

## Canada and Tunisia co-operate on dam construction

Canadian Minister of State Serge Joyal recently participated in the official inauguration of a dam in Tunisia that was partly financed by the Canadian International Development Agency (CIDA).

Tunisian President Habib Bourguiba officially inaugurated the dam that bears his name at Sidi Saad on Oued Zeroud. In addition to Mr. Joyal, Marcel Massé, president of CIDA and Camille A. Dagenais, chairman of The SNC Group of Montreal attended the ceremonies.

The official inauguration of Habib Bourguiba Dam is the culmination of more than ten years' co-operation between Canadian and Tunisian governments, engineers and builders.

The project was financed in part by a \$55-million loan from the Canadian International Development Agency. Engineering and construction management were carried out by The SNC Group. Foundation International of Canada, was a member of the general contracting consortium, led by Skanska Cementguuteriet AB of Sweden and including Italstrade SpA of Italy and Cometra of Tunisia. Additional financing for the project came from the Saudi Development Fund.

The dam, built to control disastrous flash floods and to store water for recharging of the water tables and irrigation of 4 000 hectares of land, is the key-stone of agricultural and industrial development in the Kairouan region.

Oued Zeroud is one of three large wadis crossing the Kairouan Plain in southern Tunisia. A mere trickle for most of the year, after a severe storm it can reach a flow that equals that of the St. Lawrence at Quebec. It then floods the plain, disrupting communications, causing severe damage and isolating the city of Kairouan.

In the fall of 1969 severe cyclonic storms caused four successive floods with a peak flow of 17 000 cubic metres a second that devastated the Kairouan region.

To protect its religious, artistic and historic heritage and to open the door to future development, in 1972 the Canadian International Development Agency sponsored studies of an integrated development program for the Kairouan region. The report stressed flood control as an essential factor in any further development. The report's first recommendation was to build dams on Oued Zeroud and

Oued Merguellil to control the water and solids brought down by the wadis. The Sidi Saad project was given priority and in 1974 The SNC Group submitted a feasibility report on the dam to Tunisia's Ministry of Equipment.

Engineering began in 1976 and site work started in the fall of 1978. The project was completed on schedule within the original budget of \$175 million.

The central element of the Sidi Saad project is a main dam 70 metres high and 560 metres long, built at the narrowest part of the Zeroud gorge two kilometres upstream from the point where the wadi enters the Kairouan plain. A saddle dam 48 metres high and 520 metres long closes the gorge on the right bank.

The two dams create a reservoir with a capacity of 1 994 cubic millimetres. This is divided into a section of 78 cubic millimetres of dead storage, a section of 131 cubic millimetres reserved for irrigation and a section of 1 785 cubic millimetres to be used for flood control. Flood waters will flow to the spillway by ungated outlets and free overflow.

The 60-metre wide concrete chute of the spillway ends in a ski-jump structure that discharges into a concrete lined stilling basin 121 metres long and 60 metres wide. Dissipation of the water pressure is completed in a second basin 126 metres wide. The structure is designed to handle a flood of a magnitude likely to occur only once in 10 000 years.



Mr. Joyal (left) looks on as President Habib Bourguiba officially inaugurates the dam at Sidi Saad on Oued Zeroud.

The transfer of technology was an important part of the engineers' mandate. An integrated engineering and project management team was drawn from the Tunisian Ministry of Equipment and The SNC Group. In the course of the project the Canadians gradually turned their responsibilities over to their Tunisian counterparts who finished the project with a minimum of outside assistance.

The Bourguiba Dam at Sidi Saad will protect 150 000 hectares from floods. Meanwhile, a feasibility study of another dam, at El Haouareb on Oued Merguellil, also financed by CIDA, has been completed by The SNC Group.



Minister of State Serge Joyal meets with Tunisian officials (left to right): Canada's Ambassador in Tunisia A.E. Blanchette; Minister of State Serge Joyal; Prime Minister Mohamed Mzali; Minister of Equipment Mohamed Sayah and Minister responsible for Administrative Reform and the Public Service Mezri Chekir.