

## CREWES Project Work Plan for 2008

### Research Areas (and lead researchers)

Imaging (Lawton, Ferguson, Bancroft, Margrave)  
Numerical Modelling (Ferguson, Margrave)  
Physical Modelling (Lawton, Margrave)  
Field Experiments (Lawton, Stewart, Margrave)  
Instrumentation (Stewart, Lawton)  
Data Processing (Bancroft, Margrave, Ferguson)  
Interpretation (Lines, Lawton, Stewart)

### Imaging:

We have a strong imaging group and we will continue to innovate in this area. We will work towards the development of a 3D prestack imaging engine for anisotropic, heterogeneous media. The construction of PP and PS images of the highest possible fidelity is a first concern. This code will run on our newly deployed linux cluster. Other important imaging topics include velocity analysis, topographic compensation, inclusion of statics, 2D thrust belt, and footprint suppression. Our immediate focus will be the use of this facility in time-lapse monitoring over essentially stratigraphic targets.

### Numerical Modelling:

Modelling provides an important means to calibrate an imaging or inversion algorithm. We have developed a number of useful modelling tools and we wish to continue this. Modelling approaches that honour 3D elastic waves will be a priority. Should the opportunity arise, we will purchase a 3D elastic finite difference code. Of special interest to us are the modelling of fracture-induced anisotropy, AVO in complex stratigraphic environments, the response of reservoirs after changes in fluids and pressure, and anelastic attenuation.

### Physical Modelling:

By the 2008 sponsors meeting, we will have one or two new datasets to show. We will then set priorities for the coming year.

### Field Experiments:

We plan a minimum of two seismic field experiments per year. This year we have already shot the Spring Coulee 2D multicomponent survey and also plan another shallow-high resolution line near Priddis. We will also continue our evaluation of the land streamer. In addition, CREWES will be involved with the Department geophysical field school and will gain data from this endeavour.

### Instrumentation:

Work continues in the comparison of mems (accelerometers) versus conventional 3C geophones. We are working closely with ARAM on this. We hope to also evaluate the Blastmate calibrated 3C seismometer.

### Data Processing:

We will continue work evolving Gabor deconvolution, concentrating on the surface consistent code and also on color correction and well log calibration. Coherent noise reduction, AVO analysis, residual statics, and velocity analysis all remain items of interest.

### Interpretation:

The estimation of lithologies and pore fluids remains the key goal. We will continue with AVO analysis and regression approaches while also trying to move more towards geostatistics and inversion.