

**Proceedings of the
GEOTHERMAL PROGRAM REVIEW VII**

“DOE Research and Development

for the

Geothermal Marketplace”

CONF-890352--

DE89 015627

**March 21-23, 1989
San Francisco, CA**

Coordinated by:

**Meridian Corporation
Alexandria, VA 22302**

Sponsored by:

MASTER

**U.S. Department of Energy
Assistant Secretary, Conservation and Renewable Energy
Geothermal Technology Division
Washington, D.C. 20585**

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Comments on Reservoir Technology
DOE PRVII, San Francisco
March 23, 1989

By B. J. Barker

My assignment is to give feedback on the Reservoir Technology Task portion of the DOE-sponsored work we've been hearing about. Briefly, you've done well in adapting to an increasingly tough budgetary and political environment. More specifically, I'd like to highlight some of the encouraging developments in the context of overall research strategy.

Ted Mock on Tuesday and Ken Nemzer at yesterday's luncheon made several useful observations and I'd like to refer to just two in relation to Reservoir Technology. Ted observed that product development can proceed along two paths. We might call these the Big Bang or the Evolutionary lines. He correctly pointed out the difficulty American industry has had with commercializing incremental (Evolutionary) product improvements. In this context Reservoir Technology development is more like manufacturing engineering because we aren't developing new products, for the most part. We are simply working to produce electricity or process heat cheaper.

The DOE has listened to industry on this point and their statement of objectives sounds excellent. Let me quote one example from Page 10 of the December 20, 1988 report. For "Reservoir Evaluation" we read "Decrease uncertainties...20% by 1993." I confess that I don't know what the uncertainty is in 1989, but when we reach this goal, I'm sure we'll know it. Setting quantitative goals is a worthwhile exercise, and will become an effective tool as the goals become more relevant to the specific research projects.

Getting the money to continue technology development and persuading management and financiers that we have made practical advances brings me to Ken Nemzer's challenge to us technicians. Scientists and engineers need to learn how to better communicate the value of their work in terms that are understood by people who don't care about the technical details. To me, this does not mean developing a slick sales pitch. Rather, it means thinking through the means of applying new technology, developing the linkages of people needed to make developments have an impact on costs, and targeting those areas of greatest impact on product cost.

We have seen a lot of fine DOE-sponsored work in the past which has not been effectively utilized, and I think the DOE is working to do a better job of this. The talks on Tuesday impressed me with a number of examples, I'll mention four which represent types of activities which should be encouraged.

Dennis Nielson described good, basic science work on tracers, followed by relevant field testing at Dixie. This type of work is fundamental to improving our tools, and injection is a critical area of concern for both pollution control and energy recovery.

Also in the area of tracers, Roland Horne described adaptation of existing technology from the transportation field. This is a particularly effective technique because borrowed methods are readily accessible to operators who lack the technical resources of the larger operators.

A lot of DOE money in the past has gone into numerical modeling, including the great Reservoir Simulator Derby years ago at Stanford. Marcello Lippmann described an absolutely crucial next step which needs to be repeated to establish confidence in performance predictions. That project was the retrospective look at East Olkaria using a model which had not been updated, and showed reasonable forecasting ability.

Finally, the project Ernie Majer discussed, looking at microseismic signals accompanying injection, is an example of DOE/Industry cost-shared work which needs to be encouraged. This type of work will simultaneously stretch research budgets and give scientists more immediate and useful feedback from the industrial market place than we can give in annual meetings such as this.

The point in these four examples is that they represent DOE research moving closer to the market. This interaction is vital to a continued DOE program which is justified by results. These trends need to be encouraged, because an ivory-tower approach wherein research projects take on a life of their own will kill the long-term effectiveness of the program.

I think DOE has done a good job of directing their program to address needs industry has expressed. Now it is up to the industry to participate in more cooperative programs, to continue to encourage relevant DOE work and to work on getting the funding these programs deserve.