PROGRAM facts

U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Strategic Center for Natural Gas and Oil

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OIL EXPLORATION & PRODUCTION PROGRAM FIELD DEMONSTRATIONS

America is not running out of oil and gas. Approximately two-thirds of the original oil-in-place in the United States remains in the ground - more than 400 billion barrels. But America's oil and gas resources are becoming increasingly difficult to find and produce. And these resources are being produced increasingly by smaller, independent companies who may not have the resources to apply new or unfamiliar technologies on their properties.

A key element of the U.S. Department of Energy's oil and natural gas research program, therefore, is to help provide America's oil and gas producers with the financial incentives to take innovative exploration and production concepts out of the laboratory and into oil or gas fields that are experiencing production problems.

The Field Demonstration program applies new technologies or existing technologies in new ways in an oil field setting. Several field initiatives have been sponsored by the Energy Department. Some of these initiatives are:

Technology Developement with Independents

Independent producers drill 85% of the wells in the U.S. and produce more than 40% of the nation's crude oil. This program partners with independent operators producing from domestic fields to apply untried or unfamiliar technological approaches that could potentially improve domestic production. Since this program began in 1995, 62 projects have been conducted in 19 states. The goal of the program is to:

- Extend economic production of domestic fields by slowing the rate of well abandonments and preserving industry infrastructure
- Increase ultimate recovery in known fields using advanced technologies to evaluate formations, oil recovery, and production technologies
- Use field demonstrations to stimulate information exchange and technology application among stakeholders through participation in DOE projects

Native American Program

Native American reservations contain large reserves of oil and gas. On tribal lands, there are an estimated 890 million barrels of oil and natural gas liquids, and 5.6 trillion cubic feet of gas. This translates into huge potential revenues for the tribes, even when conservative production estimates are used.

The Department of Energy's (DOE) Native American Initiative Program was designed to help Tribes develop and manage their energy resources in an environmentally-sound manner by participating in joint exploration and production efforts with the oil industry.

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Through discussions with tribal decision-makers and the Bureau of Indian Affairs, the DOE program identifies unique resources and experiences of individual tribes and responds to their needs. Research projects that address these needs by developing and demonstrating technologies are conducted in partnership with the tribes. The program encourages dialogue between tribes, industry, and researchers through face-to-face meetings and technology transfer workshops

Reservoir Class Oil Field Demonstration Program

Realizing that domestic production was declining rapidly and that huge volumes of oil were being abandoned in domestic reservoirs because of uneconomic production techniques, DOE initiated the Reservoir Class Oil Field Demonstration Program in 1992.

To determine which of the more than 96,000 oil reservoirs in the United States should receive priority attention, DOE first grouped 2,500 of the largest domestic reservoirs into "geologically similar reservoir classes" representing 65 percent of the oil-in-place in the lower-48 States. The reservoir classes were then prioritized by: the amount of producible oil remaining in them, and the likelihood of premature abandonment.

Three competitions were conducted for the following classes:

Class I Fluvial-Dominated Deltaic Reservoirs - These reservoirs were formed in ancient river deltas and originally contained about 70 billion barrels of crude oil. Class I reservoirs now contain over 5 billion barrels of potentially recoverable oil. In April 1992, 14 projects were selected.

Class II Shallow Shelf Carbonate Reservoirs - Formed in shallow ocean waters, these reservoirs originally contained more than 68 billion barrels of crude oil. Advanced technologies have the potential to recover an additional 5 billion barrels. The nine projects selected in 1993 were completed between December 1997 and September 2002.

Class III Slope and Basin Clastic Reservoirs - Created from sediment deposited in deep ocean slope and basin areas, these reservoirs are estimated to have originally contained nearly 60 billion barrels of light and heavy crude oil. Advanced technologies have the potential to recover an additional 5 billion barrels. Nine projects were awarded in fiscal year 1995; seven had been completed by February 2003.

Several Class I projects and one Class III project have individually produced tax revenue and royalities that exceed the Federal Government's investment in the entire program. Successes from completed Class projects include innovative waterfloods, CO2 and steam flood projects, and new developments in the use of seismic attributes for 3-D and 4-D seismic interpretation.