Energy "Blueprint" Sees Little R & D Impact before 1985

One year ago, when former President Nixon launched "Project Independence" in a dramatic television address, the message was that American ingenuity—and $10 billion worth of energy R & D over the next 5 years—would bail the nation out of its excessive dependence on foreign oil. Self-sufficiency, the President implied, could be achieved in much the same way as the Manhattan Project produced the atomic bomb and the Apollo program put Americans on the moon.

The implication that research could greatly increase domestic energy supplies by 1980 aroused a great deal of skepticism. And the long-awaited "blueprint" for Project Independence*, released by the Federal Energy Administration (FEA) on 12 November, suggests that the skepticism was well founded. The subject of R & D is relegated to the last of nine chapters in the main body of the 789-page report. The message now is that "only existing technologies and those on the verge of commercial operation can make a serious contribution by 1985." Consistent with the conventional wisdom, the report concludes that synthetic fuels made from shale oil and coal "will not play a major role between now and 1985," nor will the major renewable resources—geothermal heat and solar radiation.

Alternative Strategies

The blueprint is less a blueprint than a lengthy analysis of various strategies for energy policy based on a world oil price of $7 a barrel and the present price of $11 per barrel. The report examines a base case labeled "business as usual" and three alternatives: accelerated development; an effort focusing on conservation and "demand management"; and an emergency program whose main elements would be a national stockpiling effort, standby conservation measures, and cooperation among consuming nations. The entire analysis is based upon a complicated hierarchy of interlocking computer models that is not widely understood outside the FEA. All told, some 340 federal officials, grouped in 21 "task forces," worked on the project.

The R & D chapter was assembled by an FEA group directed by J. Frederick Weinhold, an engineer and energy policy analyst formerly with the White House Office of Science and Technology and later with the Ford Foundation's widely publicized Energy Policy Project.

Between now and 1985, according to the R & D section of the report, new technologies to improve recovery of "tight" oil and gas deposits, viscous oils, and tar sands could produce the equivalent of 3.1 million to 4.5 million barrels of oil a day toward a projected demand of 18 million barrels a day— if oil prices hold at $11 a barrel. At $7, these technologies would not be economical and their contribution would, therefore, be "minimal." The analysis suggests that shale oil production could reach 250,000 barrels a day in the "business as usual" case and as much as one million barrels with a major accelerative effort. Even an accelerated national production program, however, is predicted to provide no more than 200,000 barrels of oil equivalent per day from coal-consuming synthetic plants.

The R & D section considers synthetic fuels as vital in the long run, but not before 1985. It notes that major environmental and economic problems stand in the way of achieving high production levels of coal-based oil and gas. And the report warns that existing coal conversion technologies—notably the Lurgi gasification and Fischer-Tropsch liquefaction processes—are "uneconomical" and "should not be widely deployed."

Beyond 1985, the R & D section leans favorably toward a strategy that combines a major effort to conserve energy with a massive shift toward reliance on electric power produced by coal and, increasingly, by uranium. The FEA's analysis contends that the nation's demand for fossil fuel liquids and gases actually can be reduced by the end of this century through a combination of conservation, solar space-heating and cooling, the use of electric vehicles, and increasing use of nuclear power plants.

The alternative to this strategy, the R & D section says, is a steady substitution of coal-based synthetics for conventional oil and gas. But, to avoid falling back on imported oil, coal production would have to grow by 6 percent a year from the present 0.6 billion tons to a level of 3.5 billion tons a year in the year 2010. Environmental effects would be severe at this rate, the report notes, and coal and water resources would rapidly be depleted.

Most of the 20-page R & D section is devoted to strategies beyond 1985, on the ground that the greatly expanded federal R & D program now under way will have little effect on energy supplies before then. Not everyone agrees with this view, however, or so an 8 November meeting of the White House Advisory Council on Energy R & D suggested. Industrialist Simon Ramo and physicist Edward Teller took the FEA to task for downplaying what they said were numerous ways in which a little development and even less research could make significant energy gains.

Teller, for one, proposed a short-term effort to develop insulation for mobile homes, which are at present sold nearly devoid of heat-retaining materials. Ramo said he could think of "hundreds of millions of dollars worth" of similar projects. "There are a lot of things we know how to do, but not at a price," Ramo said. "For this we need some 'D' and a little 'R' to bring that price down."

Fellow committee member Alvin M. Weinberg, who is now with the FEA, demurred. Real energy savings can be achieved, in mobile home construction and elsewhere, Weinberg said, but through policy changes, not R & D. "I think it's misleading to say there's this magic R & D that can solve our problems in the next few years."

Ramo had the last word: "We can't go to the extreme and say R & D can solve everything. But we shouldn't go to the other extreme and say it can't do anything."

—ROBERT GILLETTE

* "Project Independence Report," Federal Energy Administration, November 1974; 789 pages. Available from the U.S. Government Printing Office, Washington, D.C. 20402; stock number 4118-00029; $8.95.