing to expand or further develop their locations and capacity. In addition to those proposed investments by the established companies, there are also proposals to establish new shipyards and marine construction facilities, the most notable being those of Dome Petroleum. Total potential investment for these new facilities is estimated to be in the range of \$700 to \$800 million. However, this new facility investment is dominated by Beaufort requirements where there is greater uncertainty about both the timing and pace of development compared with that in Atlantic Canada.

B. Competitiveness, Productivity and Labour Cost --

Competitiveness: Cost competitiveness in shipbuilding can only be analyzed by examining a large number of cost factors, the most important aggregates of which are the cost of materials and equipment, the cost of labour and overhead costs. The Canadian shipbuilding industry does not have the strong marine equipment manufacturing base associated with the industry in most developed countries, e.g., the United Kingdom, Norway, West Germany and the United States. Consequently, it is not able, in any significant way, to influence these costs, which may represent 50-60 per cent of the cost of a ship. Direct labour costs are usually in the range of 25-30 per cent of total cost. It is this latter cost factor that is most directly under the control of the shipbuilder. Overhead and profit may represent 10-20 per cent of total cost and includes a large number of elements, most primarily Canadian in origin.

The information available is not sufficient to form definite conclusions about the overall cost competitiveness of the Canadian shipbuilding industry. Much depends upon how comparisons are made and whether account is taken of government intervention. It is probably true that the Canadian industry, generally, cannot compete with shipyards established in developing countries where wage compensation is low, for example, in South Korea. Also, except in unusual circumstances, competition with Japan, where the world's most powerful industry is located, would be difficult. Further, when it is recognized that international shipbuilding is characterized by heavy government intervention, which can take many forms including nationalization, price subsidization, incentives for capital investment and assistance in ship financing, it is clear that forming true assessments of competitiveness is fraught with difficulties. Because of this uncertainty, there is a need for an investigation to determine where the Canadian shipbuilding industry's potential to achieve international competitiveness is the greatest and thereby to determine appropriate areas for specialization.

The relative strength of the Canadian dollar against other currencies is another important factor. As shown by Table 12, all key foreign currencies were rising in relative value between 1974 and 1980. This gave Canadian shipyards a significant advantage against competitors in Japan and Europe.

Table 12

Canadian Dollars Per Unit of Foreign Currency

	<u>1974</u> <u>Average</u>	<u>1980</u> <u>Average</u>	<u>Dec. 31</u> <u>1981</u>
U.S. Dollar	0.978	1.169	1.185
U.K. Pound	2.288	2.720	2.267
Yen (X 100)	0.335	0.518	0.542
D-Mark	0.378	0.644	0.525
French Franc	0.204	0.277	0.208
Swedish Krone	0.220	0.277	0.216

However, the trend changed in 1981 and, by the end of that year, the Swedish krone, the French franc and the U.K. pound were back down to their 1974 levels; the D-mark had dropped 18 per cent and only the Japanese yen and U.S. dollar continued to strengthen. The ability of Canadian shipyards to compete against these countries was correspondingly affected.

Because direct labour cost is the important cost factor most under the control of the industry in Canada, it is examined in the next two sections from the aspects of productivity and labour earnings, and some attempt is made to draw comparisons of competitiveness with respect to these aspects.

Productivity: Productivity of labour is a fundamental determinant of the ability of Canadian yards to compete. Productivity is also difficult to measure in shipbuilding and depends upon many factors, such as the type of ship being constructed, whether the ship is one of a kind or one in a series, and what other work is underway in the yard. Further difficulties are associated with identifying the productivity performance of foreign yards with which Canadian firms might be compared. Much of the required information is held by the consulting firm of A&P Appledore. This firm was commissioned to do a desk audit of its files, supplemented by visits to individual yards to assess the labour productivity performance of Canadian yards relative to the competition.

The Appledore study compared construction practices and methods employed in 11 Canadian shipyards and 13 foreign yards, each being subdivided into two classes representative of larger and smaller yards. The practices related to such activities as steelwork production, lay-out and material handling, and design systems. Overall practice was summarized into a "technology rating" according to a methodology developed by Appledore. In each size class it was concluded that aggregate technology levels in Canadian yards lags behind those of foreign competitors, but that the leading Canadian yards are reasonably competitive technologically in world terms.

In the case of the larger yards the areas where the technology gap is most evident are berth activities, yard layout and materials handling. This can be attributed, in part, to the fact that most Canadian yards are operating from the same site as they were 30 years ago. Other areas where shortfalls are evident relate to design, organization and operating systems. For the smaller yards, the technology gaps are in operations concerned with outfit installation, ship design and drafting and production engineering.

Separately, the Appledore report attempted to assess the labour productivity of Canadian yards and make related to productivity in steelwork and, separately, outfit and engineering productivity. The three productivity levels used for comparison were:

- a) Level 1. The minimum required in a developed country for international competitiveness. This level would be characteristic of shipyards found in the United Kingdom, Spain and France.
- b) Level 2. A good, internationally competitive productivity level characteristic of shipyards in Norway, Denmark, Sweden, West Germany and some Japanese yards.
- c) Level 3. Maximum or near-maximum productivity found internationally. This level would be characteristic of some shipyards in Denmark, Sweden, Korea, Japan, and in the case of small vessels some shipyards in the United States.

The Canadian shipyards place, generally, in between Levels 1 and 2 with a number of the larger yards meeting Level 2 standards. Overall, Canadian yards' labour productivity fell slightly below Level 2 which correlated with their slightly lower than average level of technology. Some smaller yards achieved productivity Level 2 and exceeded this level in steel productivity. The correlation between technology level and productivity level was less apparent in the smaller than in the larger yards.

Recent measures of productivity performance may not fully indicate the productivity prospects of this industry. Clearly, the major changes in the composition of the output of the shipbuilding industry that would accompany offshore oil and gas activity on the scale now envisaged could markedly change the situation. Offshore supply vessels tend to be relatively small and well within the limits of Canada's capabilities. The tankers required for the shipment of oil from east coast fields could range from 70,000 dwt to 150,000 dwt. The largest of these are well beyond current capacity limits.

Canada's productive capabilities in the construction of semi-submersibles has yet to be established. If the order won by Saint John is indicative, Canada can be productive on a world scale in terms of man-hours required per semi-submersible. It is most difficult to anticipate Canada's productivity performance in the construction of vessels, particularly for Arctic oil and gas exploration and production. This is especially true of the large cargo vessels required when production begins. These will be the largest, most powerful commercial ships ever built and their success will hinge upon current R&D efforts by oil companies (little R&D is done by existing shipbuilding firms). The large expenditures now being made on R&D by the major oil firms associated with offshore oil and gas development could place Canada in the forefront of ice technology and in related ship construction.

