

2009-2010 Graduate Seminar Series

The Department of Mechanical Engineering – Engineering Mechanics

Proudly Presents

Thomas D. Fowler Shell Exploration and Production



Tom Fowler is a Project Leader in Shell's Unconventional Oil group. He joined Shell in June 1981 and worked a number of offshore and onshore Facilities Engineering assignments out of New Orleans, Traverse City, and Houston (since 1990).

Beginning in 1998, Tom has worked with Shell's Researchers on the field-testing of Shell's emerging In-situ Conversion process (ICP) for Oil Shale and In-situ Upgrading process (IUP) for Heavy Oil in an effort to unlock these massive resources. He was involved in all six of the recent Colorado Oil Shale pilots and was project manager for the large Heavy Oil pilot in Peace River

(Alberta, Canada). Tom shares a number of patents in both the ICP and IUP technologies. He is currently project leader of a small team evaluating the long-term potential for Oil Shale in a "Hard Truths" world.

Tom is a native of Charlevoix, Michigan who graduated from Michigan Technological University in 1981 with a B.S. in Mechanical Engineering.

Thursday, Oct. 29, 2009 3:00 – 4:00 p.m. Room 112, ME-EM Bldg.

Energy Challenges in USA, Oil Shale's Potential Role

This presentation provides outlines the "Hard Truths about Energy" and provides details of the industry's attempts to commercialize oil shale. An overview of Shell's ICP technology, including its 1940s Swedish oil shale roots, will be discussed. The presentation focuses on Shell's seven field pilots conducted in Colorado that address ICP recovery, heater testing, and freeze wall construction and performance. Finally, the massive size and challenges of a possible commercial project will be considered.

Although there is no shortage of energy resource, the days of "easy oil" appear to be drawing to a close. As conventional energy supplies struggle to keep pace with projected demand, many difficult challenges known as the "Hard Truths about Energy" will emerge. The response to the Hard Truths cannot simply be to increase conventional or unconventional supply, or to bring on renewables faster, or to increase conservation, etc. The answer has to be "all of the above".

Oil derived from oil shale could play a role as part of the "all of the above" solution. The massive size of the oil shale resource in the Western USA, particularly in the Green River Basin, has attracted numerous commercialization attempts from industry over the last 100 years. Although great sums of money have been invested and many professional careers have been devoted to the challenge, efforts thus far have not resulted in a commercial oil shale industry.

For more than 40 years, Shell has been active in the Green River oil shale seeking a process that could develop the 800 billion bbls of oil resource (RAND Corporation). Since 1980, Shell has focused on the In-situ Conversion Process (ICP) in which oil shale is heated by thermal conduction from a closely spaced array of electric resistance heaters. At approximately 650oF, the kerogen present in the oil shale is converted to oil, gas and water that can be produced by conventional means.