

TRAINERS CORNER

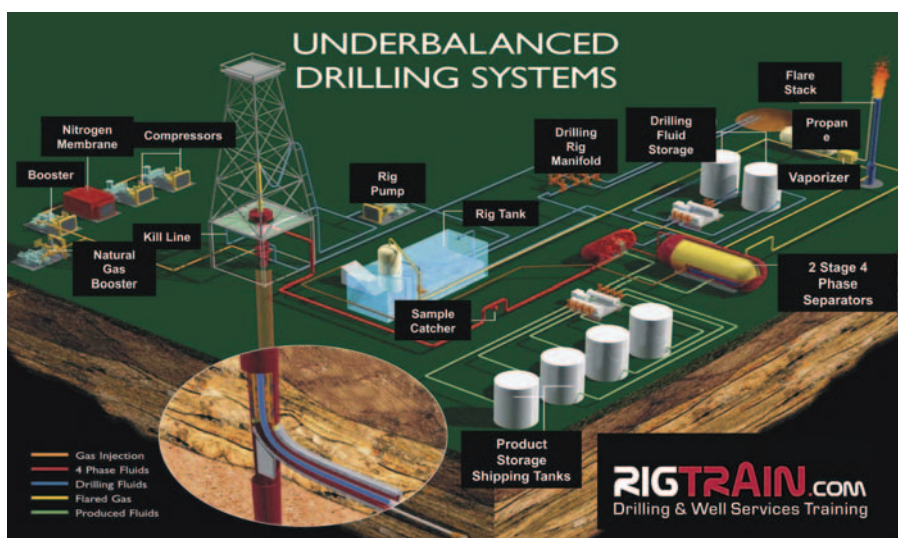
Underbalanced operations require strong communications links

Gordon Lawson, RigTrain

AS DRILLING TECHNOLOGY moves forward, so do the techniques of drilling. This is very evident in underbalanced drilling operation, as the concept of

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For those who have some field experience of conventional drilling, where all



drilling a well underbalanced goes against the conventional teaching of most field trained crewmembers.

With normal overbalanced drilling operations, problems include lost circulation, differential sticking, low rates of penetration and severe formation damage.

To drill a well underbalanced, the reservoir fluids should flow continually throughout the drilling phase of the reservoir.

This creates a situation at surface that requires a sound understanding of pressure management.

Wellbore behavior is critical during tripping operations, and control of wellbore fluids and pressures are closely controlled and monitored throughout the operation.

With a proper understanding of the con-

ventional drilling process, the management of change will not be as daunting as may first appear. For those who have some field experience of conventional drilling, where all

These links will still be there within the underbalanced drilling layout, however, the circulating medium will be a different design.

For example, gas injection is delivered to the rig floor via compressors and gas processors and the returning wellbore fluids, drilled cuttings and drilling fluids flow through an additional set of surface process equipment.

Although the process of the UBD layout is not as large as production platforms, the same stringent QHSE procedures and regulations should come into effect.

The communication link is vital and has to be continuous via the underbalanced

site supervisor, toolpusher, driller, gas injection, fluid tank, separation and RCD operators. Other additional personnel, such as MWD, directional drillers and snubbing crews may also be included in this link.

This method of drilling can go towards reducing the problems encountered in conventional drilling, with the bonus of increased rates of penetration and improved production recovery over the lifetime of a reservoir.

The control cabin is the nerve center of a UBD operation. Readouts can include real time digital metering for water, gas and liquid hydrocarbons, and real-time electronic sensors for temperature and pressures.

Additional data from other service companies, such as directional drillers, MWD, mud loggers, snubbing etc., should also be shown here. This allows all the relevant data to carry out a successful job to be available in one location.

This cabin should be designed for use in a hazardous area, if required.

An intensive training program is required to cover all disciplines within the diverse skills team necessary to complete a safe and successful UBD operation. This must encompass an understanding of many new and technical UBD concepts.

The Understanding Underbalanced Drilling course has been developed by RigTrain to meet a level of understanding by all crewmembers.

It addresses the safety, drilling and flow metering equipment, site management and well control.

The course aims to bond a team understanding of the operation, as each symbiotic skill is necessary for a safe and successful operation.

The benefits of this training is to highlight these communication links and a conceptual comprehension of how the drilling and circulating operating window is achieved, with high emphasis on the very complex annular flow behavior.

This enables candidates to be more aware of the well in a more practical and analytical manner.

For a training program to be successful it must bridge an educational gap and help to eliminate some of the fear many may have of new operations. ■