

DEEP UTAH POTENTIAL

Bill Barrett Corp. overcame a daunting array of obstacles to drill a deep test at its West Tavaputs prospect in a rugged and remote part of Utah.

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Eastern Utah's Tavaputs Plateau defines desolation. Pavement and services are nonexistent, and the rutted, rocky roads that curl through the canyons and crawl to the top of the plateaus are viciously wearing on tires. This lonely country is a jumble of arid washes and sun-baked cliffs that have confounded travelers for centuries. It is a corner of the Beehive State famous mainly for its inaccessibility.

And now it is also known as the site of Bill Barrett Corp.'s West Tavaputs discovery, a multi-pay find on an ample deep structure in Carbon County, Utah. The discovery, which is the recipient of *Oil and Gas Investor's* 2005 Excellence Award for Best Discovery, serves both as a testimony to perseverance and proof that company-maker fields can still be found onshore the U.S.

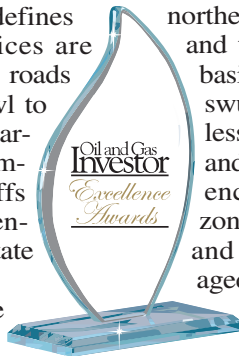
The deep feature covers more than 4,800 acres and Barrett estimates it could contain recoverable reserves of 200- to 350 billion cubic feet of gas equivalent (Bcfe).

Geologically, the area sits on the Garmesa Trend, an anticlinal trend that slices along the

northeast side of the Uncomphagre Uplift, and that separates the Uinta and Paradox basins. In the 1960s and '70s, majors had swung through the region in their ceaseless hunt for large oil-bearing structures, and drilled a couple of deep tests. They encountered some natural gas-bearing zones, but the lack of access to markets and terrible commodity prices discouraged further activity. A bit of production was the culmination of years of sporadic drilling.

Change eventually came, however. Questar Corp. laid a pipeline through one of the canyons in the region to carry burgeoning Uinta Basin production, and natural gas prospects began to look more appealing. A small Salt Lake City-based outfit, Wasatch Oil & Gas, amalgamated several properties on the anticlinal trend and drilled a couple of shallow wells. In 2002, just as Denver-based Bill Barrett Corp. opened its doors for business, Wasatch put its properties up for sale.

"We decided to go after the Wasatch deal, but it was so early in the company's life that I



Bill Barrett Corp. senior geologist Greg Hinds and vice president Kurt Reinecke, far right, accept Oil and Gas Investor's 2005 Excellence Award for Best Discovery from Leslie Haines, editor-in-chief, and Bob Jarvis, publisher, at the 2006 NAPE Expo in Houston.

PHOTO BY GARY BARCHFELD



didn't even have some of the computer software running," says Kurt Reinecke, Barrett's southern division vice president of exploration. He did an old-school evaluation, using topo maps and colored pencils. "We put together a bid and we were very fortunate to win it."

Barrett paid \$8 million and acquired more than 47,000 acres of leases and a couple of wells that produced less than a million cubic feet of gas per day. Shallow potential was the main justification for the purchase, but part of Wasatch's sales pitch focused on deep possibilities. Barrett was also aware of an Entrada discovery that had recently been made along the same structural trend in Flat Rock Field some 20 miles east, although information was mainly hearsay. "We didn't attribute a lot of value to the deep, but we were intrigued."

3-D survey

The more Barrett worked in the general area, and the more it investigated the deeper geology, the more excited it became. Indications from existing wells and scarce 2-D data were that the West Tavaputs anticline might host two separate deep structures. The company designed an ambitious 3-D survey and started the permitting process.

"We went round and round about how big to shoot the 3-D," says Roy Roux, vice president of geophysics and technology. The explorationists settled on an 83-square-mile survey at a projected cost of \$4.6 million. "The company had virtually no production at the time, and I don't think many firms in our position would have committed to such an expense."

