

ReelDirection

Varco has recently completed the purchase of Bradon Industries. Bradon, a Calgary manufacturer of Coiled Tubing Equipment, will join Varco's Coiled Tubing / Wireline Products Group as Hydra Rig Canada.

In addition to complimentary technologies and products, Bradon brings unique Coiled Tubing Drilling

Hydra Rig Expands Manufacturing Into Canada

equipment designs. With Bradon, Hydra Rig gains a stronger Canadian presence along with a 46,000 sq. ft. manufacturing facility and an experienced work force.

Bradon's manufacturing expertise along with Hydra Rig's Coiled Tubing equipment designs and technologies will create the "New Coiled Tubing Force in Canada."

Hydra Rig
Drop-In-Drum
CT Reel System
(see page 2.)



New Products

New 100,000 lb. Pull Injector
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Varco's CT/WL Products Group will soon publish a Wireline Handbook.

This handbook will be similar to the Coiled Tubing handbook published by the CT/WL Products Group.

Wireline Handbook

We anticipate the Wireline

Handbook will be available in late 2001. If you have interest in receiving the Wireline Handbook, please contact Mike Hoyle. Phone 817-446-2308 Fax 817-457-6461 Email: mhoyle@varco.com

The second printing of 500 copies of the CTHB is nearly depleted. In lieu of a third printing, the CT/WL Group has elected to place the CTHB on CD

Coiled Tubing Handbook - Update

format, which will be available in late

2001. If you have interest in receiving the CTHB on CD, please contact cthb@tuboscope.com.

Varco®

Reel World Happenings

The CT/WL Group will be attending the following events in 2001.

OTC — Houston, Texas
April 30 – May 3

MIOGE — Moscow Oil & Gas Exhibition
June 19 – 22

IPPE — Shanghai, China
Sept. 18 – 21

SPE — New Orleans, Louisiana
Sept. 30 – Oct. 3

LAGCOE — Lafayette, Louisiana
Oct. 30 – Nov. 1

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Alasdair Blair has joined SSR, International, as Sales Engineer. Alasdair brings experience in wireline operation with Camco and Wellserv.

TOT has promoted Allen Kennedy to Sales Representative for wireline products.

Bill Taylor has joined Hydra Rig and TOT International Sales Group. Bill brings over 20

years of oilfield experience primarily in the North Sea area of operation and has most recently

Reel People and Places worked for CTES. He is based out of Aberdeen, and will be servicing the North Sea, Eastern and Western Europe.

Hydra Rig – Canada has added Gary Stewart as Technical Oilfield Sales for the Canadian market. Gary's background includes Coiled Tubing Operational Manager, and has recently worked for Precision Tube Technology in Red Deer, Canada. Gary will be based at Hydra Rig Canada in Calgary.

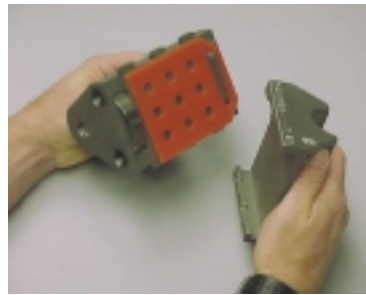
With the addition of Hydra Rig Canada; Hydra Rig has announced that Randy Graves is now responsible for sales at Hydra Rig, Ft. Worth; Hydra Rig, Canada; and Hydra Rig, UK, while John Goode has been promoted to Operations Manager at Hydra Rig, Ft. Worth, responsible for Manufacturing, Engineering and Quality Control. Both John and Randy will continue to report to F.A. Waters.

