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Industry, Science and Technology Canada Technologie Canada

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1990-1991

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# SHIPBUILDING AND SHIP REPAIR

APR - 7 1992

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In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to growth and prosperity. Promoting improved performance by Canadian firms in the global marketplace is a central element of the mandates of Industry, Science and Technology Canada and International Trade Canada. This Industry Profile is one of a series of papers in which Industry, Science and Technology Canada assesses, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological, human resource and other critical factors. Industry, Science and Technology Canada and International Trade Canada assess the most recent changes in access to markets, including the implications of the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the profiles.

Ensuring that Canada remains prosperous over the next decade and into the next century is a challenge that affects us all. These profiles are intended to be informative and to serve as a basis for discussion of industrial prospects, strategic directions and the need for new approaches. This 1990–1991 series represents an updating and revision of the series published in 1988–1989. The Government will continue to update the series on a regular basis.

Michael H. Wilson Minister of Industry, Science and Technology and Minister for International Trade

# Structure and Performance

## Structure

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The Canadian shipbuilding and ship repair industry comprises companies that construct and repair a variety of vessels having a displacement of five tons and up. This includes barges, cargo vessels, dredges, drilling vessels, ferries, fishing vessels, icebreakers, jack-up drilling rigs, military vessels, passenger ships, semisubmersibles, tankers and tugs.

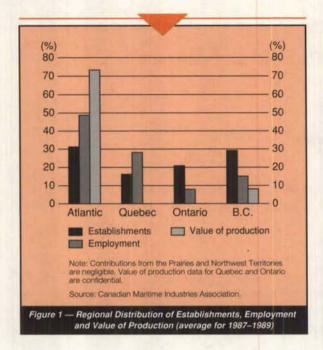
The industry in Canada is relatively small. For the most part, it serves the domestic market for ferries, fishing vessels and government vessels and provides repair services for commercial ship operators and government vessels. In 1989, about 90 percent of new construction in Canadian yards was initiated by government procurement.

In that year, an estimated 47 establishments in Canada, including 13 larger shipyards, carried out both new construction and ship repair, with total employment of some 12 250 people. There are establishments in every province, except Saskatchewan and Alberta, and in the Northwest Territories (Figure 1).

In 1989, the value of new vessel construction and vessel repair work in Canada was estimated at \$1 568.4 million (Figure 2). Of this total, 80 percent was in new construction and 20 percent in repair activities. Exports for this industry were about \$36 million, and imports were about \$101 million.

The industry is largely Canadian-owned. Foreign-equity holdings in Canadian yards are restricted to Le Groupe MIL in Quebec (MIL Davie) and to Marystown Shipyard in Newfoundland. Two of the key shipyards are fully or partially owned by provincial governments and one is held by a federal Crown corporation.



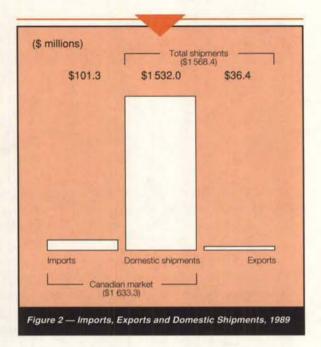


Industry employment is highest in the Atlantic region, followed by Quebec, British Columbia and Ontario. Concentration of shipbuilding capacity is increasing in that the two largest eastern shipyards (MIL in Quebec and Saint John Shipbuilding in New Brunswick) now hold approximately 50 percent of total capacity. There is little vertical integration in the industry, and most ship equipment is supplied to Canadian shipbuilders by companies operating at arm's length. This situation differs from the practice in other countries, where vertical integration allows shipbuilders to realize savings in their input costs.

The major yards in Canada do not differ significantly in their construction capability. Currently Saint John Shipbuilding and MIL Davie on the East Coast are carrying out new naval vessel construction, and Versatile Pacific Shipyards on the West Coast also has the capability to construct naval vessels. Virtually all the other yards construct a broad range of commercial vessels. Construction of fishing trawlers has been a dominant activity in a small number of yards (for example, Marystown Shipyard in Newfoundland and, to a lesser degree, Georgetown Shipyard in Prince Edward Island).