A second caveat in extrapolating past productivity performance into the future has to do with the volume of business available to Canadian firms. As the Appledore report suggests, series production of a number of similar ships has a pronounced effect on productivity. The concentration of demand for ships in a fairly narrow range of types, together with the large volume of ships required, suggests that longer production runs will follow from Arctic and East Coast energy developments and that significant productivity improvements will be made even if all requirements are not sourced in Canada.

Labour Costs: Shipbuilding technology has advanced significantly over the past decades but is readily transferred to countries wishing to establish themselves in this field. This ready availability of technological expertise and cheap wage rates has spurred a number of developing countries into the international shipbuilding industry. The data in Table 14 demonstrates the labour cost advantage held by some of these developing countries. Korea, for example, which has proven to be a formidable competitor in international shipbuilding, had a wage rate roughly one-fifth that of Canada in 1979. Japan, which held an advantage in the 1960's and early 1970s roughly comparable to that now enjoyed by Korea, is also finding it more difficult to compete on strictly economic grounds.

However, the wage gap between developed and developing countries appears to be narrowing. Korean shipbuilding wages, for example, were nine per cent of those in Canada in 1975 and 22 per cent four years later. Indeed, there appears to be an inverse relationship between the level of wage rates and their growth over this four-year period. Of the 16 countries for which data is available, only U.S. shipbuilding wages grew more slowly than those in Canada between 1975 and 1979. In part, this improvement follows from the devaluation of the Canadian dollar relative to most other international currencies over the last half of the 1970's. This trend was reversed in 1981.

C. Competitive Subsidization -- An earlier section has described the growth in the international subsidization of the shipbuilding industry in the later 1970s. Canada also increased its subsidy support in this period, increasing the rate payable from 12 to 20 per cent of production costs in 1977. This greater rate was available until June 30, 1980, at which time the subsidy reverted to nine per cent.

Over this same period, interest rates increased to the point that the financing terms available have become a primary determinant of the ability of Canadian companies to sell ships. In Canada, as well as elsewhere, concessionary financing terms are available for exports. In addition, and in distinct contrast to many other shipbuilding nations, Canada does not offer financing to domestic purchasers of ships on the same terms as those available for exports. Accordingly, Canadian buyers of ships are drawn by the attractiveness of foreign offers to a greater extent than of domestic buyers in these other countries.

D. Summary -- A central conclusion reached in the A&P Appledore productivity study (commissioned by ITC in 1981) held that Canada's shipbuilding industry fell just short of achieving what was described as a "good, internationally competitive productivity level". Although there is room for improvement, it appears that the labour productivity of Canadian yards has not been the primary cause of any inability to compete with imports or in international markets. Some improvement has occurred in Canadian labour costs relative to developed and industrializing nations, in part resulting from exchange rate changes. However, there appears to have been some narrowing of the wage gap with developing countries and, as a result, possibly a slight reduction in competitive pressures from suppliers in the less developed countries. However, the wage rates in these countries remain a fraction of those paid in Canada.

Canada's ability to sell ships is also limited by the ready availability of cost subsidies and concessionary financing abroad. Further, Canada does not provide concessionary financing to domestic purchasers of ships as do a number of countries.

A major constraint limiting the degree to which the Canadian industry will obtain new business relates to its capacity. It is clear that if all opportunities were seized by Canadian shipbuilders, the industry would expand to well beyond its present size. A number of factors have been identified, aside from those listed in the previous paragraphs, which could limit the degree to which Canadian shipbuilders will share in the new opportunities following from offshore oil and gas development. Central, it appears, is the capital investment required and the fact that many of these opportunities fall outside traditional shipbuilding. Adjustments will be required in yard layout and capital equipment, production methods, the degree of attention given to design and engineering and in the focus of management.

TABLE 13

Estimates of Hourly Compensation of Production Workers in the
Shipbuilding Industries of 16 Countries

(U.S.\$)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	Average Annual Growth Rate	Index 1975 Cdn. = 100	Index 1979 Cdn. = 100
						(%)		
United States	6.89	7.49	8.08	9.00	10.00	11.3	101	102
Canada	6.83	7.93	8.48	8.89	9.79	10.8	100	100
Japan	3.93	4.30	5.11	6.70	6.53	16.5	58	67
Korea	0.60	0.76	1.40	1.87	2.14	64.2	9	22
Taiwan	0.67	0.77	0.91	1.17	1.44	28.7	10	15
Denmark	7.05	7.38	7.98	9.37	11.29	15.0	103	115
Finland	5.50	6.24	6.42	6.89	8.17	12.1	81	83
France	5.17	5.64	6.51	8.86	9.57	21.3	76	98
Germany	7.10	7.51	8.82	11.04	12.66	19.6	104	129
Greece	2.01	2.21	2.58	3.33	3.84	22.8	29	39
Italy	5.87	5.46	6.06	7.20	8.72	12.1	86	89
Netherlands	7.11	7.44	8.54	10.31	11.79	16.5	104	121
Norway	7.48	8.14	9.20	10.27	10.93	11.5	110	112
Spain	-	-	4.41	5.05	6.61	24.9	-	68
Sweden	8.00	9.01	9.76	10.46	12.21	12.8	118	125
United Kingdom	3.67	3.34	3.51	4.37	5.45	12.1	54	56

Source : U.S. Department of Labour, Bureau of Labour Statistics.

V Current ITC Assistance to the Shipbuilding Industry

Assistance to the shipbuilding industry has been made available through a combination of programs and ad hoc measures. The primary purpose of the former has been to provide subsidy assistance to Canadian shipbuilders whereas the latter have been taken largely to encourage the construction of repair facilities, including dry docks. These measures are described in the sections below.

A. The Production Subsidy -- Production subsidies, as a device to enhance the competitiveness of Canadian-built ships, have been provided by the federal government through various programs since 1961 (see Annex "C"). The Ship Construction Assistance Program introduced in that year was administered by the Canadian Maritime Commission and paid subsidies of 40 per cent on commercial ships and 50 per cent on steel trawlers built for Canadian registry. In 1963, the former was reduced to 35 per cent but the subsidy on trawlers remained unchanged. This program was replaced in 1966 by the Ship Construction Subsidy Program, administered by the newly-formed Department of Industry. Under this program, a subsidy was offered to provide some protection against Commonwealth-built ships which could enter Canada duty-free. As under the earlier program, only ships built for Canadian registry were subsidized. The 25 per cent rate of subsidy paid was reduced over time until a 17 per cent rate was reached in 1973.

