Science Support: Is High Energy Physics at Home in ERDA?

Although the Atomic Energy Commission (AEC) was better known for its activities in the field of nuclear power than for its physics research, the AEC was the source of more government support for basic physics than any other agency before it was disbanded last January. The $282-million program for physical research that once belonged to the AEC is now part of the Energy Research and Development Administration (ERDA), for better or worse, and many physicists are mourning the loss of a comfortable relationship with the old agency and feeling uneasy about the mission-oriented role of the new one.

High energy physics in particular may be due for some changes, because it is research at such a fundamental level that no one knows whether it will ever be related to a practical source of energy. It is also a very expensive science, and it makes up about half of the program for basic research that ERDA inherited from the AEC.

Speaking from the somewhat detached perspective of an old hand at particle physics who has been outside the AEC system for many years, Boyce McDaniel at Cornell University observed that "In the AEC, the high energy physicists were in a smaller agency and in a rather respectable place, being in a research division. In ERDA, they are in a division which doesn't even contain the word research in its title, and there is some question about the new organization and new director. I'm sure they're apprehensive about that."

During the congressional hearings on the fiscal 1976 budget, the question was raised whether high energy research should remain in ERDA or be transferred to the National Science Foundation (NSF). The House Science and Technology committee was apparently concerned that decisions about new programs in ERDA would require trade-offs between new accelerators and programs for advanced energy research, whereas in the NSF high energy accelerators would be competing with other large programs of basic research.

No action was taken on the question by the House committee, and, according to a staff member, "no one has a bee in his bonnet" to move high energy research to the science agency. But the Office of Management and Budget is also pressing ERDA with inquiries about the high energy physics program. The question of the proper home for high energy research is clearly a hot one in the scientific community, and one that may be in the air for a while in Washington.

In a report drawn up to assist Congress in examining the 1976 ERDA budget, the Office of Technology Assessment (OTA) identified both the basic research organization of ERDA and the possible transfer of high energy research to the NSF as important questions. The report noted that "the basic research arm of ERDA now faces a very challenging period in which the goals of the old nuclear physics program [of the AEC] will be widened in a very major way, and the physics research division must be designed so it supports and complements the total energy R&D effort in the most effective way." The report, just released, was designed not to make recommendations but to outline the arguments pro and con and to give background information.

The old physical research division of the AEC is now part of a much larger ERDA unit covering solar and geothermal power and "advanced energy systems." The acting director, however, is John Teem, who previously headed physical research in the AEC.

With $17 million in funding for the current fiscal year, the NSF also has a sizable program in high energy physics, including a large accelerator at Cornell. The OTA report noted that the $155 million ERDA program could be transferred to the NSF, but "one apparent difficulty is the size of the program relative to the rest of the program in the NSF. Thus, the transfer would have to be preceded by careful administrative planning . . ." The report proceeded to note a considerable number of advantages to the status quo.

> Strong motivations exist to retain the high energy physics program within ERDA. The reasons are a mixture of: a) wanting to keep the prestige of high energy physics and the talents of the high energy physics community within ERDA; b) high energy physics requires the kind of facility management and support which the ERDA national laboratory structure is capable of and used to giving; c) ERDA management has the experience and capability to manage and nurture high energy physics, and there is no danger in its becoming an appendage to an agency which has a different mission; d) there are important types of fallout benefits from high energy physics which are important to the main ERDA mission. On the last point, scientists in high energy physics have many characteristics which are desirable in other areas such as high sophistication in experimental instrumentation and in the use of computers. High energy physics has also had a significant impact in the development of practical superconducing magnets because of their application in high energy accelerators.

The high energy research community felt quite comfortable with the tradition that had grown up in the AEC, which was run by physicists for many years, and most of those contacted by *Science* expressed a strong preference to stay with ERDA, where the management at the lower levels has not changed. Some scientists contacted also expressed the belief that the NSF would be less efficient in administering large laboratories like those in the high energy program. The only notable exceptions to the general preference were found among scientists at the Fermi National Accelerator Laboratory, where some scientists favored NSF sponsorship.

The question about the proper home for high energy physics was only one of about fifty considered in the OTA report, and some have suggested that little importance should be attached to the fact that it was raised. But ERDA officials with responsibility for high energy research have not treated the subject as if it were a passing query.

In February, the new administrator of ERDA, Robert Seamans, told a meeting of the high energy physics advisory panel that he favored a strong basic research enterprise in the agency. The person who has defended the role of high energy physics in ERDA most vigorously is John Teem, who says it is "clearly central to the long range goals of ERDA." In a speech to a group of accelerator physicists, Teem said that in principle it is equally logical that high energy physics should be a part of the NSF. But he suggested that the effect of a change on high energy physics itself should be examined very carefully, "and only if we see good reasons and positive consequences should we do it."

If anything is changed as a result of the current debate, it may only be the distribution of high energy research between the NSF and ERDA. The sentiment most often heard is that the worst thing for the science would be to have only one source of support. However, another consequence of the debate could be that high energy research, either in the NSF or ERDA, would become more visible than it was in the AEC, and more vulnerable. —WILLIAM D. METZ