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The European Atomic Energy Community

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220 Southern Building, Washington 5, D.C.

L. B. Tennyson, *telephone* NAtional 8-7067

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TEXT OF AN ADDRESS BY ETIENNE HIRSCH
PRESIDENT OF THE COMMISSION OF THE EUROPEAN ATOMIC ENERGY COMMUNITY
AT THE ALL-CONFERENCE BANQUET OF
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Let me first of all express my appreciation for your kind invitation to address your two associations this evening.

At first, I thought I would like to talk to you about a broad and general subject: "Science and our Future." But present circumstances have led me to change my mind. I think I would rather talk to you about a less academic question:

"The State of the United States-Euratom Joint Program."

In doing so, I will have to neglect many of the other aspects of Euratom's activities. However, I do feel that the present state of the United States-Euratom Joint Program, the problems we are facing, are of general interest to all of us concerned with atomic energy.

Before giving you an account of the present state of the Program, I would like to recall the aims we had in mind when the Program was first conceived.

The first aim was a political one, and one which seems to be even more valid now than in February 1958: it was to strengthen, by a combined effort, the unity of Europe and the ties between this new European Community and the U.S.

The second aim was an economic one; it was to add to the reactor experience already gained in the United States the experience of full-scale construction in Europe, where the cost of conventional fuel is higher. This effort was to be accompanied by a major research and development program, in order to surmount rapidly the problems of first generation reactors and thus to approach the stage wherein atomic energy would be fully competitive with conventional energy.

But we were interested in reaching these two targets only under certain conditions. They were these:

1) Neither the United States Government nor Euratom intended to get into the power-reactor business or become directly involved in the management decisions to proceed with this or that reactor.

2) Therefore, the Program had to create conditions which would lead to management decisions in favor of proceeding with the construction of reactors. We had to devise incentives sufficient to induce

utilities to enter the field, but, at the same time leave them a fair share of the burden. These incentives were to be calculated on the basis of economic assumptions which, as I will explain, proved to be inaccurate, because of changed circumstances.

3) It was to be a joint venture; meaning that both American and European industries would be involved in the Program.

4) Finally, it was thought that in view of the public money allocated to the Joint Research and Development Program, discoveries made within the framework of it had to fall in the public domain.

In short, it was always realized that utilities entering the atomic field would have to pay a price for it. The Joint Program was thus designed to bridge part of the gap between the cost of conventional and nuclear plants.

Having thus summarized the aims and methods of the Joint Program, I would like to give you an up-to-date picture of reactor projects now coming forward in Europe under the Joint Program:

An invitation for proposals was issued on April 13, 1959. In response to this invitation, five utility groups submitted letters on May 29, expressing their intention to participate in the first phase of the Program. Each of these utilities,

by October 20, had confirmed this intention. But only one out of the five fully met the requirements of the invitation.

This group was the Societa Elettronucleare Nazionale (SENN) of Italy. The SENN proposal is for a boiling-water reactor of 150-megawatt capacity and will be located at Puntafiume between Rome and Naples. The prime contractor for its construction will be the International General Electric Company.

We have also received detailed proposals from the Arbeitsgemeinschaft Baden-Württemberg zum Studium der Errichtung eines Kernkraftwerkes (A.K.S.) of Germany.

AKS, relying on the traditional German mastery in the field of chemistry, proposes to build an organic-moderated reactor of 150-MW electrical capacity. The plant is to be located at a site as yet unspecified in Baden-Württemberg. Prime contractor for the nuclear portion of the plant is Atomics International, which will work with its German affiliate, INTERATOM. Brown, Boveri will act as architect engineers and prime contractor for the conventional portion of the plant.

The German Federal Government has expressed its readiness to cover part of the difference between conventional and nuclear costs up to 100 million Deutsche Marks. However, since the AKS is incorporated only for the purpose of taking the preparatory steps, a new company has yet to be incorporated for the construction of the project itself.

Electricite De France, EdF, together with a Belgian company, Centre et Sud, have indicated their intention to submit a proposal for a 150-MW plant of yet unspecified design to be located at Chooz, near the Franco-Belgian border on the Meuse River. The site has already been surveyed, but definite proposals have not yet been completely elaborated inasmuch as the utility group is still in the process of evaluating bids received from manufacturers only a few weeks ago.

The S.E.P. which groups all the producers of electricity of the Netherlands, has also written to the Commission to express their continued interest in the Joint Program, although the time limit available has not yet permitted a final decision to be taken by the association concerned.

Finally, the West Berlin utility, BEWAG, has expressed its desire to participate in the Joint Program with the construction of a 150-MW reactor. The construction of a nuclear reactor in West Berlin would be of particular economic interest; but legal problems are involved because of the special juridical position of West Berlin. Further, the safety aspect must also be carefully studied in such a heavily populated area. A few days ago, Mr. Willy Brandt, the Mayor of Berlin, confirmed to us in Brussels the importance his city attaches to such a construction. He indicated that because of the problems just mentioned, completion should be expected before the end of 1965 and not before the end of 1963.