By the end of 1970, it became apparent that a strong demand was developing internationally and that Canadian yards could enter foreign markets if the availability of the production subsidy was extended to ships built for foreign registry. Domestic markets, at that time, were not promising; in fact, employment in the industry was declining. In November 1970, a new program was introduced offering subsidies, ranging from 12.5 to 17.0 per cent of shipbuilding cost, on ships for export. This subsidization did not exceed that already provided on ships for Canadian registry. The program was temporary, with no new applications to be accepted after June, 1972, and all vessels to be completed by the end of October, 1975. These cutoff dates were subsequently extended to March 31, 1975, and October, 1978, respectively.

The present subsidy initiative, the Shipbuilding Industry Assistance Program (SIAP), was introduced to integrate the previously separate domestic and export-oriented programs. In addition, as is discussed in a following section, assistance was provided to improve the performance of Canadian shipyards. The initial program

provided for a subsidy at the rate of 14 per cent of vessel cost on applications made during 1975. It was intended that this rate would fall by one percentage point per year until a stable rate of 8 per cent was reached in 1981. The amount of subsidy paid under this program depends in part on the Canadian content of the vessel. The shipbuilder is required to award contracts for the supply of material and equipment to be incorporated in a ship on the basis of fair competition, giving consideration to price, delivery and performance. Should the shipbuilder or shipowner decide not to comply with these procedures, subsidy is denied on that element of the ship's cost.

The program has been subject to a number of amendments since 1975. In 1976, the subsidy became available for conversions as well as for new construction, and in the following year the subsidy rate was increased from 12 per cent to 20 per cent on a temporary basis. After the 1977 announcement, the 20 per cent rate was extended on five occasions. This rate subsequently reverted to 9 per cent for applications received after June 30, 1980. In addition, a cap of \$75 million was placed on annual disbursements for subsidy and grants for fiscal years 1980-81 through 1982-83.

B. The Performance Improvement Grant -- During the evaluation of the domestic and export-oriented subsidy programs in 1974, attention was drawn to the difficulties experienced by the shipbuilding industry in obtaining assistance for capital expenditures through established programs such as the Defence Industry Productivity Program (DIPP). Because of its operating criteria, assistance under this program was not generally available to shipyards. No other program existed that would encourage increased investment in modern shipbuilding plant and equipment. Consequently, specific assistance for this purpose was made available through the SIAP.

A shipbuilder establishes access to funds for performance improvement by constructing a vessel qualifying for assistance under SIAP. Particularly, a shipbuilder earns a "credit" equal to 3 per cent of approved vessel costs which can be drawn down if it can be demonstrated that yard performance will be enhanced and if the shipbuilder will match the amount of assistance provided through the program. The concept of performance improvement has been broad; in the associated guidelines, shipbuilders are enjoined to consider a wide variety of alternatives including:

- a) the acquisition of equipment, facilities and land with necessary support services;

- b) development and implementation of management and production control systems;
- c) attention to worker safety;
- d) attention to worker facilities and services to improve conditions of work, e.g., health services, canteens, and washrooms;
- e) pre-implementation activity including the employment of consultants;
- f) activity concerned with labour-management relationships and personnel motivation; and
- g) activity concerned with shipbuilding technology.

Although projects concerning practically all these alternatives have been approved, by far the greatest proportion of assistance has been provided for equipment and facility acquisition.

Thirty-seven shipbuilders currently have access to performance improvement grants and of these 16 have approved plans, with another four in the approval process. Access to grants, either received or outstanding, of these 20 shipbuilders represents in excess of 90 per cent of all such grants made available to the industry.

To the end of FY 1981-82, \$28.0 million has been paid or committed through performance improvement agreements. There remains another \$41.1 million not committed, but provided for through subsidy agreements. In addition, shipbuilders may have access to a further \$20.1 million, depending upon the extent to which applications result in subsidy agreements and ship construction. In other words, shipbuilders potentially have access to \$61.2 million of performance improvement grants, practically all of which is to the credit of the shipbuilders who have approved plans.

The total assistance paid by fiscal year is shown in the following table.

Table 14

Grants Paid by Fiscal Year

<u>Fiscal Year</u>	<u>Performance Improvement Grant (\$ Millions)</u>
1977-78	2.544
1978-79	5.850
1979-80	3.480
1980-81	7.120
1981-82	5.504
	24.498

Source: Industry, Trade and Commerce.

During the consultation process, companies showed examples of recent capital investment and the introduction of production and planning control systems supported through federal grants. The benefits of these investments were demonstrated through productivity statistics made available to the Review Group. The information provided was most sensitive, in terms of commercial confidentiality, and was provided only on the understanding that it receive the most limited distribution. The Review Group was persuaded that performance improvement grants had played an important role in increasing productivity in Canadian shipyards. Through consultations it also became evident that provincial governments and shipyards practically unanimously supported this assistance. In particular, shipyards stated that it was only because of this incentive that a large number of capital investments had been possible.

C. Dry Dock Assistance -- Two of Canada's large dry docking facilities are owned by the Crown, with responsibility for operations vested in the Department of Public Works (DPW). This arrangement has developed because large docking facilities are not usually commercially viable. In other countries they are sometimes provided by government or, substantially so, as essential infrastructure in support of waterborne transport and naval operations.

In 1973, investigations began into the adequacy of ship repair facilities on both the East and West Coasts. A report was made on the West Coast situation in 1975 with the result that refurbishing of the DPW graving dock at Esquimalt started and a more detailed investigation of a new docking facility for the Port of Vancouver was undertaken. A second report, in 1977, concerned the Vancouver docking facility and also reported on the adequacy of East Coast facilities.

Since then the federal government has taken the following action:

- (a) The DPW Esquimalt graving dock has been upgraded and further expenditures will be made.
- (b) New ship repair facilities, including a 33,000 tonne floating dock, have been assisted at the Burrard Yarrows Corporation site in Vancouver.
- (c) An agreement has been signed with Saint John Shipbuilding to assist with new ship repair facilities, including lengthening of the existing graving dock (owned by the company).
- (d) A large ship repair facility is being developed at Halifax Industries. Work is already well advanced and includes the importation of a used floating dock from the Netherlands. A major new floating dock is to be installed in 1983 (to be constructed at Marine Industries Ltd.).

D. Assessment -- Through the measures described above, and others such as the provision of special rates of CCA for Canadian-built ships, the federal government channels approximately \$100 million annually to the shipbuilding sector. It is undoubtedly true that the Canadian shipbuilding industry would be more closely circumscribed and its economic contribution more limited had not this support been made available.

Project submissions for performance improvement grants include estimates of benefits to be achieved. Based on these submissions, cumulative savings have been valued at \$19 million (1981\$) for FY 1981-82, and are attributed to investments made in equipment, facilities and management practices since 1975, the first year that grants were provided. These savings are the cumulative result of assisted investments made since then equal to approximately twice the \$25.5 million of grants provided to the end of FY 1981-82. Further support for the effectiveness of productivity improvements was provided during consultations.

