

U.S. DEPARTMENT OF ENERGY  
Office of Fossil Energy

[HOME](#)[LABS & FACILITIES](#)[ABOUT US](#)[NEWS/EVENTS](#)

SEARCH

[Advanced Search](#)[Advanced Search](#)**Program Links**[DOE's Oil/  
Program](#)**Related Techline**[More Oil/  
Techlines](#)[More Tech  
Developme  
Independen](#)[Print T](#)[E-mail](#)[Techlines \(News\)](#)[Speeches](#)[Congressional  
Testimony](#)[Upcoming Events](#)

Issued on: January 19, 2005

## Ultra-low Cost Well Monitoring Could Save Thousands of Marginal Oil Wells

### DOE-funded Project in California Tested Successfully

TULSA, OKLA. — A new, ultra-low cost method for monitoring marginal oil wells promises to help rescue thousands of U.S. wells from an early demise.

Developed with funding from the Department of Energy (DOE) and project-managed by DOE's National Energy Technology Laboratory, this novel, inexpensive, monitoring-system prototype helps improve the efficiency of rod-pumped oil wells.

The ultimate payoff for such an approach could be the recovery of millions of barrels of oil otherwise permanently lost while the United States watches its oil production continue to slide.

More than 75 percent of all oil wells in the United States are classified as "stripper wells," producing less than 15 barrels per day. Despite their small volumes, they add up. The over 400,000 stripper oil wells in the United States produce, in aggregate, nearly 1 million barrels of oil per day.

These wells also operate on razor-thin economics, and thus are extremely sensitive to oil price changes or swings in operating costs. From 1993 to 2000, about 150,000 of these marginal oil wells were abandoned, costing the nation more than \$3.5 billion in lost economic output and leaving about 150 million barrels of crude in the ground.

So any new idea that bolsters efficiencies and cuts costs has the potential to keep tens of thousands of wells pumping and improve the bottom line of thousands of small, independent American producers.

That was the impetus behind the development of the Marginal Expense Oilwell Wireless Surveillance (MEOWS) monitoring system. Many rod-pumped wells produce at stripper rates, and frequent or extreme declines in production efficiencies can mean a choice between shutting the wells down or operating them at a loss.

The MEOWS system allows daily, remote monitoring of wells in real time at a significantly reduced cost, while providing information that helps the operator improve the efficiency of rod pumps controlled by timers. The system entails attaching small, self-contained, wireless vibration sensors to a well's flow-line check valves and then analyzing the vibration data variations to determine oil-flow conditions.

There are available commercial systems to gather, transmit, and analyze such data, but at a very high cost - the use of such high-tech equipment is limited to big-volume oil and natural gas wells, such as those found in the Gulf of Mexico. The challenge in this project was to develop "off the shelf" wireless surveillance devices and sensor technology that could be adapted to measure and transmit a rod-pumped well's flow data, or signatures, to a receiver and base-station personal computer. The goals were to increase oil production (mainly by avoiding production losses), cut well-servicing costs, trim electricity costs, reduce well-

[Register for  
NewsAlerts](#)[Go to DOE  
Home Page](#)

testing costs, and decrease manual surveillance costs.

Vaquero Energy Co., Edison, Calif., operates about 200 wells in the main area of the aging, shallow, Edison heavy oilfield in Kern County, California. Contractor Petrolects LLC, San Luis Obispo, Calif., installed the MEOWS system on three Vaquero wells produced by sucker rod pumping units, fitting the hardware with durable housings to withstand the often harsh conditions in oilfields.

Jim Barnes, project manager with the National Energy Technology Laboratory, lauded the system, which would cost a couple of hundred dollars per well while providing "very significant value" to a lot of independents.

The next step, according to Barnes, would be Petrolects' plans to develop an automated pump-off controller (POC) that uses flow indications from the MEOWS sensor for automatic control of the beam pump. This would deliver the benefits of state-of-the-art POC units at a fraction of the cost, and allow the use of automated controls on stripper wells that just haven't been profitable to warrant such investment before.

The veteran project manager deems MEOWS "a very good project." Expectations are for a 3–10 percent jump in oil output, a 10 percent drop in electricity costs (about \$2,000 per month), a roughly 10 percent gain in pump system life, and a decline in well-servicing costs (about \$2,000 per month).

- End of Techline -

***For more information, contact:***

✉ David Anna, DOE National Energy Technology Laboratory, 412-386-4646,  
[anna@netl.doe.gov](mailto:anna@netl.doe.gov)

[Return to top of page >](#)

PageOwner: Office of Communications  
Page updated on: January 27, 2005

[Employee Directory](#) | [Contact Us](#) | [Privacy Notice](#) | [FOIA](#) | [Site Map](#)

