OYO GEOSPACE @ WORK
PRODUCTS AND SERVICES AT WORK IN THE WORLD
VOLUME 2, NO. 2
FALL 2009

OYO Geospace's GSR Technology Contributes to a Successful Cross-Border Survey

Field equipment sinking up to its axles with no warning. Ice sheets snapping cables on a daily basis. Steady winds approaching 150 km/hour. Apache Corporation faced it all during its large-scale seismic program on La Isla Grande de Tierra del Fuego at the southern end of South America. Tierra del Fuego (TdF) is home to the world's southernmost producing oil and gas fields. Its landscape includes rolling hills, savanna grasslands and scrub interspersed with numerous lakes and rivers, and its climate can be harsh. But from an oil exploration perspective, one of TdF's most challenging features is one you can't see – the political border between Chile and Argentina that divides the island.

Apache Corporation was able to overcome numerous hurdles related to weather, terrain and political geography in TdF, completing a large-scale and highly successful cross-border survey in 2008. And OYO Geospace's GSR (Geospace Seismic Recorder)™ technology contributed to that success.

Spring rains and rapid thawing made for wet, muddy conditions and hazards to heavy machinery during the early phases of Apache Corporation's seismic program on La Isla Grande.

Good news. New constraints.

In late 2006, Apache began conducting surveys in the Argentinean part of TdF. While this initial campaign was underway, Apache was awarded two additional exploration blocks in Chile, immediately adjacent to the Argentinean blocks. This was good news – but technically it complicated the situation in the field.

The challenge was to link the two data sets from the two countries while maintaining data quality. Piecing together contiguous sets of data isn't as simple as putting together a puzzle. There is typically a "halo" zone of unreliable data at the edges of any survey. Known technically as the "migration aperture," this phenomenon means that there must be some overlap between two adjacent surveys to eliminate unreliable data at the seam. As a result, Apache couldn't simply shoot separate surveys in Argentina and Chile and then butt them together. At some point, the company would have to gather data from across the border. Easier said than done.

Continued, p. 2

GSR in South America

continued from page 1

Border barriers

While trade and tourists pass easily through the TdF's busy Chile/Argentina border crossing, data and certain kinds of communications face restrictions. Cross-border radio communications, while not strictly prohibited, would entail obtaining a license for a common frequency from both countries – possibly resulting in project delays for Apache. Similarly, connecting cables or transmitting real-time data across the frontier also was considered unacceptable. The company wanted to be sure it completed the survey efficiently while complying with the laws of both host countries.

This GSR unit is located just a few hundred feet from the Chilean/Argentinean border, marked here by an unassuming fence, but which presented a major hurdle in Apache's survey program.

What Apache needed was an autonomous data collection device that could sit and passively "listen" on the Argentina side of the border without creating cross-border issues, requiring new permits, or demanding new environmental studies.

In addition, Apache desired a solution that could be deployed in the soft and wet field conditions of late winter. "We'd had problems with heavy equipment getting stuck in thawing conditions earlier in the Argentinean survey, so we wanted something highly portable that could be carried in light trucks," says Mike Yates, Senior Staff Geophysicist in Apache's Exploration and Production Technology group. "That would also mean fewer people and lower costs."

Apache searched for a solution that would 1) allow smooth, seamless data collection while eliminating cross-boarder traffic or communications, and 2) be easily deployed in soggy field conditions.

Compact and cable-less, GSR units can be deployed using light trucks, with minimal gear and manpower.

The clear solution was the OYO Geospace GSR. Cable-free and compact, it was easy to deploy using lightweight vehicles and small crews. The GSR devices were deployed at existing receiver stations that already had been laid out during the Argentinean survey. There, they would just sit and "listen" for seismic shots on the Chilean side.

Even more important, no cables would have to cross the border, and there would be no questions about radio, microwave or laser transmissions passing from one country into another.

OYO Geospace's GSR solution provided a passive recording system that allowed for data continuity across the border without creating political, regulatory, environmental or logistical problems for Apache or its host countries.

As of mid-2009, Apache's Tierra del Fuego seismic program already had enabled a doubling of oil production in the operated fields in Argentina. Apache believes this project may be the largest onshore 3D survey recorded in South America.

This article originated from an interview with Mike Yates, Senior Staff Geophysicist at Apache Corporation and from a corresponding article appearing in the June, 2009 issue of the SEG's The Leading Edge magazine. We would like to thank Mike, Apache Corporation and the SEG for their help in making this article possible.

President's Page

Gary Owens

If you've stepped through our doors recently, you've probably noticed that our manufacturing facility is pretty lively. We have been very busy in the past couple of months responding to customer inquiries, closing deals that have been some time in the making and processing new orders for our seismic products. While we've received significant new orders for our geophone and hydrophone sensors, cables, and borehole products, we've also seen a surge of interest for our GSR wireless system. In a downturn of this magnitude, we find these higher levels of inquiry and interest very encouraging.

In September we announced receiving two new orders for the GSR – in addition to the 3,000-channel GSR system we recently delivered to an international customer. Our engineering team has been busy working with these clients to further refine the GSR system's functionality and provide additional capabilities so that it will be the system best suited for our customers' projects when their backlog returns.

We also recently concluded two demonstrations of our new, high efficiency GSR system for two potential customers. Their initial reaction has been very positive. Even though exploration for oil and gas remains weak and the demand for seismic equipment is still very constrained, we believe that their comments confirm that we are using the breathing room afforded by this downturn wisely to learn and respond to the unique challenges facing seismic contractors today. It is our belief that if we do this well, the GSR could certainly become the standard-bearer for the next generation of seismic data acquisition systems.

GSR's being readied for deployment during recent customer demonstration outside Midland, Texas.

Inspired by Global Geophysical, OYO Geospace Supports 1000 Hills

Social responsibility is one of OYO Geospace's most important core values. How we give back to the communities we serve – as a business and as individuals – says everything about who we are as a company.

One way we put that commitment into practice is to encourage others in our industry – including customers, vendors and even competitors – to practice social responsibility through community philanthropy and volunteerism. And sometimes, they lead us by their examples. In fact, that's how we got involved with **1000 Hills Ministry**.

Global Geophysical, an OYO Geospace customer, and its president, Mr. Richard Degner, have taken up the cause of supporting the Ministry in its service to the homeless. Among its many activities, 1000 Hills Ministry serves meals and provides basic necessities every day homeless individuals in need. Richard is an active part of this ministry, personally delivering food out into the streets on a weekly basis.

Because Richard spends his own time and money to support this organization, our company has been inspired to do so also. For the last four years, OYO Geospace has attended the Ministry's annual fundraising events to raise money for their charitable efforts. We participate in the auctions and provide financial donations to the Ministry, supporting their work for the homeless and others around the world.

OYO Geospace is proud to be a partner with Richard and Global Geophysical in support of the 1000 Hills Ministry program.

OYO Geospace Core Values: Social Responsibility

"Social responsibility is our commitment to the communities that have placed their trust in us. They provide employees and suppliers a friendly environment conducive to growth and success. We pledge to conduct ourselves in a most responsible manner in each community."

OYOGeospace@Work is published by OYO Geospace Marketing. For more information, contact Dennis McMullin, dmcmullin@oyogeospace.com

For a digital version, go to http://www.oyogeospace.com/newsletter.htm