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TRC-II Safety Valve Ensures Operation in Ultradeepwater Environment

Case study: Safety system proves effective in Gulf of Mexico ultradeepwater production wells

Challenge

Deliver a reliable safety valve system for two wells in the deepest waters ever for production wells.

Solution

Installed TRC-II* series deep-set, subsurface safety valve systems.

Results

Met all environmental, customer, and well safety requirements and protected the ultradeepwater wells effectively and efficiently.

Deepwater drilling in the Gulf of Mexico

A large independent leaseholder in the deep waters of the Gulf of Mexico uses a hub and spoke system of drilling and production facilities to bring discoveries on production quickly and cost effectively. Two safety valve systems were installed at a total setting depth of 3,808 m [12,494 ft] in water 2,438 m [8,000 ft] deep and with well production pressures estimated at 68.95 MPa [10,000 psi].

Searching for a reliable safety valve system that would meet all well, personnel, and environmental protection regulations in these extreme operating conditions, the operator selected the Schlumberger TRC-II safety valve because of its highly successful track record. TRC-II valves are reduced-operating-pressure valves that perform effectively at depths where other technologies do not.

Safety system tailored to deepwater well conditions

A 4.5-in TRC-II 10-series valve was installed April 2006 at a setting depth of 3,808 m [12,494 ft]. A similar valve was installed the following month. Both valves used 50-MPa [7,300-psi] gas spring system pressure.

TRC-II valves have redundant hydraulic actuation with integral-control fluid filters and debris-insensitive disconnect-type rod pistons for fail-safe operation. These valves also feature rod-piston actuators insensitive to tubing pressure and a rugged flapper-closure system with a leakage-acceptance criterion substantially more stringent than that required by API and ISO specifications.

The TRC-II series safety valve offers reliable protection in deep, hostile environments.

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A proprietary Schlumberger computer program is used to predict the operating pressure of a specific valve for an individual application. Each valve includes an integral gas spring that is set at the manufacturing plant to the pressure calculated to match the well conditions. The field-proven TRC-II subsurface safety valve is designed to be precisely matched to the environmental conditions and the operating parameters of the actual well conditions before installation.

Continuous confirmation of safety and effectiveness

Since their installation, the two TRC-II 10 series safety valves have been tested every 6 months as required by regulations. In each test, the valves passed the U.S. Department of the Interior Minerals Management Service guidelines, confirming that they continue to meet all safety and environmental requirements and that they operate effectively and efficiently. Based on the successful valve performance in these two wells, the operator plans to use TRC-II valves in its deepwater wells during 2009.

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