

MARINE TOWING OPERATIONS IN CANADA

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I. Introduction

Marine towing is a segment of water transportation in Canada. It accounts for a small but noticeable proportion of water transport revenue in Canada. It has played and continues to play an important role in the evolution of water transport in Canada. From the timber days in the nineteenth century to the offshore drilling days of the twenty-first century, it has played a key role. Berthing at ports, salvage operations and supply to inaccessible areas would be impossible without marine towing. It has saved great liners and their passengers from disaster and often acted as a pilot fish to the massive cruise ships, container vessels and tankers. As one article states "They're the unsung heroes of our maritime history ... which have built the trade that so many lives rely on ... today." Over the last one hundred and fifty years, its operations have largely shifted from small domestic firms to major international firms.

Interest in this specialized segment of water transport grew as a result of a certain degree of consolidation that has occurred in this industry. So this paper begins by providing a brief history of tugs and towing in Canada in Section II. This should provide a background to the firms that exist in the industry to day. Then an overview of marine towing transportation - industry revenue, nature of services, evolution of the modern tug and regulations - is provided in Canada in Section IV. In section V, the growing consolidation in the industry is described. Finally, the paper ends with a few concluding remarks on its future.

II. A Brief History of Tugs and Towing in Canada

The economy of Canada in the nineteenth century was driven in large part by a waterborne boom in the market for timber. Towing vessels handled great rafts of timber and barges carried essential supplies and materials for which there was no alternative route.[1]

Its use, like the development and growth of Canada, first began in the East, so the description hereafter follows this pattern.

Atlantic Waters: In the 1850s, there is little mention of tugs in the records of Saint John. It is likely that any steamboat may have been used to tow at will as at times it became profitable to do some towing, eg. the *Woodstock* towed lumber scows between Oromocto and Saint John. Other known tugs are: *Magnet, Reindeer, Antelope*, etc. Tows on the river included log rafts, three-masted schooners destined for coastal voyages loaded with Grand Lake coal and scows or woodboats loaded with sawn lumber.[2] The first steamer built expressly as a tug at Saint John was said to be by the Vulcan Factory in 1846. The early history of tugs at Halifax is sketchy. Halifax was considered a strategic location for the operation of salvage tugs. Some of the earliest tugs (*Goliah* and *F. W. Roebling*) were bought from American sources and some were locally built (*G. S. Mayes* and *Scotsman*). Records (1920s) show some of these tugs under the name of Halifax Towboat Company, owned by Campbell Scotsman Company. Other companies in the business at that time were C. Bristler Company and Foundation Maritime Limited.[3]

Inland Waters: At the Port of Montreal, the Allan Royal Mail Line began providing tugs in 1843 first with the *Alliance* and later with the *Rocket* and *Meteor*. With the increase of rafts being towed between Montreal and Quebec, tugs of the Calvin Company (*Chieftan* and *John A. MacDonald*) near Kingston began operating out of Quebec in the 1840s and later by James G. Ross and Company and Sincennes McNaughton Line. By 1898 the latter known as Sin-Mac was operating widely on the St. Lawrence-Great Lakes system having 19 tugs (eg. *Mathilda, Ethel, Azilda, Conqueror* and *Sincennes*).[4] At the Port of Quebec, the *Hercules* appeared on the scene in 1823 from Montreal to tow the sailing vessel *Columbus*. Some tow boats - *New Lauzon, St. Roch* and *St. Georges* - were used to ferry passengers across the river to Lévis. By the mid 1850s, the timber trade was underway and a few vessels (2 *Conquerors, Mersey, Castor* and *Rival*) were registered as tugs at Quebec. The timber trade was then replaced by tug and barge and salvage operations.[5] At Ottawa, rafting timber began in 1806. P. Wright put steamers (*Union of the Ottawa, St. Andrews* and *William King*) in the 1920-30s between the rapids of Upper Ottawa and Lachine, some of which were used for towing. In

