A fluid injection and earthquake triggering experiment in a deep mine represents the opportunity to carry out a comprehensive stress measurement program before and after fault slip occurs. Coupled with comprehensive seismic and deformation measurements, measuring stress before and after slip events will make it possible to directly compare observed stress changes with theoretical predictions and estimates derived from seismic observations. This type of comprehensive experiment represents an unprecedented scientific opportunity that will contribute directly to a better understanding of earthquake physics and mine safety.

In this talk I will address the following topics which are germane to the feasibility of carrying out such an experiment:

- In situ stress in normal faulting environments and poroelastic stress changes associated with dewatering
- Techniques for determination of the full stress tensor in complex stress fields and highly deviated boreholes
- Stress perturbations associated with fault slip events - Direct observations and modeling