*This is not a complete listing of all locations.
Call for the location nearest you.*

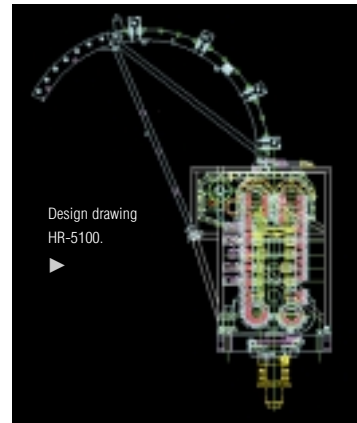
The HR5100 is the most recent addition to Hydra Rig's series "5" family of injectors and is designed to accommodate large size and higher weight coiled tubing. Rated for 100,000 lbs. continuous pull, the head is designed around a purpose built gear drive.

New Design 100,000 lbs. Pull Injector

Quick Connect gripper can be installed and removed without tools.



The HR5100 incorporates many of the advanced features of the HR560 (which was introduced in 2000) such as lighter overall weight, narrow profile, lower maintenance cost, increased reliability, accurate slow speed control single motor gear drive. The HR5100 also features Hydra Rig's patented "Quick Connect" gripper insert for rapid installation and removal of the upper insert and allows changing tubing sizes without removing the injector chain.



Hydra Rig's Model

HR5100 is now undergoing testing. It is expected to be available in late 2001. The HR5100 will replace Hydra Rig's HR480.

The introduction of the HR5100 is another step in Hydra Rig's continuing leadership in Coiled Tubing Equipment.

Last year Hydra Rig introduced the concept of Drop-In-Drum (DID) reels for utilization as a tubing-storage and work-reel system.

In late 2000, the first prototypes of this unique design were completed. After an extensive testing program, design of the production models were completed and offered to the market.

A number of units are now in successful operation worldwide, in both skid-mounted and trailer-mounted configurations.

The DID offer numerous advantages over conventional coiled tubing reel configurations, such as:

- Increased life of coiled tubing
- Eliminate or minimize yard spooling
- Allows quick pipe change
- Help reduce total pipe inventory
- Allow more offshore lift flexibility

Update – Drop-in-drum

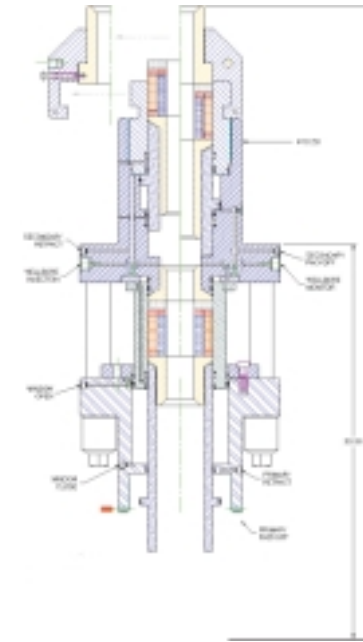
Future models of the DID reels are currently in design for larger tubing sizes and larger capacity.

Trailer-mounted drop-in-drum with HR-480 Injector.



Texas Oil Tools (TOT) has introduced its latest design in Stripper Packers for the coiled tubing industry. The Over/Under Stripper Packer is designed primarily for high pressure applications. This unit eliminates the need for the Tandem Stripper Packer, substantially reducing overall stack height. The configuration currently being utilized in the industry consists of the Side Door Stripper Packer and Tandem Stripper Packer having an overall stack height of 8.4' as compared to the overall height of 4.5' for the new 4.06" 15K Over/Under Stripper Packer.

Over/Under Stripper Packer



The TOT Over/Under Stripper Packer addresses the critical problem of stack height and weight with two individual packers in the same tool. The packers are activated by individual pistons and can be used independently of one another. A pressure chamber between the packers can be used to inject lubricants or inhibitors during coiled tubing operations.

The design retains our easy-to-use Side Door feature and combines it with an additional packer. Changing both packers can be accomplished in a few minutes even with tubing in the well.

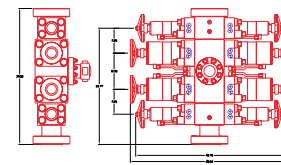
In addition to having dual packers, this system allows the operator the added benefit of snubbing into the well with either packer. Both packers are supported by bushings, enhancing the versatility of this tool.

