

## OPI Solves Pipe Makeup Problems On HDD Crossing

In early 2003, Janco Directional Drilling, Iowa, LA, was awarded a contract to install an 18-inch steel casing using horizontal directional drilling under the Hudson River for Cannon Industries Inc. The project called for a 30-inch hole to be opened through multiple pre-reams to ready the 4,560-foot borehole for final pull-in of the steel casing that would ultimately serve as a carrier pipe for 31 inner ducts.

Janco's President Paul Klein said the project presented a number of interesting challenges, including the route of the planned drill. It originated at the Staten Island Ferry landing in Manhattan and exited just over 4,500 feet away on the New Jersey shore.

To complicate matters further, the route of the planned crossing paralleled the Lincoln Tunnel that runs between Weehawken, NJ, and midtown Manhattan.

Since we would be drilling within 400 feet of the Lincoln Tunnel, it was imperative that the operator be aware at all times of the drillbit location," Klein said. "Any deviation that would put us in close proximity to the tunnel could have a devastating impact."

Prior to actually beginning the project, Janco had selected an American Augers 220-C drilling unit to complete the drill. The machine develops 220,000 pounds of pullback and 40,000 foot-pounds of torque.

"On a job like this we like to have a comfortable work zone," Klein said. "However, at this site the entry location was at the Staten Island Ferry landing. That meant that the drilling rig, driller's cabin, mud system, trackhoes, etc., all had to be set up within a work zone measuring only 50 by 95 feet."

In discussing the horizontal directional drill, Klein noted that steering during the drill posed considerable challenges. To help alleviate the problems, Janco contracted to have a barge go out about 938 feet from shore and drive piling at 200 foot intervals. Also, a diver was hired who went down to hook the guidance grid to the pilings in order to establish an azimuth heading for the planned crossing.

Ultimately, he said the pilot bore was completed in only two days. Once the bore was complete, Janco found that it needed a faster and safer way to make up the drill pipe to be pulled into the hole.

Klein said everyone was well aware that the 400 feet of work space at the exit location posed problems. Not only would crews be required to make 11 welds during final



line pull-in, the workers would be at risk during pipe makeup.

To help with the problem, Janco contacted Oilfield Products, International Inc. (OPI), La Marque, TX.

Klein points out that Janco's success with OPI's remote breakout unit on two previous jobs encouraged them to seek their help. "If we relied on conventional pipe makeup techniques, the operator would have to use the rig to spinup the pipe at the exit location. It also meant driving stakes into the ground to prevent the pipe from whipping around. Finally, to torque-up the drillpipe, a manual tong would need to be attached to a backhoe and pressure applied to the tong with the backhoe bucket. Since the operator has no way of knowing how much torque is applied, it is possible for the pipe to come apart after being pulled into the bore or damaged if it is over-torqued."

Klein is quick to point out that while constant radio contact is essential between crew members at the entry and exit locations when drill pipe is being added in a conventional way, it is still dangerous.

To eliminate this danger and to speed up the pipe makeup, OPI supplied Janco with its hydraulically-operated, horizontal remote makeup/breakout-spinup/spinout unit.

Specifically designed to eliminate worker contact with the pipe, the operator can control the unit while standing 15 to 20 feet away from the connection as it is being torqued or while spinning in or out.

The hydraulically-operated unit can handle drillpipe diameters from 2 7/8- to 8 1/2-inch O.D. and offers a maximum makeup torque of 63,000 foot-pounds and a maximum breakout torque of 75,000 foot-pounds at 2,000 psi. After breakout the hydraulic spinner is activated to spinout the drillpipe. During makeup, the spinner is activated to spin the drillpipe together and activate the hydraulic vices to the prescribed levels observed by a torque gauge located at the operator's console. The unit also offers 36 inches of horizontal travel.

Klein said the machine provided by OPI was able to make up the rods up as fast as the drill unit could break off and reattach. "We experienced no lost time due to the tail stem operation. The makeup unit was able to match speeds with the drill unit and it took no longer to tail stem that it would for a normal operation."

He also noted that given the success of this project, the company would likely look to OPI again in the near future.

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