1872, A. G. Nish recorded towing 55 sailing vessels and 17 steamers. By the 1890s, there were around 250 barges and 50 tugs on the Lower Ottawa and the St. Lawrence. At Kingston, the waters were dominated by D.D. Calvin in the 1800s. There was competition for the salvage business from the Pyke company later purchased by McAllister Towing and Salvage of Montreal in the mid 1950s. At Hamilton and Toronto there was some local tug activity in the latter part of the 1800s but no major timber export. The largest tug fleet (40) on the Great Lakes is that of the Great Lakes Towing. At Thunder Bay, Gravel and Lake Services, Great Lakes Lumber Company and Abitibi Power and Paper Company operated tugs.

Pacific Waters: The earliest known tug on the West Coast was the *Beaver* (1835) owned by the Hudson's Bay company and later by the B.C. Towing and Transportation Company. The gold rush of 1857 boosted trade and the need for tugs (eg. *Goliath* (1857), the *Resolute* (1858), the *Isabel* (1866), the *Alexander* (1875) and the *Tepic* (1883)). The coal baron R. Dunsmuir had the *Lorne* (1889) built for coal. Besides, Puget Sound Tug Company, the Moody company and the Hastings Lumber Company, independent towing specialists (Captain George French) also appeared with their tugs - *Huron*, *St. Clair*, *Superior* and *Sealion*. Tugs were also used in the salmon canning industry. At Vancouver, Stamp's Mill had the first real Canadian West Coast-built tug, the *Isabella*. The need for small tugs ((eg. *Skidegate* (1866)) led to the Burrard Inlet Towing Company. A few years later witnessed the birth of the towing business of C. H Cates & Sons Ltd. (1885). The 1900s led to a number of independent towing companies.[6] At Victoria, *Beaver* was the first full time towboat to operate in the 1870s. R. Dunsmuir bought *Alexander* and *Pilot* to tow coal and later built *Lorne* in 1889. The first tugs were operated by mill and coal companies and later the work was handed to independents; followed by full-time salvage enterprises; and later by large passengers and cargo operations.[7] The 1920s saw the emergence of two major operators: the Vancouver Tugboat Company (1924) and Island Tug and Barge - which ultimately gave birth to Seaspan.[8]

Mackenzie River and Arctic (Western and Eastern): Steam-powered towboats were built at Fort Smith on the great Mackenzie River in

1886 for pursuit of new frontiers. The Hudson Bay Company operated paddle steamers in the 1930s and 1940s which were often used to push barges to supply many communities. As commerce grew, the steamers were supplemented with push tugs and barges for carrying freight. A major fleet of tugs of earlier days were the 'radium' tugs of Northern Transportation Limited. Arctic Transportation Limited was the major river carrier in the oil exploration boom of the 1960s/70s. In the Eastern Arctic, tugs ventured around north Labrador into Hudson Bay when the port of Churchill was improved and dredged in the 1930s. Barges or tugs such as *St. Arvans*, *Ocean Eagle*, *W.N. Twolan* and *H. M. Wilson* operated there. After the second world war, the DEW Line, mining projects, oil exploration and commercial supply was accomplished by tug and barge (*Irving Birch*, *Irving Maple*, *Irving Elm* and *Irving Cedar*) operations.

In brief, the marine towing industry largely grew out of the need to raft timber to the wood mills and on occasion to carry coal. The timber and coal barons, wood and saw mills operated and owned the towing business. The need for salvage operations and other operations witnessed the growth of a number of small operators.

III. A Description of Marine Towing Operators in Canada Today

As Canada moved into the twentieth century, the demand for towing services grew and the nature of towing services changed. We begin by describing the operators in the towing industry today.

