Session 8
Paper (a)

Potential of Waterways in Forestry Transportation

by

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INTRODUCTION

As you may recall from my paper on log barging, and due to the fact the mountains run continuously the length to our mainland coast, there is no feasible way of effecting a rail or road service north and south on the coast.

As a result, the British Columbia tug and barge industry has designed equipment and developed systems to service all the needs of the forest industry in the coastal areas.

Presently, there are approximately 1,300 tugs and 1,100 barges operating in Canadian waters. Of these, 760 tugs and 610 barges operate on the British Columbia coast.

Yarding tugs range in size from 35 feet to 50 feet -- 450 to 1,500 BHP; coastal tugs from 50 feet to 90 feet -- 800 to 1,800 BHP; and deepsea tugs from 95 feet to 130 feet -- 1,800 to 5,700 BHP.

In this regard, Seaspan operates a fleet of 45 tugs, two trainships and 240 special purpose barges.

LOGGING INDUSTRY

Logging camps are scattered over the full length of the coast including the Queen Charlotte Islands and Vancouver Island. As a result of the restrictions for allowable logging quotas, forest companies are forced to move their camps and re-establish in new areas.

To meet this demand, barges have been developed to carry fuel in hull compartments and equipment on deck. These barges are capable of transporting everything necessary for the logging camps as long as it is able to roll on and off the barge. The loading and discharge of equipment is effected at bulk heads, by portable ramp or fixed mechanical ramps on the barges. On establishment of the camps, these barges continue to service the fuel needs and transport machinery to and from major centres.

A typical barge load may be diesel fuel, gas, lube in drums, grapple loaders, cats, road building equipment, wire rolls, trucks, accommodation trailers and containers of gear.

As logs are watered at the logging camps, smaller tugs are used to assist in taking made-up booms to storage, making up log tows for delivery tugs and assisting log barges in loading by bringing log booms to the barges side. When log volumes are assembled, either delivery tugs will arrive in the protected waters, or log barges in the outer areas to deliver logs to the sorting grounds, sawmills and pulpmills. Depending on the camp, some logs are presorted by species or grade and delivered in this manner or they may be delivered on a multi-grade, multi-species basis for sorting at a booming ground near the sawmill area.

When logs are to be transported by barge, they are held in the camp storage in bagged booms. However, if they are to be delivered by log tow, they must be made up in conventional log booms to allow safe transport.

Traditionally, log booms are either flat or bundled logs and constructed in a similar form of sections. Each section of logs is surrounded by two side sticks, a head stick and a tail stick. The centre of which is held together by a swifter stick or swifter wire. The surrounding four logs are coupled together by boom chains. A section measures approximately 70 feet by 70 feet and contains 300 tons of logs.

Economical log towing is estimated on maintaining an average speed of transit of two knots. Therefore, the size of the log tow is governed by the horsepower of the tug. However, due to the strength of the boom gear, 1,500 BHP is about the maximum for safety of the tow.

A 1,500 BHP tug can successfully tow up to 100 sections of bundles which represents approximately 30,000 tons of logs per tow. Normally, a 100 section tow is five sections wide by 20 sections long or 350 feet wide times 1,400 feet long.

The log barging fleet as described in my previous paper, rounds out the basic services provided by tugs and barges to the logging industry.

SAWMILL INDUSTRY

After coastal tugs deliver log booms to

sawmill storage areas, the smaller yarding tugs break out booms required by the mills and deliver them to the landing area of the mill.

These same yarding tugs are employed to deliver empty chip barges, waste product barges or lumber barges to the sawmill.

The chip barges are loaded with the by-product species of the sawmill and transported to the pulpmills as fibre base for pulp and paper manufacturer. The usual waste is called hogfuel and is taken to pulpmills to be used as boiler fuel for steam and co-generation.

Lumber barges are loaded for either dock side or ship side at the major deepsea ports.

The towing industry presently services approximately fifty sawmills and chip re-loads, towing an annual volume of 9.5 million tons of chips or hogfuel to seven Canadian and four Washington State pulpmills with a fleet of 190 barges. This represents the assembly and towage in excess of 5,300 barge loads per year.

These barges are typically moved in multiple tows with barges ranging from 1,500 to 2,400 ton capacity. The size of the barges is designed to meet the capability of the sawmills' loading facilities and pulpmill discharge facilities.

