

## Questions

## ANSWERS TO QUESTIONS

The following answers, deposited with the Clerk of the house, are printed in the official report of debates pursuant to standing order 39:

## ST. LAWRENCE SEAWAY—OPERATING TESTS

## Question No. 87—Mr. Argue:

1. Has the St. Lawrence seaway authority ever carried out an operating test or series of tests, on each individual lock on the seaway, and on the sector gates, mitre gates, and associated machinery, under operating conditions?

2. If so, what was the date of the test or tests on each individual lock and name of location? What officials of the seaway authority supervised each, and what were their qualifications?

3. Were any modifications, adjustments or repairs found to be necessary at any lock as a result of the original test?

4. If so, what was the nature of each change and the lock at which it was necessary?

5. Have any of these changes actually been made?

6. If so, which ones, and on what date were they ordered and completed?

*Answer by: Hon. George H. Hees (Minister of Transport):*

The St. Lawrence seaway authority advises as follows:

1. Yes.

2. (i) Initial operating tests with water in the locks were carried out on the following dates: St. Lambert lock, all six gates on October 8, 1958; Cote Ste. Catherine lock, gates 3 and 4 on October 21, 1958, gates 5 and 6 on October 22, 1958, and gates 1 and 2 on October 27, 1958; lower Beauharnois lock, all eight gates on December 4, 1958; upper Beauharnois lock, gates 1, 2, 3 and 4 on December 4, 1958 and gates 5 and 6 on December 13, 1958; Iroquois lock, all gates on November 12, 1957.

Supplementing the initial tests above referred to, all equipment was operated and carefully checked several times prior to the opening of navigation in 1959. Further testing and checking of all lock operations was carried out at intervals throughout the 1959 season of navigation.

(ii) Electrical, J. E. Coke or J. Kroon or R. MacLean or R. Begin; mechanical, J. Pilon or K. MacIntosh; structural, K. Coldwell or A. Lorrain or J. Dansereau.

The electrical and mechanical tests were made under the direction of S. Hairsine, electrical-mechanical engineer, while the structural tests were directed by R. W. Willis, structural engineer.

Messrs. Coke, MacLean, Begin, Pilon, Coldwell and Lorrain are all professional engineers. Mr. Kroon has three years' engineering study and he has been employed for nine years as an electrical draftsman and technician. Mr. Dansereau attended university

for four years and obtained third year engineering standing and has been employed on field engineering for ten years. Mr. MacIntosh has 20 years' experience on lock maintenance.

3. Yes.

4. (i) At all locks, the limit switches controlling the travel of the gates, valves and fenders required minor adjustments of a routine nature. This was done as testing proceeded.

(ii) At the Iroquois lock, vibration of the sector gates developed under the abnormally high head of water which then prevailed. The vibration was caused by the creation of variable hydraulic forces from water passing between the rubber seals and the sides of the lock. The side seals were modified and the vibration was eliminated.

(iii) To improve the operation of taintor valves, it was necessary to grind the concrete and/or the rubber side seals for valve 4 at Cote Ste. Catherine lock, valves 2 and 4 at lower Beauharnois lock and valve 1 at the upper Beauharnois lock.

(iv) The lip of valve 1 at Upper Beauharnois lock required some welding so that it would seat properly and form a proper seal.

(v) It was found necessary to replace five anchor bolts for valve trunnion beams, one at St. Lambert lock and four at Cote Ste. Catherine lock, which had been improperly lengthened by welding.

(vi) It was necessary to trim the fender timbers on the spare gates at Cote Ste. Catherine lock so that they would not protrude beyond the face of the wall when the gates were recessed.

(vii) The screws in the keeper plate for the top hinge gudgeon pin at most of the mitre gates sheared during the first operation. The keeper plates at all mitre gates were replaced and backing-up plates were installed.

(viii) The gudgeon pin at gate leaf 3 of the lower Beauharnois lock was found to be scored to a minor extent but it was replaced.

(ix) During preliminary tests and prior to final adjustment of the limit switches, etc., at gate leaf 3 of the lower Beauharnois lock, the shear pin actually sheared thus preventing an overload on the machinery which was the purpose of its design.

(x) All mitre gates were found to leak to a minor extent through small openings at the welded joints, at both quoin and mitre bearing blocks and at the bottom seals near the quoins. This necessitated peening, welding, and/or caulking to stop the leaks.

(xi) The re-torquing of high tension bolts in some of the splices of all mitre gates was found to be required.