Atlantic Waters: In the Atlantic Waters, there are a few tug and barge operators. They operate 76 tugs and offshore supply vessels. The two largest tug boat operators are Eastern Canada Towing (Ectug) and Atlantic Towing Ltd. Ectug was formed in the early 1920s and Atlantic Towing was formed after World War II (as a division of the J.D. Irving company). Ectug has been the primary tug company in Halifax and has 7 tugs. Atlantic Towing is dominant in St. John's, Newfoundland and has about 25 OSV's (offshore vessels), Z Drive tugs, conventional tugs and barges. From a 2009 CTA listing, there are 16 companies in the Atlantic Waters. Of these 16: PEI has 1; NS has 5; Newfoundland has 9; and 1 company from the NWT is also listed in the Atlantic waters. It appears that a number of companies from

Newfoundland are offshore supply vessels.

Inland Waters (all rivers, lakes and other navigable fresh waters within Canada including the St. Lawrence river): In the Inland waters, there are some 15 tug operators in the Great Lakes and 6 in the St. Lawrence. They operate 35 and 50 tugs and offshore supply vessels in the two areas respectively, according to a 2009 CTA listing. The Great Lakes Seaway System Directory lists 16 operators in both regions, three of these are listed as subsidiaries of one company. The largest are Purvis Marine Ltd. (9) and Nadro Marine Services (5) in the Great Lakes and le groupe ocean Inc (21) and McNeil (17) in the St. Law. The numbers in brackets indicate vessels.

Pacific Waters: In British Columbia, there are some 86 tug and barge operators. They operate 297 tugs and 443 barges.[9] The largest operator is Washington Marine Group, which consists of a group of companies - Seaspan International Ltd., Cates Tugs, Seaspan Coastal Intermodal, Kingcome Navigation, and Norsk Canada - acquired by Denis Washington. This group has a fleet of 51 tugs and 201 barges made up of 6 ocean going tugs, 22 coastal tugs, and 23 ship assist tugs. The second largest tug and barge operator is Rivtow Marine. Rivtow has a fleet of approximately 30 ocean, coastal, and ship assist tugs and about 50 barges of various types. The company was purchased by a Dutch company Smit International in 2000. Other large operators with at least 15 vessels (tugs/barges) are: 1. Island Tug and Barge Ltd. (8/18); 2. Ocean Construction Supplies (5/15); 3. The JJM Group (2/14); 4. Wainwright Maine Service Ltd. (8/8). Those with between 10 and 14 vessels are: 1. North Arm Transportation Ltd. (7/7); 2. Catherwood Towing Ltd. (11/3); 3. Pacific Towing Services (9/4); 4. Tymac Launch Service (3/10); 5. FMW Towing Ltd. (4/8); 6. Harken Towing Co. Ltd. (12/0); 7. Cooper Barging Service Ltd. (3/9); and 8. Riverside Towing Ltd. (10/0).[10]

Mackenzie River and Arctic (Western and Eastern): Northern Transportation Company Limited (NTCL) has by far the largest fleet of tugs and barges (roughly 75% of the tug and offshore supply DWT) in the Mackenzie River and Western Arctic. Most of which are located at the Port of Hay River, Canada's most northerly rail head. Inuvik in

the Mackenzie Delta and Tuktoyaktuk on the Beaufort Sea are the focal points of its tug operations. Other large towing operators are: Arctic Transportation Limited and Cooper Barging Service Limited. There are also a few small companies licensed to operate in this area. In Eastern Canada, the major operators are: Canarctic Shipping (subsidiary of Fednav of Federal Atlantic Lakes Lines) and NTCL or its subsidiaries.

In sum, the micro information obtained from various studies suggest that there are one or two very large firms in the 'major domestic water segments' with a fair number of fringe operators in some segments depending on the size of the market. However, the exact area of operation in each of these segments and their location suggests a narrower type market operation.

IV. An Overview of the Industry

In this section, we shall review some general information ranging from aggregate financial data in the industry, the nature of services provided and the type of tugs and regulations that affect this industry.

