

Measurement of *in situ* stress

958174

Bestimmung der Gebirgsspannung mit der Bohrloch-Schlitzsonde

(Rock stress determination with the borehole slotter)

A. Becker & D. Werner, *Felsbau*, 13(3), 1995, pp 134-138.

Five examples are given regarding the application of the borehole slotter in rock stress determination. Data are presented that test the reliability of the strain measurements by the borehole slotter and indicate the reproducibility of these data compared with those from doorstopper measurements. Results show that the borehole slotter is a reliable technique, which allows precise determination of rock stress. (from English summary)

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Determining horizontal stress direction using the stress mapping technique

T. P. Mucho & C. Mark, in: *Proc. 13th international conference, ground control in mining, Morgantown, WV, 1994*, ed S.S. Peng, (WVU/USBM), 1994, pp 277-289.

This paper discusses horizontal stress, directional based control techniques, and provides guidelines for the use of the stress mapping technique. A case study of a mine where the technique has been used is also presented. (from Authors)

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Controlled fracturing for measurement of rockmass stresses (in Chinese)

Chou Wanxi, *Journal - China Coal Society*, 20(3), 1995, pp 241-244.

The essence of the controlled fracturing technique for stress measurement is to break the rockmass along two or three predictable directions twice, then based on the relation between peak pressure and initial stress, obtain the maximum and the minimum principal stresses and their directions. Hydraulic, pneumatic and mechanical methods can be used for fracturing under different conditions. The mechanism of controlled fracturing, the principle of rockmass stress measurement in different conditions and methods for calculating stresses are presented. (English summary)

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A method to determine conductor setting depth in clay

K. H. Andersen & T. Lunne, *Publikasjon - Norges Geotekniske Institutt*, 191, 1994, pp 173-187; reprinted from: *BOSS'94, 7th international conference on the behaviour of offshore structures, Massachusetts, 1994, Vol. 1: Geotechnics*, ed C. Chryssosstomidis & others (Elsevier), 1994, pp 173-187.

During drilling of petroleum wells a conductor has to be installed to seal off the surface formations to a depth where the mud pressure does not cause hydraulic fracturing of the soil. Andersen *et al.* (1993) proposed a procedure to calculate the hydraulic fracture pressure in an uncased borehole. Plane strain laboratory tests have now been run on four different clays to provide the necessary input data. In parallel, DSS laboratory tests have been performed to see if sufficiently accurate data could be obtained by less time-consuming and less expensive tests. The calculated hydraulic fracture pressures were compared to hydraulic fracture pressures measured in offshore field tests and in model laboratory tests. Based on the hydraulic fracture pressure calculated for five clays with different plasticities and on measured hydraulic fracture pressures, three simplified procedures with various degrees of complexity and accuracy are proposed. (Authors)

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A criterion for assessing the stability of tunnels

S. Sakurai, I. Kawashima & T. Otani, in: *Eurock '93. Safety and environmental issues in rock engineering. Proc. symposium, Lisboa, 1993. Vol. 2*, ed L. Ribeiro E Sousa & N.F. Grossmann, (Balkema), 1995, pp 969-973.

The stability of tunnels can be assessed by comparing strain occurring in rocks around tunnels with its allowable value. If the occurring strain is still smaller than the allowable strain, then the tunnel is stable. The occurring strain is easily evaluated from displacement measurements. In this approach, however, the allowable strain is the key to success. Therefore, in this paper, the allowable strain is discussed and the critical maximum shear strain, that being the ratio of the shear strength to the shear modulus, is proposed. It has been found that the critical maximum shear strain of in-situ rock masses is more or less the same as the one obtained from laboratory tests on a small specimen. This implies that the critical maximum shear strain can be evaluated in the laboratory. It can be used as the allowable value of strain for assessing the stability of tunnels. (Authors)

SITE INVESTIGATION AND FIELD OBSERVATION

General

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The geosciences in the Caribbean

N. McFarlane, *Journal - Geological Society of Jamaica*, 29, 1993, pp 61-62.

The lack of appreciation of the geosciences has led to their underdevelopment in the Caribbean, with the result that geotechnical data are not included in planning, resulting in the wastage of manpower and money. It is recognized that the professional standard of geoscientists in the region compared with the First World is less than international, but this can be rectified. Caribbean countries should pass laws preventing the use of land without a geoscientific report. This can only happen if the geological societies are prepared to demonstrate the benefits just as the civil engineers have done. (Author)

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Gulf of Mexico producers increasing leasehold acreage, escalating drilling

J. Dodson & L. LeBlanc, *Offshore*, 55(6), 1995, pp 20-21.

Producers in the US Gulf of Mexico are expanding acreage and increasing drilling activity. In addition to re-drilling existing wells, three main areas are being focused on; previously sub-commercial acreage, shelf-edge basal, and deep water areas. This article discusses these trends and the factors affecting drilling activity. (J.M.McLaughlin)

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It's a minefield

S. Johnson, *Chemical Engineer*, 592, 1995, pp 21-22.

Strategies for dealing with contaminated land in the mining and extractive industries are examined. The development of appropriate strategic approaches includes risk assessment and management, reliability engineering and sustainability. To illustrate the similarities and differences in objectives and issues, two scenarios are considered involving different strategic approaches to maintaining asset value and minimizing liabilities. Various aspects are examined including the threat to health, redevelopment and operating sites, planning and guidance. (P.M.Taylor)