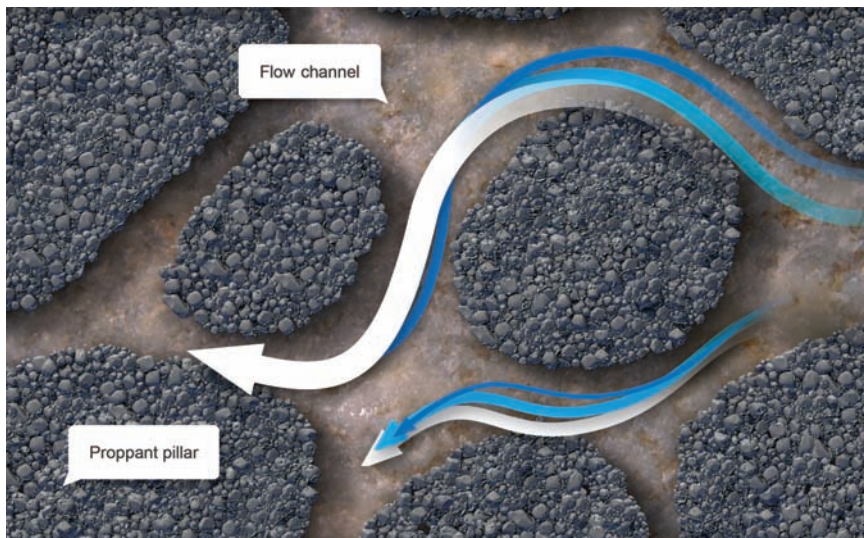


Dennis Denney, JPT Senior Technology Editor



**Fig. 1—Schlumberger’s HiWAY technique enables hydrocarbon flow around proppant pillars.**

**Flow-Channel Fracturing**—The Schlumberger HiWAY flow-channel hydraulic-fracturing technique is a new service that improves the deliverability of hydrocarbons from the reservoir to the wellbore. The technique makes fracture performance independent of retained proppant-pack conductivity by creating open channels inside the fracture, which provide highly conductive paths for reservoir fluids (**Fig. 1**). With this technique, proppant does not serve as a conductive medium, but rather as a supporting agent to prevent fracture closure within the channels. The arrangement of channels in the proppant pack is created through a patented technique that combines special pumping protocol, perforation scheme, fracturing-fluid design, and fiber technology. The technique is intended for consolidated, single-layer and multilayered formations with formation temperatures between 100 and 250°F. The service provides substantial gains in production and estimated ultimate recovery, as verified through extensive field testing. It also improves effective fracture half-length and decreases risk of screenout and proppant flowback.

For additional information, visit [www.slb.com/HiWAY](http://www.slb.com/HiWAY).

**Ball-Drop Fracturing Plug**—Magnum Oil Tools International’s Rapid Mill composite fracturing plug (**Fig. 2**) uses a ball-drop procedure to isolate formations for multistage fracturing operations. Used mostly in horizontal operations, the slim lightweight design makes deployment fast and efficient in vertical or horizontal wells. The tool can be deployed on wireline, coiled tubing, tubing, or drillpipe. The pump-down-element design requires less fluid and pump pressure to deploy the plug horizontally. After setting, dependable cast-iron slips secure the plug in place. The tool remains open for fluid flow and allows wireline services to continue until the ball-drop isolation procedure. Once the surface-dropped ball is pumped down and seated on the inner funnel top of the tool, the operator can pressure up against the plug to achieve isolation. Having a proprietary composite-material mandrel and a low metallic content, the tool can be milled quickly and easily and circulated back to surface by use of conventional milling, coiled tubing, or a rig and tubing. With no tungsten carbide buttons and no aluminum, drill times are consistently 30 minutes or less per plug. The positive lock-up feature ensures



**Fig. 2—Magnum Oil Tools International’s Rapid Mill composite fracturing plug.**

easier drillout of multiple plugs in a single wellbore.

For additional information, visit [www.MagnumOilTools.com](http://www.MagnumOilTools.com).