(i) Industry revenue and ownership

Operations: Water transportation can be classified into the following broad

Operating Rev. of Water Transp. Carriers by Type of Operation 1984-2007
(000'000)

Water	1984	1995	2001*	Est 2001	2007
Towing Revenues	274.8	276.5	400.1	400.1	591.3
Percent of Total Marine O. Rev	12.1	10.2	14.7	14.2	14.2
Total Marine Operating Rev	2265.1	2706.3	2729.3	2804.7	4164
TOTAL	2489.3	3050.5	2962.6*	3063.2	4495

* Excluded is the private carriers. It was 23.4% for 1984 and 3.2% for 1995. The size of the total revenue would be 3063 if adjustment of individual components is made to total revenue in 2001.

categories: passenger (ferry and cruise), freight, towing and charters. The estimates of total water revenue attributable to towing [11] range from 12%

to 14% of total marine operating revenue over the period 1984 to 2007 as shown in the table. In absolute terms, this ranged from \$274.8 million in 1984 to \$591.3 million in 2001.

In 2006, the Canadian Transportation Agency estimated that the Canadian fleet of tugs and barges included 309 tugs (122,000 gross tons) and 836 barges and scows (905,000 gross tons).

On the basis of operations, the greater proportion of towing revenue is derived from domestic services as opposed to international services. In 1984, the latter accounted for 10.4% and in 1995 it accounted for 14%. The areas of domestic operations can be classified according to the traditional areas of water transportation: Pacific; Atlantic; Inland; and Mackenzie River and Arctic (Western and Eastern). However, the first is the most significant.

Ownership: This segment of the industry has traditionally been commercially owned with the government playing an insignificant role, this also applies to day. In 1984, it was basically for-hire with a small proportion being private (14.8%) falling even further since then. Of the total revenue sole proprietor-ship accounted \$1.2million, incorporated companies accounted for \$272.9 million and cooperatives and federal government accounted for \$0.5 million. Statistics for a more recent period are not available.

(ii) Nature of Services

According to the *Oxford Dictionary* to tow means to pull. It could be overland by horse or vehicle or over water by boat or barge with a rope or chain. In the *Regulations Amending the Navigating Appliances and Equipment Regulations* a "tow-boat" means a ship engaged in towing another ship or a floating object astern or alongside or in pushing another ship or a floating object ahead. Statistics Canada describes towing as "The pulling or pushing of barges, scows, self-propelled vessels and log booms by means of a tug-boat." Since this paper is concerned with water, the definition provided by Statistics Canada will be used.

The most common services provided by tugs and tow boats are: *Berthing*; *Towing*; *Salvaging*; and *Supplying*. ***Berthing*** services are used to describe the service of bringing a vessel alongside a specific location in a port or harbour usually for mooring so as to load or unload the vessel. Berthing will be alongside a quay or a jetty (large

ports) or pontoons (small harbours and marinas). Berths (general/container/bulk/product/marina) are either general or specific to the types of vessel that use them in the process. **Towing** are services of pulling or pushing of barges, scows, self-propelled vessels and log booms by means of a tug-boat. A distinction is sometimes made between the services of a tugboats vs towboats (i.e., push boats). **Salvaging** services are rescuing a ship, its cargo, or other property from peril. Salvage encompasses rescue towing, refloating a sunken or grounded vessel, or patching or repairing a ship. Salvaging has been classified into: offshore; harbour; cargo and equipment; wreck removal; afloat salvage and clearance salvage. **Supplying** services are used in connection with towing of supply or re-supply vessel by tugs. These vessels transport supplies, equipment and materials to inaccessible areas and offshore structures such as drilling rigs.

The nature of services is largely determined by the type of tugs. There are three major categories of tugs: 1. Ocean going tugs or seagoing tugs; 2. Harbour tugs; and 3. Canal tugs. The first receives steam propulsion giving it the freedom of moving in any direction. The second is classified into three basic categories: one is the 'standard seagoing tug' that tows its payload on a hawser (cable or rope generally of steel); two is the 'notch tug' that is a tug that can be secured at the stern of a specially designed barge; three is the 'integral unit' or ITB that is it locks together with specially designed vessels. Articulated tug and barge units also utilize mechanical means to connect to their barges. The third whose hulls feature a flat front or bow to line up with the rectangular stern of the barge, they typically do not have any hawser. Besides these three categories there are other types of tugs: coastal tugs, railroad tugs; rescue and salvage tugs; etc. Coastal tugs are heavier and larger than harbour tugs and have more horse power. Railroad tugs haul car floats that transport railroad freight cars. Rescue and salvage tugs contain extensive equipment and are as large as ocean tugs.