Direct cost subsidies account for much of the assistance given shipbuilding. A paper prepared in 1979 concluded that the costs of providing subsidy support were greater than the benefits derived. The conclusion was based on separate studies conducted by the Departments of Finance and Industry, Trade and Commerce. A premise of that work was that lay-offs of employees in shipbuilding implied an economic loss and hence maintaining employment was a

benefit to the economy. A central determinant of these benefits was the speed with which laid-off workers found new jobs: the more quickly new jobs were found, the less the benefit from maintaining workers in their present employment. Calculated benefits were estimated by both the Finance and ITC studies to equal slightly in excess of 11 per cent of vessel construction costs. On the other hand, costs of assisting the industry were estimated at between 30 and 50 per cent of vessel construction costs. Allowing a margin for error, costs were concluded to be at least twice the magnitude of benefits.

The economic situation has changed since 1978 when the two benefit-cost studies were done. Particularly, labour markets have become less buoyant with unemployment rates in all shipbuilding provinces now higher than those prevailing in 1978. According to the methodology followed in the cost-benefit studies, the benefits of providing shipbuilding assistance have probably increased as a result. In addition, the subsidy rate has reverted from 20 to nine per cent, and subsidy represented the largest element of cost considered. However, it is unlikely that benefits now exceed costs. Rather, it would appear that the conclusions reached in the background paper to the July 1980 decision are not cyclically sensitive but relate to the nature and level of the assistance provided.

One characteristic of the SIAP is that assistance is made available at an equal rate of subsidy for all ship types. An earlier section has noted that some types of vessels are virtually captive to Canadian shipbuilders. For example, over 90 per cent of all barges and scows registered in Canada were built in this country. Conversely, a much smaller proportion of general cargo ships were built in Canadian yards. By providing across-the-board assistance, it would appear that subsidy is paid on vessels that would have been constructed in Canada in any event.

A further characteristic of the SIAP which bears on its associated costs and benefits is its essentially defensive nature. Over the course of the past two decades when no major adjustment pressures arose, a program offering across-the-board subsidies and geared to the status quo was probably appropriate. However, the major opportunities for the shipbuilding sector are developing outside of the traditional activities of this industry. Under these circumstances, a program targeted specifically upon emerging opportunities would involve greater benefits relative to costs.

POLICY OPTIONS

In November 1981, the federal government outlined its priorities for Canada's economic development in the 1980s. Noted were the major opportunities becoming available, particularly outside of central Canada, as a result of energy development. Of concern also was the need for restructuring of some industrial sectors. In the case of shipbuilding, these two themes are intimately related. Major new market opportunities are becoming available from offshore oil and gas activities at a time when the present and anticipated demand for the traditional types of vessels is limited. Encouraging Canadian industries to respond to such adjustment pressures is an industrial policy priority of the government.

Other reasons may be advanced in support of assisting Canada's shipbuilding industry. A healthy shipbuilding industry is an essential element of Canada's industrial capability and it has proved to be a significant source of skilled, relatively high paying employment. A number of the larger shipyards are located in localities where alternative employment is lacking and the shipyards are valuable employment creators there. Because of the importance of water-borne transportation in Canada, both domestic and international, it is essential that this service industry be supported by ship repair and maintenance capacity. In Canada, the practice has usually been to have shipbuilding and ship repairing activities integrated to ensure a satisfactory labour pool for both, although some yards specialize in one activity or the other. Finally, there is an element of national prestige in having a shipbuilding industry capable of serving national defence, Arctic and other offshore requirements.

Federal and provincial government departments and agencies with marine operational responsibilities are of the opinion that the maintenance of a shipbuilding and ship repairing industry is necessary for the supply, and particularly for the support, of their fleets. For example, the Departments of Supply and Services (DSS) and National Defence (DND) believe there is an absolute requirement for a capability to support the existing naval fleet. This capability should be available on a regional basis to service East and West Coast requirements. If the industrial capability was lost, DND would have to expand its own naval dockyards together with their support staff. On the subject of ship construction, DND believes that it is highly desirable that Canada have a naval shipbuilding capability, principally because, in the event of hostilities, there

would not be the response time available to establish such capability. Again, ideally, this capability should exist in more than one region. The skills and capabilities needed in such an industry can only be maintained by some continuing level of commercial new construction and repair activity. DSS would also argue that the structure of the industry should be such that genuine competition prevails for government contracts.

The regional character of the industry, which is discussed at greater length in the section Regional Considerations, has played an important role in influencing assistance policy. The Department of Employment and Immigration considers the shipbuilding industry to be a valuable training ground for skilled labour which becomes available to Canadian industry at large. Further, employment in shipbuilding has proved to be an effective means of upgrading labour skills, and this has been particularly the case in Atlantic Canada.

The following sections investigate a number of options open to the government to tailor assistance to the economic circumstances of the shipbuilding industry. These options are not necessarily mutually exclusive. Rather, a combination of measures may be required to ensure that the character and magnitude of assistance meets the needs of the industry and serves the industrial development objectives of the government.

I Retention of Subsidy Under SIAP

Subsidy programs have proved to be flexible instruments that have been successful in meeting their declared objectives. Their flexibility has allowed adjustments to be made in government assistance policy as domestic and world circumstances warranted. A particularly attractive feature of the SIAP and earlier subsidy programs has been their universality and therefore relative freedom from criticism on the grounds of preferential corporate or regional allocation. The delivery of subsidy is straightforward and the administration of SIAP well developed with a low administration cost. Indeed, during consultations there were frequent references to both the efficiency and the effectiveness (at least until the reversion of subsidy rate to nine per cent) of SIAP subsidy assistance.

One criticism of the subsidy in its present form, however, derives from its universal availability. There is some evidence that universal subsidy tends to encourage the status quo rather than adjustment as market forces dictate. This statement is necessarily hedged

because there is also evidence to the contrary, e.g., Davie Shipbuilding's successful penetration of the jack-up rig market, although this can, in part, be attributed to the rate of subsidy (20 per cent) then available. Nonetheless, with the universal availability of subsidy, assistance is given according to volume of output, rather than being tailored to the construction of particular vessel types. In the extreme, subsidy is provided on vessels that would have been built in Canada in any event. These reasons suggest that a universal availability of subsidy is ill-suited to the development of a shipbuilding industry at reasonable cost, especially one focussed upon new offshore opportunities. However, with changes to the existing SIAP regulations, it would be possible to change from a universal subsidy to one that was deliberately targeted on specific ship types. For example, it appears that a subsidy rate greater than nine per cent is necessary for Canadian shipyards to win contracts for many important new offshore requirements.