These five answers and the oral comments made by the interested utilities and governments show that, provided some flexibility is injected in the timetable, the Program will meet with a large measure of success. The need for flexibility is not surprising: it has been stressed both in Euratom and in this country by a number of persons. But it is worthwhile pondering this question: Why did not more European utilities come into the Program in time with complete proposals?

One element of the answer is certainly the time factor. It is worth emphasizing that the only utility whose proposals fit the specifications of the invitation exactly is the SENN project, which had, so-to-speak, a longer incubation period than the others, thanks to the pioneering work done by the World Bank on this project.

All the utilities concerned, without exception, complained about the short time available for making such important management decisions involving entirely new technical factors.

But this is only part of the answer. The main reason for the caution shown by the European utilities is the changed energy picture in Europe. It is a striking fact that, with a mild recession in Europe, the European consumption of energy was two per cent less in 1958 than in 1957. In 1959 - according to the latest estimates - the energy consumption of Europe, estimated at some 415 millions of tons of coal equivalent, will still be slightly inferior to the corresponding 1956

figure. This drop in energy consumption was particularly striking for coal, whose use in 1958 was 10 per cent less than in 1957.

At the same time, structural factors came into play, chief among them the growing importance of oil. In the Suez days, it was feared that Europe would be more and more dependent upon Middle East oil with all the political dangers of such a dependence. But since that time new oil deposits have been found in many places: Sahara, Libya, Canada. Not only did these new finds exceed expectations but new resources of natural gas were found in the Sahara and also on the Continent of Europe, namely in France and Italy. Those new findings have done much to lessen the fear of too exclusive a dependence on Middle East resources.

Some other elements also played in the same direction: the construction of new tankers continued unabated, productivity continued to rise in American coal mines. At the same time, a general slowing down of industrial activity occurred, and Atlantic freight rates dropped sharply. All those factors combined to make imported fossil fuels in Europe stronger competitors to nuclear energy for power than had been expected. It was forecast two years ago that the price of a ton of coal C.I.F. on the European coast would be around $18. Today, we can buy American steam coal in Rotterdam at about $14 a ton; the price of oil imported under the same conditions is even lower. With

a four-dollar difference in the cost of each imported ton, most modern thermal plants, with which atomic energy must compete, will be able to produce electricity for 1.5 mills less than was expected two years ago.

It is worth calculating the supplementary handicap which atomic energy has thus to face: For a 150-MW reactor with a load factor of 75 per cent, producing one billion kilowatt-hours per year, it is an added handicap of 1.5 million dollars per year. Over a 20-year period, that means 30 million dollars would be added to the handicap already forecast for a nuclear reactor when the Joint Program was launched.

Further, it appears from an early examination of the proposals received, that the installation cost for nuclear power plants tends to be higher than the 350 dollars-per-kilowatt-installed that was estimated when the Program was launched.

A paradoxical aspect of the situation is that the mere promise of atomic energy has contributed to making conventional sources of energy cheaper, and here I would like to borrow an example from my former experiences. When I was responsible for economic planning in France, we had to decide whether to use up a certain natural gas field in Southern France within a period of 20 or 50 years. It was decided that, with the prospect of atomic energy in the not-too-distant future, it was better to use this natural gas in the shorter period, thus making it possible to market it at a cheaper price and to increase the

quantities immediately available. You can see by this example how atomic energy already plays an indirect role in the energy balance of Europe and thus, paradoxically, makes its own first steps more difficult.

I would like to add that this problem is by no means a Euratom problem or a European problem. Our British friends, with a stockpile of 50 million tons of coal, have just decided to postpone for about two years the deadline of their present ambitious nuclear program. In Russia, according to Mr. Khrushchev himself, it appears also that nuclear energy is not yet competitive and that it has been decided to step up the production of soft coal. I have also been told that such difficulties are not entirely unknown in this country.

Although the commercial production of atomic energy meets everywhere with difficulties and unforeseen problems, the resolution of these problems is nonetheless just as essential as we thought it to be two years ago.

The consumption of electricity in Western Europe keeps doubling every ten years. In 1958, our six member countries produced 230 billion kw-hours. For a population nearly equal to yours, that amounts to less than one third of United States' production. In 20 years' time, around 1980, we will need four times this amount, and estimates, based upon prospective energy resources, show that one quarter of this will have to be electricity produced by nuclear power. If this assumption is correct, this means that in 1980, we will have to produce roughly

as much nuclear electricity as the total amount we are now producing in all our thermal and hydro-electric power stations.

In view of this fact, we need large-scale experience on as many different reactor types as possible. Nor can we leave the development only to scientists. Commercial-scale experiments provide the only possibility of getting the utilities, the manufacturers and their engineers on the job. Because this undertaking demands a major effort, we believe that by joining our activities in this field, its success will be assured. In this connection it was of great interest to me to see in the paper presented to you by Mr. Frank Pittman and to hear from Chairman John McCone's remarks at the luncheon yesterday that the thinking of the Atomic Energy Commission continues to develop along the same lines as ours.

