



“Over 10,000

fittings

and not

a single leak.”

Mike Wallace, Instrumentation Superintendent, Cianbro



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Swagelok Plays Key Role In Construction Of South-American-Bound Oil Rigs

WHEN CIANBRO CORPORATION WON A BID to complete construction of two oil rigs, it was challenged with installing a complex fluid handling system that comprised more than 10,000 individual components per vessel and met the requirements of a stringent third-party risk management organization. Now, as the second rig nears completion and sets its sights on the southwest Caribbean, Cianbro is crediting the more than **20,000 Swagelok components and fittings** it needed to build the two 12,000-ton offshore, semi-submersible oil-drilling vessels in Portland, Maine — as having played a major role in the venture's success.

Project Amethyst: To fully comprehend the magnitude of this undertaking, it is important to examine the project from the beginning to see just how much effort and planning went into constructing the rigs' fluid handling systems.

Pittsfield, Maine-based Cianbro, one of the largest civil and heavy industrial construction companies on the East Coast, was awarded a bid in early 2002 to complete construction of the two rigs after the original builder filed for bankruptcy. Believed to be the first oil rigs ever constructed in Maine, the partially outfitted vessels arrived in Casco Bay, Maine in early 2002 after traveling, via barge and tow, from their original sites in Texas and Mississippi. Cianbro began working on the rigs in March 2002.

One rig, **Pride Rio de Janeiro**, left Portland in early February, embarking on a 20-day trip to Curacao, one of three islands in the southwest Caribbean that comprise The Netherlands Antilles. The second rig, **Pride Portland**, is wrapping up construction and is scheduled to leave Maine in the near future to join Pride Rio de Janeiro in the Caribbean.

Opportunity Knocks: To assist with assembling the rigs' complex fluid handling systems, Cianbro named Maine Valve & Fitting Company as its top-tier fluid system component supplier on the project. An exclusive, independent distributor of Swagelok fluid system components, Maine V&F would help Cianbro by supplying product, managing inventory, and coordinating the installation of the components through on-site training of Cianbro's fitters.

The sheer magnitude of the project — 10,000 fittings per rig — was challenging enough for any fluid-handling expert. But the system also had to meet the high standards of Lloyd's Register Americas Inc., which is part of London-based International Lloyd's Register Group. Lloyd's is a certification agent that acts on behalf of governments and insurance companies, certifying products, processes, and systems using published criteria.

"When the rigs came through, everything that went out to bid had to meet Lloyd's Register," said Ken Madore, Maine V&F sales and service representative. "That took a lot of manufacturers out of the picture, but not Swagelok."

Cianbro also based its selection of Maine V&F on a recent work experience the construction company had with the exclusive Swagelok distributor.

"Cianbro was working on a project in northern Maine at a paper mill and was having trouble with deliveries and reject parts. Cianbro was just having a great deal of difficulty getting the product on time," Madore said. "That's where we came in. Cianbro turned to us and we jumped through hoops to keep that project moving along."

"We exhausted all avenues. Whether it was Swagelok tubing, tube fittings, welders, valves; whatever they needed,

"We did anything we could to get them product. The company was so pleased they told us that Maine V&F would get first shot on all future Cianbro projects."

Service: The personal attention and commitment to service Maine V&F showed Cianbro on the previous job continued on the sizeable Amethyst project.



Tube bender: Cianbro fitter Dan Perkins finishes a bend with a Swagelok hand tube bender. The tool's ruggedness, portability, and accuracy proved critical to helping fitters complete their work on schedule.



Tube bender: The bend is now complete and Perkins stands by to assist in final installation of a length of tubing. After using the Swagelok hand tube bender, many Cianbro fitters, who are responsible for purchasing their own hand tools, bought one of their own. They've etched their initial in the benders to make sure they know they are theirs.



During the first half of 2004, Pride Portland & Pride Rio de Janeiro semi-submersible self-propelled drilling rigs will be moving off the coast of Brazil. Each rig is 250-ft long, 180-ft wide, and approximately 324-ft tall from the bottom of the pontoons to derrick tip.

Each ship's system is comprised of more than 10,000 Swagelok fittings in fractional and metric sizes up to 1 1/2-inches and in a variety of configurations — as well as lockable Swagelok ball valves, check valves, and tube supports. Because much of the fabrication occurred in confined areas, there were connections every 8 to 10 ft. More than 46,000-linear ft of tubing was installed on each rig.

In addition, the single largest task undertaken by Cianbro fitters involved the assembly of a complex remote-control system that manages all the ballast valves on board and required 8,000 mechanical connections per vessel.

"My job is to test and operate all equipment on board, including the Swagelok tubing and fittings on our remote-operated valves," said Dave Christopher, commissioning manager for Cianbro on the Amethyst Project. "There are 283 remote-operated valves on each rig that open and close your ballast valves. It is a very complicated system. It also controls the rig's treatment systems so it requires good, dependable equipment."

To assist with the proper installation of all fittings, Maine V&F helped establish a train-the-trainer program for Cianbro. Several Cianbro employees participated in this program, which allowed Cianbro trainers to provide on-site instruction to its fitters on how to use Swagelok tube benders, multi-head swaging units, and orbital welders.

Additionally, to help coordinate the installation of the more than 20,000 fluid system components, Madore established a consignment program and checked inventory twice a week. The program kept the project moving along and on schedule.

"We were really going through the materials, and to keep product here and to keep it ordered was quite a task itself," said Mike Wallace (shown right), Cianbro instrumentation superintendent.

Flawless Results: The training Maine V&F provided and gaugeability of the Swagelok tubing fitting were instrumental in getting the rigs ready for their work in South America, according to Cianbro. Wallace said, "when Lloyd's Register came up for final approval — done. Not an issue. Not with one fitting. And we had more than 10,000 fittings on each rig."

The performance of Swagelok's components cannot be underscored. "The offshore industry has very high standards and that is because of safety," Cianbro's Christopher said. "These rigs are going to be drilling in 3,000 ft of water, going down to depths of 15,000 to 20,000 ft. Because you're going to be all by yourself, your equipment has to be reliable and properly maintained."

Thus far, Swagelok's performance speaks for itself. "We've had very good feedback on all of the equipment we've installed on board," Christopher said. "I would say we're battling pretty close to a thousand. And that is excellent."

For complete information on Swagelok components, fittings, tube benders, multi-head swaging units, and orbital welders:

Swagelok Company, 31400 Aurora Road, Solon, OH 44139.

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