A wide variety of packers are available for the following services:

H2S Service	-50°F – 180°F
H2S Service	76°F – 400°F
Geothermal Up to	76°F – 500°F

The latest design in the Texas Oil Tools arsenal of pressure control products is the "EK" Blowout Preventer (BOP).

This market-driven design has unique features specifically for the new high-strength coiled tubing. Test results on the slip rams have proven exceptional.



The newly designed actuators reduce the overall width of the BOP making it easier to use on offshore applications. There is no need for booster cylinders and one set of shear blades can be used for the range of coiled tubing. The shear blades are new with a special material for longer life and more shear cutting capabilities.

The slip rams have been redesigned with a foolproof method. There are no guides, pins, screws or inserts to deal with. The slip ram is a unique one-piece design maximizing the gripping area. The slips are bi-directional, and will hold the same load for light pipe or heavy pipe. Preliminary test results are positive, capable of pulling 100% of the yield strength on heavy wall 1.75 QT-1000 coiled tubing with 1500 psi hydraulic pressure.

"EK" BOP

The pipe and blind rams have also been improved. There is no longer a need for a retainer bar. Special front seals have the retainer bar as an integral component of the metal insert.

Improved corrosion resistant coatings are used for the bonnets increasing the life expectancy of the BOP. Standard easy-to-use ram change rods on this BOP greatly improve the safety concerns when servicing the BOP.

The new "EK" BOP is available in the following configurations: Single, Quad or Quint with standard single function rams and also a Single, Dual or Triple Combination.



Malampaya SpoolTree subsea production system.

Today, the Deepwater Developments around the world have come into focus more than ever before. Within the Varco Products Group, SSR has played a significant role in supplying vital equipment to most of these developments in Campos Basin (Brazil), Gulf of Mexico, West African coast and South China Sea.

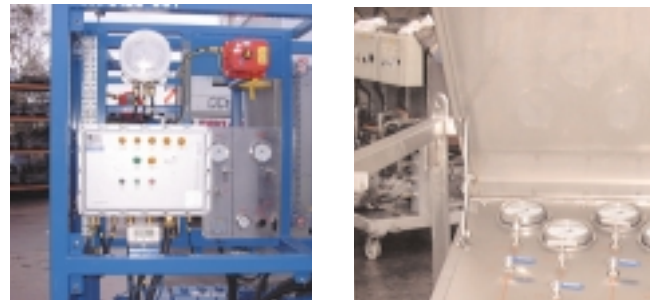
Recently SSR supplied equipment to Malampaya Gas Development in South China block SC 38. Shell Philippines Exploration BV has plans for an initial 5 wells in this remote deepwater environment, with forecast of first delivery of gas in January 2002.

Two of the key players were Cameron (Modular Subsea and Integrated Completion) and Expro Group (Subsea Intervention Package), both used SSR equipment.

Deepwater Developments' New Opportunities.



SSR equipment for Cameron:
6 sets of Horizontal Spool Tree Isolation Plugs and Ancillary.



SSR equipment for Expro:
2 sets of Umbilical Hose Tensioning Units
1 set of Methanol Injection Triplex Pumping Unit
1 set of Subsurface Control Unit

Introducing The New PCE "TORCONNECT" Slip Connector

The new PCE "Torconnect" Slip Connector has been primarily developed to withstand even the most extreme high-torque, high-tensile applications.

Unlike existing slip connectors the PCE Torconnect does not rely on grub screws to transmit torque from the toolstring through to the coiled tubing.

