



Centre d'Ingénierie Hydraulique

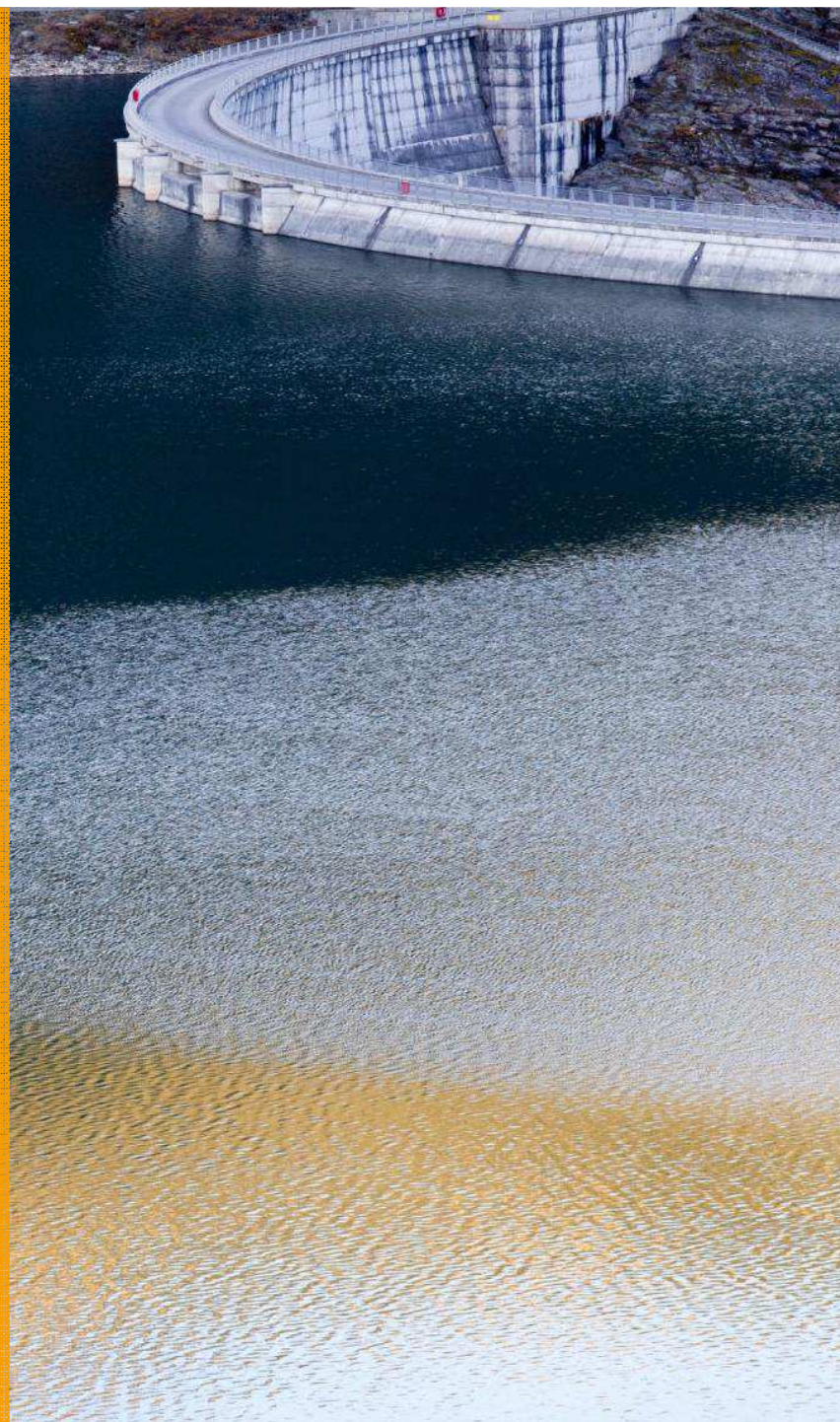
ENERGIE MARÉMOTRICE:

