

69 Bores

Completed on Pipeline Project

HDD Makes It Possible
for Unique CO₂ Pipeline to Overcome
Environmental & Logistical Issues



By Paul Greenwell

The Green Pipeline — a project of Texas-based oil and gas company Denbury Resources Inc. — is designed to carry 800 million cu ft of CO₂ per day for use in enhanced oil recovery.

The pipeline transverse many difficult stretches of geography while making its way from South Louisiana to Galveston, Texas. Large rivers, creeks, wetlands and major highways dot the landscape, along with a number of cities and towns. The route includes portions of the Atchafalaya Basin, home to the Louisiana Black Bear, an endangered and threatened animal, and crosses Interstate 10 — twice.

To avoid as many environmental and logistical issues as possible during the installation process, the pipeline design engineers recognized that the quickest, safest and least disruptive way was to drill horizontally under and around

those problem areas.

When Houston-based U.S. Pipeline Inc. (USPL) — one of the largest pipeline contractors in the United States — was awarded the contract from Denbury for the initial six spreads (230 miles of the 320-mile pipeline) starting in Donaldsonville, La., and finishing in Winnie, Texas, the company knew there were not many HDD contractors capable of handling the fast-paced construction schedule.

Laney Directional Drilling Co., based in Humble, Texas, was USPL's first choice due to its vast experience and the number of large drill rigs the company employs. Laney's size, capabilities and history of drilling large diameter pipelines in the Gulf region of Texas and Louisiana are unmatched by any other HDD contractor, anywhere in the United States.

Major Effort

The complexity of the project — in combination with the tight schedule — required an extraordinary effort from Laney. Typically, most pipeline projects have from one to six separate horizontal drills and some major projects require between 10 and 15 horizontal drills. But the Green Pipeline required Laney to install a record 69 drills in six spreads in a one-year time span — something that had not been done before and that would certainly require a high degree of planning and coordination with everyone involved.

Beginning Jan. 26, 2009, Laney deployed four HDD crews to Louisiana to work the first spread of 36 miles from Donaldsonville to Port Allen. Laney needed to get a number of drills installed ahead of USPL's stringing crews laying the main line behind them.

The 69 individual drills ranged in length from 1,200 ft to more than 5,000 ft, at depths of anywhere from 45 to 85 ft. Laney moved two medium-size drill rigs with 385,000 lbs of pulling force and two maxi drill rigs with 785,000 lbs of pulling force to the project, along with all of the related support equipment for each rig.

The smaller rigs were used on the shorter drills and because they are quicker to rig up, drill and rig down, the time actually spent on each of those drill sites was reduced, allowing USPL to come in right behind the rig departure for completion of the tie-ins.

USPL committed several construction crews just to support the HDD effort. While USPL was handling the preparation of the entry and exit drill sites (which were all matted), Laney's surveyors/steer hands were surveying the crossings and completing the drill profiles in anticipation of the arrival of the drill rig at each site. For the most part, USPL had the product pipe welded, tested and coated when Laney's rig arrived on site so there was no waiting to pull the product pipe once the final reamer pass was completed.

As the project wound down on the last spread, only two drilling rigs were needed to finish the job. On Jan. 8, 2010, Laney Drilling finished the last drill installation and the project was complete.

Lessons from the Job

With a project of this size and with deadlines being so important, the primary considerations for the Laney team were planning and coordination. While Laney's onsite personnel worked closely with USPL's onsite management coordinating site availability, matting and water supplies, the project management staff at Laney's main office worked overtime to ensure that timelines and schedules for each spread were well thought out and that all available resources were well utilized.

