In Oil Quest, U.S. Says Rock On

Shale Extraction Sees Renewed Government, Corporate Interest

By JOHN J. FIALKA

Uintah County, Utah

RISING OIL prices have sparked new government and corporate interest in developing oil shale, a tantalizingly plentiful but difficult-to-access resource largely abandoned after oil prices crashed in the early 1980s.

The Pentagon is working on plans to direct, within four years, a portion of its $5.5 billion fuel-purchasing budget for high-quality oil, extracted from sedimentary-rock formations called shale, here and in the surrounding region. The move is designed to "catalyze" a new industry that can supply the military with oil from untapped domestic sources, according to a Defense Department official.

The Interior Department, meanwhile, soon will lease tracts of land in the West for research and development of oil shale—something it hasn't done since the 1970s. Officials have received positive comments from independent producers and two big oil companies, Royal Dutch/Shell Group and Exxon Mobil Corp.

Shell has informed the Interior Department it has spent "many tens of millions of dollars" on field research for a new development process and plans to start a U.S. research project by year end. Shell said in a filing with the Interior Department that the U.S. should designate oil from shale as a "strategically important domestic fuel that should be developed on an accelerated basis." The company isn't seeking government assistance but would like the government to elevate oil shale on its energy-priority list. Shell also announced in January that it was working with China's Jilin province to develop oil-shale deposits there.

With an estimated two trillion barrels of shale oil under American soil—roughly 60% of the world's known deposits—successful development would, at least on paper, begin to change the international oil business. The U.S. would become the world's single biggest oil source, far surpassing Saudi Arabia's proven reserves of 261 million barrels.

As oil prices head toward the $60-a-barrel mark and uncertainty hangs over the Middle East and other major suppliers such as Venezuela and Russia, there is renewed interest in so-called unconventional hydrocarbons: fossil fuels that can't be extracted using traditional methods. Canada, the world leader, now pumps more than a million barrels of oil a day from tar-sand formations in Alberta—selling 95% to the U.S.

"We are going back, looking at the old reports and reanalyzing old samples—we're confident you can make a quality jet fuel from shale," said Theodore K. Barna, who heads a team of Pentagon fuel experts, in a recent interview. "We'll be using our domestic potential to produce petroleum and keeping the money here in this country."

Widespread development of U.S. oil shale is far from certain. The complex process of removing energy from rocks remains much more expensive than conventional drilling for oil and would be viable only if oil prices remain high. "The magic number for all of this seems to be about $30 a barrel," said Mr. Barna, a deputy assistant undersecretary who tracks advanced nuclear, biological and chemical technology developments in the office of Defense Secretary Donald Rumsfeld.

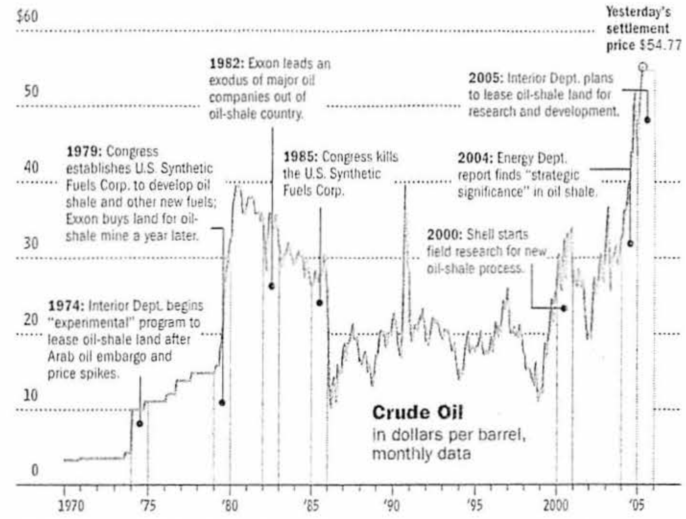
Many producers and investors are wary, after about $5 billion of losses in shale investments two decades ago when the most recent government-industry effort to produce oil from shale collapsed. Oil prices defied predictions of hitting $100 a barrel and instead dived as low as $10. In Rifle, Colo., the locals still talk about "Black Sunday"—May 2, 1982—when Exxon announced it was abandoning its shale mine. That ended hundreds of jobs, crashed local real-estate values and killed many small businesses. In 1985, after raising big economic hopes here, three other big oil companies abandoned a $150 million shale mine, failing to produce a single drop of oil.

"We don't want to create a boom expectation when we're not ready for that yet," said Terry O'Connor, a vice president at Shell's exploration-and-production subsidiary in Houston, as he toured his snow-covered research center in western Colorado, where Shell has 16 oil-shale wells in operation. He told a local business group this year that his company is "moving forward in a cautious but increasingly optimistic manner" toward a decision to build a 1,000-barrel-a-day pilot facility.