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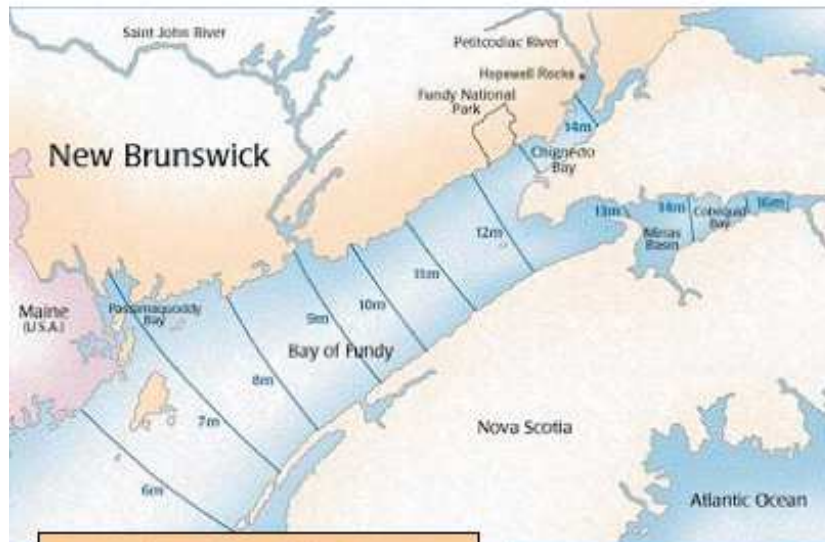
CANADA

Antoine LIBAUX, Christophe COCHET

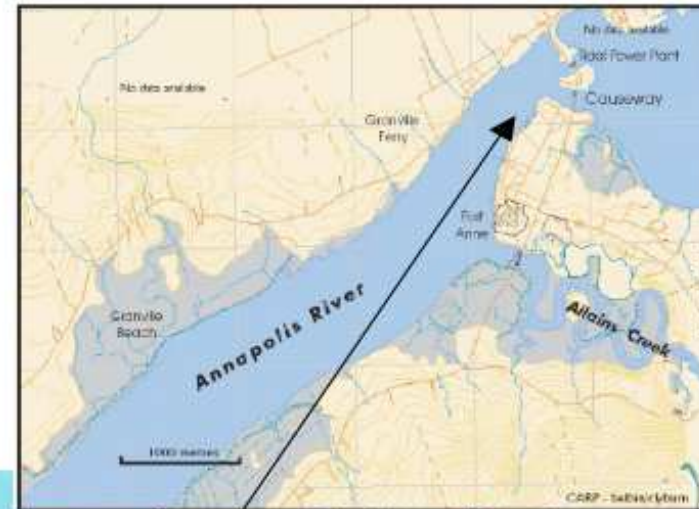
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Bay of Fundy – Tidal range



TIDAL POWER IN THE BAY OF FUNDY

- The idea of using the world's highest tides in the Bay of Fundy to generate power arose in the 17th century when Samuel de Champlain, French founder of the first permanent European settlement in Canada, built a tidal mill in Port Royal (1607)!
- Proposals to generate electricity from the tides started at the beginning of the 20th century:
- 1910: project of a double basin scheme between New Brunswick and Maine undertaken by Wallace Rupert Turnbull, inventor and aircraft pioneer from New Brunswick - he invented the variable pitch propeller.
- 1915: Cape Split tidal power plant proposal by Acadia University.
- 1944-1945: the governments of New Brunswick and Canada sponsored an investigation into the exploitation of tidal energy at the upper end of Shepody Bay. A hydraulically linked double-basin scheme, incorporating the Petitcodiac and Memramcook estuaries, could generate about 1.3TWh but the project could not be economically justified.
- 1950s-1960s: investigations of limited scope were undertaken in the Chignecto Bay and Minas Basin.