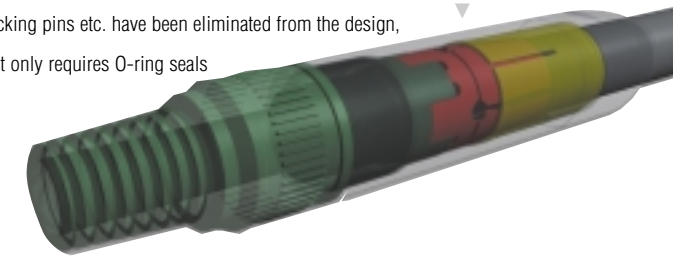
This feature is provided through a unique non-rotational slip arrangement providing a high bi-directional torque resistance. The slip is positively engaged into the bottom sub via drive teeth, therefore transmitting any rotational torque from the toolstring directly to the pipe.

The basic installation to the coiled tubing does not require any specialized tooling or make-up torque. The connector is simply fitted to the pipe and an overpull taken to test and set the connector.

The Torconnect has only 4 main components ensuring ease of assembly, installation and disassembly. For field redressing purposes, small components such as grub screws, locking pins etc. have been eliminated from the design, ensuring a simplified redressing operation. In fact, the Torconnect only requires O-ring seals to redress the tool.

Because the Torconnect can withstand extremely high tensile and torsional loads, it is ideally suited for high-end CT drilling or fishing applications.

A full range of Torconnect Slip Connectors are available, ranging from 1-1/4" to 2-5/8" coiled tubing sizes. The standard range of connectors are all suitable for H2S service.



Below: Assembly drawing showing an internal view of the "Torconnect's" four main components fully assembled onto coiled tubing.

The PCE "Breech Lock" wireline tool string connector has been established for many years as one of the best fit for purpose multi-shouldered quick-release connections available on the market. This well proven connector has now been engineered to provide the operator with an even greater degree of reliability and simplicity of operation.

The new PCE "QuickGrip" connector combines all the principle features and benefits of the current Breech Lock but now offers two additional benefits.

The New PCE Wireline "QuickGrip" Connector

A simple grip pad release is now incorporated in the design to replace the out-dated lever release system. There is no longer any need for special tools or secondary levers to operate the lock. Simple grip pads mounted in the female section are now used to release the connection.

The positive and automatic locking system prevents the plunger moving with inertia loads during extreme jarring operations. This will now provide the operator with the level of security during wireline operations that all quick release connectors should enjoy.

All of the features of the original PCE "Breech Lock" have been incorporated into the New PCE "QuickGrip". The quarter turn release action, multi-shouldered load-bearing faces to ensure strength characteristics are maximized and the ability for the connection to be incorporated into all wireline tools without the need for secondary threaded connections.

The newly engineered features in the PCE "QuickGrip" are incorporated in the female section of the connector which ensures that all the PCE "Breech Lock" connectors that exist in the field are fully interchangeable with the new PCE "QuickGrip" system.



TEM's CAT-450 is a combination single-pump Cementer / Acidizer with bulk storage. This unit improves efficiency and lowers field cost by combining the features of several trucks into one. The design incorporates ease of maintenance and operation with all systems controlled at the operator's console. It reliably performs cement mixing, bulk-transport and acid-stimulation jobs.

The CAT-450 performs three major functions:

- Bulk-cement transport
- Acid transport and pumping
- Cement blending and pumping

The unit has a 225 cu.ft. ASME coded bulk-cement tank, a 340 cfm blower pressurizes the tank. A PTO mounted to the chassis engine drives the blower. The bulk tank will deliver cement to the cement mixer or outboard discharge.

The CAT-450 has two 10 BBL acid tanks. The tanks may be used to haul acid, or other corrosive fluids, or as displacement tanks while cementing. Each tank is internally coated with acid-resistant tenemic. The tanks are DOT certified for over-the-road hauling of hazardous liquids.

The CAT-450 incorporates the same high-energy recirculating cement mixer as TEM's traditional Double Pump Cementer. TEM's high-energy mixing system maximizes wetting and shear of the cement producing a uniform slurry, minimizing cement setting problems and maximizing customer satisfaction. The unit has one 500 HP triplex pump that is driven by the truck chassis engine through a transfer case. An onboard air-cooled deutz diesel engine powers the unit's hydraulic power pack. Recirculation and mix-water

centrifugal pumps and acid-tank agitators are hydraulically powered.

