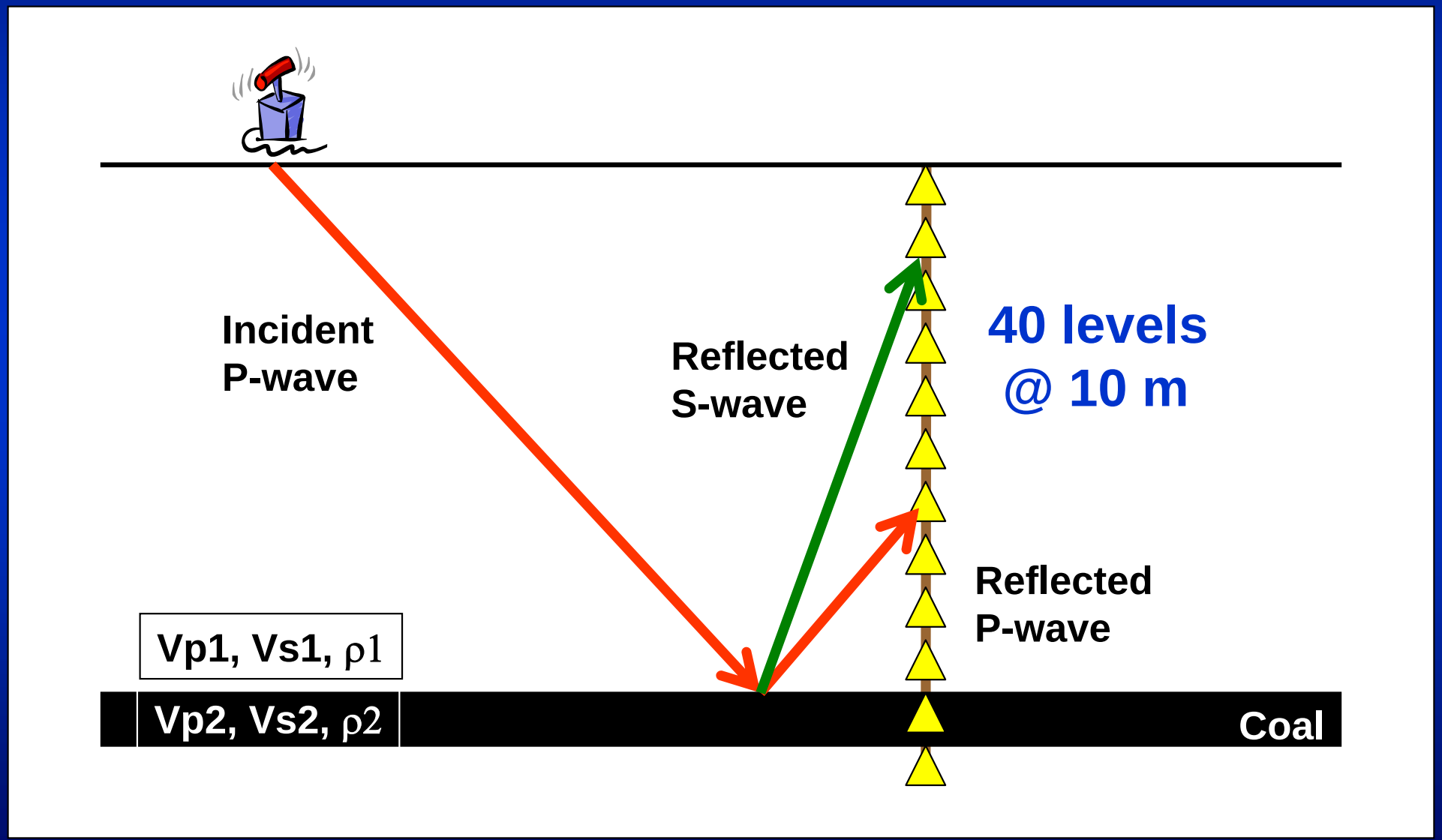
Overview of current and upcoming field projects

