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V.F.B. DE MELLO

OFERECE

Comment addressed to P. Londe

VICTOR F. B. DE MELLO

The data quoted and questions raised with respect to the La Girotte dam must be scrutinized with care before being thrown to the profession at large where any seemingly bright new idea tends to rage like a forest fire. Unfortunately the data presented do not permit one such a questioning or challenging scrutiny and therefore I believe that our scientific attitude would oblige us to consider the hypothesis wrong until proven otherwise. On the other hand, in due respect to the unquestioned qualifications of the General Reporter, my present request can only be that the supporting data and argumentation be presented, which was unfortunately impossible to do in the oral report, compact and brilliant.

It is today accepted as irrefutable that the coefficient of permeability in most rocks may present a very significant change (100 : 1 or even 1000 : 1) as one moves from compressions to tensions along the planes of discontinuity. Therefore, the pressure-dependent coefficient of permeability is unchallenged as logical. However, the data presented are, to be quite honest, of two sets of Lugeon tests, before and after reservoir filling. So the direct evidence concerns a set of "reservoir-filling dependent Lugeon tests". Two very important steps have been short-circuited: 1) what are [or are presumed to be] the effective stress changes in the upstream zone under a dam during reservoir filling; 2) how were the Lugeon tests really carried out and interpreted, and what is the validity of the claims correlating Lugeon tests to *in situ* permeabilities.

As regards the first item, each case will yield a different probable net result, but it would be pertinent to recall that the submergence does not reduce compressive stresses upstream of a grout curtain. On the contrary there should be an increase of compressions were it not for the stresses (due to movements, etc.) introduced because of the superstructure, and therefore entirely conditioned by each distinct design case.

As regards the Lugeon tests many questions arise, and it is emphasized that one should not scrutinizingly question their results to begin with. The conditions of hydraulic cracking (claquage) as formulated by many grouters' formulae (cf. "Injections des Sols" by Cambefort, etc.) do not tally with recent work from earth dams, etc., (cf. conclusions derived by Bjerrum *et al*, Geotechnique 1972, from investigations concerning permeability tests *in situ*, because of Dead Sea Project litigations, etc.). Pending clarification it would seem necessary to begin by questioning 1) the Lugeon test, 2) the interpretation of representative terrain *in situ* permeabilities as desired from such routine tests.

A similar case (or was it the same?) was quoted (and similarly commented upon) by Mr. Sabarly at the International Engineering Geology Congress in Sao Paulo a couple of weeks ago.