(iii) Evolution of the modern tug

Modern tugs have evolved over time. The first tugs were made of wood that consisted of the hull of a small sailing vessel with a square,

low pressure boiler, engines and paddles. Iron was later adopted by the British for the hull. The next development was engines and boilers with more power. Between 1823 to 1833, horse power increased 3 fold and pressure increased to about 40psi. Cylindrical boilers and steel were then used and by the 1880s increased pressure boilers between 175 and 250psi were available. In the mid 1850s, the two-cylinder compound engine, utilizing the expansion of steam twice was invented. Twenty years later, the triple expansion engine first appeared in Europe. The development of propulsion technology gave birth to the modern tug. A number of developments increased its efficiency. First, the use of the Kort nozzle (1930) (i.e., a sturdy cylindrical structure around a special propeller considered to be one of the greatest contributions-named after the inventor); and second, the introduction of the Voith-Schneider propulsion (or cycloidal propulsion - a specialized marine propulsion system). By the 1960s, powerful high speed geared diesel engines led to the abandonment of steam. In the early 1980s, a competing system with high manoeuvrability and ability to push side-on appeared -- the twin screw, Z-drive or Azimuthal Stern Drive or 'Z-peller'. The new propulsion with a higher power led to the modern tug designed to move in any direction, with heavy rubber fenders all around. Advances in technology were accompanied by advances in operating techniques including radio dispatching and communications, computerized records and fully integrated tows.

(iv) Regulations

The *Canada Shipping Act, 2001* is the most important regulation that applies to tugs, tow boats and barges operating in all waters and to all such vessels operating in Canadian waters. The regulations applicable to tugs and barges are often classified under: 1. Enhanced Vessel Safety, 2. Load Lines; 3. Environmental Protection; 4. Vessel clearance, Vessel Certification and Voyage Classification; and 5. Marine Personnel. The first includes: a) *Small Vessel Regulations*; b) *Fire Safety Regulations*; c) *Cargo, Fumigation and Tackle Regulation*; and d) *Collision Regulations*. The second includes: a) *Load Line Regulation* (which incorporates the technical aspect of the IMO load line convention). The third includes: a) *Regulations for the Prevention*

of Pollution from Ships and for Dangerous Chemicals; and b) Environmental Response Regulations. The fourth includes: a) Vessel Certificates Regulations; and b) Vessel Clearance Regulations. The fifth includes: a) Marine Personnel Regulations.[12]

Coasting Trade Act -Tugs must be registered in Canada and must meet regulatory standards set under the *Canada Shipping Act*. These standards are high when compared to the US and other countries and so are costs. Further, such vessels are barred from engaging in US coastwise trade under the *Jones Act*. Foreign tugs also face the above requirements, in addition, to a tariff of 25% on the value of tug boats imported. Foreign barge operators are prohibited from operating between Canadian points pursuant to the rules against cabotage under the *Coasting Trade Act*.

Other regulatory/other factors - Besides the specific regulations mentioned, each licence has to be examined to determine if it limits the tug boat operators to specific waters or service and whether the nature of the tug boats of each operator limits the service that can be provided (i.e., if a heavier tug is needed it may not be suitable if the tug boat operator has lighter tugs).

V. Growing Consolidation in the Towing Industry

Growing Consolidation: Consolidation in this industry, it could be argued began as early as the 1970s in the West and the 1960s in the East.

