PROJECT facts

DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

OIL recovery PROGRAM

EARLY APPLICATION OF ADVANCED RESERVOIR MANAGEMENT TECHNOLOGIES — THE STRATA PRODUCTION COMPANY PROJECT

PRIMARY PROJECT PARTNER
Strata Production Co.
Roswell, NM

FOSSIL ENERGY PROGRAM
Oil Field Recovery Demonstrations

MAIN SITE
Delaware Basin, Nash Draw Field
Eddy Co., NM

TOTAL ESTIMATED COST
$18.3 million

COST SHARING
DOE - $7.8 million
Non-DOE - $10.5 million

DE-FC22-95BC14941

Project Description

Delaware Mountain Group reservoirs in southeast New Mexico have low recovery efficiencies—only about 10% of the original oil in place is ever recovered. The poor production is caused by lack of initial reservoir energy, repressurizing late in the production history, and variations in the reservoir strata that create isolated zones of oil.

Strata Production Company is conducting a Department of Energy-supported Oil Recovery Field Demonstration Project designed to show that a simultaneous program of drilling new vertical and horizontal wells, reservoir repressurizing and obtaining better reservoir description can significantly improve oil recovery.

Location of development wells in the recently discovered Nash Draw Brushy Canyon pool will be based on improved knowledge of the reservoir derived from three-dimensional seismic surveys, vertical seismic profiling, and analysis of fluid distribution and barriers to oil flow through the reservoir. Use of these techniques in the early development of the field should increase the optimum placement of wells to contact oil-bearing reservoir zones.

In the second phase of the project, early implementation of water injection will be initiated to maintain reservoir pressure and improve ultimate recovery. The location of injection wells will be based on the reservoir models developed from engineering and seismic studies. The approach used in Nash Draw will be compared to the economics and recovery in a similar field, East Loving Pool, that was developed and operated in a conventional manner.

Program Goal

One of the DOE Oil Program goals is to help develop new technologies that can increase production from complex reservoirs that have not responded to conventional technologies. Traditionally, pressure maintenance by waterflooding was applied to reservoirs late in their producing life. However, its early application can greatly increase ultimate production. The problem has been that early waterflooding requires knowledge of the reservoir architecture before all of the wells have been developed. Advanced reservoir imaging and modeling technologies can overcome the lack of information in a partially developed reservoir.

Strata Production Company's cost-shared DOE project uses improved knowledge of the reservoir to guide the location of both vertical and horizontal injection and production wells for a waterflood that will be implemented early in the project to maintain reservoir pressure. If successful, Strata estimates it can produce 18.5 million barrels of oil from the project, an incremental increase in recovery of approximately 35% of the original oil in place. Applying these technologies to similar reservoirs in southeast New Mexico and other slope-basin clastic plays in New Mexico and Texas could recover as much as one billion additional barrels of oil. Every additional barrel of oil contributes to increased federal, state and local taxes, new jobs and increased sales of equipment and services.

Project Partners

STRATA PRODUCTION CO.
Roswell, NM

NEW MEXICO PETROLEUM RECOVERY RESEARCH CTR.
Socorro, NM

SCOTT EXPLORATION, INC.
Roswell, NM

PECOS PETROLEUM ENG., INC.
Roswell, NM

BOB HARDAGE-CONSULTANT
Austin, TX

Early Application of Advanced Reservoir Management Technologies — The Strata Production Company Project

Project Benefits

Recovery efficiency in reservoirs similar to the Nash Draw Brushy Canyon Pool has been very poor, estimated at only 10% of the original oil in place. This poor recovery is due to lack of understanding of the complex nature of the Brushy Canyon reservoir strata and the application of pressure maintenance measures such as waterflooding late in the production life of the reservoirs. A successful demonstration of the cost-benefit of obtaining more thorough, detailed reservoir information combined with waterflooding implemented early in the field life while reservoir pressures are still high should convince other regional operators to apply the technologies to their operations.

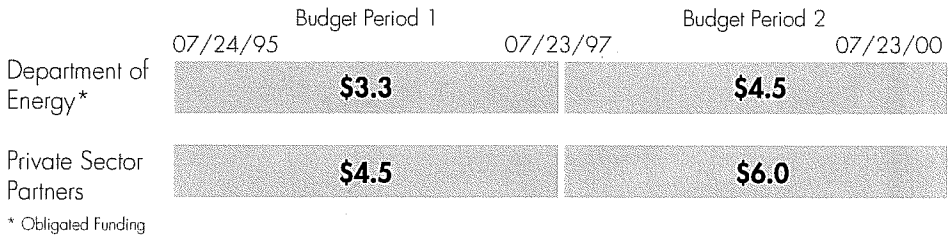
Success of this project could improve production from the Nash Draw Brushy Canyon Pool by over 2,500 barrels of oil per day or a total of 18.5 million barrels of oil, representing an incremental increase in recovery of approximately 35% of the original oil in place. Extrapolated to analogous reservoirs in southeast New Mexico and other slope-basin clastic plays in New Mexico and Texas, similar successful projects might recover as much as one billion additional barrels of oil. Every barrel of additional oil provides more than two dollars in federal revenue, about a dollar in state and local revenue, added jobs, and increased equipment sales.

CONTACT POINTS

Bruce Stubbs
Pecos Petroleum Engineering, Inc.
Roswell, NM
Phone: (505) 624-2800
FAX: (505) 624-1777
e-mail: pecos@bservan.nmt.edu

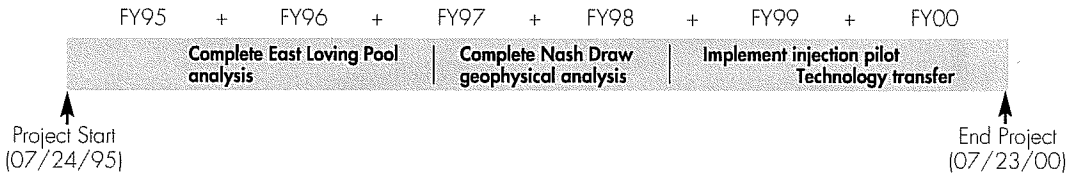
Edith C. Allison
U.S. Department of Energy
Bartlesville Project Office
Bartlesville, OK
Phone: (918) 337-4390
FAX: (918) 337-4418
e-mail: eallison@bpo.gov

Cost Profile (Dollars in Millions)



* Obligated Funding

Key Milestones



Printed on Recycled Paper