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THE ROLE OF THE JOINT RESEARCH CENTRE

(Summary of the report prepared at the request of the
Commission by four independent experts)

1. General

- a) While it is for the Council of Ministers of the Community to determine which major research sectors are going to be of interest to the Community, details of the programmes should no longer be submitted to it, mainly in order to avoid delays in the taking of decisions, through which the research soon loses its value.

From this standpoint it is important to have sufficient flexibility of organization, e.g., in the form of small-scale appropriations for free research, so as to ensure that research initiatives are neither stifled by excessively detailed programmes nor given premature publicity before completion of the initial phase essential to assessment of the value of the idea.

- b) Broadly speaking, the Joint Research Centre should have the following responsibilities:--

- the performance of public service functions of general usefulness. The Joint Research Centre is already developing such functions in several fields, particularly nuclear

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standards and measurements, where it has scored a success which is worth following up;

- to obtain the data on which the Community will be able to plan its lines of action, particularly in fields which are still obscure and controversial;
- to provide the foundations on which Euratom's activities can be based (reactor safety, control of fissile materials, etc.);
- in certain cases, to construct special large-scale scientific devices in respect of which duplication of effort in the member countries must be avoided, and which will at the same time enable the Joint Research Centre to reach a sufficiently high level of scientific achievement;
- to back up the scientific activities of member countries with aids or additional resources which may in many cases open the way towards highly desirable measures of coordination between laboratories in the various countries;
- to lend its support to industrial firms in basic sectors and possibly to perform work for them under contract. It is essential that the charges for the work done by the Joint Research Centre on behalf of industry should, in an initial stage at least, cover no more than the additional expenses incurred by the Community. These payments cannot be expected significantly to lighten the financial burden of the member countries within less than about five years. In view of the difficulty of getting such work under way (it will probably not exceed 2-3% of the Centre's capacity at the outset, and 10-20% in a few years' time) it should be started without delay;
- to help in training highly qualified European research scientists; it would be very valuable spin-off from the Joint Research Centre's programme to further the training of European research workers and give them better preparation for intra-European contacts. In addition, this would provide the Community with an invaluable basis for the possible creation at some future time of a European science university.

c) The geographic concentration of the whole of the Joint Research Centre in the one Ispra establishment is to be rejected for various reasons - loss of efficiency, cost of financing the operation, etc.

Furthermore, each of the establishments apart from Ispra has a sufficiently well-defined task for it to have by now reached the critical size in its special field. On the other hand, the operation of the four establishments could be further integrated, particularly by the creation of a teleprocessing link.

2. The main lines of a programme

- a) Abandonment of the project for converting the ESSOR reactor into a fuel testing light-water reactor, unless prompt consultations result in the firms concerned or certain Member States accepting sufficient concrete commitments as to the use of the reactor.
- b) Launching of a "materials project", concentrating the efforts of the various Joint Research Centre establishments on scientific and technological research on materials, combined with similar efforts in other countries, which are still far from covering all the research requirements in this field, a decisive one for the future technological level of the Community. The materials would, of course, not be conventional materials in common use, but special materials; there is considerable scope here for the development of Community-scale research which will avoid duplication not only with existing but also with subsequent research; provided it attains a sufficiently high scientific level, such work would afford a basis for exchanges of information between the other laboratories conducting research on materials, and even for coordination of their programmes. It must be recognized, too, that it is pointless to try to make a strict distinction between what is and what is not "nuclear".
- c) Firm decision to construct the SORA pulsed reactor, with the sole reservation that the call for tenders to be issued immediately should not confront the Commission with an unreasonable increase in the previously announced estimate. The SORA project, which was at first a highly original one, will depreciate with time, and we have probably reached the point beyond which it will no longer be worthwhile.

In connection with basic research on matter in the condensed state (in particular solid state physics and chemistry), the

construction and operation of the SORA reactor will have the advantage of restoring to Ispra a major objective, and one which is also likely to promote contacts with the other research centres and the universities. SORA is a project developed at Ispra and internationally recognized (30 times as powerful as the prototype pulsed reactor at Dubna in the USSR).

The SORA experiment should make it possible subsequently to construct a still more powerful reactor (10 MW instead of 1 MW for the present project). The SORA instantaneous pulsed thermal neutron flux is four times as intense as the continuous flux of the high-flux reactor at Grenoble; hence the two reactors complement one another.

The study of matter in the condensed state with neutron beams is developing rapidly, being limited only by the lack of powerful neutron sources. The SORA reactor thus meets a research need in the member countries.

- d) Initiation of a "pollution project", extending the project already in progress on radioactive contamination; this will elucidate a series of still obscure problems and help to provide the Community with the necessary data for formulation of a pollution policy, at a later date, the present general state of knowledge being too fragile a basis to exclude the risk of errors which might subsequently prove to be serious.

The interconnections between radioactive and other types of pollution, the possibly provisional character of studies on some of these types, the availability of specialist manpower in the Community and the modest amount capital investment required - all these are factors militating in favour of assigning such a task to the Joint Research Centre.

Generally speaking, pollution coincides with certain technological advances, and then declines with others. If one could foresee pollution more clearly one could in some cases reduce the effective period. The improvement of technological forecasting in this field might therefore be one aim for the Community to pursue.

A second reason for treating pollution on a Community basis is that pollutants cross frontiers; this applies to wind-borne dusts and gases, and also to pollution of the seas by rivers. Rivers which cross or skirt several countries also raise problems.

But the main reason for Community action is to prevent economic distortions arising from divergences between statutory prohibitions or tax incentives in the various member countries. The expansion of national regulations will tend to be stimulated by the force of public opinion, and there is even a danger of the creation of a fresh type of pollution; namely the paralysing effect of a multiplicity of prohibitions; the longer we wait before adopting a Community-level position, the more difficult it will be to harmonize the relevant legal or fiscal provisions enacted in each of the member countries. Furthermore, the divergences between these countries' regulations will create further impediments to the free exchange of equipment, products or their packagings at the Community's internal frontiers; here again damage may be caused through delay in effecting the harmonizations which will be required if procedures are not coordinated at a sufficiently early date.

In order that the various countries may move towards convergent points of view, the balance-sheet for each type of pollution must be drawn up scientifically and the scientific data must be fully comparable from one country to another. In this context the Joint Research Centre could make a useful contribution to a highly objective analysis of pollution.

3. Some Other Tasks for the Joint Research Centre

- a) To ~~reassign~~ to problems inherent in fast or high-temperature reactors the greater part of the staff at present working on heavy-water reactors.
- b) To develop the work of the Ispra Computer Centre (CETIS) in order to enable it to help improve Community collaboration in the apportionment of programmes and to meet the needs of new projects concerning materials and pollution.

- c) To stimulate work on thermonuclear fusion, which is already well integrated, and that on biology and health physics, which constitute a good catalytic agent as regards national programmes.
- d) The general tasks in such fields as reactor safety, control of fissile materials, etc., will no doubt raise research problems of a kind to be entrusted to the Joint Research Centre, but have not been specifically assessed by the four experts consulted.