THESIS

INVESTIGATION OF SEDIMENTATION PROBLEMS IN TARBELA RESERVOIR

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ABSTRACT

INVESTIGATION OF SEDIMENTATION PROBLEMS IN TARBELA RESERVOIR

Tarbela dam was built across the river Indus, about 65 kilometer North-West of Islamabad. It was completed in 1974. It had gross storage capacity of 11.62 million acre feet (MAF) at reservoir level 1550 ft. above mean sea level, with 9.7 MAF as live storage with a maximum draw-down to elevation 1300 ft. and remaining 1.92 MAF as dead storage at the design stage. The primary function of Tarbela dam was to provide water for irrigation purposes with a secondary function of power generation. Annual inflow sediment load of 0.197 MAF (360 MST) was estimated at the project planning and design stage by the project consultants. Out of 168500 square kilometers of catchment area of river Indus above Tarbela. Only 10400 square kilometers receive monsoon rain while the rest has scanty rainfall from 75 to 125 mm per annum. Snow melting is the main source of water in river Indus. At design stage, reservoir's live storage capacity was approximately 15 percent of the average annual flow.

Tarbela dam faces a major problem from the consequences of high sediment inflow in the reservoir. At the design stage of the dam, it was considered by TAMS that bulk of its active storage would be silted up in 50 to 60 years. The trap efficiency of the reservoir is still higher than 95 percent as against 88 percent presented by mathematical model study by TAMS.

The purpose of the study is to determine a strategy for the preservation of the assets of the project on a sustainable basis. All possible options are considered, including measures to

reduce sediment inflows, to increase sediment out flows and the creation of additional live storage by the improved management of sediment.

Study will be useful to increase the life of Tarbela reservoir and other reservoirs by applying the remedial measure for the control of sediment inflow in the reservoir.

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