

**PTTC Workshop**  
**May 14, 2009**  
**NRCCE Building, Morgantown, WV**

**“Keys to Complex Well Economic Success”**

**A one-day short course focused on the critical elements and misconceptions of application design and field activity that relate to economic success or failure.**

**Presented by Robert G. (Bob) Knoll**

**Who Should Attend**

Earth scientists (geologists, geophysicists), engineers, technicians, managers and any support staff involved with exploitation of oil and gas reserves.

**Background**

The rapid evolution and application of horizontal wells, multi-branch, MPD, and other complex well exploitation technologies have resulted in the requirement of new and critical skill sets, as well as a demand for more in-depth synergy between earth scientists and all other members of the asset team. Lack of these new skills and/or interdisciplinary synergy has led to many field developments' failure to achieve economic and/or operational objectives. This course will help earth scientists/engineers and other related parties develop the necessary skills and enable efficient synergy within the asset team.

**Objectives & Content**

The objectives of this constantly up-dated, one-day, practical-based course are to make earth scientists/engineers and asset managers more conversant in modern exploitation technology applications; to reveal some critical misconceptions; and to deliver basic prerequisite knowledge required to function optimally within the asset team during the planning and implementation of complex well technologies. The course will focus on the latest complex well asset settings, including conventional marginal assets, oil and gas shale, UTG and CBM resource play exploitation pursuits.

This program will address three critical elements, (a fourth if time permits), required for optimal exploitation with complex wells:

- #1- The basic theme of site-specific multidisciplinary asset teams, back-to-front well design, demands placed on earth scientists/engineers, and how they fit into the team.
- #2- The new issues regarding principles of geology and reservoir engineering in direct respect to horizontal & complex well applications, and an example of candidate screening and sensitivity test.
- #3- The new role of well-site geologists, their capabilities and limitations, geo-steering and how it interrelates with other field functions, and the selection of appropriate site-specific geo-steering options.
- #4- Evaluation technologies, when to look for a problem, options available to help rectify these situations, and how earth scientists/engineers provide guidance and insight to the asset team on these issues.

**Instructor**

Bob Knoll is one of the world's leading horizontal/complex well experts. He has more than 33 years of uniquely diverse upstream experience, holding senior operational, technical, and managerial positions in oil and gas projects worldwide. As project coordinator of the internationally acclaimed DEA-44 Project (Horizontal Technology JIP), he has acquired unparalleled exposure in applying modern exploitation technologies to real-world problems. Since 1990, he has authored and presented more than 260 technical training and management programs in every major petroleum province in the world, with consistently excellent reviews. His multidisciplinary background of engineering, geology, field operations, and management, accompanied by an entertaining talent for explaining complex issues, provides for a uniquely positive and immediately applicable learning experience.

## Workshop Curriculum

### **MODULE 1 BASIC THEMES**

Requirement for a site-specific, multi-disciplined team approach; a back-to-front design methodology.

### **MODULE 2 PRINCIPLES OF GEOLOGY AND RESERVOIR ENGINEERING**

Benefits of horizontal/complex well geometry and production mechanisms; how these benefits are applied; the screening process.

### **MODULE 3 WELL PROFILE DESIGN**

The three critical uncertainties in well profile design.  
Geo-steering — what is it? Where and how to apply.

### **MODULE 4 TYPICAL PROBLEMS**

How does the well fail? What to look for; how to identify and avoid common problems. A check lists for Team Leaders.

**Course Materials and Format:** The course is delivered primarily with power-point & video assisted lectures, and opening quiz, latest field examples and numerous Q&A periods. A 4-tabbed Slide Manual and Summary Text, black and white with 50% (two per page) graphics is provided, along with evaluation sheets for each student.