Approvals for its Stone Cabin survey turned into a marathon event. Barrett's leases are predominantly on federal lands, and its proposal faced considerable regulatory obstacles. During a two-year effort, Barrett consulted and coordinated with 12 native American tribes, four state agencies, three federal agencies, 14 organizations and three county governments. The company mounted educational efforts for media, regulators, state, county and town officials, and other interested groups.

One demonstration featured golf balls and glasses of water that were placed near vibroseis pads during data acquisition. The golf balls remained perched on their tees and the water unspilled, says Jim Felton, communications director. Environmental groups regularly appealed decisions that were favorable to Barrett, but approval was eventually received.

The seismic operations themselves were also daunting. The topography at West Tavaputs is exceedingly rough, with as much as 2,500 feet of relief from the plateaus to canyon bottoms, dictating that half of the 4,825 proposed shot holes had to be drilled by heliportable rigs.

Finally, the company shot its survey. The wait was worth it, as the results confirmed the critical four-way closure on the two large structures. "The 3-D also helped us pinpoint the

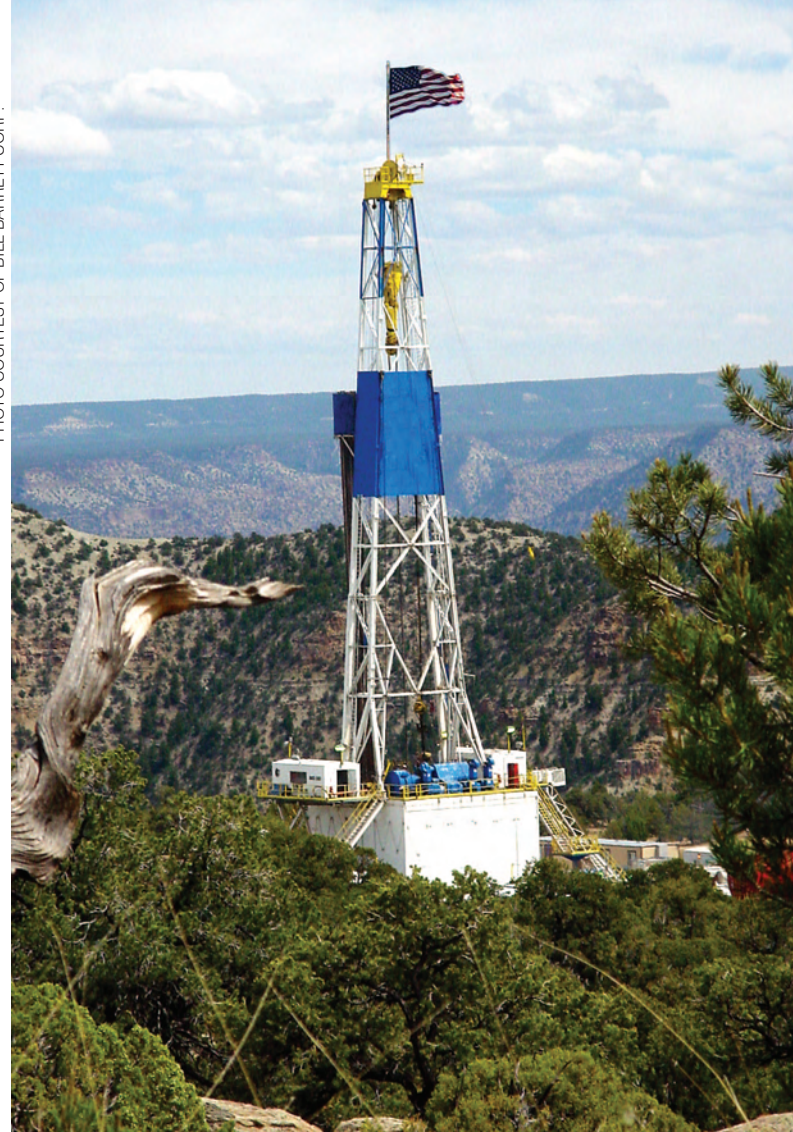


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crests of the deep structures, which are not coincident with the shallow structures," says Roux.