Oil shale is found in this remote part of Utah amid the remnants of a thick layer of sediment including algae and plants that accumulated on ancient lake beds. Over millions of years the sediment was compressed into clay-like formations that contain kerogen, a high-quality oil,

The Forgotten Oil?

The prospects for tapping domestic oil-shale reserves have waxed and waned along with the price of crude oil. A brief timeline:



Note: Prices prior to March 1983 are for West Texas Intermediate crude, Nymex near-month futures prices are used thereafter; prices are not adjusted for inflation

Sources: St. Louis Federal Reserve; Energy Information Administration; Nymex via Thomson Datastream

Shell and Exxon Mobil—heats the rock while it still is in the ground and then pumps the kerogen out.

There is no serious talk about offering direct government subsidies or tax credits for shale, the way President Carter did amid the oil crisis of the late 1970s. The closest step to industrial policy now is through the Pentagon fuel program, which buys 300,000 barrels of oil a day. Mr. Barna says the military will declare that a certain, as yet unspecified, portion of that spending will be earmarked starting in 2009 for fuel specifications that match oil shale and other unconventional domestic sources such as oil made from coal.

The world's richest source of oil shale is called the Green River Formation, 16,500 square miles of deposits beneath parts of Colorado, Utah and Wyoming. The most productive part of that is the "Mahogany Zone," a layer of rock that runs through it. The owner of 80% of the resource is the Interior Department, which became the caretaker after Congress zeroed out the Energy Department's shale program in 1985.

There has been interest from various independent investors. One is Byron Merrell, a 63-year-old self-taught inventor from nearby Vernal, Utah. He has bought tons of kerogen-containing rock from the White River Mine, the large mine that was dug into the Mahogany Zone, then abandoned. Mr. Merrell has since cobbled together his own extraction process from equipment and ideas the big oil companies abandoned.

His venture, Oil Tech, has attracted $2 million in backing from a retired golf-club maker and other investors. He says he plans to "go commercial" in the fall. Working with a couple of technicians and followed by his dogs, "Smith" and "Wesson," he showed a visitor his silo-size test retort. An enlarged version, he estimates, soon will produce 1,000 barrels of crude oil a day for a cost of about $13 a barrel. "At these prices, we figure in about 90 days it'll be paid for," he said.

For the moment, though, the only people known to have made big money in ventures on shale-rich land are two caretakers whom the Interior Department's Bureau of Land Management hired to patrol the deserted facilities of the White River Mine. After weeks of watching suspicious movement of water trucks over the mine's roads, federal agents raided the place in 1993. They seized more than $3 million of marijuana.

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How Lowly Bitumen Is Biting Oil Reserve Tallies

wss 14Feb05 C1

By Tamsin Carlisle

Calgary, Alberta

AN UNUSUAL AND short-lived drop in the price of an oft-spurned type of crude oil in late December has forced several major energy companies to slash their tallies of how much petroleum they have—at a time of concern about the industry's ability to replenish the resources it pumps from the ground.

The reserve adjustments are necessary because of U.S. Securities and Exchange Commission guidance on how reserves should be reported in financial filings. The adjustments are on paper only. Indeed, some companies are still getting oil from fields that under the reserve-reporting guidelines would in effect be considered empty, because it would be too expensive to extract the oil.

Nevertheless, the need for several companies to adjust their tallies underscores an industry-wide scrutiny over accounting for reserves.

Their actions follow a revelation last year by **Royal Dutch/Shell Group** that it had massively overstated its energy reserves, and the oil giant has since further adjusted its reserve figures. Reserves are watched by investors as a measure of oil companies' future performance.

The latest adjustments also raise questions about accounting for bitumen, the source of the problem. Bitumen, a tarlike substance, is the heaviest and least valuable grade of crude oil. But with oil prices high, even low-grade oil like bitumen is in demand.

Houston-based **ConocoPhillips** late last month said it replaced only 60% to 65% of the oil and natural gas it produced in 2004 due to writing down its bitumen project, while it would have

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Steamy Stuff: Oil on the Rise

Unlike conventional crude oil, bitumen is too thick and sticky to be pumped out of the ground. One extraction method is called steam-assisted gravity drainage, which uses pairs of horizontal wells.

Note: Illustration is schematic

Sources: Petroleum Communication Foundation; Canadian Centre for Energy Information

Heavy Oil's Price Volatility Weighs On Industry

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replaced about 100% without the write-down. In mid-January, Shell unit Shell Canada Ltd. "de-booked" 182 million barrels of bitumen reserves representing all of the proven reserves at its Peace River oil-sands project in northern Alberta.

And earlier this month, EnCana Corp., of Calgary, said it would remove from its books all of the proven bitumen reserves at its Foster Creek oil-sands project in Alberta amounting to 15% of the company's 2.4 billion barrels of oil equivalent in total proven oil and gas reserves as of Dec. 31, 2003, the most recent date available.

