unlimited heights at rapid rates of rise even on impervious foundations.

In situ leaching operations appear not to affect the slope angle, although it can be argued that a flatter slope will allow easier access onto the slopes for drilling and pumping operations. If the dam is to be used as a building site in the future, the flatter slopes will make access to the top easier, and it should also be possible to use the slopes for building by benching because the steeper cuts at the back of the benches will still be stable.

DESIGN OF A NEW DAM

If one can assume that a slimes dam is an independent structure, one can consider the ideal site and method of construction. In practice, however, there are other factors that limit the choice of site and construction method. Let us therefore consider the ideal concept and see to what extent it can be affected by other technical considerations.

Site selection

As already mentioned, the ideal site for a normal slimes dam should have permeable foundation soil, but, if there are effluent problems or *in situ* leaching is to be carried out, the foundation should be impermeable. The foundation soil should have adequate strength to prevent foundation failures, which means that it should be at least as strong as the consolidated slimes will be.

The other aspect of site selection is the topography of the site. Generally, a site with a slight slope is preferred so that wall building can be concentrated in one area and a large storage area is gained for a relatively low height of wall. On level sites, all walls have to be built simultaneously and the total storage area is immediately available. On the other hand, steeply sloping sites require rapid rise of wall for a limited gain in storage area, and it is preferable to avoid very rapid rates of rise in the initial stages of building a wall. The dam is usually situated in a low area to take advantage of gravity for moving the slimes from the plant to the dam. This often leads to the dam being sited in a low-lying area next to a stream or vlei, where weak soils may be encountered, and this point must be watched.

Wall construction

If the foundation conditions at the site are not good, the first step in the construction of the dam is the preparation of the site. In badly drained areas, underdrainage must be provided with a rock toe right round the periphery, and any weak foundation spots must be improved. The wall is then built in the normal way with an outer slope of 18° and an inner slope of 30°. While it is still an advantage to allow each successive layer of slime to dry out in the paddocks, the strength analysis has not taken this into account and the only requirement is that the rate of rise should be evenly spread over the whole period; that is, 3 m per year is 0,25 m per month. However, if a period of rapid building is followed by a rest period, the rate of rise may be calculated over the whole period; for example, a rise of 3 m in one month, followed by a rest period of 5 months, is equivalent to a rise of 0,5 m per month, but a rise of 3 m in the last month of a six-month period remains a rate of rise of 3 m per month for that period.

Penstocks and pond

The wider wall area caused by the flattened slope will necessitate moving the penstocks further into the dam, but will be compensated by moving the pond further from the toe and thus reducing seepage flow. The normal recommendation to keep the water level in the pond as low as possible is still valid.

CONCLUSIONS

The recommendations on slimes-dam construction in 1959-60 are still valid and have been proved by practical experience in their application. The requirements for pollution control, vegetation, *in situ* leaching, and possible later use of the dam for building purposes can all be met with minor modifications to existing slimes-dam construction practice. The major change that is likely to occur is the flattening of slopes to allow the use of mechanical plant for vegetating the sides of dams, and this will aid all aspects of dam stability both in use and for later developments. Provided the toe is protected by underdrainage and the foundation has adequate strength, dams at 18° side slope can be built to virtually unlimited heights at a rapid rate of rise.

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SYMPOSIUM ON PELLETS AND GRANULES

During October 1974, the Newcastle branch of the Australasian Institute of Mining and Metallurgy is to hold a symposium on pelletizing and granulation, with particular reference to the iron ore, fertilizer, and cement industries. The symposium will examine the fundamental principles underlying pelletizing and granulation, current international plant practices, and new process developments. The advantages offered by these processes in subsequent industrial operations will also be discussed. Intending delegates and contributors of papers should contact The Conference Secretary, Pellets and Granules Symposium, c/o B.H.P. Central Research Laboratories, Shortland, Newcastle, N.S.W. 2307, Australia.