### **STUDENT COMMENTS:**

“5/5, Excellent, This one program was worth the trip to Salt Lake, National AAPG 2003”

“Great overview of the aspects of horizontal drilling. I would highly recommend this course to my co-workers.” —Bismarck, N.D. May, 2002

“Terrific short course on complex well technology, would highly recommend to any involved in O&G development drilling, from the manager to the secretary.” - Houston AAPG, March 2002

“Great overview of practical challenges to earth scientists involved in development well design and operations.” — Calgary, 2000

“Very good exposure to the critical do’s and don’ts; loved the reference and vision of ‘Joe’.” — AAPG, LA, 2000

“Excellent!” American Association of Petroleum Geologists — Houston, 1999

“Terrific speaker, lots of relative and practical info and advice.” — Houston, 1999

“Most effective course delivery by the speaker I have encountered in 23 years in the oil industry.” — Houston, 1999

***DIRECTIONS:*** The easiest access to NRCCE is from the Star City/WVU exit off I-79 north of the I-68 interchange. Turn right off the ramp if coming from the south, left if coming from the north. Follow the signs for U.S. 19 south/ Rt. 7 East (Monongahela Blvd./Jerry West Blvd.). Go through 4 lights (the 4<sup>th</sup> is at the Coliseum). At the 5<sup>th</sup> light, turn left onto Evansdale Drive. The Creative Arts Center will be on your left. A map of WVU’s Evansdale Campus is attached and should help you find your way to the NRCCE building once you turn into the campus.

***HOTELS:*** For workshop attendees who may wish to stay in Morgantown, the following is a list of hotels convenient to NRCCE. The first two are right off Monongahela Blvd./Jerry West Blvd. Directions to the hotels are given from the I-79 Star City exit:

Best Western – 800-528-1234 (turn left at the third traffic light from the Interstate, hotel is immediately on the right) 366 Boyers Ave.

Quality Inn - 599-1680 (hotel is just before the WVU Coliseum on the right after the third traffic light) 1400 Saratoga Ave.

Hampton Inn - 599-1200 (turn left at the 4<sup>th</sup> traffic light on Monongahela Blvd onto Patteson Drive; hotel on left immediately after the 3rd light; 1053 VanVoorhis Rd.

Euro-Suites - 598-1000 (continue past Hampton Inn to the next light and turn right; the hotel is immediately on the left) 501 Chestnut Ridge Rd./Milan Puskar Blvd.

***PARKING:***

The following are suggestions for parking while attending the workshop:

Paid Parking is available in the short-term pay lot next to the WVU Greenhouse (see map; parking area #1). Rate is \$1.00 per hour and the machine does not give change. It accepts only \$1 bills and coins, so attendees need to arrive with at least 8 \$1 bills in their possession. Attendees should arrive early to use this option.

Free Parking is available in the WVU Coliseum parking lots (see map). Attendees may park at the Coliseum and ride the free university shuttle bus to the Mineral and Energy Resources Building and from there walk (5 minutes) over to NRCCE. Attendees also may choose to walk

directly from the Coliseum parking lot to NRCCE. Attendees who choose one of these options should allow an extra 20 minutes to park, catch a bus/walk to NRCCE. Buses depart from the Coliseum Blue Gate every 10 minutes from 7:30 a.m. until 5:00 p.m., and every 15 minutes from 5:00 pm until 10:00 pm.

Access to the NRCCE Building is through the front (first floor) entrance for those who park at the Coliseum and take the short walk from the drop off point, or through the rear (ground floor) entrance for those who park in the pay lot next to the Greenhouse and walk to the NRCCE building. The workshop room will be immediately on the left as one enters the front entrance to the building.

---

NAME: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

E-MAIL: \_\_\_\_\_

The registration fee for this workshop is \$250. This fee covers the entire workshop, continental breakfast, morning and afternoon breaks and lunch. **Please make checks payable to “PTTC” and return with this form by May 7, 2009** to: Douglas Patchen, P.O. Box 6064, Morgantown, WV 26506-6064.

**Registration may be limited.**

