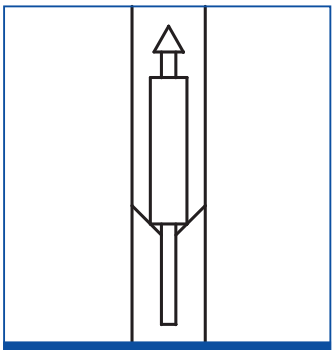
STRESS MEASUREMENT

Sigra provides testing services and consulting in the field of rock mechanics covering civil engineering, mining and the petroleum industry. Drawing on 25 years of experience in testing and consulting, Sigra continually innovates in the field of rock mechanics to provide reliable, cost effective and accurate results.

IN-SITU STRESS MEASUREMENT

In-situ Stress Tool (IST)

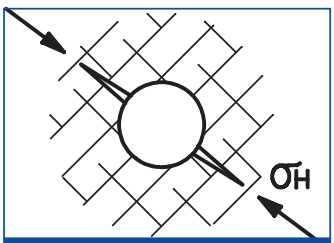
Sigra measures in-situ stress primarily by the use of its IST tool. This is an overcore device which operates in conjunction with the Boart Longyear HQ wireline coring system and permits stresses to be measured down to 1500 m depth. The tool is a re-usable device which returns high quality two dimensional stress information within 1-2 hours. Most major Australian tunnelling projects have used the Sigra IST system as part of their geotechnical exploration programmes since 2014.This service is only provided by Sigra.



IN-SITU STRESS TOOL

Hydrofracturing

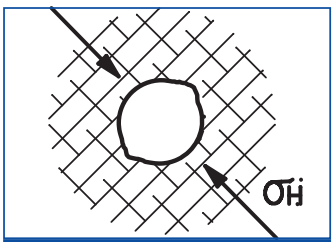
This is a useful system to measure the minimum principal stress. It can also be used advantageously to measure the stress across joints in the rock mass. It may be the only system to measure stress in fractured ground.



HYDROFRACTURE STRESS MEASUREMENT

Borehole Breakout

Borehole breakout is used as an indicator of stress direction and stress magnitude. It is only of use where the stresses are great enough that they cause failure of the borehole wall, which can be detected by an acoustic scanner.

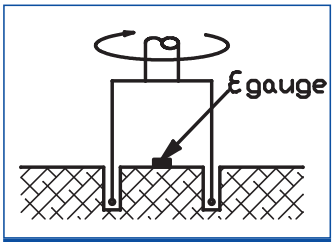


BOREHOLE BREAKOUT

Surface Stress Measurement

While the above three techniques are for measuring stress at depth, Sigra also undertakes surface and near surface stress measurements. This involves strain-gauging the wall of a tunnel or mine opening and overcoring using a concrete coring system so as to relieve the stress around the strain gauge. This technique has been used in excavations and within tunnels. The most notable of these is the Bogong Power project in the Snowy Mountains where four surface stresses were measured around the periphery of a circular tunnel created by a tunnel boring machine in granodiorite. These surface values permitted the calculation of the overall far field stress.

The surface stress is frequently a more important measurement than the virgin stress. When combined with rock strength, it provides an immediate estimate of the opening stability.



SURFACE OVERCORING

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