American Association of Petroleum Geologists Eastern Section Meeting
September 25-28, 2011
Hyatt Regency, Crystal City
Arlington, Virginia

Workshop: Microseismic Monitoring of Hydraulic Fractures

September 25, 2011

Location: Hyatt Regency – Crystal City, VA, Room TBD

Who should attend: The workshop is intended for petroleum geologists, engineers, and geophysicists who want to understand the basic technology associated with microseismicity induced by hydraulic fractures, including the processing, interpretation, and geologic, engineering, and environmental application of these results.

About the Course: The course is designed for petroleum professionals who have a basic understanding of petroleum geology and well completions and stimulation. The attendees will gain an understanding of the mechanisms that induce microseismicity, the important characteristics of microseisms that are used in processing and interpretation, and geologic and engineering applications of the results relative to the reservoir and the fracturing.

Course Content: The course content begins with a general overview of microseismicity, some basic geophysics to make sure all attendees are familiar with the underlying principles, and then covers some historical information on how this technology has developed. With this background in hand, the changes in the reservoir that induce the microseisms are discussed, as well as its impact on the monitoring project. The acquisition of microseismic data, the general characteristics of the microseisms, and the methodology for processing the data are discussed in some detail to provide a sufficient level of understanding of how a microseismic test can be assessed for quality and accuracy. The development of a layered velocity model, which is a key component of any microseismic project, is discussed and examined in some detail. The first half of this course ends with a discussion of microseismic source characteristics and their application to the monitoring technology. The second half of the course is the application of this technology based on examples and case studies. Sections will be devoted to shale gas fracturing, tight-sandstone fracturing, environmental applications,

stimulated reservoir volume, geologic effects, and general reservoir and well performance issues.

Duration/Credit Hours: TBD

Instructor Biography: Norm Warpinski is the Director of Technology for *Pinnacle – A Halliburton Service* in Houston, Texas, where he is in charge of developing new tools and analyses for hydraulic fracture mapping and reservoir monitoring, and integrated solutions for reservoir development. He joined Pinnacle in 2005 after previously working at Sandia National Laboratories from 1977 to 2005 on various projects in oil and gas, geothermal, carbon sequestration, and related geomechanics issues. Norm has extensive experience in various types of hydraulic fracture mapping and modeling and has been involved in large scale field experiments from both the hardware and software sides. He has a PhD in Mechanical Engineering from the University of Illinois, Champaign/Urbana in 1977.

Cost: $350