

# **New geophysical data acquisition systems and upgraded physical modelling facility**

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# The new field equipment

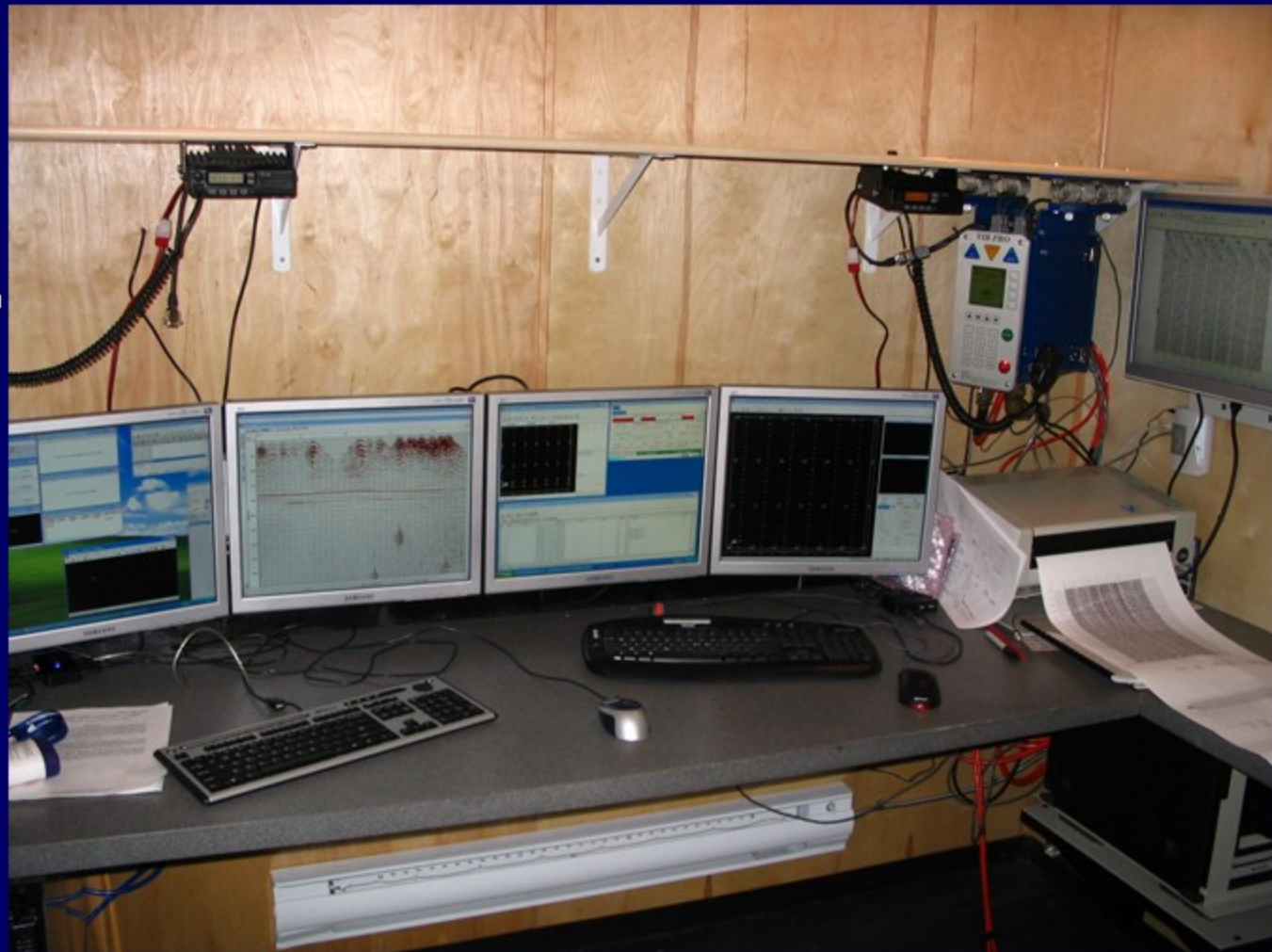
- Aries seismic system
- Geode seismic system
- Envirovibe (IVI)
- Sokkia GPS
- Syscal resistivity system
- Support equipment





