

TOG Excels



Tellus Operating Group built this CO₂ plant to facilitate enhanced oil recovery operations in the Raleigh Field and the Stampede Field, which it discovered after conducting one of the largest 3-D seismic surveys in Mississippi's history. The two fields also share a gas compression and recompression plant designed, built and operated by TOG.

By Being Self-Sufficient And Maximizing Efficiency

By Kari Johnson

RIDGELAND, MS.—In the heart of Mississippi lies the headquarters of Tellus Operating Group, LLC. Several of Tellus' employees have a long history together going back almost 30 years through intersecting careers in the oil and gas industry. "A large number of our current managers and professionals worked together at Cities Service Oil and Gas from the early 80's to the early 90's," recalls Charles M. "Milt" May Jr., Tellus' chief operating officer. CSOG later was acquired by Oxy USA. In 1989, its offices were moved from Jackson to Houston, at which time about half of the staff parted ways with the company.

Milt May stayed with Oxy USA in Houston for eight months before moving to Ouachita Energy Corp., a contract compression company, as design engineer and eventually fabrication manager in West Monroe, La. Meanwhile, Richard H. Mills Jr., Tellus' founder and manager, elected to remain in Mississippi working as an independent consulting engineer and energy investment advisor. Many of the original CSOG staff stayed in touch and jumped at the chance to get back together when Mills decided to form Energy Management Corporation of Mississippi in 1991, May says.

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EMC initially bought operated fields in North and South Louisiana, as well as nonoperated working interest positions, May reports. He says EMC funded each acquisition with private accredited investors and bank debt, using a joint venture structure. Within a few years, the company was operating several fields.

In April of 1995, Mills migrated away from the old joint venture structure and opted for the limited liability company structure coincident with Mississippi's adoption of the LLC Act. That year, the company made its biggest move yet—it acquired Oryx Energy's Mississippi interests. This acquisition nearly tripled the company's reserves.

Mills continued with a series of acquisitions in Louisiana and Mississippi using the LLC investment structure for seven more years. In 2002, the LLC's managed by Tellus were merged into what is now known as Tellus Energy, LLC. As a result of these changes, investors were able to spread their ownership across all of Tellus Energy's business opportunities and acquisitions, providing a win-win for everyone. According to May, "Investors got greater diversity and a share in a bigger basket of eggs. Tellus gained the ability to better collateralize assets for financing its continued growth."

Tellus has continued its production and reserve growth and today, it is the second largest oil and gas producer in the state of Mississippi based on total barrels of oil equivalent, May says. As the company has grown, it brought in more former CSOG associates, as well as other professionals, who had spread out

to California, Louisiana, Texas, and Oklahoma but wanted to return to Mississippi, May relates. These were proven performers, he says, indicating all were known for their work ethic, morals, and knowledge in the industry. "We have come back together much like a scattered covey of quail will whistle itself back up," he says.

Now with over 130 employees, Tellus grows its production and reserves through horizontal drilling, licensing three-dimensional seismic survey data in Louisiana and Mississippi as a precursor to exploration, and producing carbon dioxide for injection into new discoveries and legacy fields. One constant for the company, according to May, is its dedication to efficiency and self-sufficiency.

Exploitation Activities

The vast majority of existing oil and gas fields acquired by Tellus had a large number of redevelopment opportunities associated with them, May says. One example of such a legacy field is the Baxterville Field located in South Mississippi. Originally discovered by Gulf Oil in 1944, Baxterville Field has produced more oil than any other field in the state, May says. Since its discovery, it has produced over 250 million barrels of oil. Today, Tellus is producing 1,300 barrels of oil a day and 20 million cubic feet of gas a day from the field.

Tellus acquired its first ownership in Baxterville through its Oryx acquisition in 1995, and expanded its ownership with a 2002 acquisition of Devon Energy's interests. May says Tellus has recently introduced horizontal fracturing technology that it was using in its Northwest Louisiana Haynesville Shale operations to Baxterville's Selma Chalk sections. Although historically the Selma Chalk has yielded significant natural production volumes, multistage horizontal fracturing has materially enhanced production. Drilling to a true vertical depth of 6,600 feet, laterals over one mile allow for multistage frac jobs in the Selma Chalk interval with much better production responses per unit cost than that of the Haynesville Shale, May reports, "These operations are more profitable than many of those in the Haynesville Shale because they are half the depth, half the cost and have comparable production," he says.

Today, Tellus has 25 fields. May says the geologists and reservoir engineers in its exploitation department have a knack for identifying new stimulation, recompletion and infill drilling opportunities. "The team has been responsible for generating very good oil and gas operations, in 70-year-old fields where everyone thought the oil and gas was depleted," May says. "They have proven time and again our maxim that oil and gas is where oil and gas was. In other words, where oil has been found before, it can be found again."

Exploration Activities

Tellus' exploration reserve growth is predicated on acquiring 3-D seismic data in both the southeastern United States and worldwide. "Tellus acquired a license to seismic data from one of the largest proprietary 3-D seismic surveys in Mississippi six years ago, covering 226 square miles. The program has yielded three discoveries to date, and several more prospects remain in inventory," May says.

