

Wednesday, October 30, 2013

Petroleum Club • 800 Bell (downtown)
Social 11:15 AM, Luncheon 11:30 AM

Cost: \$30 pre-registered members; \$35 for non-members/walk-ups;
Emeritus/Life/Honorary: \$15; Students: FREE

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk ups may pay at the door if extra seats are available.

HGS General Luncheon Meeting

Klaas Koster
Apache Corporation

HGS General Luncheon Meeting

Geoscience Plays Key Role in Forties Field Brownfield Redevelopment Success

Modern seismic methods are supporting a “drilling machine” that is increasing oil production in a United Kingdom North Sea field that, measured by discovery date, is just a decade shy of qualifying as an antique.

Production at the Forties field started in 1975. Production peaked in 1979 at approximately 550,000 barrels of oil per day (bopd), but when Apache took over as operator in 2003, production had declined to little more than 30,000 bopd. After the acquisition, Apache immediately initiated an intensive rejuvenation program that included infill drilling, workovers, and facilities upgrades. By 2008, 50 new targets had been drilled, and several projects were completed to upgrade power generation, export pumps, and water injection systems. By 2008/2009, Forties was the second largest producing field on the United Kingdom continental shelf and in July 2009, monthly production averaged 73,500 bopd, the highest monthly average since May 1999. To date, Apache has invested in excess of \$2.8 billion on facility upgrades, maintenance, and infill drilling. A new “4D snapshot” seismic survey was acquired in 2010 and is providing further information to optimize target locations.

Apache is keeping three drill strings busy continuously, which in turn keeps the geoscientists busy. The pace is close to having a target drilled every other week. Because Forties is a mature field, the moment you stop drilling the production rate immediately starts going into decline. That directly affects the bottom line.

At times, the constant activities may seem like an assembly line.

Little time passes between the identification of a drilling target and when that borehole reaches total depth. A reservoir model, continually updated on the basis of drilling results, is used to generate information for drilling decisions. With decades of production history from 300 wells, the amount of data that is available is staggering.

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The pressure to supply new targets means that interpretation and processing of the newly-recorded time-lapse data must occur quickly. The integration of the results is almost instantaneous. The technical improvements implemented since the 2005 survey have resulted in unprecedented data quality and interpretation. ■

Biographical Sketch

KLAAS KOSTER recently transferred from Apache North Sea to Apache's Technology department as Manager Seismic Interpretation. He has held positions of increasing responsibility in Apache's North Sea Region culminating in his final role as development manager. Dr. Koster has 20 years of industry experience and previously worked for Shell and Amoco in diverse locations such as Oklahoma, Colorado, Netherlands, Norway, Australia, and Louisiana. He is Past President of the Society of Exploration Geophysicists and holds a Ph.D. in geophysics from Delft University of Technology, Delft, Netherlands.