# Aries seismic system

- SPMLite CRU
- 600 channels
- 1C and 3C
- Pelton VibPro
- Raid storage





Unpacking the new Aries system



# The Geode system

120 channels (5 Geodes) for recording down-hole geophones at time-lapse sites, and for smaller portable environmental surveys





Ruggedized sunlight readable laptop control computer



# Envirovibe source (IVI)

- 15,000lb hold-down weight
- 8 – 300Hz frequency range



# Sokkia GPS equipment

- RTK provides cm accuracy
- CDGPS capable
- Rugged hand-held data-logger





# Syscal resistivity system

- 72 channels for improved resolution and 3D surveys
- VIP-3000 IP transmitter with up to 3KW output





# Support equipment

- Recorder truck
- 2 cable trucks
- Vibe tender truck
- 2 Trailers
- ATV
- 2 generators
- Radios







University of Calgary Geophysics Field School 2005





Malcolm - observer training





“Trained observers”





Equipment in use for the first time





Laying spread





Nearby heli-portable crew





Vectorseis crew visit (Trace)





Small 3D survey





Evening tutorial

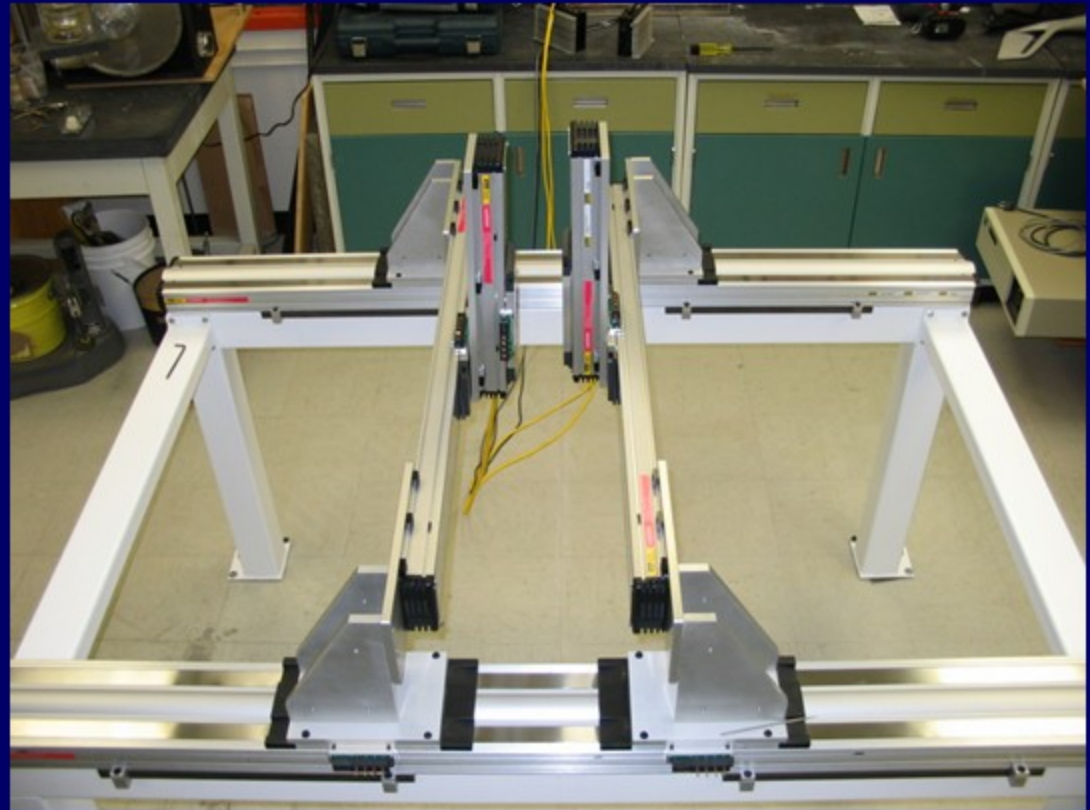


# Research projects

- Multicomponent seismic coalbed methane (CBM) development (facies, fracture characterization)
- Monitoring timelapse enhanced CBM production
- Simultaneous surface seismic and VSP's
- Multicomponent seismic heavy oil reservoir characterization
- Monitoring in-situ heavy oil upgrading (*Alberta Ingenuity Centre for In-situ Energy*)
- Joint seismic and resistivity inversion
- High temporal frequency timelapse VSP's
- Reproducibility experiments
- Electro seismic experiments
- Pump-probe experiments

