

Risdon Brook dam

by I. B. Jennings

Preliminary geological mapping has indicated several problems in relation to the dam and storage reservoir which require investigation in order to assess the feasibility of the project. A full geological report will be submitted later but in the meantime investigations could be pursued on the lines indicated below.

Damsite

The dam is situated on a flat bedded block of Permian mudstone bounded by two faults. The rocks themselves are reasonably competent but they are intersected by a well defined joint system.

The obvious problems with a dam in this position are:

- (1) The mudstone beds are separated by well developed planes containing thin clayey partings. These clay partings may be of low cohesion and could materially affect the shear strength of the rock as a whole.
- (2) Faults occur close to the damsite and leakage could occur along joints related to the fault systems. The distribution and condition of these joints should be investigated.
- (3) Erosional cavities several feet long and a few feet deep have been noted in the mudstones at and near the damsite. These cavities may be due to the solution of limestone lenses in the mudstones if so they may also be present below creek level.
- (4) The possibility of the existence of a buried stream channel was suggested by Spry. Detailed mapping has indicated that if such a channel does exist it is probably of limited extent. However it would be prudent to examine this possibility further. At the same time any small such faulting below the bed of the creek, if present, would be revealed.

To investigate the problems outlined above the following program of diamond drilling is recommended.

- (a) Two vertical drill holes from the T.W.L. on each abutment to a depth of about 20 feet below the creek level.
- (b) Two vertical holes, one on either side of the creek to a depth of about one and a half times the height of the dam.
- (c) An angle hole drilled from the north side of the creek to sufficient depth to overlap one of the holes from (b).

This drilling program will involve about 700 feet of drilling. A minimum core size of NX should be specified in order to obtain maximum recovery of the clay partings between beds.

Reservoir Area:

The storage area is occupied largely by a block of Triassic sandstones bounded by Tertiary faults and intruded by Jurassic dolerite.

These rocks are an important aquifer in Tasmania and have appreciable, but widely variable, permeability.

The small amount of investigation so far carried out on these rocks indicates a wide variation in the coefficient of permeability. This together with visual observations suggest that most of the

ground water movements take place along bedding planes and joint systems.

The presence of a number of faults in the area indicates that well developed joint systems and shatter zones may be present. However the outcrop in the sandstone areas is poor and no reasonable assessment can be made from the available exposures. In order to make a more complete preliminary study, it is recommended that the bedrock should be exposed by bulldozer cuts at several points so that a detailed geological section can be drawn along the shortest leakage path. At the same time some cuts should be made across the fault just upstream of the damsite in order to examine the condition of the rock in that vicinity.

[2 January 1964]