Most chip barges are loaded by gravity spouts fed by conveyors and are either discharged by overhead bucket crane or in most instances, through a removable twenty foot panel in the stern of the barge by front end loader, feeding a shore hopper conveyor system.

PULPMILL INDUSTRY

At pulpmills, yarding tugs are used to deliver chip and hog barges from storage to discharge facilities, as well as move logs to woodroom areas where necessary. These tugs are also used in the docking of deepsea vessels, taking the pulp and paper products abroad.

Some of the pulpmill production is used in local or near markets and special covered barges are used to meet this service. These barges are fitted with

vertical or horizontal watertight access doors to allow either pass-on, pass-off or ramp handling of cargo by forklift. All are fitted out with lighting and mechanical ventilation.

Most pulpmills have rail ramps and railcar storage to allow receipt of necessary chemicals and shipping of finished products.

Rail barges have complex rail switches that allow them to marry up to the many rail head ramps in the Vancouver area and all local pulpmills. Most of these rail barges also carry bulk chemicals, such as caustic and chlorate in their hull tanks.

We also run daily rail barge service from Vancouver to Seattle carrying forest products from the interior of our province. This allows railcars to avoid costly switching penalties through the many interchanges of railways in the Vancouver area and assures the customers no lengthy delays resulting from the congestion of the interchanges.

TUG AND BARGE EFFICIENCIES

To be competitive, a successful operator must seek sufficient work to provide high utilization of his equipment.

When tugs and barges are married, such as in log barging, equipment movement or fuel transport, efficient loading discharge systems are necessary to provide quick turnarounds of the units. In circumstances where relatively slow loading or discharge occurs such as in chip, paper and lumber transport, it is usual to have a minimum of three barges in a system. One loading, one in transit and one discharging, so the tug is kept running in the cycle. If the size of barge is restricted by load or discharge factors, towing barges in multiples is the most effective method of maintaining volume requirements.

If an operator has a network of different business, the tug can move from one source of towing to another on delivery of each tow.

METHODS OF TOWING

There are two regular methods of towing presently in use in British Columbia.

All tugs are fitted with a drum winch and wire towline sized to match the horsepower of the tug. Towlines range from 900 feet to 3000 feet in length and 1 inch to 2½ inches in diameter, incorporating one or two towing pennants and linkage to accommodate multiple tows. Attachment to barges from the towline and/or pennant links are in the form of wire bridles with spliced eyes over tow posts or shackled into towing chains.
This is the most common method of towing, but always the method in times of heavy weather.

A second method is to use the same towline as above, but rather than attaching the multiple barges in a tow to pennants and bridles, the second or third barges are married together by couplers from the stern posts of the ahead barge to the forward tow posts of the following barge.

The use of the coupler technique is used on short hauls in good weather and is the normal practice in shallow restricted waters such as the Fraser River system.

LOOKING AHEAD TO "2000"

From a minor position of towing small lots of logs to nearby sawmills, the tug and barge industry in British Columbia has successfully fought off other forms of marine transport to become the usual method of transport for almost all cargo on our coastal waters.

Specially designed tugs and barges have been built to service all forms of industry, however, probably 80 percent of our business is directly related to the forest industry.

To assure ourselves an ongoing place in this business, we must continue to provide our forest customers with cost effective, innovative tug and barge transportation.

We have been, and are prepared to seek out and utilize new construction

materials and techniques in our building programs and continue to effect new designs to be more efficient and reduce cost in transit, as well as to continue to implement new ideas in cargo handling and stowage. However, we can go only so far with technology and the most important challenge for the future lies in the education of all the people involved. Politicians must restructure and redirect their bureaucracies to reduce outdated restrictive legislation which is a costly burden to marine operators.

The forestry people must discard non-environmental practices and manage the forest in new ways. Likewise, the environmentalists must come to the party and play their role in a more realistic way, to ensure a continuing valuable resource.

And finally, as marine operators, we must continue to upgrade the skills of our employees and, hand in hand, rather than fist in face, work with our unions to ensure a stable workplace that our forest industry can rely on. If we can achieve this, the potential for tug and barge on the waterways will definitely be ongoing.