USGS Releases Shale Oil Assessment for Alaska

DAN JOLING,Associated Press

ANCHORAGE, Alaska (AP) — A federal agency estimates Alaska's North Slope holds up to 2 billion barrels of oil and 80 trillion cubic feet of natural gas in a resource that has never been tapped in the state — shale.

The U.S. Geological Survey on Friday released its first estimate of technically recoverable North Slope shale oil and gas in part because of success companies are having extracting it elsewhere. The formations, which feed the vast Prudhoe Bay and Kuparuk oil fields, rank No. 2 for shale oil potential in the U.S. behind the Bakken Formation in the Williston Basin in North Dakota and Montana.

"The North Slope estimate that we released today shows that Alaska's resources hold great promise," said Anne Castle, assistant Interior Department secretary for water and science, at a briefing for reporters.

No shale oil wells have been drilled in Alaska because of economic and infrastructure considerations, according to the agency. That could change soon.

In 2010, Great Bear Petroleum LLC leased 500,000 acres that straddle the trans-Alaska pipeline corridor, and the company has said it will focus on shale oil potential there, with plans for wells this year.

Shale oil is an "unconventional" source of energy. The oil was generated naturally in source rocks, but it never migrated from them. Shale oil and shale gas is harvested by stimulating formations in a process known as hydraulic fracturing, or fracking. It uses pressurized water, sand and chemicals to open fissures and improve the flow of oil and gas to the surface, which has led to concerns that it can pollute groundwater.

Shale oil also is not the same as "oil shale," the immature source rock in which oil and gas has not been generated, said USGS energy resources program coordinator Brenda Pierce. Oil shale can generate oil if it's artificially heated, according to the USGS.

The study did not specify how much of the potential shale oil is on federal, state or private land. USGS Director Marcia McNutt indicated Alaska shale gas is not likely to show up in anyone's gas tank soon.

"There is a long lag between doing this resource assessment and understanding what it might take to develop them, but we hope that the information from this study being put in the public domain will help everyone make wise decisions in the future as to whether these resources are going to be economically worth developing and what sorts of environmental protections would be needed to be put into place if they were developed," she said.

USGS research geologist David Houseknecht said the study was preceded by decades of work by the agency on the North Slope, starting in the 1950s.

The USGS estimate of shale oil ranges from zero to 2 billion barrels, which is a little more than one-fourth of the oil the U.S. consumes each year, according to the U.S. Energy Information Administration.

In basins where shale oil is already produced, Houseknecht said, there is a certainty that productivity will continue as more wells are drilled. That is not the case in Alaska.

"Because no production has been demonstrated by drilling, we are never sure whether production will be viable or not until the formations are tested," he said.

The agency evaluated geological elements of the petroleum system and estimated the probability that drilling would be successful. The study, he said, will be valuable for predicting "sweet spots" in the resource distribution, the acreage affected and the number of wells needed.

"Generally, the areas of source rocks that are in the oil window are located mostly within a 50-mile area south of the northern coast of Alaska," Houseknecht said. "So much of the resource base we're talking about is concentrated along the very northern part of the North Slope."

The agency concluded that the best potential for shale oil development starts in the northeast corner of the National Petroleum Reserve-Alaska and extends east almost to the Canning River, the western boundary of the Arctic National Wildlife Refuge.

The survey concluded that two areas had no potential for shale oil: the northern tip of the NPR-A and an area from the east side of the Prudhoe Bay field east to the Canada border, which includes the 1.5-million-acre coastal plain of the Arctic refuge, an important area for wildlife habit that holds enormous conventional oil and gas.

"Those areas, even though we evaluated their geology and we included those areas in the assessment process, were found to have essentially zero shale oil potential because the source rocks and the reservoir rocks for this system are simply absent," Houseknecht said.

The North Slope now ranks No. 4 on the U.S. list of shale gas systems, he said, but there is no market for the gas because there is no pipeline to deliver it.

The estimated 80 trillion cubic feet of shale gas in the North Slope is enough to meet current U.S. demand for about 3 1/2 years, based on EIA figures.

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