The amount of subsidy required above the prevailing nine per cent rate is difficult to estimate. This is particularly true now that offshore requirements are beginning to dominate the industry's future. Each major contract will have unique features derived from considerations of such variables as the tax position of the shipowner, the capital cost allowances available, whether the shipowner has a corporate interest in shipbuilding, the sensitivity of the shipowner to industrial benefit considerations, and the intensity of international competition for any particular contract.

Based on the fact that Canadian shipyards have recently lost significant traditional business as well as contracts for exploration platforms required for offshore development because of the widespread use of direct and indirect subsidies abroad, continuation of assistance under SIAP at increased subsidy rates will be necessary, unless offsetting assistance in some other form is provided.

II Elimination of Subsidy Under SIAP

The principal reason advanced for the elimination of the subsidy is the mounting cost to the government of this assistance. These mounting costs can be attributed to the general escalation in all costs during a period of high inflation and the fact that, for a number of years, and for most existing contracts, the industry's output has been subsidized at a 20 per cent rate, rather than the lower rate in effect earlier. The 20 per cent rate was originally intended to be temporary but will apply to ships built into 1985.

At present, disbursements under SIAP (subsidy and performance improvement grants) are capped at \$75 million annually. The "cap" is well below current requirements and has required deferment of payments from FYs 1980-81 and 1981-82 into subsequent years.

Primarily because of general cost escalation, output of ships in 1982 will be in the range of \$500-\$600 million and most of this is subsidized at the 20 per cent rate. This output implies subsidy commitments of \$100-\$120 million which, because of the accumulated effects of capping, will not be completely paid until FY 1983-84 or later. After that, annual subsidy commitments (in current dollars) will decline because shipyards will be increasingly occupied with shipbuilding at the nine per cent subsidy rate and deferred subsidy amounts will have been largely paid.

Considerable benefit is associated with the elimination of subsidy assistance. Earlier sections of this paper have described the escalating support for this industry internationally to capture available orders and prevent the loss of business to emerging countries. Whether the need for short-term defensive measures will increase is open to debate. However, it is not anticipated that foreign governments' involvement in their shipbuilding industries will decline appreciably before the middle of the decade. Under this alternative, Canada would not incur the costs of "staying in the game".

A related advantage of this alternative is that foreign governments would underwrite a large portion of the vessel acquisition costs of Canadian firms. The short-term benefits of this approach are clear although such adverse impacts as reduced employment in shipbuilding would result even in the short run. The longer-term advantages are less apparent. It is unlikely that heavy foreign government support will be available into the longer term. By nature, it is a short-term, stop-gap measure to "buy time" until the necessary adjustments can be made. However, acceptance of this alternative even in the short term would result in a reduction in Canadian shipbuilding capabilities that would likely be permanent.

Withdrawal of the subsidy would have greater impact on some shipbuilding activities than on others. Canada's capability in small vessels suggests that small tankers and cargo carriers would continue to be built in Canada. Fishing vessels also fall under Canada's established capability and, given a more buoyant market, may be built in this country. Most of the tug and barge business would likely remain available to domestic shipbuilders.

Given the need to meet exacting military standards peculiar to Canada, most if not all warships required by the Department of National Defence would be constructed in Canada.

Even though Canada has developed unique capabilities in the construction of seaway-size Great Lakes vessels, these ships are sufficiently large to attract the interest of foreign yards and more would likely be built abroad. These vessels would likely be imported from the Commonwealth since they can enter duty free. Canadian demands for some ferries and for larger tankers and cargo carriers would also be sourced abroad for the same reasons.

Requirements for oil and gas exploration and production would not be met to any significant extent by Canadian firms. Vessels and equipment for offshore resource activities is a promising segment of an otherwise depressed international market and will be actively pursued by foreign competition. Elimination of subsidy together with slowing demand for this type of equipment in the North Sea would result in all semi-submersibles being built abroad. Solely on the basis of reliability and delivery, some orders for supply vessels might be placed in Canada. The widened gap between the assistance available internationally and that given Canadian yards under this alternative would virtually preclude exports of Canadian-built vessels.

Removal of the subsidy would result in a reduction in employment in the industry unless other assistance is introduced. These adverse employment effects would reinforce those expected as a result of slower growth in the demand of the traditional types of vessels built in Canada. Countering somewhat the adverse employment effects is the ownership structure of the industry. Most major yards are subsidiaries of larger organizations, many of shipping firms. The cushion provided by this ownership structure is probably significant, particularly in the short run. The business losses that parent firms would be willing to assume in the longer term doubtless varies among firms.

III Initiatives for a Supportive Environment

There are a number of possible policy initiatives that could be taken to encourage the development of a supportive environment for the shipbuilding industry, without direct expenditures in the form of production subsidies.

A. Extension of Customs Jurisdiction -- The Department of Finance has prepared a discussion paper on the extension of customs jurisdiction from the present 12 miles limit to the outer limits of the continental shelf¹. Extension of customs jurisdiction would provide the Canadian shipbuilding industry with important advantages when competing for business related to offshore energy developments.

If, as currently proposed, customs jurisdiction was extended to the outer limits of the Canadian continental shelf, then it would be possible to have all ships and equipment required for any marine activities in support of oil and gas exploration and production subject to the Customs Tariff, anti-dumping and countervail legislation. Attention to date has largely focused on drilling rigs and the ships that directly support drilling activity. However, there are other marine activities taking place in support of oil and gas exploration and development that could also be covered by an extension of customs jurisdiction, e.g., dredging operations for the construction of artificial islands in the Beaufort Sea. Consequently, any extension of customs jurisdiction could embrace all oil and gas related commercial marine activities.

B. Amendments to the Customs Tariff -- The tariff items relating to oil and gas equipment were introduced as a result of recommendations made by the Tariff Board and were intended to cover only land-based equipment at a 10 per cent Most-Favoured-Nation (MFN) rate when the equipment is "of a class or kind made in Canada" and duty free if "of a class or kind not made in Canada". Even though offshore drilling was not an issue when these tariff items were introduced, it would appear that they might be applicable, in part, to waterborne equipment used in the exploration and development of offshore oil and gas resources if customs jurisdiction is extended beyond the 12-mile limit and this equipment has to be imported.

¹ Canadian continental shelf means those submarine areas, not within a province, adjacent to the coast of Canada and extending throughout the natural prolongation of the land territory of Canada to the outer edge of the continental margin or to a distance of two hundred miles from the baselines from which the breadth of the territorial sea is measured, whichever is the greater.

Although these tariff items cover machinery and apparatus, the chassis on which they are mounted is excluded and this could give rise to a situation where a semi-submersible rig, for example, might be dutiable either as a ship, as machinery and apparatus, or in part as a ship and in part as machinery and apparatus. One way of correcting this anomalous situation would be to regard a semi-submersible rig as comprising two discrete elements: a vessel and drilling equipment, with at least the former dutiable at the rate applicable to vessels (25 per cent) and the latter at 10 per cent. Based on the relative costs of the vessel component and the drilling equipment, a composite rate of duty of 20 per cent would be appropriate for both jack-up rigs, semi-submersible rigs and drill ships. Most other vessels used in support of offshore energy activities would be dutiable at 25 per cent under the Canada Shipping Act if customs jurisdiction is extended.