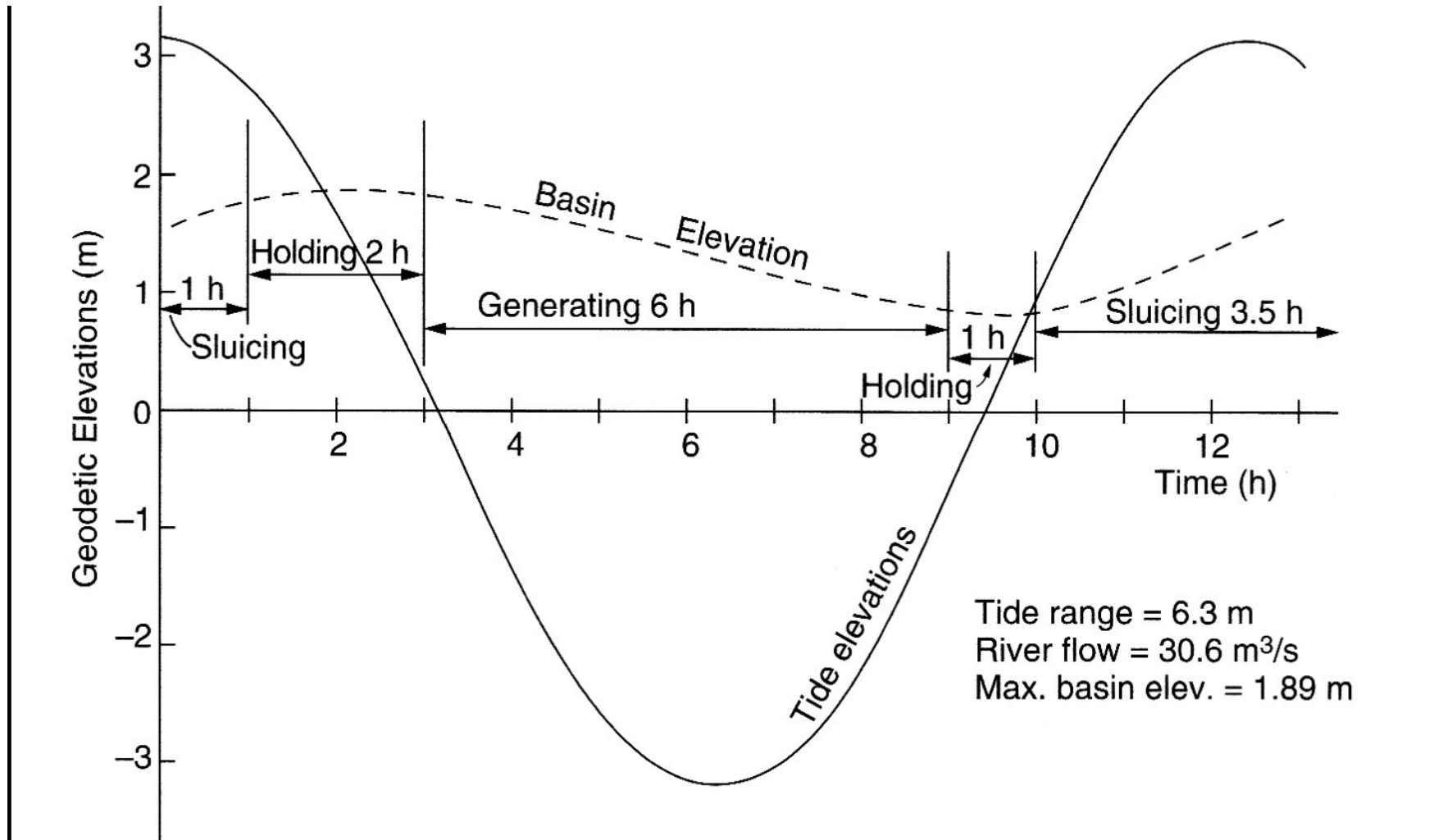
CAPE SPLIT TIDAL POWER PROPOSAL, ACADIA UNIVERSITY 1915



TIDAL POWER IN THE BAY OF FUNDY

- 1966, visite de LA RANCE, enthousiasme des officiels et politiques
- La 1^{ère} véritable grande étude de « Fundy Tidal Power » est lancée par les gouvernements de New Brunswick, Nova Scotia et du Canada. Cette étude est menée par le ATPP Board (Atlantic Tidal Power Programming Board).
