

01/06/2008

## **Balloon-based network boosts communication in remote oilpatch**

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**Establishing wireless communications at the remote well sites of the Permian Basin to allow for remote monitoring or communications between field personnel and their corporate offices has long posed a challenge.**

But Chandler, Ariz.-based Space Data found a low-tech solution and used the Permian Basin to help establish its network. Their solution was to launch transceivers that carry communications on industrial weather balloons. The balloons, which are launched every eight to 12 hours, comprise a free-floating network that operates at between 50,000 and 85,000 feet. The balloons float well above airline traffic and are approved by the Federal Aviation Administration. The balloons are equipped with Global Positioning Satellite (GPS) technology so they can be tracked and Space Data technicians have the ability to steer the balloons, moving them up or down into various thermal systems.

"Midland-Odessa was the beginning" of the company's network, said Mark Kator, who joined the company as a technician and field applications engineer. He noted that, with his background in satellite communications, he was at first dubious of balloon-based communications, but was impressed not only with the technology being used but the background and confidence of the company's founders. "It's amazing to me a balloon can hold a payload that can carry that communications equipment."

Todd Turner, regional sales manager, admitted that "as a terrestrial guy, and when I heard about this, I laughed." But like Kator, he was won over by the technology and expertise he saw in the company.

Accepting Space Data's technology, he said, is a matter of letting go of the traditional view of communications of towers dotting the landscape and hard lines connected to those towers.

The initial goal of the company, Turner said, was to establish a national balloon-borne communications network offering push-to-talk and wireless telephone communications and eyed the oil and gas market and its needs to gather and transmit data as a way to establish and expand its network.

Services offered to the oil and gas industry include alarm monitoring of storage tanks, compressors and pipelines, production monitoring, tracking compressors, drilling rigs, service trucks and frac tanks via GPS, and the recently introduced cathodic protection monitoring and notification. Field communications is also available.

"It was used as a tracking system for company trucks, from pick-ups to semi-trucks," said Kator. "Now it's progressed and we're working on a unit specific to frac tanks that's autonomous and battery-powered."

Turner observed that oil and gas communications has evolved from huge microwave dishes to "little hand-held personal digital assistants."

Each platform covers an approximate 420-mile diameter area and Space Data's network presently stretches from Texas and New Mexico through parts of Colorado, Oklahoma, Arkansas and Louisiana.

"Our goal is to go nationwide, launching platforms in sectors," Turner said.

He views the company's technology as a "remote gap filler. We won't place spectrum or licensed communications. We enhance communications. We don't want to launch satellites or build cell towers. We're not high speed data solutions, we're more a remote monitoring application."

Utilizing industrial weather balloons, Turner said, gives the company the ability to move its technology around, to launch where needed when needed. The company's 12 launch facilities have launched 15,000 flights and its balloons have over 200,000 hours in the air. Space Data has covered Midland-Odessa for approximately two-and-a-half years.

Its monitoring stations communicate with the balloons and relays that information via a T-1 line to the national operations center, which can then adjust the balloon's location to optimize performance. When the communications technology reaches the end of its lifespan, about 12 to 24 hours, the payload is brought down and tracked via GPS technology. If a member of the public finds the payload, Turner and Kator say they are offered a \$25 gift card for sending it back to Space Data, which then refurbishes and reuses the equipment.

When Space Data was founded, Kator said, "oil and gas was its bread and butter. Now we've been able to branch out."

Indeed, Turner noted that the company has a \$49 million contract to use its technology to enhance battlefield communications and its government entity just signed a contract with the Navajo Nation to provide equipment to monitor diabetes among its members. Under the contract, he explained, the company will provide solar-powered PDAs with displays in the Navajo language that will transmit data via Space Data's network to local health facilities who can then call an ambulance in case of an emergency, tell the patient to come in for a check or that their vital statistics are fine.

In the new year, Turner said the company will look to develop the voice and push-to-talk technology that was the initial goal.

"We have all the equipment in place, we've done all the research, now it's time for the development phase," he said.