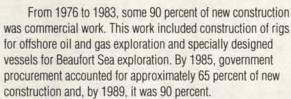
# Performance

Throughout the 1960s and early 1970s, international demand for new ships rose steadily. Canadian yards were able to participate in the international market, with a significant proportion of their production going into the export market. This expansion of international ship demand came to an end in 1973 with the sharp rise in international oil prices.



The period following 1973 was characterized by a significant international and domestic excess in shipping and ship-building capacity. Governments responded to the situation by providing their domestic shipbuilding industries with assistance through subsidies and other aids. Prices for ship construction dropped universally as a result of overcapacity. Since then, Canadian shipyards have been handicapped in both the export and the domestic markets because of international overcapacity and the aggressive competition for new orders. Ship prices and global demand now have stabilized and appear to be increasing somewhat. Shipyards in major shipbuilding countries (Japan, Republic of Korea, Germany) are now booked solidly until 1993.

Performance of Canadian yards in recent years has been mixed. The value of shipments has fluctuated widely from 1982 to 1989 (Figure 3). Employment has fluctuated in line with shipments, but the overall trend has been one of decline. In constant 1981 dollars, the industry's gross domestic product declined from nearly \$459 million in 1982 to slightly over \$289 million in 1989. In current dollars, the value of exports fell from \$215 million in 1982 to about \$36 million in 1989, and imports varied from about \$26 million in 1982 to about \$101 million in 1989, with peaks in 1983, 1984 and, to a lesser extent, 1988. Since 1983, the industry has not been profitable. Consistent with other traditional shipbuilding countries of the world, there has been a long-term decline in total employment in Canadian yards over the past several years, from 16 186 in 1982 to 12 250 in 1989.



The structure of the Canadian industry is gradually changing because of ongoing efforts to rationalize shipyards and eliminate excess capacity. This contraction of building capacity may also lead towards increased specialization of both the shipyards and the work force. Repair and conversion activities are increasing as a percentage of total income of Canadian shipyards, while the proportion of new construction is falling. Some yards are continuing their efforts to diversify. Major structural changes have already begun in Ontario, Quebec and British Columbia.

Because of its poor financial position, the industry has generally been unable to invest new capital in production sites in recent years. Less than \$40 million was invested annually from 1983 to 1987 by the entire industry. However, this number increased to over \$50 million in 1988 and 1989.

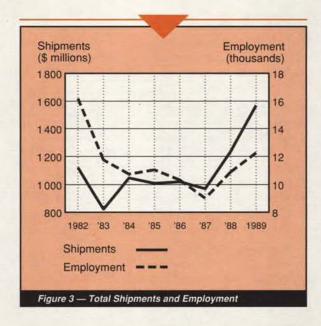
# Strengths and Weaknesses

# **Structural Factors**

The key structural characteristics of the industry include a significant amount of unused production capacity, a small domestic market, relatively high wage rates, trade demarcation practices that hinder productivity and, in several yards, outdated equipment that cannot accommodate new types of assembly-line production.

Because of higher production costs, Canadian yards find it difficult to compete in the international market. Moreover, foreign yards benefit from significant levels of host government financial assistance in the form of production subsidies and favourable financing terms. Consequently, Canada has been virtually shut out of international markets for complete vessels, and performs only small amounts of minor structural work and ship repair for U.S. vessels in addition to other emergency repairs.

Individual shipyard capacity utilization is now increasing in virtually all major industrialized shipbuilding nations as a result of efforts to rationalize or retire outmoded capacity in most countries with established shipbuilding industries; in some countries, such as Sweden, it is disappearing. The fierce competitiveness was exacerbated by the entry of newly industrialized countries (NICs) such as the Republic of Korea, China, Singapore and Taiwan, which have been competing aggressively and expanding their facilities.



Canadian labour rates are relatively high, although they vary considerably on a regional basis. Among the major shipbuilding nations, only Germany, the United States and Japan have higher labour rates than Canada. France and Italy have lower wage rates, and the NICs have significantly lower rates.

The shipbuilding market in Canada is small and slowly shrinking, particularly in the demand for commercial vessels. Canadian yards cannot offer economies of scale because of a lack of specialization. The only exceptions are Saint John Shipbuilding and MIL Davie, which are capable of handling specialized defence vessels and can offer integrated marine systems management.

Because most yards are in their original locations and little new investment has been made in facilities and equipment, most Canadian shipyards have to cope with such physical constraints as size and design layout. These limitations have hampered their productivity and efficiency.

