INTERNATIONAL SYMPOSIUM ON

DAM FOUNDATIONS PROBLEMS AND SOLUTIONS

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PREFACE

Although Türkiye has about 14 % of total hydroelectric generation capacity of Europe, generally speaking our country is not the richest of the region in view of land and water resources. Distribution of these sources all around the country and the irregular hydrology of the sources during different periods of the year necessitate the construction of especially the storage facilities, in other words, the dams. Even in same regions of the country in summer the streams are completely dry, resulting its surrounding area so arid and in other areas in winter severe floods are met, sometimes in abnormally high rate of flows. Also the precipitation rates differentiate a lot all around the country.

The first dam built in Türkiye during the presidential period of Atatürk is the Çubuk I Dam, built in 1936 for the domestic water requirement of the city of Ankara. No serious activities in dam construction was observed until the end of Second World War few low dams built for irrigation purposes. Then an increase in construction of dams and hydroelectric power plants can be observed in 1950's after the establishment of the General Directorate of State Hydraulic Works, being the main public body for the exploitation of water resources of country in four major activity areas of hydroelectric energy production, irrigation, flood control and drinking water supplies of big population centers.

As of today, the construction of 678 dams have been completed and put into operation. The majority of these dams were financed through our national budgetary sources. However as required, the foreign financing through various world-wide financing agencies such as IBRD, EIB, OECF were also used.

Some examples of foreign financed projects are Atatürk, Karakaya, Aslantaş and Özlüce Dams and Hydroelectric Power Plants.

In recent years, average increase of electric consumption in Türkiye is 8 to 10 % per year and a similar rate is projected in the coming years. To meet such a rate with a counter generation, the country is required to allocate each year a total of 3 to 4 billions of dollars for the new energy projects. So energy is a vital and priority issue in Türkiye. The Government is in such a trial how to handle this energy deficit in the country, while considering all the alternatives including natural gas and nuclear power plants too, aiming to create an energy - rich country.

Because of the huge amounts of financing requirements for the new hydroelectric power plant investments and the limited budgetary sources in this respect, alternative ways of project awarding, implementation and operation have been promoted in Türkiye. The models such as BOT (Built-Operate-Transfer), BO (Built and Operate), BOO (Built, Own and Operate) and TOR (Transfer of Operating Rights) developed by Türkiye to facilitate investments into the energy sector have created considerable interest in the international cycles of investors and financiers. Already eight hydroelectric power plants have been realized on BOT model. As of January 1999, there are eleven BOT based hydroelectric power plants under construction.

The subject of the symposium is dam foundations and in this respect one of the most interesting countries is Türkiye, since the majority of dam areas is of karstic origin and at almost all of the dams completed to date, the settlement of dam foundation problems had been required.

We hope that this symposium will benefit a lot to the distinguished participants and to the sector of dam construction.

Before concluding my introductory views, I wish to transmit my sincere thanks and appreciation's to the participants, to the ones who contributed to this symposium by presenting their valuable papers and to my colleagues who worked for preparation of symposium notes, especially to Prof. Dr. Ufuk ERGÜN, Dr. Ergün DEMİRÖZ, and his colleagues.

Mümtaz TURFAN
President of TRCOLD

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C. DESIGN AND CONSTRUCTION OF DAMS ON UNFAVORUBLE FORMATIONS - CASE STUDIES (KARSTIC, COLLAPSIBLE, SOFT, ETC.)

D. PROBLEMS OF ABUTMENTS AND FORMATION STABILITY

A. DESIGN AND CONSTRUCTION OF DAMS ON PERMEABLE SOILS AND ROCKS AND METHODS OF FOUNDATION TREATMENT AND DESIGN FOR WATER TIGHTNESS