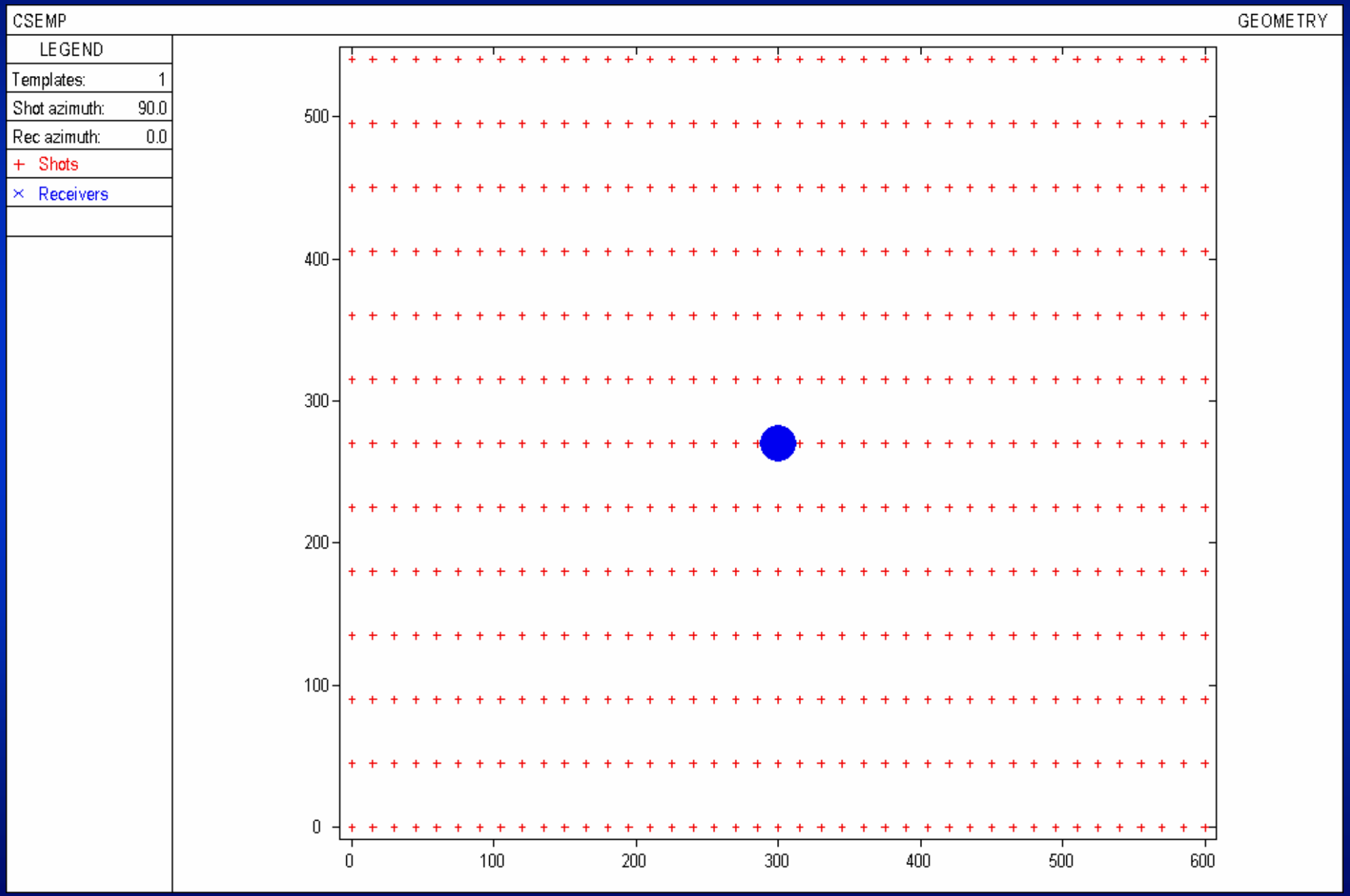
Monitoring enhanced production of natural gas from coal

- Ardley coal zone in central Alberta, with CO_2 injection to enhance CH_4 production
- Time-lapse 3C-3D surface seismic surveys
- Vertical 3C geophone cable cemented into observation well
- Synchronous 3C-3D surface seismic with 3D VSP surveys using vertical cable
- Passive seismic recording using vertical cable, between time-lapse surveys
- Surface tiltmeter installations
- Start early 2005

