



Far left: Applying pipe dope to BPS collar threads.

Left: Running BPS collar in casing string.

Collaring the market

Trican's Burst Port System is a versatile option for multi-stage stimulation of horizontal wells

The unconventional resource sector continues to play a dominant role in E&P activity in various regions in North America, including the Western Canadian Sedimentary Basin (WCSB). In unconventional plays, producers typically drill their wells horizontally and perform a number of fracturing treatments along these horizontal portions of the wellbore. Originally, a more common option was to stimulate the whole horizontal section in a single treatment. Significant improvements have been made in multi-zone completion technology however, and now, multi-stage fracture treatments can be done along the horizontal section. To save time and money, many operators prefer to perform multiple fractures along their horizontal wellbores in a single trip downhole, with either a permanent packer liner assembly with mechanical shifting ports to divert flow, or with coiled tubing, packers and perforations that are created by jetting in a cased and cemented wellbore.

Calgary-based Trican Well Service Ltd. is the largest full-service pressure pumping company in Canada with a significant presence in each of the unconventional resource plays in the WCSB, and the majority of those in the United States. A leader in developing new technology to service customers in this market, Trican recently introduced its patent-pending Burst Port System (BPS™), designed for multiple stage stimulation in a horizontal wellbore that is cased using external packers or cemented into place. BPS™ consists of a liner assembly containing specialized collars with predrilled holes covered by burst disks, which are pre-set to open at a prescribed pressure. These collars are installed along the horizontal well casing or liner string, straddled by Trican's exclusive selective fracturing cup tool (C2C™) run with coiled tubing, and pressured up to burst at their designated burst point, leaving an isolated conduit to the formation. The collars can be placed anywhere along the horizontal section and the spacing between collars can be set

according to the stimulation design and formation characteristics. It is possible to run as many as 35 collars (and perform 35 fracs) in a 1,000-metre horizontal leg. The collars are 'full bore', which means that no drilling is required after fracturing to gain access to the toe of the well.

"The system allows for as many specialized collars to be run as needed, and at the desired spacing," explains Dave Browne, Trican's corporate director of technology. "The frac treatment is then pumped through the coil string into the reservoir, and completed as designed." Once a treatment is completed, the coiled tubing is moved along the horizontal wellbore, it straddles the BPS™ collars in any order, and repeats the process against each specialized collar.

To date, hundreds of fractures have been completed in multiple formations across Western Canada with Trican's BPS™. The way Browne describes it, the system's advantages are making it a popular alternative to other methods. "You don't need sand jetting, shifting sleeves, perforating or dropping balls, and there are no limits to the number of stages that can be completed with BPS™."

Though cementing is preferable, the system works with external liner packers as well and leaves the full drift of casing available for re-fracturing in the future. "The system offers the versatility of a full-bore design, combined with the simplicity of pre-milled burst port collars," Browne says, "and we think that makes it the most time- and cost-effective option available."

Trican's BPS™ is very applicable to the growing unconventional market and, together with the C2C™ tool, is proving successful in both oil and gas reservoirs with vertical depths under 1,000 metres and measured depths in excess of 2,500 metres. BPS™ is currently being utilized in the Bakken and Viking formations, and Trican is continuing to develop this technology to handle deeper and more challenging reservoirs. ■