

GOVERNMENT



OF CANADA

REFERENCE PAPERS

INFORMATION DIVISION
DEPARTMENT OF EXTERNAL AFFAIRS
OTTAWA - CANADA

No. 40

(Revised April 1959)

BACKGROUND OF THE ST. LAWRENCE SEAWAY AND POWER PROJECTS

On June 26, 1959, Her Majesty Queen Elizabeth and President Dwight D. Eisenhower of the United States of America, in a joint ceremony near Montreal, will open the St. Lawrence Seaway. On June 27, on the Saunders-Moses power dam joining Barnhart Island to the north shore of the river just west of Cornwall, Her Majesty will take part in a second international ceremony. These two ceremonies will mark the completion, after almost five years of actual construction work, of two monuments testifying to the spirit of co-operation that exists between Canada and the United States.

2. The St. Lawrence Seaway in its broadest sense is a deep waterway extending some 2300 miles from the Atlantic Ocean to the head of the Great Lakes at the heart of North America; strictly speaking, however, within the meaning of the legislation which permitted construction to get underway, the St. Lawrence Seaway extends from Montreal Harbour to Lake Erie and includes the Welland Ship Canal.

3. In the early part of the sixteenth century the French explorer, Jacques Cartier, was turned back by the rushing waters of the Lachine Rapids just west of what is now Montreal and was thereby forced to abandon his dream of finding the Northwest Passage and the route to the rich and glamorous East. At various times during the intervening 300-odd years, canals have been dug and locks built around the natural barriers to navigation in the St. Lawrence River and in the waters connecting the Great Lakes. This activity was spurred on by the desire to make use of the economical water route which the waters of the Great Lakes Basin offered for the transportation of goods in and out of this important area of the continent. The first such canals were built in 1783 but were only two feet deep. By 1850, 9 foot canals had been completed in Canada right through to the Upper Lakes. By 1900, 14 feet was the regulating depth in these canals, although certain of them - Sault Ste. Marie, for example - were deeper. In 1932 Canada completed the Welland Ship Canal, 27 miles in length with a governing depth of 25 feet in some reaches. This canal and its eight locks overcomes the differences in level of 326 feet between Lake Ontario and Lake Erie. Its construction may be considered as the first and a decisive step in the construction of the present St. Lawrence Seaway.

4. The needs of commerce pointed to the desirability of providing even greater depths in the St. Lawrence Canals, its locks, and the connecting channels, and by 1959, as a result of the joint efforts of the Canadian St. Lawrence Seaway Authority and the United States Saint Lawrence Seaway Development Corporation, 27 foot depths were available from Montreal to Lake Erie. The improvements to the Welland Ship Canal between Lake Ontario and Lake Erie around the barrier of the Niagara Falls

have been the sole responsibility of the St. Lawrence Seaway Authority. Deepening the channels above Lake Erie to seaway standards is proceeding apace, and by 1963, 27 foot depths will be available into the Upper Lakes.

5. Concurrently with this development, the Hydro Electric Power Commission of Ontario (HEPCO) and the Power Authority of the State of New York (PASNY) have completed works in the International Rapids Section of the St. Lawrence River to convert into electricity the energy that once expended itself by tumbling through the Rapids west of Cornwall. When all turbines have been installed and are in production at the Barnhart-Cornwall generating plants, these works will be producing 840,000 kw in each country.

History of Negotiations Making These Achievements Possible

6. Negotiations between Canada and the United States aimed at developing these twin resources of the St. Lawrence River and the Great Lakes for the benefit of both countries began towards the end of the last century, although, as has been shown, piecemeal development of navigation by Canada in the Great Lakes Basin started centuries ago. Power was first developed at Niagara at the turn of the century. In 1912, the Canadian Government decided to improve the Welland Canal to provide 27 foot depths with locks 800 feet long and 80 feet wide. Work began in 1913, was suspended during the first World War, and was finally completed at a cost of approximately \$143 million in 1932. In the same year, Canada and the United States signed the St. Lawrence Deep Waterway Treaty which was to provide for the joint development of the resources in the Great Lakes Basin in the interests of both navigation and power. In 1934, this Treaty was rejected by the United States Senate.

7. After further studies, and urged on by the power needs created by war production, Canada and the United States signed the Great Lakes - St. Lawrence Basin Agreement in 1941 with the same object in view. This Agreement, which like its predecessor was submitted to the United States Senate for approval, remained unratified by 1949.

8. The 1941 Agreement was intended, amongst other things, to permit the development, as a joint project, of the power resources available at Niagara Falls, where, over the falls alone, 160 feet of drop is available for the production of power. Since there was little prospect by 1949 that the Agreement would be approved, a separate treaty was signed and ratified in 1950 setting forth the principles under which the water in the Niagara River could be turned into power by Canada and the United States.