- 1969, l'étude conclut sur la faisabilité technique mais non économique
- 1972, évolutions significatives du prix et des conditions de fourniture d'énergie
- Reprise des études, de très grands ouvrages sont étudiés mais les impacts environnementaux sèment le doute :
 - Le marnage est fortement modifié
 - Les périodes

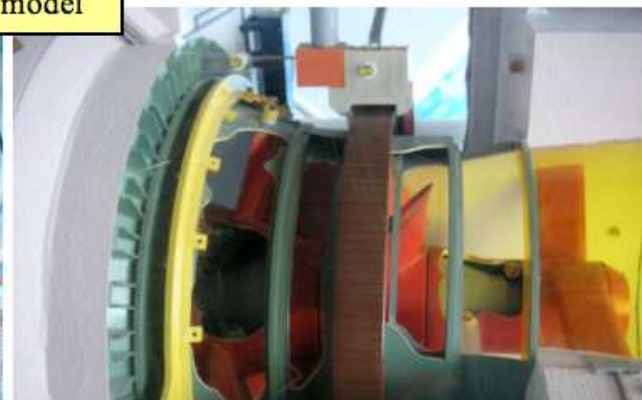
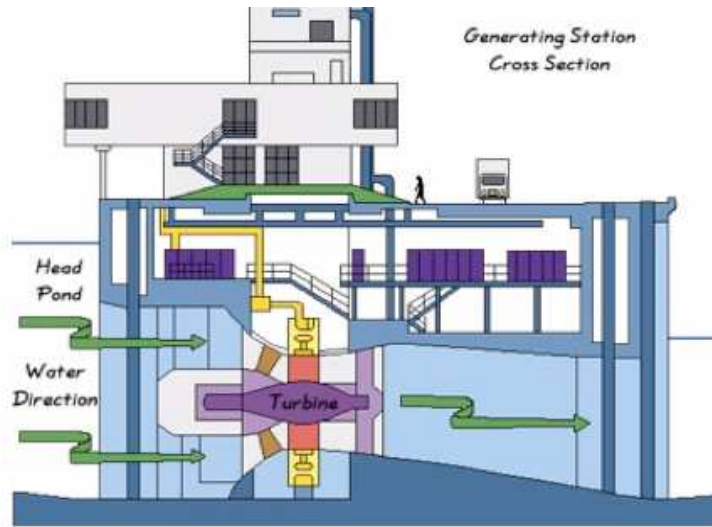
ANNAPOLIS TYPICAL OPERATING CYCLE (EBB GENERATION ONLY)

