

DRILLING

Best Of Both Worlds

DUAL TELEMETRY SYSTEM A TWO-IN-ONE BY RICHARD MACEDO

RESEARCH AND DEVELOPMENT AND the progression of the oil and gas industry are very much analogous to what exercise and a proper diet mean to human health. Without a perpetual focus on pushing the envelope of new ideas and fresh ways of economically extracting resources from below the Earth's surface, the industry's cutting-edge technology — essentially its heart — becomes less efficient and higher costs would likely follow.

The result could be a domino effect that dims the industry's future, much like a heart wanes more rapidly with poor eating habits and a lack of physical activity.

The problem with R&D is there are no immediate rewards. Basically, it's a long-term endeavour to brainstorm, develop and test the technology before any commercial success is realized.

John Petrovic, vice-president of Mostar Directional Technologies Inc., however, knows that R&D and the future health of the industry are inextricably linked.

"In our research and development area, we put a lot of time and resources into developing and producing downhole tools for the betterment of the industry," he says. "Research and development take priority over everything else. We want to ensure we get a high-quality, efficient and reliable product to market as soon as possible.

"That's why we're able to come up with our technology so

quickly and why it works so well."

The incubator for the company's technology rests in Calgary's burgeoning Foothills industrial area at Mostar's own oilfield machine and fabrication shop, where it manufactures and services its own tools. It's a business that Victor Petrovic, president of Mostar, started as Victor's Machine Works over 30 years ago.

"Being able to develop our own directional equipment, manufacture it, maintain it and keep a high level of reliability, that was the actual goal," Petrovic says. "A lot of oil and gas companies ... want to drill the same type of well better and for less money. Efficiency of that rig time is extremely important, which is what Mostar's all about."

One of its latest creations is the dual telemetry measurement-while-drilling (MWD) technology. The equipment allows a company to switch between electromagnetic (EM-MWD) and mud pulse technology without tripping out of the hole. The patent-pending technology lends an ability to maximize speed using EM technology where the formation allows, and converting to mud pulse when required, such as when signal problems arise, without tripping. Switching between EM and mud pulse can be done in less than eight minutes.

Essentially, the dual telemetry is the best of both worlds.

"It's got its advantages and dis-



advantages," Petrovic says of the mud pulse tool. "It's a very reliable, robust tool, but you receive slower surveys. Companies have developed electromagnetic MWD tools because you get up to four times faster surveys and don't need to wait very long between connections."

On the flip side, EM technology isn't perfect either and companies must consider the formations they're drilling. In high resistivity formations, electromagnetic signals have a hard time reaching surface, an obvious limitation. With respect to the dual telemetry tool, combining the respective technologies cancels out the weaknesses.

"You no longer have to choose which wells you're going to drill using EM," Petrovic says. "You can drill any directional well with EM, at least a certain portion of it."

The technology has been put

to use with no failures yet reported. Greg Kuipers, president of oilpatch neophyte Black Sea Oil & Gas Ltd. used dual telemetry to drill near Worsley, Alberta, during the middle of last year.

"We drilled quick and smooth, no issues ... whatsoever," he notes. "If you were to start drilling horizontal wells, the benefits would be extraordinary because you can come around corners quicker with this motor and with the telemetry system, you could easily keep your bit on track perfectly."

Keeping rig time to a minimum is key as this could add up on the expense side of the ledger. For example, if total depth is at around 2 500 metres and a trip out due to EM signal loss is necessary at 1 900 metres, it could mean eight hours out and the same amount of time back in for



SPLIT PERSONALITY

Above: A technician tests the dual telemetry tool inside the Mostar's operations facility. Left: The dual telemetry surface system displays both EM and mud pulse information.

16 hours of downtime.

Petrovic pointed to an example in a well where resistivity was excellent for EM up to 1 900 metres and there was a 200-metre-thick formation where resistance was quite high. "We drilled with EM down to 1 900 metres, then down-linked to mud pulse for 200 metres," he explains. "As soon as we got out of that formation, we down-linked again to EM and finished the well."

That, he says, is where the tool is most effective and generates much of its appeal.

"It saved me probably \$110,000 in rig time," Kuipers says. "Our total well out there came in under budget by \$220,000 and I attribute a lot of that to the motor."


Likewise, John Flynn, president of Horizon Resource Management Ltd., sees the benefit in being able to switch between the

two modes. "We ran it once so far," he says. "The concept is a great one ... the flexibility of a pulse or an EM tool.

"Certainly the time savings for survey time is super. If there was a problem with the tool, you could verify or back it up with the other. A lot of times with traditional tools, if you have a tool failure or you're unsure, the typical response is to trip out of the hole and check it out. This way

you can check it and switch and carry on without tripping it."

Over a 10-well project, saving five or 10 hours per well literally means saving days of rig time, adds Petrovic.

"You still complete the same number of wells with high quality, just much more efficiently." 

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