In the West, a series of amalgamations of fleets left two large companies dominating the coast, Seaspan International and Rivtow-Straits. The origins of the first can be traced to the mid 1920s when two operators in two principal BC ports (Vancouver and Victoria) were formed: Harold Jones' Vancouver Tug Boat Company (1924) and Harold Elworthy's Island Tug and Barge Company (1925). They merged in 1970 to form Seaspan. This brought about 3/4 of the trade into one hand. The origins of the second can be traced to Rivtow Marine founded in 1939 at Hope, B.C. In 1970, it merged with Strait Towing to form the Rivtow Group. This brought a good portion of the remaining 1/4 of the trade into the other's hand. The 1990s and 2000s witnessed another round of consolidation but this time by international

giants. American Washington Marine group absorbed Seaspan International, Kingcome Navigation and C. H. Cates in 1992. The latter's origin can be traced to a Nova Scotian stevedoring entrepreneur in 1885 (C. H. Cates) which gained total dominance in ship berthing by the 1990s at Burrard Inlet. In the mid 2000, the Rivtow Group was bought by Dutch Smit Organization and later the towing divisions of Smit were later taken over by the Svitzer division of Danish A.P. Moller (Maersk).

In the East, a similar pattern is discernible in the Atlantic waters, Foundation Maritime[13] sold its towing fleet in the 1960s to Marine Industries Limited of Sorel, Quebec which resold it to Smit and Cory International Port Towage Limited owned by Cory Towage of Britain and the worldwide L. Smit towing and salvage of the Netherlands. A new name Eastern Canada Towing Limited (ECTUG) was adopted. In 1999, the British Cory firm was bought by Dutch Wijismuller group. In St. Lawrence Ports, Sin-Mac had a monopoly of ship berthing in Montreal in 1950 and dominated the barge operation at the Port of Quebec where Quebec Salvage and Wrecking also operated. Sin-Mac was purchased by McAllister Brothers Inc. in 1959. In 1972, Aqua Marine became le Ocean Groupe and purchased Quebec Tugs in 1987[14], McAllister in 1993, Sorel Tugboats in 1994 and Three Rivers Boatman in 2002. "This group gained control over the St. Lawrence ports for towing and salvage. Three to four tugs each are based at Montreal, Sorel, Trois Rivières and Quebec City."

Recent Mergers and Director's Application: Not surprisingly, when certain mergers arose between Dennis Washington and K&K Enterprises/Seaspan International Ltd. and Dennis Washington/Norsk Pacific Steamship Company, Limited on the West coast, the matter attracted the attention of the Director of Investigation and Research now the Commissioner of Competition.

On March 1, 1996, the Director (now the Commissioner) filed an application with the Competition Tribunal with respect to two mergers. The application opposed both the October 1994 merger whereby Mr. Dennis Washington, the owner of C.H. Cates & Sons Ltd., indirectly acquired a significant interest in Seaspan International Ltd. and the June 1995 merger whereby Mr. Washington purchased Norsk Pacific

Steamship Company, Limited. In June 1996, Mr. Washington acquired control of Seaspan.

The application alleged that the mergers prevent or lessen competition substantially in the provision of *tug boat services used to berth ships in the port of Vancouver*, and in the provision of *wood ship and covered barging services in and around British Columbia's coastal waters*. In the provision of ship berthing services, Cates had a virtual monopoly in Burrard Inlet, the main portion of the Port of Vancouver for several years. In September 1993, Seaspan entered the Burrard Inlet market bringing unprecedented competition.

In June 1994, in response to the new competition, Cates announced its intention to enter the Roberts Bank Inlet portion of the Port of Vancouver in competition with Seaspan where it was the only provider of berthing services. The acquisition removed the only source of competition in the two inlet markets. Further, given that entry into the inlet markets was difficult, the dominance of Seaspan in the provision of barging services in B.C. and the acquisition of Norsk (the third largest company in this market), the potential of Cates being a vigorous and effective competitor was removed. As a result, the application sought interim relief to prevent the integration of the operations of Cates and Seaspan.

