

\\ The Evolution of FireFly from Wamsutter to the Apache Project ///

The second FireFly® project is underway for Apache in northeast Texas. This was the second survey involving the FireFly field station units (FSUs) and VectorSeis® digital, full-wave sensors included in the previously announced, multi-year program involving Apache, BP, and Seismic Equipment Solutions (SES).

The Apache survey involves recording approximately 15 million traces in a 77-square-mile survey area over an estimated 30-day deploy-record-retrieve cycle. The resulting full-wave seismic data should allow Apache to better characterize the target reservoirs and to measure the productivity of FireFly-enabled vs. conventional seismic acquisition in this agriculturally sensitive region.

A Personal Perspective from Northeast Texas

Picture yourself in a wonderful outdoors environment, say north-east Texas, with green trees, lush grass, and a clear blue sky. You look across the landscape and what do you see? Some cows grazing. A horse or two.

This was the scene at the second FireFly project. In this bucolic northeast Texas setting, Apache, PGS, and I/O have teamed up to complete a very challenging survey.

Wamsutter, where BP and I/O first deployed FireFly, is an area of high desert plains that is often considered a seismic 'race track' by the acquisition contractors. Wamsutter was a good first choice deployment area for FireFly, being blessed with good radio conditions, ease of mobility over the project area, clean lines of sight to see shot holes and recording equipment, limited vegetation, and minor animal troubles.

In contrast, the Apache project is taking place in an area that is opposite in every way. The area has significant vegetation, which impacts radio communications and requires the crews to occasionally navigate through brush during system deployment and retrieval. Animals are prevalent, ranging from cows, horses, snakes, and family pets. For example, one rather testy bull took exception to the orange bags used to deploy the FireFly units throughout the survey area. The bull hooked a bag on its horns and tossed it around like a rag doll. And, in comparison to the static layout of the Wamsutter project, the Apache survey features 'roll' during acquisition operations.

At Wamsutter, the FireFly equipment was new and untested. Based on input from the BP project team and their acquisition

contractor, Global Geophysical, the I/O engineering team modified the system to be far more robust. They deployed a more powerful radio backbone, improved system timing, simplified the navigation tool, and built equipment quality control into the staging trailer. In general, they smashed most of the bugs that surfaced at Wamsutter.

Despite all these improvements, and perhaps not unexpectedly, one rather nasty bug emerged after nearly three thousand stations were laid on the ground for Apache. While the bug turned out to be easy to fix, the spread did need to be picked up to update the firmware within the FireFly field station units (FSUs). While this setback resulted in a one-week delay during layout, expectations are high that the time can be made up during the shooting and pick-up phases of the operation. In layout, PGS had six crews averaging over 100 deployed stations each per day. This is in line with deployment statistics from the Wamsutter project and viewed as quite productive given the vegetation throughout the survey area.

As I was writing this note, nearly six thousand stations have been deployed and are reporting a 'healthy status' within the project area. PGS will ultimately deploy seven to eight thousand FSUs before we start recording an anticipated 5,100 dynamite shots; deployment will continue after the start of acquisition due to system roll. Shooting should go very fast and we hope to see new acquisition records being set, perhaps even exceeding the 1,001 shots per day record at Wamsutter.

Stay tuned for more on this revolutionary technology.

By: Marty Williams