May says Tellus is now seeking to acquire licenses to 3-D



By drilling exploratory wells and reworking older fields in Mississippi, Tellus Operating Group has become the state's second largest oil producer and third largest gas producer. The company started in Louisiana, where it still is active.



To promote efficiency, Tellus Operating Group tries to meet its needs internally. Toward that end, the company buys, uses and maintains commonplace rental items, including compressors and pump jacks.

seismic program data internationally. The company has reviewed proposals from all over the world, in places like England, Indonesia, Morocco and Colombia. After extensive review, May says it has decided to pursue opportunities in Colombia. "Colombia's political climate and social climate are more stable now and there is a strong infrastructure," May explains. "Exporting Tellus' production and exploitation expertise is the focus of our first foray into international operations".

In 2010, Tellus was awarded three onshore concessions that cover 300,000 acres in the Llanos and Upper Magdalena Valley Basins, May says, noting that the Llanos Basin concession is about thirty miles east of Oxy's giant Cano Limon field. The company is planning seismic acquisition for the concessions and expects to drill wildcat wells on each within the proscribed three year window, with one of its subsidiaries serving as operator. May says all of the concessions are pure exploration plays. "This is our first foray into international and the biggest step out from proven production," he reports. "We're looking for big elephants."

Expanding EOR

One of Tellus' recent discoveries in Mississippi, Stampede Field, is a Deep Cotton Valley formation oil reservoir with five pay zones and high gas to oil ratios. Rather than deplete the reservoir below the bubble point, the company curtailed production while installing CO₂ facilities to initiate tertiary recovery early on, May says. CO₂ injection operations began in September, 2010.

During this same time frame, Tellus acquired a depleted sister field, the Raleigh Field. CO₂ injection into this field also began in September 2010, and it will be CO₂ flooded concurrently with Stampede, May says. The two fields also share a gas processing plant and recompression facility, he adds.

As Tellus has grown, so has its need for a large, steady supply of CO₂ for its EOR operations. Demand quickly outpaced the 20 MMCFD under contract from a private source, May says, noting that the company's holdings in South Mississippi will

soon require 50-100 MMCFD to maximize output.

In late 2010, the company drilled into a 2-D delineated structure north of Jackson and discovered its own source of CO₂. Over the next few years, Tellus has plans to develop and pipe the CO₂ to fields in the south, May says. The first well yielded 15 MMcf/d, he reports, indicating Tellus has plans to drill 3-4 more wells to reach the desired overall capacity.

The CO₂ will be piped at pressures necessary to maintain it in a supercritical state. Once to the field, it will be directed through a multistage pump to increase pressure to 1,800-2,000 psi before injection, May says. The field will then produce oil, water and CO₂, which he indicates will be separated, with hydrocarbons sold and the CO₂ recompressed and reinjected.

In the past, Tellus financed its development programs using conventional bank debt and cash flows, May points out. He says that now there are so many opportunities for EOR and other capital-intensive operations, that the company is exploring alternatives.

Efficient Operations

According to May, one of the core tenets of Tellus is its desire to be as efficient as possible. For example, when the company needed electricity for a new gas processing plant and recompression facility for Stampede and its sister field, Raleigh, it considered several options but ultimately decided to work with an oilfield services company, Treetop Midstream Services LLC. To provide affordable power, the company, Treetop procured a power generation plant that could be relocated to meet the company's need. "The station had been built in Rockford, Il., for use in Y2K and was no longer needed," May says. "Treetop took it apart, moved it, reassembled it and hooked it up to our electric infrastructure. Permitting, removal, construction at the new site and start up took less than six months and cost had a total cost that was only 25 percent of the cost of new construction."

Treetop also built the processing plant, put in heat recovery systems, primary separation, Joule-Thomson and refrigeration

skids, and desiccant dehydrators, May reports.

Treetop secured the services of Compression and Engine Service Company, LLC, a Flowood, Mi.-based oilfield service company, to install the generator sets and maintain the engines, May continues. CESCO also built the CO₂ re-compressors and the refrigeration compression, and it helped prepare the CO₂ separation vessels. The entire construction project took less than a year, enabling Tellus to begin operations at least nine months earlier than it would have otherwise been able to, May reports. He adds that the plant minimized its electricity costs by using Tellus' produced gas as the energy source.

Tellus also manages surface acreage and buildings. "Many of the fields we buy come with surface acreage positions that require management," May observes. He says the company has taken an active role, when possible, in acquiring surface acreage and in maintaining and restoring the land back to its natural condition, including setting aside and restoring wetlands as part of the development of its Evergreen program.

The company has approximately 4,000 surface acres that it manages for long leaf pine and slash pine production, May continues. He says many timber companies treat trees like a crop: they will clear cut, burn the acreage off, plant again, thin and then clear cut again. Long leaf pine forests, which were the predominant forest ecosystem prior to 1900 from Virginia down the Atlantic coast to southeast Texas, are not well suited for that kind of management, May says. "I'm glad it is not; these

are some of the biggest, tallest, and best quality trees, so we want to see them grow," May says. "We never clear cut them but selectively harvest instead. The resulting habitat created with this savannah really helps quail, turkey and deer thrive. This makes us feel we are a better overall steward of the land."

