

Mr. BROWN. Was there an adequate foundation for what they were trying to do?

Dr. TAPE. Yes, I think in terms of the hardware development that they were pursuing at the time we had a reasonably good foundation. What one must recognize here is that the science and technology foundations improve with time. So part of the question facing us was to look at what might be the development of the technology over 5 or 10 years and whether that would influence the hardware that would be developed 10 years from now. In effect, we came to the conclusion that we probably would be better off concentrating on the technology side for a while than we would to pursue more rapidly the hardware development.

Mr. BROWN. Let me ask a question that is in the realm of basic science. I am interested in how you make these determinations and how you develop roles for laboratories and so forth.

We are, I presume, at the early stage of developing the basic scientific foundations in the hydrogen fusion field. There have been some discussions of the proper funding levels, and I think there has been some increases of a fairly substantial nature within the last year or two. Could you explain to me how this process is arrived at? How you allocate resources for this kind of an operation?

Dr. TAPE. The particular program which we are talking about is the so-called controlled thermonuclear reaction program, and it is a program in which some years ago there was extreme optimism as to the possibility of proving it technically feasible. This is a question of a self-sustaining fusion reaction as you said, Mr. Brown.

In more recent years it was recognized that this was indeed a most difficult problem, scientifically and technically; the technical feasibility had to be demonstrated. There was a switch from emphasis on some of the more engineering aspects to a lot more emphasis on the physics or the understanding of the basic science.

In addition to our annual reviews of these programs, periodically we have more major reviews of a given area of interest. About 2 years ago we asked a committee of experts, some of them coming from the field itself, some of them coming from related fields on the side, so that you didn't have just the proponents of the activity, to actually examine the progress which had been made over the last years, to assess the status of the program at that time and to give us recommendations for the prospects for the future and how strongly this country should support such endeavors. There was a complete technical evaluation and assessment. There was also an assessment of what was going on in other countries, what was the extent of their support, and what were their evaluations as to the future for this field of research and development.

On the basis of that report, we then in the Commission did our own review and arrived at our own conclusion that this was indeed a time when we should increase support and set for ourselves certain objectives for the future. We were looking ahead a period of about 5 years; the committee urged that we should double or triple the work in a period of 5 years; the Commission felt that this was a little faster than was necessary under the conditions. The AEC program management has set up its own specialized committees to look at each facet in this series of stepping stones for the future, and as a new major experiment comes along, a special ad hoc committee gives us a complete analysis as to their evaluation of the feasibility and so on.