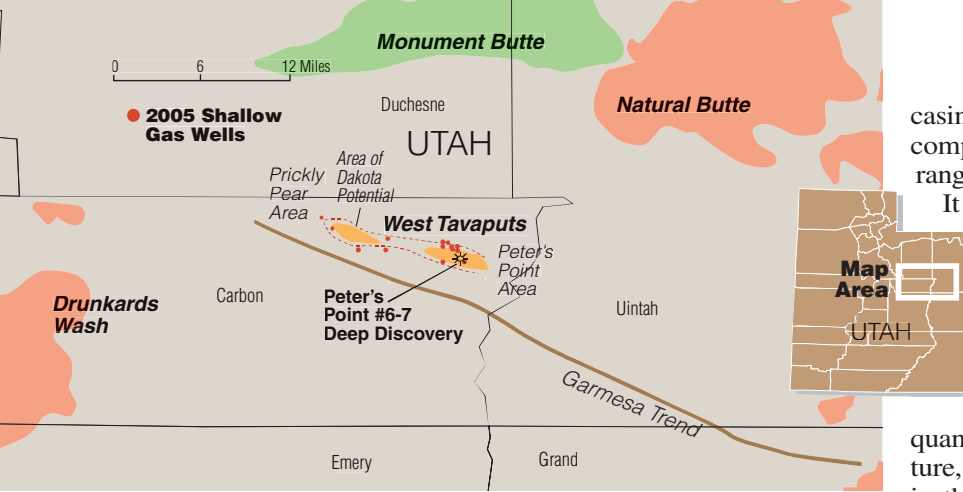
Shallow development

At the same time the company was struggling to shoot its seismic, Barrett was struggling to get drilling permits for a shallow program at West Tavaputs. "We inherited two environment assessments," says Greg Hinds, senior geologist. "One was completed quickly, and we obtained some drilling permits, but the other endured multiple revisions, an extended comment period and a lot of resistance from various environmental groups."

In 2005, Barrett was able to launch a 15-well shallow drilling program targeting Tertiary and Cretaceous Wasatch, North Horn, Price River and Blackhawk reservoirs at depths between 3,500 and 9,800 feet. It drilled 15 wells that flowed at rates from 1- to 5 million cubic feet per day, and contain estimated ultimate recoveries in the range of 2.5- to 4 Bcfe per well. The company also replaced and upgraded the existing gathering system, which was far undersized for its future needs.

The shallow potential, which was the grounds for the purchase of the property, has certainly been realized. Based on 160-acre spacing, Barrett potentially has 150 additional

Unit Drilling Co.'s Rig #166 drilled the Peter's Point #6-7 to a total measured depth of 15,349 feet for Bill Barrett Corp. The Denver-based independent's test was a significant deeper-pool discovery in Dakota, Entrada and Navajo reservoirs.



casing and stimulate the prospective zones. The completion had to be done quickly, as winter range restrictions were looming.

It was a success: the Peter's Point discovery flowed back at 11.9 million cubic feet a day, and that rate was restricted due to surface constraints. To date, the well has produced 1 Bcfe and is currently making nearly 10 million cubic feet per day into the nearby pipeline.

"We're doing a long test to try and quantify reserves," says Reinecke. At this juncture, recoverable reserves appear likely to fall in the range of 5- to 10 Bcfe per well. Additional shallow potential pays were also encountered in the Wasatch, North Horn and Mesaverde and remain behind pipe.

Future plans

Going forward, Barrett plans to drill two and possibly as many as six Dakota/Jurassic locations this year. The first offset is expected to spud during the second quarter. Later in the year, the company plans to drill a 17,000-foot vertical test to Weber and Mississippian. Seismic mapping indicates this location will be higher on the structure than the initial well.

"We didn't go to the Mississippian and Pennsylvanian Weber with the wildcat because we were drilling directionally, thereby increasing the risks of downhole issues and adding to the cost," says Hinds.