A second tariff measure available to the federal government is the removal of the Commonwealth Preference on vessels engaged in Canada's coasting trade. As a result of this preferential treatment, Commonwealth-built ships currently participate in major sectors of Canada's coasting trade on an unrestricted basis and enter duty free. One means of removing this preference is through proposed changes to the Canada Shipping Act presently being prepared by Transport Canada. If these proposed changes are introduced, authority for setting the rate of duty would shift from the Canada Shipping Act to the Customs Tariff. In conjunction with this change, the federal government would announce a 25 per cent rate of duty to apply to vessels imported to operate in the coasting trade. A duty at this rate would help Canadian shipbuilders compete with imports of foreign vessels in Canada's coasting trade.

Another possible change concerns the tariff treatment of fishing vessels. Fishing vessels over 100 feet currently enter Canada duty free whereas smaller vessels are subject to a 25 per cent MFN tariff. Recently, some arguments have been made both in favour of a reduction in the 25 per cent duty on smaller fishing vessels and for the imposition of a 25 per cent duty on the larger fishing vessels. One compromise solution that might be considered is an equal rate of duty on both size classes. This is a matter which could be included in the context of the review of the Atlantic fisheries, currently in progress.

The CSSRA holds the view that there should be uniform and consistent treatment of products of the industry under the Customs Tariff. Although not explicitly one of the CSSRA's 10 proposals, it was suggested during consultations that a single rate of duty of 25 per cent should apply to all ships, vessels and floating marine structures used either for the coasting trade, for any activity in support of offshore oil and gas exploration and production, or for commercial fisheries over which Canada exercises control.

The provision of further protection for Canadian shipbuilders is not free of economic cost. There is the risk that shipbuilding companies would weaken in their competitive behaviour if given greater insulation from the competitive pressures of foreign suppliers. In addition, ship-owning companies might have to pay higher prices for vessels. The assumption of these increased vessel costs could affect the competitiveness of some shipping companies. Finally, tariffs are a relatively "blunt" policy instrument and cannot always be fine-tuned to meet the requirements of specific situations.

C. National Energy Program Initiatives -- A major element of the National Energy Program (NEP) is the provision of a new legal framework to govern oil and gas activities taking place on Canada Lands, defined in the Canada Oil and Gas Act to include the Yukon and Northwest Territories and those submarine areas within 200 miles or to the edge of the continental margin, whichever is greater. Under the Canada Oil and Gas Act, exclusive rights for drilling on Canada Lands would be given through an Exploration Agreement. These agreements place stringent requirements on operators with respect to such matters as the level of drilling activity and safety and make mandatory the submission of a plan

"for the employment of Canadians and for providing Canadian manufacturers, consultants, contractors and service companies with a full and fair opportunity to participate on a competitive basis in the supply of goods and services used in that work program."

Noting the previous references to the extent of foreign government intervention in support of shipbuilding and the importance of this intervention for influencing the award of contracts, the Canadian industry is somewhat uneasy about how the industrial benefit provisions of the Canada Oil and Gas Act will be interpreted and applied in the day-to-day administration of this legislation. This matter requires further examination and it will be important that any emerging regulations or guidelines be "transparent", for the benefit of both domestic and foreign companies.

D. Coasting Trade Policy -- Transport Canada is considering action to reserve the coasting trade and "related commercial marine activities", e.g., those concerning offshore oil and gas operations, to Canadian flag ships. These ships may be either Canadian-built; foreign-built, duty paid; or foreign-built, non-duty paid (this latter category would apply to Canadian ships engaged in international voyages). The rate of duty to be applied to imports would no longer be set through the Canada Shipping Act. Rather, authority would be based on the Customs Tariff. The present 12-mile limit to customs jurisdiction would remain unaffected by approval of the proposed changes to the Canada Shipping Act.

With a decision to transfer duty aspects of the proposed New Coasting Trade Policy from the Canada Shipping Act to the Customs Tariff, the principal importance of the amended shipping legislation for the shipbuilding industry will be the extension of the concept of coasting trade to marine operations between Canada and platforms operating on offshore Canada Lands. It is proposed that this extension would be accompanied by the withdrawal of the tariff preference for Commonwealth-built ships intended for operation in the coasting trade, and that these vessels be made subject to the 25 per cent MFN rate of duty.

If the New Coasting Trade Policy is fully implemented before customs jurisdiction is extended, the following situation will be created. Rigs operating on Canada Lands, and ships supporting them, would have to be "Canadian ships" which, because there would still be no customs jurisdiction outside the 12-mile territorial sea, would simply mean that they must be registered in Canada. That is, they may be "foreign built, non-duty paid ships". Registration of a ship in Canada is a straightforward and relatively inexpensive procedure and forms no barrier to importation. These changes to the Canada Shipping Act would be an improvement over the prevailing situation in which ships and rigs do not even have to be registered in Canada, but they would not discourage Canadian companies from placing orders for ships and rigs abroad.

It is also likely that a system similar to the existing waiver system would remain. This would mean that, if no suitable Canadian ship were available, foreign registered ships would be free to participate in the coasting trade upon payment of duty of 1/120th of the full duty per month, a nominal amount not intended to discourage such temporary importations. It is also expected that a similar system would exist to allow the temporary importation of exploration rigs.

E. Capital Assistance -- In many countries, government assistance provided to the shipbuilding industry has been directed towards encouraging the introduction of improvements in efficiency and restructuring to a smaller scale of operations. The productivity gap in the Canadian industry indicates the gains yet to be won if it is to become competitive without heavy support. Further, the Canadian shipbuilding industry is facing strong adjustment pressures. Insufficient volumes of business in traditional, shipbuilding activities and yards' inability to remain in the export market will result in reduced production and employment levels in these activities even with current levels of support. On the other hand, new business with much stronger growth prospects is developing as a result of increasing offshore oil and gas activity. The measures described below could assist the industry to make the necessary improvements in productivity and adjustments to its changed economic circumstances.

Performance Improvement Grants: The performance improvement grant feature of the SIAP has been described in the section: Current ITC Assistance to the Shipbuilding Industry. During consultations, the Review Group heard near unanimous support for this assistance, the only negative comment related to the fact that the maximum amount available to a shipyard is tied to the value of new construction carried out by it. Consequently, continuation of this assistance, or an equivalent, would be widely supported by both the industry and provinces, and would be recognized as a demonstration of government's commitment to encourage improvements in productivity in the industry.

