VELOX velocity and straddle system

Extend the life of your well without expensive workovers

The Baker Hughes **VELOX™ velocity and straddle system** can effectively solve either of two production problems in a one-trip operation that saves time and money compared to a conventional workover.

Installed as a velocity string, the VELOX system prevents water from cutting off gas production by reducing the ID of the production tubing and increasing the velocity of produced gas.

Run as a thru-tubing straddle system, the VELOX system can isolate and pack off a predetermined section of parted or damaged tubing.

Velocity string installation

Late in the field's life, flowing gas wells lose pressure and production velocity, so they can load up with produced water that may eventually stop gas flow. Using the VELOX system, Baler Hughes can deliver a cost-effective solutions by installing smaller ID tubing string, known as a velocity string that is typically set below the existing downhole safety valve. The velocity string increases gas flow velocity, so water is carried from the well and gas production continues. The VELOX system is an economical remedial solution to extend the production life of a well—without carrying out an expensive workover.

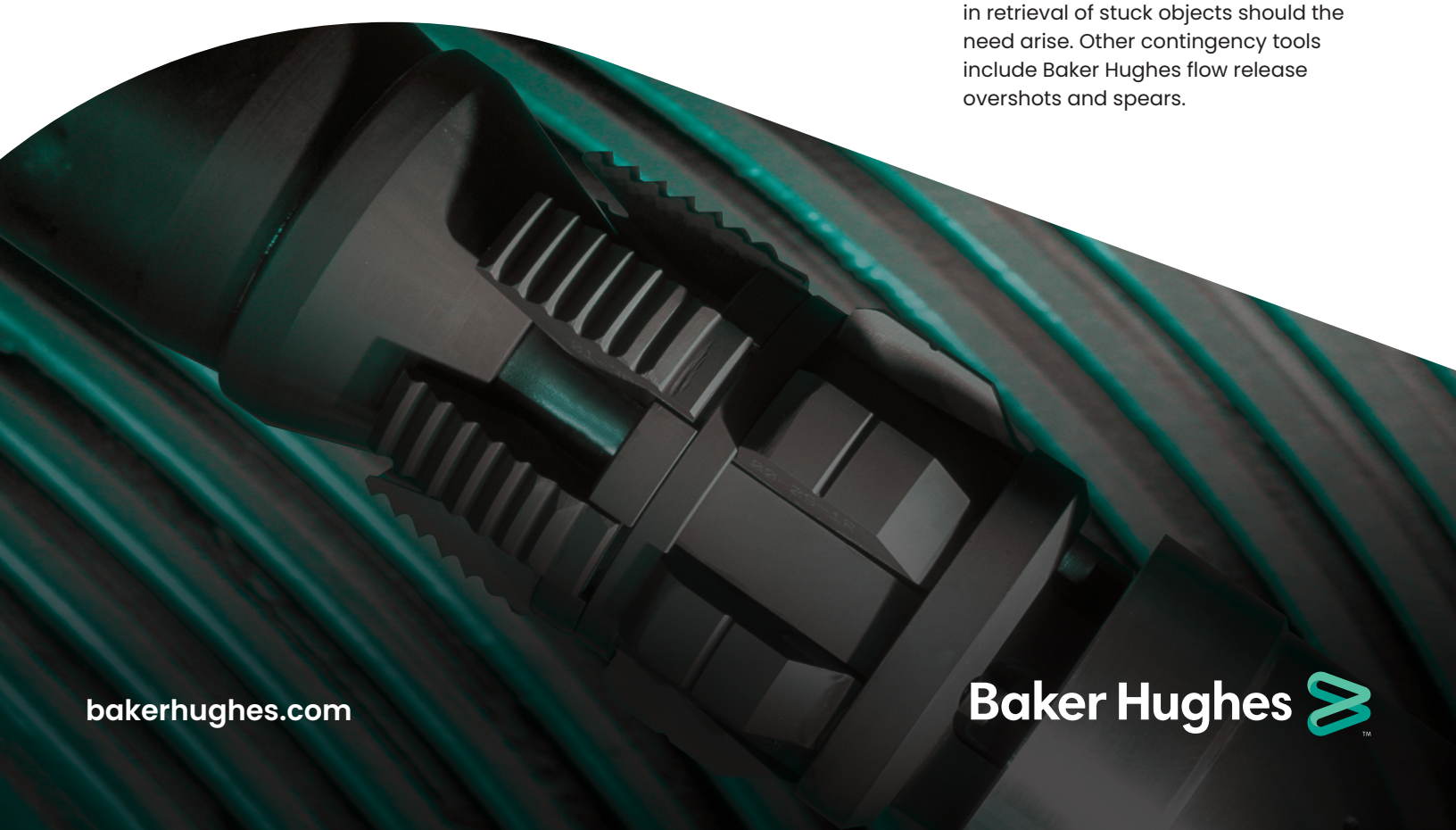
Straddle system

When production tubulars separate or develop holes and leaks, production flows into the annulus–a serious problem that usually requires a complete workover of the well. The VELOX system can be used to straddle the damaged location of the tubing, packing off the flow into the annulus and extending the life of the well. The VELOX straddle system also can be used to shut off water or gas perforations, seal damaged gas lift mandrels, and provide downhole selective isolation in other problem situations.

Operations

Using a systems approach, Baker Hughes' thru-tubing fishing and cased hole completions experts participate in the project's design review along with providers of all deployment and contingency tool strings and equipment. Such cross-product line job design review meetings have resulted in a flawless job execution track record to date.