9. At more or less the same time the Canadian Government let it be known that Canada was prepared to proceed with an "all-Canadian" seaway as far west as Lake Erie, once the means had been found to have the power works constructed concurrently in the International Rapids Section of the St. Lawrence River. By December of 1951 the St. Lawrence Seaway Authority Act and the International Rapids Power Development Act were approved by the Canadian Parliament, the first authorizing the construction of navigation works on the Canadian side of the river from Montreal to Lake Ontario as well as in the Welland Ship Canal, the second authorizing the Hydro Electric Power Commission of Ontario (HEPCO) to join a United States power generating entity in constructing the necessary power works in the International Rapids Section of the St. Lawrence River.

10. In 1952, in order to get the power project underway, the Canadian and United States Governments submitted joint applications for the approval of the International Joint Commission to the proposed power development, on the understanding that the Canadian Government would undertake to construct, more or less concurrently, and to operate all the works necessary to insure uninterrupted 27 foot navigation between Montreal and Lake Erie. Approval of this proposal was given by the International Joint Commission in an Order of Approval dated October 29, 1952.

11. In 1953, the U.S. Federal Power Commission granted a 50-year license to the Power Authority of the State of New York (PASNY) for the development of the United States half of this power project. Because the Order granting this licence to PASNY was contested in U.S. courts, it was not until June of 1954 that PASNY had clear authority to join HEPCO in making a start on these works.

12. In the meantime, however, the United States Congress had enacted the Wiley-Dondero Bill (P.L. 83-358) which authorized and directed the Saint Lawrence Seaway Development Corporation to construct, on United States territory, all the 27 foot navigation facilities required to get shipping around the navigational barriers in the International Rapids Section. The situation thereby created required close consultation between the Canadian and the United States Governments in order to avoid a duplication of locks and canals. The number of compromises and accommodations were eventually worked out and embodied in a series of exchanges of Notes according to which the United States agreed to build a canal and two locks on United States territory to by-pass the Barnhart-Cornwall generating dam at the foot of the Long Sault Rapids and, in addition to do some essential dredging elsewhere, while Canada agreed to build a lock and canal around the Iroquois Control Dam some 30 miles upstream and, in addition, to complete to a common standard all the necessary navigation facilities in Canadian territory, i.e. between Montreal and Cornwall and in the Welland Ship Canal. The estimated cost to the United States of these works was of the order of \$100 million while the estimated cost to Canada was to amount to about \$200 million.

13. The first sod on the St. Lawrence Power Project was turned on August 10, 1954. Work on the Seaway began in September of 1954. As already stated, all the works are to be ready for more or less full scale operation by June of 1959.

Description of Navigation Facilities

14. Some idea of the magnitude of the work undertaken can be obtained by taking an imaginary voyage on a ship west-bound from Montreal.

a) St. Lambert Lock:

More or less opposite the pool of Montreal harbour can be seen the protecting dyke of the channel giving access to the Seaway. This channel begins just east of the Jacques Cartier Bridge, passes beneath the bridge and extends for three miles before reaching the first lock of the Seaway, the St. Lambert Lock, at the southern end of the Victoria Bridge. (At Victoria Bridge are lift spans and a system of rail and road traffic diversion.)

The St. Lambert Lock will lift the ship some 15 feet from the level of Montreal harbour to the level of Laprairie Basin through which the ship channel sweeps in a great arc $8\frac{1}{2}$ miles long between its protecting embankments to the second lock.

b) Cote Ste. Catherine Lock

The Cote Ste. Catherine Lock, like the other six new seaway locks and the seven lift locks on the Welland Ship Canal, has been built to the following standard dimensions:

useable length	730 feet
width	80 feet
depth over lock sills	30 feet

This lock, which will require 24 million gallons of water to fill, can be filled or emptied in less than ten minutes. It will lift ships from the level of Laprairie Basin through 30 feet to the level of Lake St. Louis.

The function of this lock is to by-pass the Lachine Rapids. Beyond it, the channel runs $7\frac{1}{2}$ miles before reaching Lake St. Louis.

Over this channel at one point tower the piers which give Honore Mercier highway bridge 120 feet of clearance for ships. Further upstream the Canadian Pacific Railway bridge has had two lift spans installed to allow for the passage of ships. These lift spans can be raised or lowered in a minute and a half.

c) Lake St. Louis & the Beauharnois Locks

Entering Lake St. Louis the ship will proceed some 12 miles by dredged channels before reaching the Lower Beauharnois Lock at the west end of the Lake.

The minimum width of St. Lawrence Seaway channels is 200 feet when provided with two embankments, 300 feet when there is only one embankment, and 450 feet in the open reaches. The depth in canals and channels is 27 feet.

The Lower Beauharnois Lock by-passing the Beauharnois Power House lifts the ship 41 feet so that it may pass through a short canal to the Upper Beauharnois Lock, where it is again lifted 41 feet so as to reach the level of Lake St. Francis; after some 13 miles in the Beauharnois Canal, the ship enters Lake St. Francis. It sails westward for some 30 miles by dredged channels to the head of the lake.