One critical issue related to directional drilling is mud disposal. Laney worked closely with nearby landowners to land-

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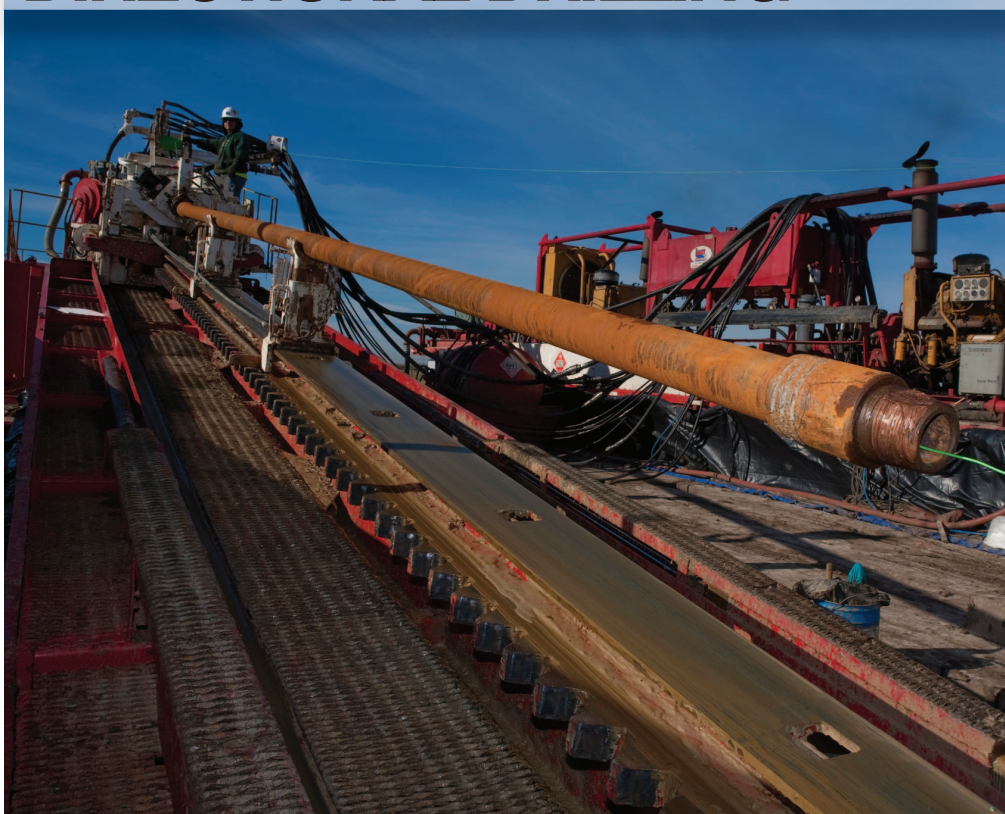


Ed Saxon

Assistant General Manager
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Authority, Beaufort, SC

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DIRECTIONAL DRILLING



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farm the waste mud from the project’s drilling operations. The Texas Railroad Commission has a strict set of guidelines for drilling fluid disposal in Texas, and Laney worked diligently to make sure that all procedures were followed.

The company also made an extra effort to coordinate crews and equipment to ensure that everything — and everyone — was in place and ready to go when needed. As one Laney project manager put it, “When you are knocking out that many drills in such a short time frame, you’ve always got to be looking ahead — you have to be planning the next six crossings down to the last detail while the current crossings are being competed.”

Just moving equipment along the six spreads required a great deal of coordination. Each directional drilling rig can utilize as many as 18 semi-trailer loads of gear depending on the rig size. The fast pace of the project meant that somewhere along the project length, drilling and support equipment was being moved in or out in preparation for the next drill. As a couple of rigs were working on individual drill sites, the others would be in the process of moving into place to prepare for the next drill or getting ready to move off site.

The Project Team

Laney has been in the horizontal directional drilling business for more than 20 years and has handled thousands of directional drilling projects throughout the United States and around the globe. Laney is a leader in the HDD industry — specializing in drilling large diameter pipe crossings, long drills and extremely complex drilling projects.

Laney’s management would like to thank its drilling supervisors (Skip Carlisle, Tommy Tilton, Anthony Cabler and Tad Dean) for all of their hard work on this project. Laney would also like to thank Dan Cobb and USPL’s Dana Bratcher, Kevin Kilgore and Glenn Maneritch for their help and support in the success of this project.

Paul Greenwall is a project manager with Laney Directional Drilling, based in Humble, Texas.