The CAT-450 enjoys all the advantages of a single-pump recirculating Cementer with the added features of bulk transport and acid stimulation. The versatility of this unit enables operators to eliminate equipment from the wellsite thus saving money.



CTES Release 6.0 of Cerberus, the leading modeling software for coiled tubing and wireline operations, was shipped to customers in January. Cerberus covers three main areas – String Management (including fatigue life tracking), Well Intervention (drag & buckling) and Wellbore Hydraulics modeling. Among the numerous new features

Cerberus™ & Orion™ Version 6.0 releases. and enhancements are the following:

CT String Select Wizard. This new feature ranks the customer's coiled tubing strings by up to 12 different criteria, from basic geometry like diameter and length to advanced considerations like pick-up and set-down capability in a given well, allowing the user to quickly identify the optimum string for an upcoming job. The engineer can analyze not only the CT string data configured in his or her own location, but also load data from other districts within the same company via the Internet, in order to locate the ideal string. Tubing manufacturer and Varco company Quality Tubing, Inc. will soon also be on this data-sharing network, allowing customers to locate and order inventory and consignment strings online.

Pump Wizard. The Hydra well hydraulics simulator now features an advanced tool for designing well treatments. Using the Pump Wizard, the user first selects the fluids to be circulated, and then uses special calculators to set volumes and pump rates appropriate for the job objectives and geometry of the particular CT and well. A suggested Pump Schedule is then produced and calculations performed to generate charts of pressure, pump rate and other key parameters plotted against time. The Cerberus user can thus present a complete job simulation to his client without setting foot on the wellsite.

Orion, the CTES data acquisition system for coiled tubing and wireline, will see Release 6.0 going public to coincide with the ICoTA conference in March. Enhancements include a new interface, sophisticated real-time job monitors, remote diagnostics via the Internet, the ability to design custom monitor screens, and (coming soon) voice-activated control. CTES is about to ship the 100th Orion system to the field.

Regional Sales & Service Centers

During the past three years, strategically located Sales & Service Centers have been established, and are now in full operation in:

- Dubai - Manager, Jackie Carroll
- Singapore - Manager, Ron Barnett
- Mexico - Manager, Gerardo Smith
- Venezuela - Manager, Brad Hastad

These centers have been well received and supported by our customers who have expressed a strong desire for locally available spare parts and service. The extensive inventory of coiled tubing and pressure-control spare parts allows our customers ready access to parts when they need them and allows them to reduce their own parts inventory and associated cost.



Coiled tubing rebuild, Mexico

In addition to providing sales assistance for coiled tubing and wireline equipment and ready access to spare parts, the centers have expanded their services to include:

- Repair and rebuild of coiled tubing unit components
- Repair and rebuild of wireline units
- Repair and rebuild of nitrogen pumping units as well as rebuild of LN2 triplex pumps, cold ends and boost pumps
- Restore vacuums and repair liquid nitrogen storage tanks and transports
- Repair and recertification of coiled tubing and wireline pressure control equipment



Repair of LN2 equipment, Dubai



The service and repair work can be done at the center or at the customer's location when necessary.

The CT/WL Products Group is proud of the success and customer acceptance of the centers and we are dedicated to continually improving. You can contact any of our centers to find out more information.

Wireline spooling operation, Singapore

In fourth quarter 2000 Eastern Oil Tools moved its Perth, Australia manufacturing operations to Singapore. Tom Hewitt, Eastern Oil Tools' general manager has also relocated to Singapore. This consolidation of management, engineering and production functions allows Eastern Oil Tools to provide quick response time and better service to our customers.

Eastern Oil Tools Consolidates Manufacturing