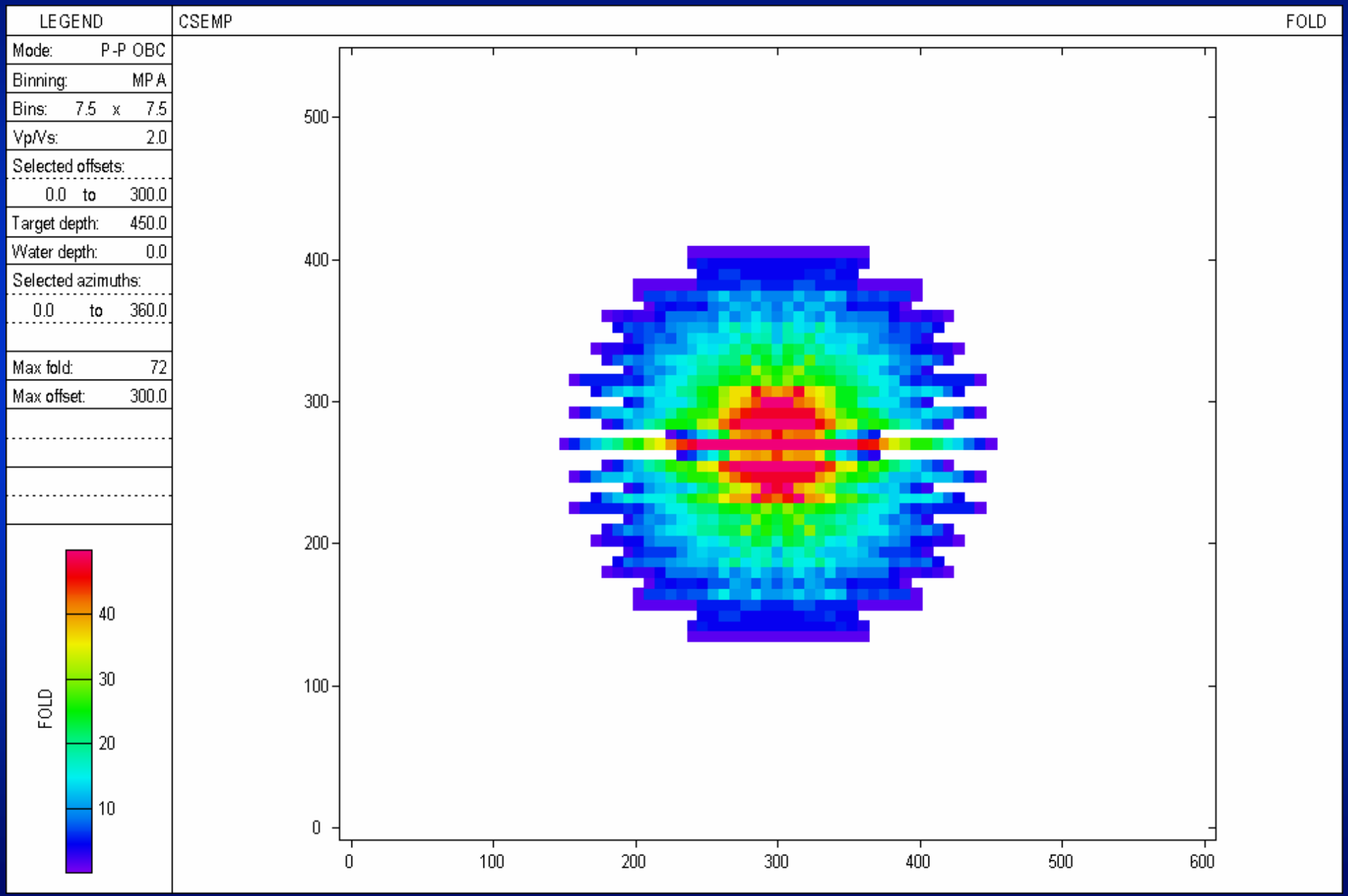
Cemented 3C geophone cable for 3D VSP ENGC monitoring program