While there is less vertical integration in the Canadian industry compared with that in some other countries, the amount that does exist between Canadian shipping lines and shippards offers a captive market for in-house repairs to some Canadian shippards. As well, the provincial government owners of shippards direct government work to their respective yards.

A few shipyards have been diversifying their operations into both product and professional service lines. Most notable in this area is MIL Davie, which manufactures sonar dome assemblies for the U.S. Navy.



# **Trade-Related Factors**

Virtually all shipbuilding countries protect their domestic industries through the use of tariffs, non-tariff barriers (NTBs), subsidies and export financing.

Canada, the United States, the European Community (EC), Japan and Australia all impose import tariffs on ships and/or ship repair. The Canadian tariff on goods from countries granted Most Favoured Nation (MFN) status is 25 percent on ships and fishing vessels under 30.5 metres in length and 20 percent on offshore rigs, whereas large fishing trawlers enter tariff-free. Dredges are subject to an MFN tariff of 10 percent or 25 percent, depending on use. On non-emergency repairs carried out on a Canadian vessel abroad that could have been performed by a Canadian yard, the duty is 25 percent of the enhanced value of the ship (full vessel value plus repairs).

The United States imposes a tariff of 7.1 percent on fixed platforms for offshore oil and gas production and a 50 percent tariff on repairs done abroad to American ships. The EC imposes a tariff ranging from 2.5 to 4.9 percent. Australia applies a 25 percent tariff on vessels under 150 tonnes. Japan's tariff ranges up to 3 percent.

Subsidies to shipbuilding companies include direct price subsidies, yard subsidies and tax benefits. France, Italy, Spain, Norway, Germany and the United Kingdom all provide price subsidies ranging from 10 to 25 percent. Canada eliminated price subsidies for ships delivered after 30 June 1985. In order to upgrade facilities, yard improvement grants were available for Canadian shipyards until 31 March 1991.

In other countries, yard assistance includes government equity participation, preferential terms on loans, grants for specific improvements, tax and duty exemptions and the forgiveness of loans. In many countries, these measures have been used as part of a policy of retiring capacity. Tax benefits to the industry have included exemptions from the value-added tax (VAT), accelerated depreciation and tax deferral, and relief from various indirect taxes.

Export interest rate financing by member countries of the Organization for Economic Co-operation and Development (OECD) is guided by the OECD Understanding on Export Credit for Ships, which limits interest rate subsidization. Canada is a party to the understanding, as are most OECD countries. Several countries offer preferential interest rates for ships that are built to serve their domestic markets. Details of the interest rate assistance offered by other countries are not available.

Importation of complete ships into the United States is prohibited by NTBs. The United States protects its civil market through cabotage laws, collectively through the *Merchant Marine Act* of 1920, as amended (the "Jones Act"). Under this legislation, only vessels built in the United States and operated under the U.S. flag can engage in domestic trade. The

purchase of domestically built vessels is also encouraged through moral suasion, through requirements to use domestic products when they are competitive (i.e., the "Buy America" provisions) and through cargo preference legislation. Regular amendments to the U.S. Department of Defense appropriations bills (the Burns-Tollefson clauses) preclude construction of any major components of the hull or superstructure of U.S. Navy vessels, or of complete vessels, in foreign shipyards. Other legislation prohibits non-emergency repairs to any American naval vessels from taking place outside the United States.

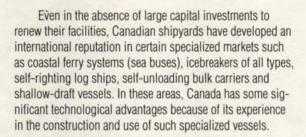
The United Kingdom, Norway and Canada require domestic manufacturers to be given "full and fair opportunity" to supply goods and services for offshore oil and natural gas exploration and production. Accordingly, review processes have been instituted to ensure that local suppliers are given full consideration.

Under the Canada-U.S. Free Trade Agreement (FTA), implemented on 1 January 1989, tariff barriers on the repair of commercial vessels will be phased out in 10 annual, equal steps ending in 1998. Canadian access to commercial U.S. repair work will be enhanced by reductions in the 50 percent tariff over the tariff elimination period. Tariffs on offshore drilling vessels also will be eliminated in 10 steps. Tariffs on imported components for Canadian ship construction will be phased out in five annual, equal steps. The "Jones Act" remains unchanged, as does the *Canada Shipping Act*, which reserves coasting trade for Canadian ships.