On January 13, 1997, Acting Director of Investigation and Research under the *Competition Act* filed an application for a Consent Order. The terms of the proposed Order were agreed to by the parties.

One of the interesting aspects of this Order was that the terms and the conditions of the divestiture were framed with respect to the speed with which the divestiture was undertaken. Another issue was the question of whether alternative suppliers could enter the market from neighbouring areas. Regarding this aspect, regulatory barriers made entry from the US difficult, and entry from adjoining Canadian areas appeared unlikely to bring about alternative services.

Implications of the Market Dominated by a Few Firms: Given the consolidation in this industry over time, various segments of inland waters are dominated by a few tug boat operators (i.e., one or two) together with some fringe operators. The dominant operators have

grown large through mergers or exit (i.e., cost advantages or disadvantages - production or sales), or because of the benefits of size (i.e., market power or financial power), or because of know-how and experience. These underlying factors to their growth (internal or external) have created various barriers to entry.

This has enabled firms in this industry to become price-setters (i.e., they can charge prices above those in a competitive regime) from price takers depending on the nature of the barriers to entry. We know from economic theory that this results in a deadweight loss and transfer of surplus (as consumers of tugboat services will be paying higher prices for lower quantities and/or lower quality of services i.e., less suitable or modern tugs, slower service, etc). We also know that there could also be benefits from increased consolidation as a result of lower costs (part of which could be passed on to consumers) and increased competition due to increased rivalry among the dominant firms.

This raises the question as to what should be done from the policy perspective? Without knowing the specifics of future developments in each situation, I tend to lean towards some of the general observations made by Prof. William Fellner.[15] That is, it would be preferable to have broader oligopolistic market structures because it lowers the potential for collusion or tacit collusion on price and key dynamic variables such as product variation and technological progress. The underlying factors that create barriers to entry (cost advantages) have to be carefully examined. Barriers created to gain market power or financial power should not prevent the broadening of oligopolistic structures nor should they be permitted to create narrower oligopoly or monopoly.

Public policy may make its main contribution by interpreting the time-honoured concept of artificial exclusion very broadly, as applying to all cases where oligopoly develops from sources other than economic superiority, and by enforcing the law against artificial exclusion vigorously and consistently.[16] Low cost entrants should be given effective protection by removing artificial barriers. Even where entry does not materialize, the threat of entry at the cost-of- production price of potential rivals would set narrow limits to the exploitation of

oligopoly power. Keeping the way open to power should set limits on its exploitation.

VI. Conclusion

Marine towing, an often forgotten segment of water transportation, accounts for a small but noticeable proportion of water transport revenue. It may have lost the glamour that it once had in the pioneering timber days but it continues to play an essential role in shipping.

The demand for tugs in Canada is largely driven by the changing needs of the shipping industry and users. As behemoth container ships grow even bigger, bigger or more tugs are needed for berthing and as offshore drilling projects and as development of remote areas are pushed further additional tugs are needed. The tug boat building industry also suffers from long booms and busts though in the last few years (before the recession) the ship building industry reported a revival of tug boat building. Over the last one hundred and fifty years, its operation and ownership has largely changed as a result of changes in technology and mergers in the industry. The industry in the two Canadian coastal waters is dominated today by big international operators of the United States and Europe.

Given that consolidation in the industry has already occurred, barriers that prevent entry into the industry and the creation of barriers should be removed.

Endnotes/Bibliography

[1] Baird, D. M., *Under TOW -A Canadian History of Tugs and Towing*, 2003, p. 24.

[2] *Id.*, p. 32.

[3] Foundation Maritime sold its towing fleet in the 1960s to Marine Industries Limited of Sorel, Quebec which resold it to Cory International Port Towage Limited owned by firms in UK and Netherlands. A new name Eastern Canada Towing Limited (ECTUG) was later adopted.