Certainly, it is early in the life of the drilling programs and reservoir evaluations, but preliminary indications are that West Tavaputs has the promise to yield between 500 billion and a trillion cubic feet of gas from its shallow and deep reservoirs combined.

During 2005, Barrett grew production from the area from approximately 7 million to more than 50 million cubic feet per day. "This is despite the fact that we have yet to drill some of the best structural locations identified by the 3-D. The next 18- to 24 months should prove very interesting," Reinecke says.

The roads are still rocky, nonetheless. Because of the heft of the future development potential, in early 2005 Barrett embarked upon an environmental impact statement (EIS) for full-field development. At present, the company is preparing an environmental assessment that will allow it to continue both shallow and deep drilling during the EIS process, which is projected to take up to two years to complete. It believes that it has sufficient locations already approved on federal and state acreage to continue a development-drilling program in the interim.

"Our experience here is a prime example of why too few companies explore today when it's needed more than ever," Reinecke says. "It requires diligence, patience, total compliance with ever-increasing levels of regulations and comfort with the incredible amounts of scrutiny from any number of special-interest groups." □

locations in the shallow zones with an unrisksed resource potential of 350- to 500 Bcfe. Future 80-acre downspacing could increase these gas reserve values.

A deep test

Yet more plums lay deep. These features were hardly untested, however. Chevron drilled a basement test on the western Prickly Pear structure in the early 1960s. The well was sited close to the structural crest, but the shows were primarily gas and failed to interest the major. Barrett was mightily concerned about what type of gas had been encountered, because the prospect area is close to a major CO₂ accumulation in the Jurassic Navajo.

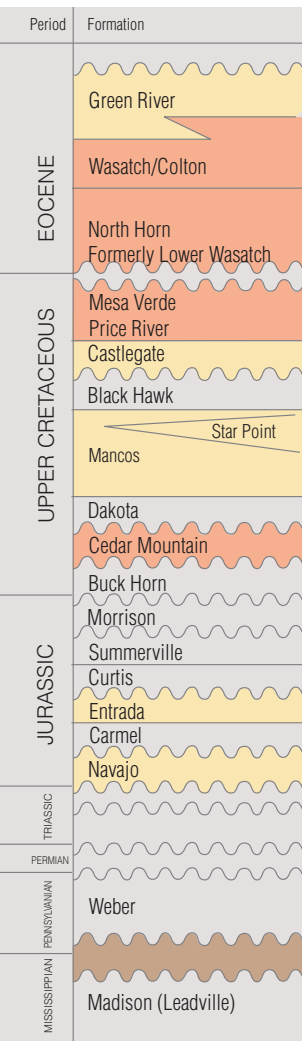
Unfortunately, despite detective work that included a trip to Houston, it couldn't scare up any of the critical gas-quality information. "CO₂ remained a concern until we drilled the discovery," says Hinds.

The other large structure had also been evaluated. In the 1970s, Getty Oil drilled the eastern Peter's Point feature to the top of the Mississippian and encountered shows in the Jurassic Entrada and Navajo. It completed the well as a marginal producer from the Cretaceous Dakota sandstone, and subsequently plugged it back to shallower zones from which it still produces today.

Undeterred, Barrett pushed ahead. The company's 3-D interpretation indicated the Getty well had missed the crest of the structure by hundreds of feet, so it sited its initial well on the eastern feature. Because the environmental assessment that had been prepared previously for the area didn't anticipate a deep wildcat, Barrett was required to drill a directional well with more than 3,200 feet of lateral offset to hit its subsurface target.

The Peter's Point #6-7 was spudded in May 2005 toward a bottomhole location in Section 7-13s-17e. Barrett owned a 100% working interest in the well, which took 100 days to drill and cost \$9 million. Total measured depth was 15,349 feet, with a true vertical depth of 14,920 feet.

The well came in 350 feet high to the Getty well, and Barrett encountered shows in the Navajo, Entrada and Dakota intervals. It wasn't clear from the logs whether the well would be commercial, but the company decided to set



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