Hefny, A., Lo, K.Y. Interpretation of Initial Stresses from Hydraulic Fracturing Tests at AECL's Underground Research Laboratory, Manitoba. 1995 Tunnelling Association of Canada Annual Publication.

Interpretation of Initial Stresses from Hydraulic Fracturing Tests at AECL's Underground Research Laboratory, Manitoba

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Abstract
Hydraulic fracturing tests were conducted in boreholes PHI and HFI of the Underground Research Laboratory (URL) of AECL at Pinawa, Manitoba down to a depth of 510 m. Packer impression tests showed the formation of subhorizontal hydrofractures under Fracture Zone 2. The Modified Stress Path (MSP) method (Hefny and Lo 1992) is used to reinterpret the stresses from the test data. The calculated stresses are comparable to the stresses determined from the results of convergence measurements and consistent with field observations. The arbitrary assumptions adopted in previous calculations (Haimson *et al* 1993) of considering the horizontal stresses constant with depth over a 70 m range and the neglect of the breakdown pressures are not only unnecessary but also result in calculated stresses that are too low.

Keywords: Results of Haimson et at (1993); The Modified Stress Path Method; Tests in Borehole PH]; Tests in Borehole HFI; Initial Stresses Between 300 m and 515 m at URL; Hydraulic fracturing tests; Modified Stress Path method.

This Compilation of TAC Papers was prepared courtesy of Hatch Mott MacDonald