All locks and channels to this point have been built by Canada's St. Lawrence Seaway Authority.

d) United States Locks:

The ship canal leaves Lake St. Francis at the southwest corner and before long crosses the International Boundary just opposite St. Regis, Quebec. From here to the first lock on the United States side is only five miles. Entering the Snell Lock, the ship is lifted 45 feet into the Wiley-Dondero Canal (10 miles long) and is then lifted another 38 feet by the Eisenhower

Lock into Lake St. Lawrence, the power pool on which HEPCO and PASNY will draw for the water used in the turbines at Barnhart Island-Cornwall Power House Dam, just a mile to the north. The ship canal through Lake St. Lawrence passes where rapids once tossed the water into an angry foam.

e) Iroquois Lock:

At the western end of Lake St. Lawrence, the Seaway Authority of Canada has built a lock to allow ships to by-pass the Iroquois Control Dam. Once in the water of the St. Lawrence west of Iroquois, the ship channel meanders through the Thousand Islands past Prescott, Brockville and on to Kingston on Lake Ontario.

g) Welland Ship Canal:

From Port Weller on Lake Ontario to Port Colborne on Lake Erie is 27 miles. Through a series of eight locks (three of them twin locks allowing passage of ships in both directions simultaneously) the ship is raised through 326 feet to the level of Lake Erie.

The Economy of the Seaway

15. By most recent figures, new work on the Seaway proper from Montreal to Lake Erie will cost Canada about \$330 million; work in the International reaches of the River will cost United States \$122 million. (The two power entities will have spent \$600 million in developing the power at Barnhart, \$300 million by HEPCO and \$300 million by PASNY. These sums, which have been raised by floating bonds and by other types of borrowing, will be financed out of revenues realized from the sale of power).

16. To finance the navigation projects, tolls are to be charged. Costs of construction, operation and maintenance are to be recovered in fifty years. The toll levies have been carefully worked out on economic forecasts of expected traffic, with an eye always to competitive carriers -- rail and road -- and on the assumption that the use of the new facilities will increase progressively from a first year total of 25 million tons to a maximum of 50 million tons in ten years. On this basis the tolls will be charged as follows:

SCHEDULE

	Tolls		
	Montreal to or from Lake Ontario	Lake Ontario to or from Lake Erie (Welland Canal)	Complete Transit Total
	\$	\$	\$

1. For transit of the Seaway, a composite toll, comprising -

(1) a charge per gross registered ton, according to national registry of the vessel, applicable whether the vessel is wholly or partially laden, or is in ballast.

	.04	.02	.06
--	-----	-----	-----

(2) a charge per ton of cargo, as certified on ships' manifest or other document, as follows:

- bulk cargo	.40	.02	.42
- general cargo	.90	.05	.95

(3) a charge per passenger 3.50 4.00 7.50

(4) minimum charges, subject to the provisions of sub-items (1), (2) and (3) above:

- pleasure craft	14.00	16.00	30.00
- other vessels	28.00	32.00	60.00

2. For partial transit of the Seaway: -

(1) Between Montreal and Lake Ontario, in either direction, 15 per cent per lock of the applicable toll;

(2) Between Lake Ontario and Lake Erie, in either direction, (Welland Canal), 50 per cent of the applicable toll; no toll to be assessed unless at least one lock is transited, or with respect to Lock 1 of the Third Canal at Port Dalhousie, Ontario.

(3) Minimum charges:

- pleasure craft, \$2.00 per vessel per lock transited;
- other vessels, \$4.00 per vessel per each lock transited.

SUMMARY -

Thus the aspirations of many generations of traders, explorers, businessmen and politicians are at last about to be realized. It has been calculated that about 80 per cent of the merchant shipping of the world could use the improved facilities of the St. Lawrence Seaway; when all the inter-connecting channels have been completed, the industrialized heartland that has been developed along the fringes of the Great Lakes will be accessible to most of the merchantmen that trade upon the high seas.

Quite aside from the material advantages which the Seaway will bring, it would be a mistake to overlook the establishment of the co-operative working arrangements that have been developed in the course of the construction of these mighty works between Canada and her neighbour, the United States. Nothing could be more fitting than that these joint facilities should be opened ceremonially by her Majesty the Queen and by President Eisenhower in June of 1959.

RP/A

Thus the aspirations of many generations of traders, explorers, businessmen and politicians are at last about to be realized. It has been calculated that about 80 per cent of the merchant shipping of the world could use the improved facilities of the St. Lawrence Seaway; when all the inter-connecting channels have been completed, the industrialized heartland that has been developed along the fringes of the Great Lakes will be accessible to most of the merchantmen that trade upon the high seas.

Quite aside from the material advantages which the Seaway will bring, it would be a mistake to overlook the establishment of the co-operative working arrangements that have been developed in the course of the construction of these mighty works between Canada and her neighbour, the United States. Nothing could be more fitting than that these joint facilities should be opened ceremonially by Her Majesty the Queen and by President Eisenhower in June of 1959.