# **Technological Factors**

Canada has the technological capability to produce advanced state-of-the-art vessels in certain niche markets that are dominated by technological rather than cost considerations. Canada's leading yards have begun to introduce modern technologies and processes such as modular zone-by-stage construction, heat-line bending processes, computer-assisted design and computer-assisted manufacturing (CAD/CAM) systems, palletization and pre-outfitting production activities, all of which have the potential to increase productivity greatly. The application of advanced composite materials to certain vessel types and ship products holds potential for the industry in view of their weight and strength characteristics. Canadian yards also have good capability to build ships and minor vessels of aluminum alloys and fibreglass materials.

The ability of Canadian shipyards to introduce assemblyline facilities with modern technology is connected to the prospect of continuing, long-term orders for vessels. This expectation, however, is limited by the aggressive, competitive characteristics of the international industry in recent years, including their access to government assistance and the lowcost production facilities now in place in some Asian countries.



# **Evolving Environment**

The problem of overcapacity, which recently characterized the world shipbuilding industry, was the result of a decline in international demand for new merchant ships, offshore structures and oil tankers, together with the rise in new shipbuilding capacity by NICs, primarily in Asia. The result was a continuing excess of production capacity, which is likely to continue but at a lower level for the next few years.

In spite of the problem of overcapacity, there are some positive signs for the international shipbuilding industry. World demand forecasts for new ship construction over the next decade are more optimistic than has been the case for some time. It is likely that the trend towards gradual increases of the world bulk fleet will continue, although the demand has been for very large vessels in excess of 250 000 deadweight tonnes, a size of vessel that Canada does not have the facilities to produce. The demand for offshore units is tied to the price of crude oil; price fluctuations could also result in further contractions in this area. Although Canadian yards will participate in the Hibernia offshore oil-drilling project, the future prospects for additional offshore work are uncertain.

The FTA is not expected to have a major impact on the industry, although there may be some positive impact on the ship repair subsector. Since domestic procurement preferences for vessels are largely untouched by the agreement, large government procurements are likely to continue to constitute the major source of demand on both sides of the border. American shipyards will be in a position to gain entry to the Canadian market with the reduction of tariffs, including some access to the market for offshore drilling vessels, which may be significant over time. However, as a result of the lowering of U.S. tariffs on repair work, Canada in turn could gain access to U.S. commercial repairs, where the Canadian ship repair subsector is price-competitive with its American counterpart. In addition, Canadian yards could benefit from the phased elimination of tariffs on imported components, which will be completed by 1 January 1993. Thus, shipbuilders may be in a position to lower their costs when imported equipment is less expensive.

At the time of writing, the Canadian shipbuilding and ship repair industry is in the process of radically restructuring and reducing its productive capacity to meet the new market circumstances. Since 1986, the federal government has been assisting the industry during its period of adjustment by maintaining a 25 percent tariff on ships, except for fishing trawlers over 30.5 metres; by sourcing all federal government shipbuilding and ship repair needs from Canadian shipyards; and by the provision of assistance to ensure that rationalization is done in a manner that minimizes the adverse effects on individuals and communities. Once the rationalization process is complete, Canada will have a smaller but a more competitive and more economically viable shipbuilding and ship repair industry.

# **Competitiveness Assessment**

In most product areas, Canadian shipyards are not competitive in the world market. This assessment reflects higher production costs and foreign subsidies.

However, there is a largely undetermined market for Canadian yards in highly specialized vessels such as fishing vessels, icebreakers and passenger ferries. Canadian ship-yards also have a market for some forms of repair work for which they have a locational advantage.

Additional improvements in competitiveness may arise through recent moves towards rationalization and consolidation of construction activity in a reduced number of yards. Economies of scale would reduce costs. A return to the profitability of the industry would in turn result in expenditures on improved facilities and new technology.

