While, in comparison to many science administrators, Wilson is a man of da Vincian versatility, he is by no means a one-man show. Goldwasser, who came to the lab from the University of Illinois, plays a complementary role. According to close observers he is less likely to assign tasks on a sink-or-swim basis than Wilson, and he is said to be in closer touch with the nuances of the experimental program. Often at the end of a meeting at which a problem is being discussed, it is Goldwasser who does the summing up.

In an operation as large as the lab, of course, it is difficult for an outsider to judge where credit is due. Often mentioned are the names of James Sanford, associate director for planning and programming, who carries much of the demanding task of working with visiting scientists, and Paul J. Reardon, associate director for accelerator division, responsible for making the machine run better and more often. And there are a number of people not necessarily at the top of the hierarchy who have made key contributions at various stages of the project. Some of those found the Wilson regime uncongenial

Complications Indicated for the Breeder

The breeder reactor program, which President Nixon elevated to top priority among energy R & D efforts in 1971, last year consumed $473 million, nearly half of the total U.S. energy R & D outlay. Officially its high status remains unchanged, but a number of signs suggest that the breeder may be in serious trouble.

Chief among these signs are sharply higher cost estimates for a demonstration breeder reactor that is to be built on the Clinch River near Oak Ridge, Tennessee. Although the Atomic Energy Commission has not finished revising its cost figures, the new price tag will reportedly be at least double the earlier $700 million figure and may be as high as $2 billion. Tom Nemzek, director of the breeder program, attributes the higher costs to a more realistic assessment of the project and to inflation, but the abrupt escalation is sure to attract renewed scrutiny of the program. Officials at the Office of Management and Budget are aware of the new cost figures and are known to take a dim view of the breeder's seemingly limitless drain on energy R & D resources.

Whether because of the complexity of the technology or the AEC's unrealistically low estimates, cost overruns have been endemic to the breeder program. A major test reactor, the Fast Flux Test Facility (FFTF), now being constructed in Hanford, Washington, rose from $87 million to $450 million, and the program as a whole has jumped from $2 billion to more like $5 billion, with actual construction on the demonstration reactor not due to start until next year. (Current expenditures on the breeder program thus do not include the cost of the demonstration plant, for which funding will begin in fiscal 1976.) The demonstration plant is to be built as a joint project between the AEC and the utility industry. But the industry's $250 million contribution, which was to have underwritten the major portion of the cost as the project was originally conceived, has now shrunk in comparison to the total price to a token participation in financing. And since energy officials have concluded that the breeder will play little or no role as a short-term energy option in Project Independence, the diversion of still more federal money from other urgent energy programs may meet considerable opposition. The alternative would seem to be still longer delays to the breeder project, pushing completion of the demonstration reactor into the mid-1980's.

Energy specialists at OMB are not the only ones aware of the breeder's problems. According to Manson Benedict, chairman of the nuclear panel of the Energy R & D Advisory Council, the government's senior energy advisory group, there is "a mounting feeling of uneasiness about costs and delays" in the breeder program, although he himself has not yet concluded that it is time to drop it. Such doubts among those in the technical community who would normally be the breeder's strongest proponents are significant.

The retirement of Congressmen Chet Holifield (D–Calif.) and Craig Hosmer (R–Calif.) this fall will deprive the breeder of two of its most devoted and powerful backers. Jurisdiction is still up for grabs in the Senate and the House over the soon-to-be-created Energy Research and Development Agency (ERDA), into which the breeder program, along with most other energy research, is scheduled to move. Several committees are vying for the assignment, and the future of the Joint Committee on Atomic Energy is uncertain. Amid the confusion, Congress is less likely to be in a position to dictate the fortunes of the breeder than at any time in the past decade.

The breeder is also encountering some difficulties within the AEC. The reactor design developed by the R & D half of the agency in cooperation with its industry partners specifies some "fall-back" safety features, which could be made a part of the demonstration reactor but which were to be left out unless needed. The regulatory branch of AEC, however, appears to have rejected this approach and will apparently require the inclusion of most of the fall-back items, at least until they can be proved unnecessary, thus shifting the burden of proof to the R & D team. That this revised safety philosophy will raise costs still further seems probable.

Even from the nuclear industry's professional press some discordant notes on the breeder can be heard. *Nuclear News* (August 1974, p. 55) journal of Nuclear Society, has published an article sharply critical of the breeder program and its present goals. The article and accompanying editorial bespeak a new era of candor in the usually closed ranks of the nuclear community. With other straws in the wind, it may reflect a sense that the breeder program will now have to be judged on its own merits rather than fostered as an inevitable follow-on to nuclear power. And while there is no indication of any serious sentiment outside of the environmental camp for canceling the program altogether, it is possible to read the signs as evidence that the breeder's cherished priority status may be, for the first time, seriously in doubt.

—ALLEN L. HAMMOND