To sum up, I have tried to give you a complete and candid picture of both the present state of the Program and the background against which it developed. Some of the economic assumptions on which the Program was based have changed for the immediate future, and this may require some flexibility in the timetable, but the long-range perspective remains unaltered, and the necessity to acquire experience on the construction of large-scale reactors and to bridge the gap between nuclear and conventional power costs remains as valid as ever.

The Joint United States-Euratom Research and Development Program is an essential means to accomplish this last objective. As you know, it provides for the expenditure of 100 million dollars contributed equally by the two partners. I am glad to give you a favorable report on this part of the Program. Almost 400 proposals have been received, out of which nearly 100 are joint American-European proposals. This success demonstrates that industry on both sides of the Atlantic has faith in the ultimate success of atomic energy. Furthermore, the unique features of the Program, the direct association of many American and European firms, the joint financing, the selection of the proposals by a joint board made up of American and European experts, and the sharing of results and inventions, provide a working model of the kind of efficient and intimate relationship we should try to develop between Europe and the United States. In addition, we must give serious attention to the extension of joint co-operation on this pattern to other fields of mutual interest.

But I would not wish to leave you with the impression that the United States-Euratom Joint Program, as important as it is, is the only aspect of our activities. Therefore, I would now like to mention briefly some of our other fields of activity.

We have the general duty to coordinate national research programs. But coordination is not enough. We also have our own financial resources for research. These amount to 215 million dollars which is to be spent on research in the first five years of Euratom's existence. Thus, by the end of the first five-year

period, we will be spending some 80 million dollars annually on research in addition to the national efforts of our member states.

To give you a few concrete examples:

One of our immediate goals is the establishment of a common research center, to supplement the work of the national centers. In view of the number of research centers already existing or planned, it would have been a waste of effort to build a new center of our own from scratch. Thus, we signed in July an agreement with the Italian Government, to be ratified before the end of this year, by which the Italian center of Ispra will be "Europeanized" and put at the disposal of Euratom. We plan to have 1,500 scientists at work there by the end of 1962.

Similar negotiations are in progress with the Dutch Government to "Europeanize" the Netherlands' Petten center, and also with the German Government concerning a transuranium institute in Karlsruhe.

Conversations are also under way to organize a partnership between Euratom and the Belgian nuclear center for the development of certain reactor types at Mol.

Without waiting for the outcome of these negotiations, the Commission has concluded research contracts with different national centers. For instance, a contract has been signed with the French Commissariat for research in the field of fusion and with the Dutch KEMA for studies on a homogeneous reactor. Another

contract for fusion studies is being negotiated with Germany's Max-Planck-Institute. Such contracts of association provide not only for a financial contribution, but also for joint European teams made up of experts from the various member countries of the Community.

In the field of nuclear products, a common market has been in full operation since January. In addition, all duties on reactors or reactor parts imported into the Community from third countries have been suspended. As to the important question of third-party liability, we are actively participating in the preparation of an OEEC convention and have proposed to the member states an additional convention in order to supplement the coverage of the OEEC convention.

We have also concluded a cooperation agreement with the United Kingdom, which provides for a broad exchange of information, men and equipment, and, more recently, an agreement with Canada, which includes a Research and Development Program connected with natural-uranium, heavy-water-moderated types of reactors.

Finally, I want to address you no longer as scientists and engineers but as a European talking to Americans interested in the future of Europe.

In Euratom, there is atom, but there is first and foremost Europe. It is our responsibility to contribute, with the Coal and Steel Community and the Economic Community, to the creation of a united Europe.

The three executives are responsible to a single European Parliament. This Parliament only, and not the national governments, has the power to vote us out of office. Proposals are being prepared to have the members of the Parliament elected directly by the people of the six countries. A Court of Justice enjoys powers somewhat similar to those of your Supreme Court. In the last weeks, the six Foreign Ministers have begun to develop the means of devising a common foreign policy.

European schools are in operation in Luxembourg and in Brussels. Teachers from the six countries working together have already devised European textbooks for history and for geography. New European schools will be opened next year.

The construction of a European University is in preparation.

We are all convinced that, by such means, we will achieve our ultimate goal - the creation of a prosperous United States of Europe - and we are grateful to the United States for the interest you have shown and the support you have, since the start, given to the integration of Europe.

If we look back on the period since the end of the war, we realize how close we have moved together, and here I would like to pay tribute to the vision of a great American, the late George Marshall. His name is forever associated with the gigantic assistance extended by the American people to Europe, but perhaps the most lasting result of the Marshall Plan is that it paved the way for the United States of Europe.

Economically, the period of European reconstruction has now come to an end. Politically, we begin to see in Europe, emerging from the chaos of the past, a powerful new force, a second United States. This new Europe is not looking to the United States as the universal provider it was during the period of reconstruction. Europe is now ready to assume its responsibilities as an equal partner in their common world-wide tasks.

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