For further information concerning the subject matter contained in this profile, contact

Shipbuilding, Marine and Land Defence Systems Branch Industry, Science and Technology Canada Attention: Shipbuilding and Ship Repair 235 Queen Street OTTAWA, Ontario K1A 0H5 Tel.: (613) 954-3757

Tel.: (613) 954-3757 Fax: (613) 957-8912



| PRINCIPAL STATISTIC                   | CS      | 1430   | 100     |         | W.      |       | 100     | Mar.     |
|---------------------------------------|---------|--------|---------|---------|---------|-------|---------|----------|
|                                       | 1982    | 1983   | 1984    | 1985    | 1986    | 1987  | 1988    | 1989     |
| Establishments <sup>a</sup>           | 69      | 49     | 55      | 59      | 54      | 55    | 50      | 47b      |
| Employment <sup>a</sup>               | 16 186  | 11 749 | 10 748  | 11 049  | 10 329  | 9 017 | 10 893  | 12 250b  |
| Shipments <sup>a</sup> (\$ millions)  | 1 121.2 | 822.1  | 1 046.8 | 1 008.9 | 1 020.1 | 970.3 | 1 234.1 | 1 568.4° |
| GDPd (constant 1981 \$ millions)      | 458.9   | 297.7  | 309.8   | 305.3   | 273.9   | 248.6 | 270.7   | 289.1    |
| Investment <sup>e</sup> (\$ millions) | 58.3    | 28.6   | 22.0    | 37.3    | 23.7    | 24.6  | 53.5    | 57.7     |
| Total income! (\$ millions)           | 963.8   | 772.9  | 896.0   | 973.8   | 926.0   | 1 002 | N/A     | N/A      |
| Profits after taxf (\$ millions)      | 2.0     | -3.6   | -8.3    | -19.1   | -39.1   | -20.1 | N/A     | N/A      |
| (% of total income)                   | 0.2     | 0.4    | 0.9     | 2.1     | 4.2     | 2.1   | N/A     | N/A      |

<sup>&</sup>lt;sup>a</sup>See *Transportation Equipment Industries*, Statistics Canada Catalogue No. 42-251, annual (SIC 3271, shipbuilding and repair industry). Data for establishments also include manufacturers of small commercial boats of more than 5 tons displacement.

N/A: not available

| TRADE STATISTICS <sup>a</sup>                           |       |         |         |         |         |         |         |         |
|---|-------|---------|---------|---------|---------|---------|---------|---------|
|   | 1982  | 1983    | 1984    | 1985    | 1986    | 1987    | 1988 b  | 19895   |
| Exports (\$ millions)                                   | 215.0 | 70.1    | 29.6    | 35.6    | 35.6    | 34.5    | 39.7    | 36.4    |
| Domestic shipments (\$ millions)                        | 906.2 | 752.0   | 1 017.2 | 973.3   | 984.5   | 935.8   | 1 194.4 | 1 532.0 |
| Imports (\$ millions)                                   | 26.7  | 528.2   | 286.3   | 39.5    | 29.7    | 65.1    | 154.6   | 101.3   |
| Canadian market (\$ millions)                           | 932.9 | 1 280.2 | 1 303.5 | 1 012.8 | 1 014.2 | 1 000.9 | 1 349.0 | 1 633.3 |
| Exports (% of shipments)                                | 19.2  | 8.5     | 2.8     | 3.5     | 3.5     | 3.6     | 3.2     | 2.3     |
| Imports (% of Canadian market)                          | 2.9   | 41.3    | 22.0    | 3.9     | 2.9     | 6.5     | 11.5    | 6.2     |
| Canadian share of international market <sup>c</sup> (%) | 0.50  | 0.40    | 0.10    | 0.30    | 0.29    | 0.10    | 0.07    | 0.25    |

<sup>&</sup>lt;sup>a</sup>See Exports by Commodity, Statistics Canada Catalogue No. 65-004, monthly, and Imports by Commodity, Statistics Canada Catalogue No. 65-007, monthly.

bData supplied by the Canadian Maritime Industries Association.

<sup>&</sup>lt;sup>c</sup>See Monthly Survey of Manufacturing, Statistics Canada Catalogue No. 31-001, monthly.

dSee Gross Domestic Product by Industry, Statistics Canada Catalogue No. 15-001, monthly.

<sup>&</sup>lt;sup>e</sup>See Capital and Repair Expenditures, Manufacturing Subindustries, Intentions, Statistics Canada Catalogue No. 61-214, annual.

