Interpretation Panel 4

On Tides and Currents

The St. Lawrence is one of the world's biggest rivers. It runs 1,167 Kms from its emergence in Lake Ontario to the end of the Gaspé Peninsula, it drains the entire Great Lakes basin along with the tributaries flowing directly into it. Nearly 10% of the world's fresh water reserves pass through it, and it flows at a rate of 11,900 cubic metres a second.

Tides - an Astronomical Phenomenon

Twice a day, the level of the River rises and falls. It does so daily, some 50 minutes later as each day passes. The immense liquid mass of the oceans shifts and moves as the sun and the moon change their positions relative to the earth - creating tides.

The height of the tides varies with the phases of the moon, rising at full and new moon. In the St. Lawrence, the attraction of the two celestial bodies is excpresed in very long waves, which start in the estuary and continue their swell right up to Lac Saint-Pierre. This then is why the tide is high in Sainte-Pétronille and low in Rimouski and vice versa. In addition, the height of the tide will be more marked in Sainte-Pétronille (5.8m) than in Rimouski (4.1m) because of the reduced area of movement of the water mass, in both width and depth. Finally, the tie takes ten hours to cover the distance from Sept-Îles to Lac Saint-Pierre, a distance of some 600 Kilometres.

Marine Currents around the Island

Marine currents off Sainte-Pétronille are complex, because the Chenal des Grands Voiliers on the south shore of the Île d'Orléans is much deeper and wider than is the Chenal du Nord. The effect is to considerably accelerate the flow of the water, with the marine currents reaching as much as 7 Km/h on the south side of the island, but no more than 2 Km/h on the other side. This disparity in the flow of the curents produces a shearing effect, which generates eddies off the wharf. In some instances, the currents will move around the western tip of the île d'Orléans.

Navigation in the Area of the Île d'Orléans

Commercial shipping passes along the south shore of the island through the Chenal des Grands Voiliers off Sainte-Pétronille. It then takes the Traverse du Nord, which, opposite Saint-Jean, moves to join the Chenal du Nord forming an elongated S downstream from cap Tourmente. A long passage of 31 Kilometres dug to a depth of 12.5 metres below the lowest usual sea depth and dragged annually, the Traverse du Nord permits large merchant ships and liners, even 150,000 tons tankers, to pass at high tide on their way to te Saint-Romuald terminal in Lévis.