The VELOX system can be deployed on either coiled tubing or jointed pipe. The VELOX system's deployment tool-string includes Baker Hughes' universal hydraulic disconnect, and the state-of-the-art soft-touch make-up tong unit for safe, accurate and highly versatile tool joint make-up. Quick connectors are also included for ease of connecting upper and lower assemblies. The deployment string also includes the Hipp-Tripper® bi-directional vibratory jar. This tool can be used to activate the back-up shear release mechanism on the VELOX STV running tool or to aid in retrieval of stuck objects should the need arise. Other contingency tools include Baker Hughes flow release overshots and spears.



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VELOX STV running tool allows the VELOX STV upper packoff to be run in live well conditions and hydraulically set. Then the running tool is disengaged and tools recovered to surface. The VELOX STV running tool has three release methods: two hydraulic and one mechanical.

VELOX STV packoff is an economical field-proven Hydraulic (S) Tension Set (T) packoff for use in Velocity VELOX (V) String applications. This short, compact packoff has a minimum number of working parts for easy setting and retrieval. Hydraulic slips lock it in position. Thereafter it is packed off via tension from below and can carry high tailpipe forces.

VELOX setting sub is used between two packoffs, allowing tubing movement between packoffs, during production or when setting a straddle. It is supplied with standard premium threads and has an ID compatible with tubing string.

VELOX straddle packoff is a upper/lower packoff, single-trip, hydraulically set tool that can be retrieved with coiled or jointed tubing. It is used primarily in straddle applications that provide isolation inside the casing or tubing. The VELOX upper packoff is run in conjunction with a setting sub, a VELOX lower packoff, and a double-pump open sub. The VELOX packoff features field-proven slip and one-piece element designs. The lower packoff can be converted easily to an upper packoff by changing the top sub to accept a running tool.

VELOX double pump open plug is a tubing device that allows pressure to be held from below when running the VELOX system. The plug can be equalized by applying pressure from above to a predetermined value of shear screw which allows the plug to 'blow out,' leaving a standard WEG. This tool eliminates the need for slickline intervention when setting the system.

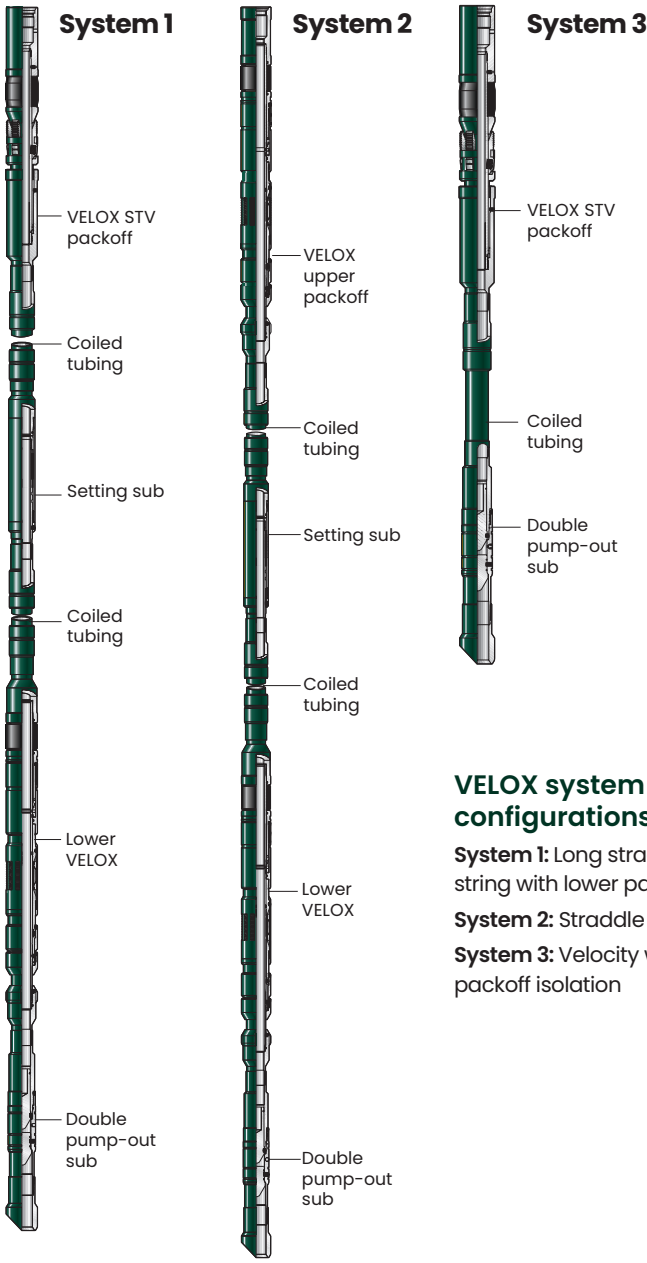
Hydraulic releasing GS spear is specially designed for thru-tubing fishing operations. It is engineered to with-stand the high tensional and side-load stresses encountered during jarring operations, and designed to engage standard GS fish necks or slick ID fish necks. The non-rotating GS Spear incorporates a clutch matching that of the FAU hydraulic disconnect so that torque may be transmitted through the tool.

CASE HISTORY

Baker Hughes has carried out various VELOX systems operations with coiled and jointed pipe in the UK sector of the North Sea

On one well, the string consisted of the VELOX velocity STV packoff with approximately 11,500 ft tubing and plugged at the bottom. It was deployed and hung off below an existing downhole safety valve using a snubbing unit, without killing the well.

The VELOX velocity system provided a cost-effective solution that extended the life of wells that had previously become uneconomical due to high water loading and intermittent gas production. Within 8 hours of installing the VELOX velocity system, the well was steadily producing 5 MMscf/day. Total installation time for this operation was carried out within planned time, with zero NPT. The system eliminated the need for an expensive 'workover.'



VELOX system configurations

System 1: Long straddle velocity string with lower packoff isolation

System 2: Straddle system

System 3: Velocity with no lower packoff isolation

Baker Hughes