The productivity study performed by A&P Appledore concluded that labour productivity of the aggregated Canadian shipbuilding industry was only slightly below a good internationally competitive productivity level. In addition, this study identified specific shortcomings in the technology levels in Canadian yards. Consequently, it is evident that the Canadian shipbuilding industry can still make gains in productivity through investment in equipment, facilities and in "softer" areas such as design, organization and operating systems. All these areas of technology are presently assisted with performance improvement grants.

During consultations the industry provided evidence to substantiate the claims of labour productivity improvement achieved over the past decade. Since 1975, the gains in productivity have been supported with performance improvement grants.

The existing assistance can generate \$15-\$18 million of grants each year (assuming industry new construction output is in the range of \$500-\$600 million annually) which could mean a total supportable annual investment by the industry of \$30-\$36 million. At present, there is a conditional obligation to pay approximately \$60 million of performance improvement grants, but this amount includes grants related to more than one year of future industry output of new construction. Thus, over the next five years in excess of \$130 million of performance improvement grants could become available.

Assistance to encourage performance improvement could continue to be provided through that element of the SIAP or through some other new assistance measure. New assistance could be delivered either through an industry specific program or through a more universally available program.

Assistance could continue to be provided on a formula basis, as is now the case under SIAP, i.e., three per cent of approved cost, or on a case-by-case basis in accordance with established criteria, which is more characteristic of ITC assistance programs. Assistance on a formula basis has the advantage of eliminating the potential for criticism of program administration on the basis of company or regional distribution of grants. The case by case alternative has the advantage that assistance can be targeted to the need perceived to be greatest. Use of case-by-case delivery of assistance would allow a number of very small shipyards, or those currently engaged only in ship repairing, to seek assistance. At present such companies cannot receive grants through SIAP because of ship size criteria for eligibility in the SIAP regulations.

There are, of course, arguments opposing assistance of this type. First, the SIAP performance improvement assistance is unique to the shipbuilding industry and there are very few industry sectors that have their own assistance programs. It might be argued that, provided an otherwise supportive environment exists, companies should be exclusively responsible for productivity improvement, it being another element of inter-company competition. Further, it might be argued that the near unanimous support for this assistance is not surprising: the provinces make no direct contribution and it would be remarkable if the industry was not enthusiastic about a program that shared in the cost of most of its member companies' capital investment programs.

Targeted Capital Assistance: Earlier sections have described the major opportunities generated by offshore oil and gas activities that are potentially available to Canadian shipbuilders. Those sections have also noted that the new vessels and equipment required for these activities differ, in some cases significantly so, from the vessels traditionally constructed in Canada. Moving into these new lines of activity will require substantial investments. Known investment being considered by domestic shipbuilders for this purpose totals some \$300 million over the next five years. This is in addition to that being considered for or currently being made in the more traditional aspects of the industry's business. This latter investment is approximately \$350 million, including some \$150 million for ship repair facility investment now under way, an amount much in excess of this industry's rate of investment over the past five years.

A portion of these new investments will be provided by the industry, without government assistance. For example, some will be financed by firms out of cash reserves and others will follow from the recognition by capital markets of brighter prospects in shipbuilding. However, it appears that investments financed from these sources will not be sufficient to ensure that business potentially available to Canadian shipbuilders is secured. This shortfall will result from a number of factors, including the size of the required investments relative to the assets of firms and the perceived risk of moving into new areas.

One alternative available to the government, similar to that described above in relation to the performance improvement grants, would be the introduction of a sector-specific program to underwrite a proportion of the adjustment-related capital costs of firms. Alternatively, existing programs, such as those available through ITC/DREE could be used to channel assistance to the industry.

Clearly, the criteria set for assistance will determine the nature of government support. One criterion could be that assistance be of significant economic benefit. This would ensure that economic efficiency objectives are served.

Through the availability of capital assistance the industry could be encouraged to increase its specialization in ship construction, realizing the productivity and cost advantages of production runs of similar vessels, and thereby the creation of internationally competitive capabilities. It will be

important, however, to avoid the creation of major downstream adjustment problems such as those now besetting the shipbuilding industry in developed countries. In addition, regional considerations should be taken into account and whenever practicable and appropriate, increases in capacity should be based on existing capabilities (location, facilities, and labour and management skills) to ensure the full utilization of the industry's potential.

CONSIDERATIONS

I Regional

The long-term trend in employment in Canadian shipbuilding and repair establishments has been slightly downward, from 19,000 in 1953-1957 to 18,400 in 1963-1967 and to 15,600 in 1974-1977. Total employment was approximately 15,000 in 1981.

The downturn trend was felt chiefly in Quebec where employment dropped from 8,100 in 1963-1967 to 6,000 in 1974-1977, largely as a consequence of the cessation of shipbuilding at Vickers and at Geo. T. Davie. It fell further in 1979-1981, as heavy layoffs at Sorel resulted from the inability of Marine Industries to obtain commercial shipbuilding contracts. Currently, Quebec employment in shipbuilding and repair is only 3,500 to 4,000 persons, approximately 26 per cent of the Canadian total. During the 1950s and 1960s, Quebec averaged 44 per cent of Canadian employment.

The Atlantic Provinces increased shipyard employment slightly during the early 1970s in actual numbers, with a rise from 23 per cent of the Canadian total in 1963-1967 to 29 per cent in 1974-1977. However, the virtual closing of Halifax Shipyard in 1978 was a sharp setback from which the region is only now recovering. Current employment is approximately 4,500 persons, just over 29 per cent of the Canadian total.

Ontario and British Columbia have historically held approximately 13 per cent and 20 per cent respectively of total Canadian employment. However, shipyards in both provinces are busy at present, with 2,000 to 2,500 employees in Ontario and 3,000 to 3,500 in British Columbia, and their percentages have increased to 19 per cent and 26 per cent respectively.

There are only a few hundred shipyard workers in the Prairie Provinces and the Territories, although opportunities are expanding with the size of the oil-related fleet operating in the Beaufort Sea.

The Atlantic provinces in particular view offshore oil and gas development as a major determinant of their economic development and expect to receive a large proportion of the associated industrial benefit. Further, because of access to the Beaufort Sea, British Columbia can reasonably expect to enjoy industrial benefits from development there. Shipyards in Ontario and Quebec are capable of adjusting their production to serve offshore requirements, should this be in their perceived interests.

The conclusion is that, although there may be some alteration in the relative regional distribution of shipbuilding capacity, all regions could derive additional benefits from offshore oil and gas exploration and development.

