

In 1990, Lawrence Livermore National Laboratory signed a collaborative agreement with Platte River Associates to provide technical assistance to the company's basin modeling software development effort. Today, that program, *BasinMod*, is the best selling program of its type in the world. This 7-year, \$3 million project has been crucial to the success of many small American oilfield service companies, companies that today have over \$5 million in annual sales.

For its basin modeling efforts, Lawrence Livermore received the 1990 Federal Laboratory Consortium *Award for Excellence in Technology Transfer*.

## **Simulating How Oil Flows in a Reservoir**

Using a computer to simulate how oil and other fluids might flow through a reservoir has been an enormous boon to the small, independent producer. With the advent of computerized simulation software, oil production was no longer as much of a "hit-or-miss" proposition. The only problem was that the best software typically ran on a mainframe computer, and its use was often too expensive for cash-strapped small producers.

DOE's investment in oil field computer simulators, however, has changed that. In 1982, DOE's Office of Fossil Energy introduced BOAST, for Black Oil Applied Simulation Tool, originally as a mainframe application. In 1989, the Department released a new, more powerful version that could operate on a personal computer. Capable of assessing larger areas, more wells, and a greater number of solution options, BOAST II became an immediate success in the industry. Now BOAST III is available with new features that include 3-dimensional modeling.

Over 2,400 copies of BOAST PC software have been distributed by DOE. Several oil industry consulting firms have modified the program to their own specifications. Universities are using BOAST as a textbook for reservoir simulation instruction.

A second simulator, UTCHEM, has been developed specifically for chemical flooding. A third, MASTER, was developed to assist the natural gas industry in evaluating miscible and non-miscible gas enhanced oil recovery processes.

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