Tuesday, March 18, 2008

Crowne Plaza Hotel (former Sofitel Hotel) • 425 Sam Houston Pkwy. North
Social 11:15 a.m., Luncheon 11:30 a.m.

Cost: $31 Preregistered members; $35 non-members & walk-ups

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

The Role of Geomechanics in Enhancing Production in Tight-gas or Naturally Fractured Reservoirs

by ***Daniel Moos***
GeoMechanics International

Maximizing production in low-permeability or naturally fractured reservoirs requires either exploiting pre-existing natural fracture systems or creating new networks of fractures to reach otherwise inaccessible reserves. The properties of natural fractures are controlled in many cases by the stress magnitudes and orientations relative to the fracture orientations. The far-field and near-well orientations and propagation pressures of induced fractures also are predominantly controlled by stress. Furthermore, in a naturally fractured reservoir, fracture stimulation performance depends on the relative pressure required to stimulate pre-existing fractures compared with the pressure required to propagate a hydrofrac. This has created considerable controversy and a variety of recommended "best practices" to maximize production in the Barnett and similar formations.

The properties of natural fractures are controlled in many cases by the stress magnitudes and orientations relative to the fracture orientations.

This talk will briefly review methods for determining in situ stress orientations and magnitudes and address how knowledge of the in situ stress can impact operational decisions. For example:

- What is the optimal drilling direction to maximize productivity from natural fractures?
- What is the optimal direction to drill a well to be hydraulically stimulated?
- What is the best direction to drill a well to maximize production from the largest volume of rock based on hydraulic stimulation and natural fractures?
- What conditions and stimulation practices lead to the largest stimulated volume?
- What information does microseismic fracture mapping provide about the stimulation process and result? ■

Biographical Sketch

Daniel Moos is co-founder and Chief Scientist of GeoMechanics International in Houston. He has published extensively in the areas of stress determination, pore pressure prediction, and the application of geomechanics to wellbore stability, sand production prediction and reservoir behavior, as well as in petrophysics and wellbore acoustics. Dr. Moos received his PhD from Stanford University in 1983 and subsequently joined Lamont-Doherty Geological Observatory, where he participated in setting up and conducting logging operations for the Ocean Drilling Program and sailed on several ODP cruises. He returned to Stanford to join the Rock and Borehole Geophysics Group as a research scientist in 1988. GMI was formed in 1996 to provide consulting services to the oil industry and to develop technology and software solutions to enhance the application of geomechanics to oilfield problems.