Course Emphasizes Value Of ‘Doing It Right’ In Horizontal Wells

With the push into unconventional plays, horizontal drilling has become a mainstay for many operations. Steering the drill bit effectively can mean the difference between a successful well and a dry hole. To do this, operators rely on engineers and geoscientists to place the bit in just the right spot and keep it there. However, sometimes the personalities of engineers and geoscientists are very different.

When it comes to a company’s culture of risk versus reward, the incentives given to individuals to quickly complete a job often are at odds with the company’s overall goal of higher initial production and superior well performance. For example, drilling team metrics and operations team objectives often are in conflict with maintaining geological target objectives. As a consequence, many operators are not achieving maximum production.

In addition, rig time has become so valuable that some operators are tempted to cut corners, rather than make the most out of the drilling process. This temptation, combined with drivers such as personality differences, incentives and personal motivation, as well as other competing corporate goals can add to potential conflict between otherwise closely aligned team members.

PTTC hosted a workshop designed specifically to address this issue and to provide a basis for better understanding what makes the drilling team uncomfortable versus the overall benefits of staying in zone. The course, titled “The Trade-Offs in Drilling the Perfect Horizontal Well,” led by K.C. Oren, vice president sales and marketing for Horizontal Solutions International, has been held in Golden, Co., and Midland. It explores the trade-offs of staying in the targeted zone, or sweet spot, by carefully steering the well and monitoring every move versus drilling ahead for maximum rate-of-penetration in an effort to avoid costly nonproductive time. One of the main course themes introduces basic geo-navigation principals used for effective geosteering decision support.

The course begins with a general overview of the trade-offs of drilling the perfect horizontal well. Oren discusses why some companies are better at drilling horizontal wells. He highlights how not only company drivers influence the success of an operation, but also how departmental goals and individual drivers can impact a job. Oren goes into what he calls “the great train wreck,” which is an example of what can go wrong when the team is not pulling together. In this case study, he highlights key elements that are the focus for the rest of the course. Among these are well control, understanding uncertainty, true stratigraphic position modeling, and personalities and communications.

Part two focuses on identifying and understanding the trade-offs. It begins by considering the benefits of working as a team and avoiding the agony of defeat. In this section, key elements include working toward a common end and establishing a goal using a unified team approach. Additionally, establishing a common nomenclature as well as developing an understanding of the drilling world is key.

Oren provides a detailed review of factors that influence the “perfect” horizontal well, such as well control challenges, planning a horizontal well, drilling the well using high dogleg severity, and understanding wellbore position uncertainty when landing and in general.

The third segment focuses on geo-navigation, geosteering, and effective communication. In this section, Oren begins with how to mitigate uncertainty and manage the inevitable while drilling. He discusses horizontal well programming with plans for the unexpected, understanding the geology with contingency planning, prespudd meetings, and the importance of true stratigraphic position modeling. The conversation includes geo-navigation versus geosteering, horizontal well targeting, and the importance of updating the plan. In this section, Oren also discusses common drilling problems, completions and the life of the well, and targeting best practices.

The course then makes a case for the benefits of geosteering a horizontal well. Among them is the potential to increase exposure of wellbore to the pay zone, minimizing slide times and reducing doglegs, and gaining a better understanding of geology. In addition to going through the process of geosteering, Oren makes recommendations for best practices. He recommends making sure best practices include efficiency and consistency, standard software and workflows, streamlined training, consistent analysis and evaluations, and safety.

In the last part of the course, Oren discusses communication and using geosteering software to help increase the success of the drilling operation.

Overall, Oren combines advanced technology with real world process development to help operators evaluate and optimize horizontal well drilling operations. As he states it, “Sometimes the extra deliberations or seemingly costly modifications in a drilling plan do, in fact, pay big dividends . . . or do they? This course provides what both engineers and geologists need to know.”

The course has been so successful with operators that we have scheduled three more sessions. For information visit www.pttc.org.

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