Production Optimization

Last year, May says Tellus selected Bluetick Inc.'s remote monitoring and control (RMC) system to realize the benefits of the digital oilfield. "This system has allowed us to improve our daily operations in several ways," he reports. "Most importantly, it provides a steady stream of information that our field engineers can use to maintain peak production. Additionally, the system has allowed us to manage our resources more efficiently. Now, instead of having our people drive around to read gauges, we can have them focus on new production projects and preventative maintenance."

At Baxterville, May says Tellus moves 30,000 barrels of water every day, using Bluetick to monitor tank levels. If levels get too low or high, the system sends alerts. If no one responds, the operation is shut down. "If something goes down, you know quickly, so it does not stay down all night; someone is there in 20 minutes to take care of it. Nothing is worse than driving away on a Friday afternoon thinking everything is fine and finding out Monday that operations have been down for two days," May remarks.

Monitoring Systems Boost Efficiency

GREENSBORO, N.C.—Bluetick Remote Monitoring and Control (RMC) systems can increase production, improve labor efficiency, and reduce downtime and reduce environmental liabilities, says Bluetick Sales Manager Mark Rodgers. "These systems provide measurable benefits and eliminate the need for technicians and pumpers to periodically check instruments in the field, enabling them to focus on new production, preventative maintenance, and addressing equipment failures." He adds that the systems can detect problems with equipment before failures, reducing downtime and capital expenditures.

The Bluetick RMC system gathers information about field operations from sensors placed on various types of equipment, including pump off controllers, tank batteries, and compressors. The data is then remotely transferred and the measurements are presented on PCs, local digital displays, and smartphones, Rodgers says. Rules are created and downloaded by the field engineers to determine when measurements are out of tolerance and who to notify of the prob-

lem. "By tracking several key indicators on equipment, it now is possible for experienced mechanics and field personnel to diagnose problems before failure. The cost savings from avoiding unplanned downtime alone can be significant, Rodgers states.

"Our system provides a low-cost alternative to fiber optic-based or other proprietary networks," says Rodgers. "We connect pumpers, engineers, and managers to their daily operations anywhere they have access to the Internet."

According to Rodgers, Bluetick provides an integrated solution. The monitoring unit collects data in the field and transports that data across cellular and mesh networks, where the data is stored and made available to customers. "Our monitoring unit is essentially a mini field computer that we call the BlueMax," he says.

The BlueMax contains the processing power to provide data collection using high speed sensor sampling, and the intelligence to enforce rules and generate alarms. In addition to the standard interfaces, such as RS232/485, Ethernet, and

USB, the BlueMax also provides multiple analog and digital connections. "The BlueMax is manufactured in North Carolina and is certified to operate over GSM and CDMA networks like ATT and Sprint," Rodgers reports. "We work with our customers to determine and control how often their data is sampled, collected, and uploaded. Sensors can also be polled by our customers at any time to get real-time data," he adds.

Once the data is uploaded, it can be analyzed, graphed or trended. In addition, Bluetick monitors key system parameters that can impact the health of the system, such as charging system operation, temperature, and current consumption.

"From the user-friendly web interface, our customers can create alarm rules and notification lists" Rodgers says. "For example, if a waste water tank reaches a defined level, an alert will be sent. If no action is taken in a specified period, the alert will be escalated and the appropriate field personnel will be notified. These alarms can be suppressed during planned maintenance, Rodgers adds. □

Bluetick also monitors compressor operations. “We monitor several variables to see if a catastrophic failure is coming or if the unit is running hot, which decreases efficiency,” May reports. When measurements are out of tolerance, alerts are sent by text message, e-mail or phone, and an escalation path is defined to ensure problems are addressed. “Monitoring is good not only for keeping production going but also for safety and reducing the time and manpower needed to check compressor operations,” May relates.

Tellus has deployed the Bluetick RMC system on production wells, compressors, pipelines, and tank batteries, May notes. They are connected to a variety of sensors such as pump-off controllers, flow meters, and pressure transducers, he adds.

The secure data stream is wirelessly transmitted to Bluetick’s datacenter, where it is stored and accessible through any web browser or smartphone, May praises. “One of the unique strengths of the Bluetick system is that it monitors itself with a two-way signal,” He continues. “In other words, if an RMC device does not respond to a “check-in” within a defined interval, our people get a text message telling them to go check on the monitoring system. Using a one-way monitoring systems, we would only get a signal if something went wrong and the monitoring system was functioning. If lightning struck in a remote area and took out our monitoring system and other equipment, we would not know about it for many hours.”

May says the system has provided a great return on investment. “Before Bluetick, we were spending \$7,100 a month to have someone go by boat to check on our offshore equipment,” May recalls. “Now we get data 24 hours a day, and when we have to dispatch a maintenance team, they know what tools to bring. The system has already paid for itself.” □



By installing monitoring systems on its pipelines, tanks, compressors and other equipment, Tellus Operating Group has reduced the amount of time its technicians spend going to and checking gauges. The company says the monitors enable it to respond to problems or warning signs before they lead to downtime.

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