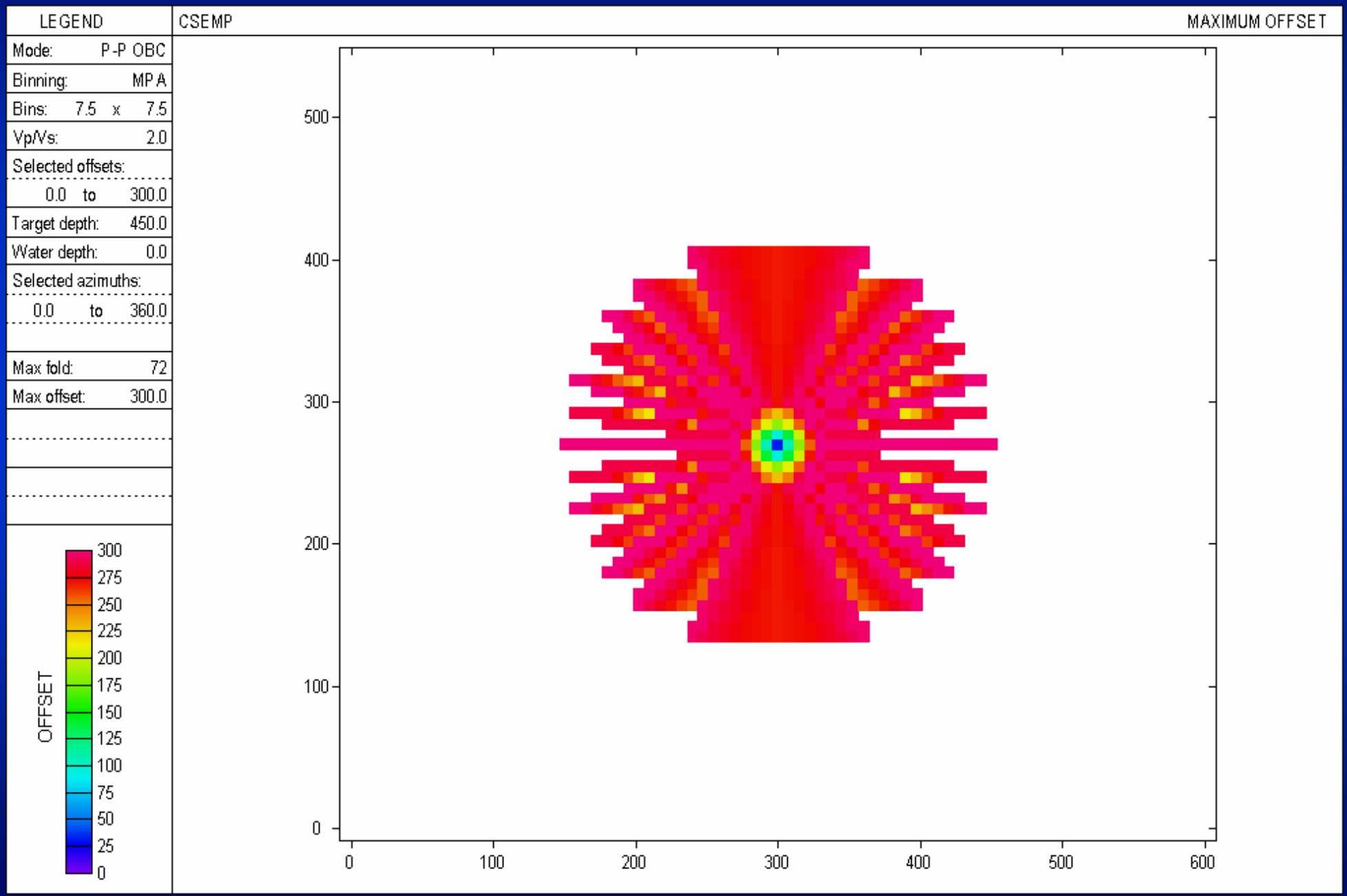
3-D VSP Geometry



3-D VSP P-P fold



3-D VSP P-P max offset



Monitoring enhanced oil recovery and CO_2 storage in Pembina field

- Pilot CO_2 injection to enhance oil production from Cardium zone at 1600 m depth
- Time-lapse 3C-2.5D surface seismic surveys
- Vertical 8-level 3C geophone cable cemented into observation well
- Synchronous surface seismic and 3D VSP surveys using vertical cable
- Passive seismic recording using vertical cable, between time-lapse surveys
- Surface tiltmeter installations
- Start early 2005

Geophysical equipment

STARRS

Seismic **T**echnologies for **A**dvanced

Research in hydrocarbon

Recovery and carbon **S**torage)

Alberta Innovation and Science
Corporate donor
?Western Economic Partnership Agreement

Supported by the Institute of Sustainable Energy, Environment and Economy, University of Calgary (ISEEE)

STARRS infrastructure

- Multicomponent seismic recording system and field support
- VSP cables
- GPS systems
- Electrical resistivity imaging system
- Borehole conductivity system
- Tiltmeters

STARRS research opportunities

- Geological storage of CO_2
- SAGD
- In-situ heavy oil upgrading (AIF Centre)
- Natural gas from coal
- Groundwater and contaminants
- Integration of geophysical & geochemical monitoring technologies
- ?Acid gas disposal