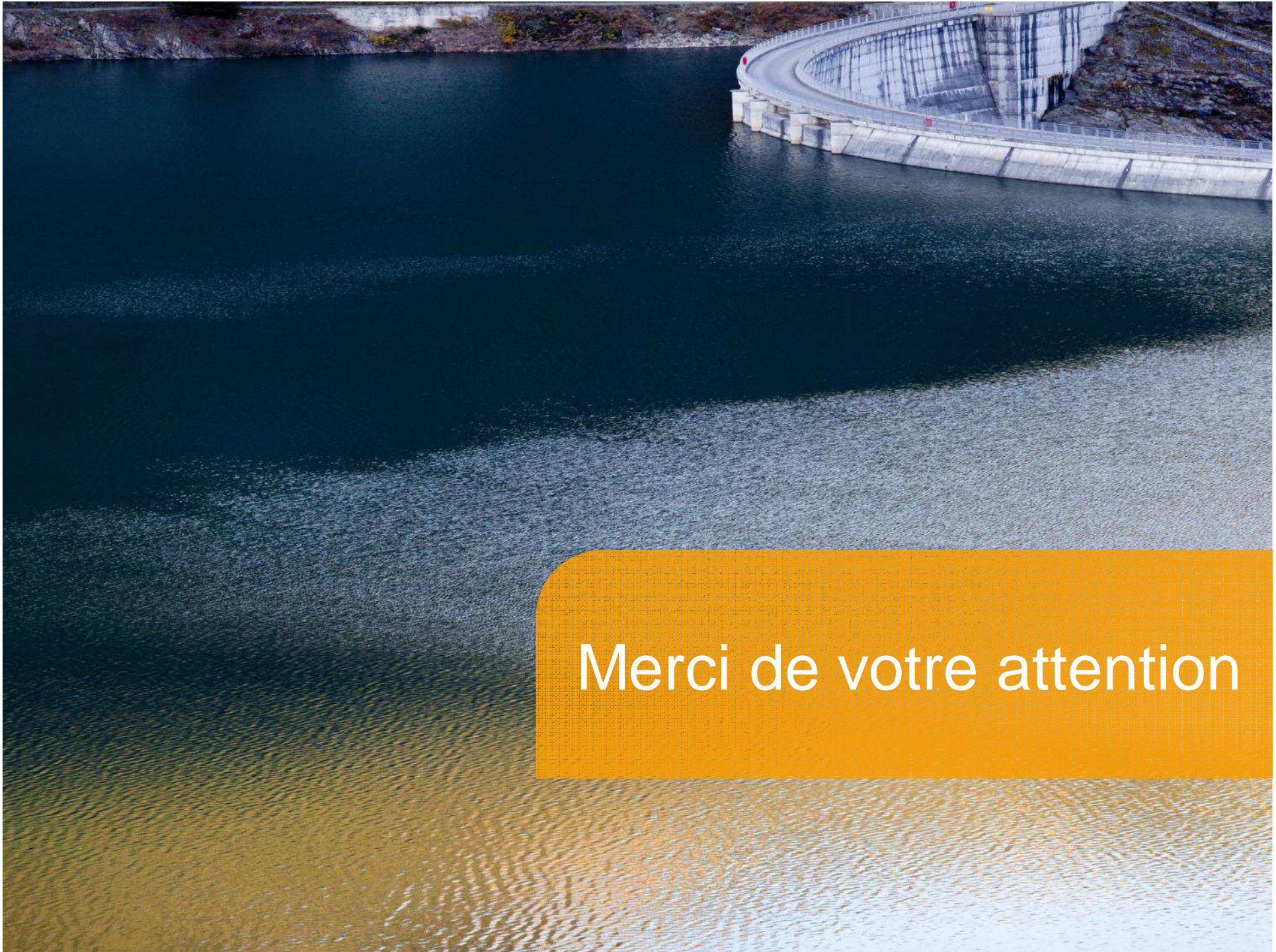


ANNAPOLIS ROYAL TIDAL POWER PLANT

- 1960, 2 sluice-gates w 9.2 x h 7.3 et 1 passe à poissons w 3 x h 7.3
- Bassin 1740 ha
- Construction de la centrale de 1980 à 1984, longueur 46.50 m
 - Le conduit d'alimentation de la turbine 15.50 m²
 - L'aspirateur w 14.50 x h 11.1
 - Turbine Straflo D 7.60 m, P_{nom} 20 MW, 50 GWh/an, ebb generation only
 - L'alternateur comprend 144 poles
 - Le diamètre du stator est 13 m

ANNAPOLIS TYPICAL OPERATING CYCLE (EBB GENERATION ONLY)





Merci de votre attention