# The new physical modelling facility

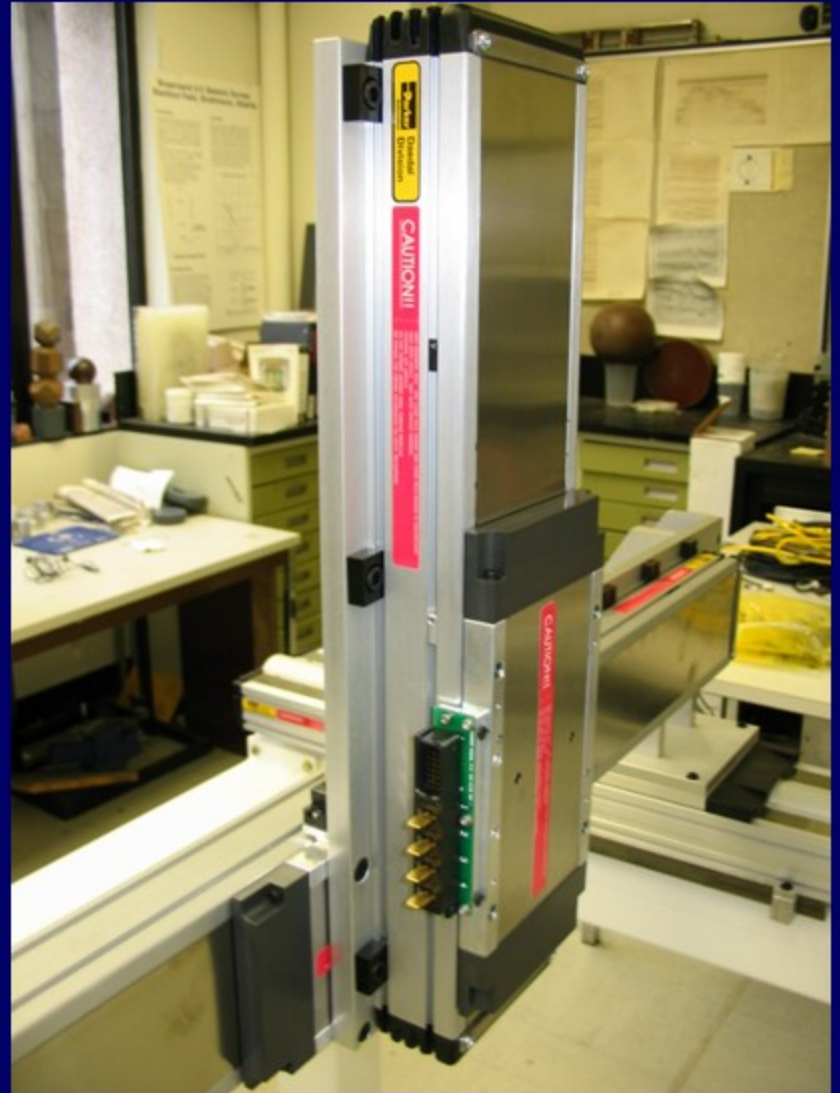
- Linear motors
- Accurate and repeatable to 50  $\mu\text{m}$
- Versatile
- Scaling (1:10,000)
- Precision: 0.5 m
- Range
  - X: 10,000 m
  - Y: 8,000 m
  - Z: 2,000 m





# The Z axis of the modelling jig

The vertical axis has sufficient travel (0.2m or 2000m scaled) to follow topography on the model surface, or to simulate a vertical geophone array for VSP surveys or tomography experiments.





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