[4] In 1950, it had a monopoly of ship berthing in Montreal and was purchased by McAllister Brothers Inc. in 1959. That year the opening of the St. Lawrence Seaway saw significant changes in the pattern of towing requirements together with new opportunities. The modernized fleet of McAllister was sold in 1994 to le Groupe Ocean. Also associated with tugs downriver from Montreal was the Simard family more so with its development than operations.

[5] Sincennes, McNaughton dominated the barge operation and other names were George Hall Company and William Hackett and Sons. Davie Shipbuilding & Repairing Co. (building most of its tugs) and Quebec Salvage and Wrecking Company opened up in tug and salvage operations. In 1944, Quebec Salvage and Wrecking was sold to Foundation Maritime Limited and later the tugs of Davie Shipbuilding were sold to Quebec Tugs Limited, a new subsidiary of CSL. In 1972, Aqua Marine became le Ocean Groupe and in 1987 Quebec Tugs was purchased followed by acquisitions of McAllister in 1993, Sorel Tugboats in 1994 and Three Rivers Boatman in 2002. "This group gained control over the St. Lawrence ports for towing and salvage. Three to four tugs each are based at Montreal, Sorel, Trois Rivières and

Quebec City.” It has a fleet of 17 tugs together with several barges.

[6] Vancouver Tug Boat Company, Preston and Mann, George H. French, Yong and Gore, Standard Towing, Union Tugboat, Greer and Coyle, Blue Band Company, ... Today, the only major competition to the Washington Group of Companies (Cates (was amalgamated into it) and Seaspan International) was Rivtow Marine founded in 1939 at Hope, B.C. The latter was bought by Smit Organization in the mid 2000.

[7] Sequentially companies in those businesses were: B. C. Towing, Puget Sound Tug Boat Company; B.C. Salvage Company, Pacific Salvage Company, Straits Towing Company, and Island Tug and Barge; and Greer and Coyle Towing (1905), Gulf of Georgia Towing Company (1912), and Vancouver Tugboat Company (1912).

[8] The 1970s led to a series of amalgamations of fleets that left two large companies dominating the coast, Seaspan International and Rivtow-Straits (ancestry included River Towing, Pioneer, B.C. Salvage, M.R. Cliff, Westminster and Straits Towing). The process continued, in 1992 American Washington Marine group absorbed Seaspan International, Kingcome Navigation and C. H. Cates; and in 2000 Rivtow Marine joined the Dutch Smit Group. The towing divisions of Smit were later taken over by the Svitzer division of Danish A.P. Moller (Maersk).

[9] **Cross Border Short Sea Shipping Study**, II, F. Rep., Cam. Systematics, Jan. 2007, p. 2-7.

[10] *Id.* See Table 2.3

[11] The marine towing industry falls under the SIC G4543 and under the NAICS as: 483115 (Deep Sea Coastal and Great Lakes Water Transportation (except ferries); 488339 (other navigational services to ship); and 488390 (other support activities to water transportation. Activities are described as barge transportation (except inland); lighter operations, water transportation).

[12] For additional details see Canada Shipping Act, 2001 - Tugs and Barges, www.tc.gc.ca

[13] Foundation Maritime Limited (1931) purchased Quebec Salvage and Wrecking in 1944. The latter began operations in 1914 (a subsidiary of CPR which took over the salvage business of Davie, a major player in tug operations and salvage on the St. Lawrence).

[14] Quebec Tugs Limited (was formed as a subsidiary of CSL in the 1940s).

[15] Fellner, William J., **Competition Among the Few**, N.Y., Alfred Knopf, 1949 (See ch XI).

[16] *Id.*

[17] The Effect of the Darling Report on Canadian Coastal Trade Regulation, **Transportation Revolution**, CTRF Proceedings, 39th Annual Conference, 2004, pp. 627-641.

[18] **Time for a New National Vision**, Report of the Standing Senate Committee on Transport and Communications, June 2008.

[19] **Making Connections**, Shortsea Shipping in Canada, Transport Canada, TP 14552, 2006.

[20] Maag, Chris., “Tugboat Industry Is Experiencing a Revival,” **NY Times**, June 23, 2007.