**Deepwater Subsea Tree**—GE Oil & Gas launched its VetcoGray DHXT deepwater horizontal tree and integral-control system (**Fig. 3**). The tree is designed for water depths to 10,000 ft and pressures to 15,000 psi. The design reduces horizontal-tree footprint by 12% (to 4.5×4.4 m) and weight by 10% (to 43.7 t). The D-Series package includes the company’s integral ModPod, a subsea control module that is powered by the SemStar5 open-architecture subsea-control and -instrumentation systems. The tree has three



**Fig. 3—GE Oil & Gas VetcoGray DHXT deepwater horizontal tree.**

primary configurations: a standard production tree having a modular concept for all major components of the tree, an enhanced system in which the annulus wing block is extended to include additional valves and sensors for improved annulus-pressure management, and a gas lift system that includes a gas lift choke, dual-bore flowline connector, and sensors. Up to nine hydraulic and two electrical or fiber-optic connections to downhole functions are incorporated in the standard system design. The standard flowline connection is a 5-in. vertical clamp-connection system, which minimizes remotely operated vehicle (ROV) intervention. The production choke is a 4-in. ROV-retrievable choke.

For additional information, visit [www.ge.com/oilandgas](http://www.ge.com/oilandgas).

**In-Line Viscometer**—The Brookfield TT-100 In-Line Viscometer (**Fig. 4**) is designed for use in closed-loop systems that require constant monitoring and associated control of product viscosity. Continuous measurement eliminates the need for grab sampling and enables prediction and constant control of final product properties. Concentric-cylinder geometry (Couette type) provides viscosity measurements at defined shear conditions. The viscometer can be used with a wide range of pressures, temperatures, viscosities, and flow and shear rates. The measurement zone is protected from the main flow, allowing accurate, repeatable measurement under variable conditions. The viscosity range is 10–500,000 cp at pressures up to 200 psig. The operating temperature range is –40 to 300°F at a maximum flow rate of 20 gal/min. It can



**Fig. 4—Brookfield TT-100 In-Line Viscometer.**

be operated at shear rates of 511 sec<sup>-1</sup>. Constant- or variable-speed motors are available, and a variety of display and control capabilities is available.

For additional information, visit [www.drillingfluidviscosity.com](http://www.drillingfluidviscosity.com).

**File Uploader**—Digital Well File has introduced its Re-Connect Uploader tool. During the drilling process, there is a need to send large data files from the drilling rig. Large files, such as high-resolution digital photos of rig parts, are difficult to send by email because of size limitations and low bandwidths onshore. Internet connections can drop out at the wellsite for various reasons. If the Internet connection is dropped before completing the upload, the user logs back on and reconnects to the server to resume the upload automatically from the point of the Internet disconnection. Web-based encryption technology is used for all data uploaded during the drilling process (e.g., daily drilling reports, mud logs, logging and testing data) into a Digital Well File database by contractor or company personnel. Approved users then can download, sort, and search data. Users access the Internet and enter their user name and password to view, upload, and/or edit data depending on their privilege.

For additional information, email [ops@digitalwellfile.com](mailto:ops@digitalwellfile.com).

**Well Life Cycle**—Petris Technology released its PetrisWINDS Well Lifecycle Manager software that provides access to a well's history—from prognosis and construction through abandonment. The software captures and organizes well-life-cycle data, which, when com-



**Fig. 5—Moyno Mag Drive 500 Series no-seal pump.**

bined into an integrated system, provide comprehensive information for analysis and decision making throughout the life cycle of wells. The collected data can be mined to determine “lessons learned” and preserve knowledge for future reference. Data are entered once and then are available for reuse throughout the company. The software will capture, maintain, and deliver information on producing wells requiring any type of maintenance. Tracking maintenance and failure data enables discovering failure trends to develop proactive solutions. The software is aimed at automating the data-capture and -entry processes, allowing personnel to spend more time on the rig floor instead of entering/validating the data. The module features flexible data exchange between the rig and the office, expediting the decision-making process in the office. Plan vs. actual data and graphical comparisons are possible. Time-related well-schematic visualization is available. Role-based security with tight-hole capabilities can be enabled.

For additional information, visit [www.petris.com](http://www.petris.com).

**No-Seal Pumps**—The Moyno Mag Drive 500 Series pumps (**Fig. 5**) use a magnetic-drive design that provides zero-leakage pumping. This proprietary progressing-cavity pump uses technology that ensures operator safety, eliminates work-place hazards, and protects the environment from contamination. The pump uses a magnetic coupling to establish a static seal, aligning an outer drive magnet with an inner driven magnet within a stationary containment shell. The resulting no-seal design performs well in hazardous applications and is effective with difficult-to-seal fluids. Pump rates are 0.1 to 900 gal/hr. **JPT**

For additional information, email [literature@tdh-marketing.com](mailto:literature@tdh-marketing.com).