Disaggregated data at the industry level are provided by Business Finance Division, Statistics Canada.

bit is important to note that data for 1988 and after are based on the Harmonized Commodity Description and Coding System (HS). Prior to 1988, the shipments, exports and imports data were classified using the Industrial Commodity Classification (ICC), the Export Commodity Classification (XCC) and the Canadian International Trade Classification (CITC), respectively. Although the data are shown as a continuous historical series, users are reminded that HS and previous classifications are not fully compatible. Therefore, changes in the levels for 1988 and after reflect not only changes in shipment, export and import trends, but also changes in the classification systems. It is impossible to assess with any degree of precision the respective contribution of each of these two factors to the total reported changes in these levels.

cWorld order book for merchant vessels completed: percentage of total tonnage, 1987 to 1989 (vessels over 100 gross tonnes).



| SOURCES OF IM      | IPORTS <sup>a</sup> (% of | total vai | ue)  |      | 10 70 | 4    |      | 1279 |
|--------------------|---------------------------|-----------|------|------|-------|------|------|------|
|                    | 1982                      | 1983      | 1984 | 1985 | 1986  | 1987 | 1988 | 1989 |
| United States      | 56                        | 1         | 1    | 74   | 8     | 5    | 39   | 15   |
| European Community | . 34                      | 25        | 3    | 20   | 40    | 34   | 2    | 30   |
| Japan              | N/A                       | 35        | 79   | N/A  | N/A   | N/A  | N/A  | 15   |
| Other              | N/A                       | 39        | 17   | N/A  | N/A   | N/A  | N/A  | 40   |

a See Imports by Commodity, Statistics Canada Catalogue No. 65-007, monthly. Data do not reflect other key country importers such as Norway, Sweden and Australia. N/A: not available

| DESTINATIONS OF EXPORTS <sup>a</sup> (% of total value) |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|
|   | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
| United States   | 67   | 48   | 13   | 18   | 28   | 23   | 13   | 11   |
| European Community                                      | 2    | N/A  | 6    | 5    | N/A  | 1    | 3    | N/A  |
| Japan   | N/A  |
| Other   | N/A  |

<sup>&</sup>lt;sup>a</sup>See Exports by Commodity, Statistics Canada Catalogue No. 65-004, monthly. Data for ship repair as a percentage of total value are not readily available by country, although total values are reflected in Trade Statistics.

N/A: not available

| REGIONAL DISTRIBUTION® (average over the period 1987 to 1989) |          |        |         |          |                  |  |  |
|---|----------|--------|---------|----------|------------------|--|--|
|   | Atlantic | Quebec | Ontario | Prairies | British Columbia |  |  |
| Establishments (% of total)                                   | 31.2     | 16.2   | 20.8    | 2.6      | 29.2             |  |  |
| Employment (% of total)                                       | 48.8     | 28.1   | 7.9     | 0.1      | 15.1             |  |  |
| Value of production (% of total)                              | 73.3     | X      | X       | -        | 8.1              |  |  |

<sup>&</sup>lt;sup>a</sup>Data supplied by the Canadian Maritime Industries Association. A small amount of production also comes from the Northwest Territories.

X: confidential



| Name   | Country of<br>ownership | Location of major plants  |
|--|-------------------------|---|
| Allied Shipbuilders Ltd.                                       | Canada                  | North Vancouver, British Columbia                                   |
| Canadian Shipbuilding & Engineering Ltd.                       | Canada                  | Pictou, Nova Scotia<br>Port Arthur, Ontario<br>Port Weller, Ontario |
| Georgetown Shipyard Inc.                                       | Canada                  | Georgetown, Prince Edward Island                                    |
| Groupe MIL Inc.  | Canada/France           | Lauzon, Quebec  |
| Halifax-Dartmouth Industries Limited                           | Canada                  | Halifax, Nova Scotia  |
| Marystown Shipyard Limited                                     | Norway                  | Marystown, Newfoundland   |
| Newfoundland Dockyard Corporation                              | Canada                  | St. John's, Newfoundland  |
| Saint John Shipbuilding Limited                                | Canada                  | Saint John, New Brunswick   |
| Vancouver Shipyards Co. Ltd.                                   | Canada                  | North Vancouver, British Columbia                                   |
| Versatile Pacific Shipyards Inc.                               | Canada                  | North Vancouver, British Columbia<br>Victoria, British Columbia     |
| West Coast Manly Shipyard,<br>A Division of Rivtow Marine Ltd. | Canada                  | Vancouver, British Columbia   |

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