In an industry where crude oil fetches top dollar for being clean and easy to refine into gasoline and other fuels, bitumen is considered strictly bargain-bin. Massive amounts of it are in the oil sands of Alberta, but developing those reserves can be uneconomical, because bitumen fetches lower prices than other kinds of oil.

In mid-November, refiners paid about $25 a barrel for a certain type of bitumen from EnCana, according to Purvin & Gertz Inc., a Houston consulting firm. But by late December, a barrel of bitumen had plunged to $4.55 a barrel, and ended December at $8.13 a barrel. By mid-January, bitumen prices had jumped back to more than $20 a barrel. During the same period, the moves among lighter crude-oil types weren't nearly as dramatic.

The bitumen price drop, while temporary, had a lasting effect because of the way the SEC requires companies to estimate reserves. The SEC stipulates that their evaluations must be based on a snapshot of oil prices at the companies' year end, usually Dec. 31. If the cost of extracting a barrel of oil from a particular project exceeds the price a barrel of oil fetched that day, the oil must be removed from company books. By contrast, Canadian regulators ask oil companies to base year-end reserve estimates on average oil prices for the preceding year. Both EnCana and Shell Canada say they wouldn't have had to revise downward their reserves were they operating under Canadian guidelines, but EnCana switched to U.S. reporting standards in 2003, and Shell Canada abides by rules applying to its parent, Royal Dutch/Shell.

To be sure, the brief December drop put many bitumen projects in the red that month. At $6.45 a barrel for bitumen, EnCana's Foster Creek was losing money. Because of high costs of starting and stopping the steam-injection process used to coax the gooey bitumen out of the ground, none of the companies curtailed production despite the rock-bottom bitumen prices. Their bet: Prices soon would bounce back.

Steven Fekete, a Purvin & Gertz analyst, said the immediate driver for the drop was a stiff boost in rates for transporting fuel oil by tanker. The profitability of shipping fuel oil from Gulf Coast refineries to Asia tanked, driving up North American fuel-oil inventories and driving down prices North American refiners would pay for heavy crude feedstock. As many of the U.S. refineries that process Canadian heavy crude, including bitumen, are connected by pipeline to Gulf Coast tanker terminals, Canadian bitumen prices suffered.

In addition, with light crude oil increasingly in short supply globally, some major oil-exporting countries such as Saudi Arabia have been ramping up heavy-oil production, putting long-term downward pressure on heavy-crude prices. Canada has also substantially increased its exports of heavy crude in recent years, offsetting declining light-oil production. Light oil is a higher-grade crude oil that is easier to refine than heavy oil.

Due to this long-term global trend, Mr. Fekete predicts a wider-than-historic discount for heavy crude compared with light crude for some time to come. Eventually, due to unusually attractive margins for processing heavy crude, more U.S. and Canadian refining capacity will be built to handle heavy crude feedstock. But this could take years.

Meantime, bitumen prices could remain vulnerable to the type of unpredictable short-term event that sent them plunging in December. That uncertainty, in turn, casts doubt on the usefulness of evaluating bitumen reserves backing oil-sands projects, which typically have 30-year life spans, on the basis of field prices for bitumen on a particular day.

EnCana's output from Foster Creek averaged about 28,800 barrels of bitumen a day last year. "We think it's a very viable, profitable project, and we're continuing to produce from it," EnCana spokesman Alan Boras said. Despite writing off the project's reserves, EnCana is sticking to a plan that will see the company more than double production at Foster Creek to 60,000 barrels a day by the end of next year.

Said Shell Canada spokeswoman Jan Rowley, "There's a huge resource there, and it's not going anywhere."

Morgan Stanley Unit May Face Discipline Over Account Fees

Dow Jones Newswires

NEW YORK—Morgan Stanley said the National Association of Securities Dealers is considering disciplinary action against a unit tied to an investigation of fee-based brokerage accounts.

The New York securities firm said in its annual report filed with the Securities and Exchange Commission that the NASD's enforcement staff informed it in mid-November that it had made a "preliminary determination to recommend that a disciplinary action be brought against" broker-dealer subsidiary Morgan Stanley DW Inc.

The possible regulatory action alleges that Morgan Stanley DW violated NASD rules. In particular, the NASD is focusing on issues involving the firm's "Choice" brokerage accounts. The accounts, which are intended for clients who are active traders, charge clients a percentage of their assets instead of a per-transaction fee. Morgan Stanley said the potential disciplinary action concerns the "opening and maintenance of certain Choice accounts, the fees charged for certain such accounts and the content of certain Choice marketing materials."

A Morgan Stanley spokeswoman declined to elaborate on the nature of the NASD investigation, but said the firm is cooperating with the NASD.

Barclays Subpoenaed