II Financial

Established shipbuilding companies have tentatively planned major capital expenditures of the order of \$650 million over the next five years. Approximately \$150 million of this amount is for ship repair facility expansions now under way. If, for illustration purposes only, it were assumed that only \$300 million of the balance of these expenditures were assisted on an equal cost sharing basis, then government contributions would be \$150 million spread over five years. Most of this assistance could be provided through programs, such as those under the Regional Development Incentives Act (RDIA), although some portion could be provided as performance improvement grants under SIAP.

In addition to the planned expenditures by established shipbuilding companies, other companies are planning to establish totally new shipyards at a total cost of some \$700-\$800 million. However, the greater part of these expenditures would be for facilities to serve oil production from the Beaufort Sea. As noted earlier, there is considerable uncertainty about both the timing and pace of this production.

At the beginning of FY 82-83, approximately \$60 million was conditionally available to the industry as performance improvement grants under the SIAP. Over the next five years, there could be an additional amount of as much as \$70 million made available, if this program continues.

SIAP payments for subsidy and performance improvement grants are capped at \$75 million until the completion of FY 82-83. However, payments to be made under SIAP in 1982-83 and subsequent years could total \$259 million, including \$60 million for performance improvement grants. It is expected that subsidy payments will still be made in FY 85-86, based upon the expected construction schedule of some of the ships on order.

III Federal-Provincial

Shipbuilding is an important industry in all except the Prairie provinces. Certain provinces have intervened directly to support their shipbuilding companies, for example owning shipyards as Crown Corporations. Provinces in Eastern Canada complain about "balkanization" in shipbuilding. All provinces look to the federal government as the principal source of support for this industry.

IV International

The United States has extended jurisdiction to activities undertaken on the seabed beyond the territorial sea, consistent with the 1958 Continental Shelf Convention. Other countries, including Australia and Mexico, have enacted similar legislation. Extending Canada's customs jurisdiction appears consistent with the practices of these other countries.

Domestic subsidy and support programs in the industrial sector are recognized in the General Agreement on Tariffs and Trade (GATT) as legitimate instruments for the promotion of social and economic policy objectives. There is also the recognition that such domestic measures may cause injury to the industry of trade partners.

Canada has commitments under the GATT with respect to the present schedule of tariffs. Consequently, any changes may require negotiations with trading partners concerning compensation.

ANNEX A

Schedule of Consultations

Consultations were held in 1981 as follows:

<u>With</u>	<u>Date</u>
Canadian Shipbuilding and Ship Repairing Association (CSSRA)	June 2
CSSRA	July 19
Marine Industries Ltd.	July 10
CSSRA	July 13
Port Weller Dry Docks	July 15
Burrard Yarrows Corp.	July 21
Allied Shipbuilders Ltd.	July 21
Vancouver Shipyards Co. Ltd.	July 22
Wagner Engineering Ltd.	July 22
Government of British Columbia	July 23
Government of Prince Edward Island (Subsumes Georgetown Shipyard Inc.)	July 28
Saint John Shipbuilding & Dry Dock Co. Ltd.	August 4
Government of New Brunswick	August 5
Government of Nova Scotia	August 6
Ferguson Industries Ltd.	August 7
Government of Newfoundland	August 10
Marystown Shipyard Ltd.	August 11
Government of Ontario	September 1
CN Marine	September 2
Canadian Shipbuilding and Engineering Ltd. (Collingwood)	September 2
Confédération des Syndicats Nationaux	September 3
Gouvernement du Québec	September 5
CSSRA	September 14
Canadian Labour Congress	September 17
Davie Shipbuilding Ltd.	September 18
Dome Petroleum Ltd.	September 23
Petro Canada	September 23
Gulf Canada Resources Ltd.	September 23
Esso Resources Canada Ltd.	September 25
Fednav	September 29
Canada Steamship Lines	September 29
Upper Lakes Shipping	October 8

ANNEX B

The Canadian Order Book as of March 31, 1982

Allied Shipbuilders

This yard has on order two pusher tugs for Arctic Transportation. Subsidy on these vessels is at the nine per cent rate.

Bel-Aire

This yard has on order two fishing boats and one offshore supply vessel.

Burrard Yarrows

This company is building two icebreaking vessels for Gulf Canada Resources and a supply vessel for Dome Petroleum. In addition it will be undertaking two major conversions for B.C. Ferries.

Canadian Shipbuilding & Engineering

This company has the largest order book in the industry which will keep the two yards occupied until 1984. The order book includes three self-unloading lake ships and one bulker for Canada Steamship Lines (which owns CS&E), and a self-unloader and a bulker for Algoma. The total gross tonnage of these ships amounts to 136,000 tons.

Davie Shipbuilding

Except for a 7,800-ton tanker being built for Branch Lines, all of Davie's order book is comprised of jack-up drill rigs. These include five rigs for Global Marine and one for Mexico. Notably, almost all of Davie's order book is for export.

Ferguson Industries

This shipyard has been particularly hard hit by the minimal demand for fishing vessels on the east coast. Two fisheries research trawlers will be delivered in early 1982. On order are two segments of the dry dock for Halifax.

Georgetown Shipyard

The order book for Georgetown includes only government work: two rescue boats for the federal government and a ferry boat for Nova Scotia. All of these vessels are small, totalling only 150 tons.

Halifax Industries

This shipyard is primarily engaged in ship repair work but has one trawler to complete for National Sea Products.

Marine Industries Limited

This company is currently building a dry dock for Nova Scotia. It has recently won a contract for a seismic vessel for Petro-Canada.

Marystown Shipyards

Outstanding contracts include a fisheries patrol vessel for the federal government and a supply vessel.

Newfoundland Dockyard

This company does only ship repairs.

Port Weller Dry Dock

This yard has a contract for an ocean-going self-unloading bulk carrier for Upper Lakes Shipping which owns Port Weller. Port Weller was also successful in bidding for the third R-class icebreaker for the federal Ministry of Transport. The vessel is to cost approximately \$64 million.

Purvis Navcon Shipyard

This company concentrates upon ship repairs.

Rivtow Industries

This company's yards have orders for a number of smaller vessels including seven tugs, four of which are for export, three fishing vessels and seven barges.

Saint John Shipbuilding and Dry Dock

This yard, which is owned by Irving Oil, is building a \$72 million passenger-rail vehicle ferry for CN Marine. Recently, Saint John received a contract for the construction of a semi-submersible drilling rig.

Vancouver Shipyard

Vancouver Shipyard is given considerable repair work on vessels owned by Seaspan International, its parent company. On order are two fishing vessels for export, two seismic research vessels for export, a ferry, an Arctic Service Vessel for Gulf Canada and a tug for Arctic Transportation.

Versatile Vickers

This company concentrates upon ship repairs.

RATE OF SUBSIDY BY APPLICATION DATE

Ship Construction Assistance Regulations (SCAR)

Ship Construction Subsidy Regulations (SCSR)

Shipbuilding Industry Assistance Regulations (SIAR)

