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Bruxelles, le 2 juillet 1986

Revision for 1987 of the JRC Programme 1984-1987

1. Desired Decision : Adoption by the Commission of the programme revision of 16 July 1986

2. Consultations : in Progress with :

MM. BRAUN, Directeur Général de la DG III
DEGIMBE, Directeur Général de la DG V
LEGRAS, Directeur Général de la DG VI
FRISCH, Directeur Général de la DG VIII
FAIRCLOUGH, Directeur Général a.i. de la DG XI
CARPENTIER, Directeur Général de la DG XIII
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STRASSER, Directeur Général de la DG XIX
FACINI, Directeur Général de la DG XX
EHLERMANN, Directeur Général du Service Juridique

These consultations will be complete on July 8.

3. Financial Fiche : see annex

4. Fiche on Impact on SME's : see annex

5. Fiche on Impact on Regional Policies : see annex

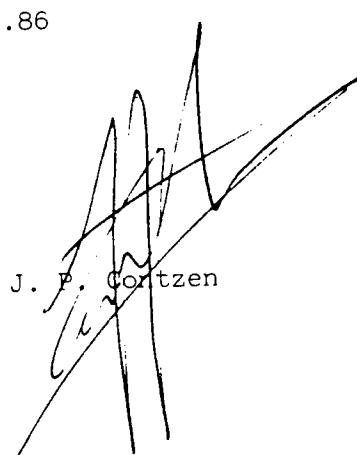
6. Calendar : - adoption by the Commission : 16.07.86

- first discussion in Council (research) : 21.10.86

- advice by Parliament : November 1986

- Decision by Council : 9.12.86

J. P. Cortzen



KARL-HEINZ NARJES
VIZEPRASIDENT

Note from Vice-President Narjes to the Commission

The JRC is presently executing the multiannual programme 1984-1987 decided by the Council in December 1983. As foreseen in this Council decision, a need has however arisen to revise the multiannual programme for its last year, 1987. The strategic orientations for the new Framework Programme for Community research and technological development (1987-1991) make it an urgent necessity to align the JRC programme with priority activities contribution to :

- competitiveness at industrial level
- improvements in the quality of life
- reinforcement of Europe's scientific and technical potential

and this requires some changes in the current programme in both its non-nuclear and its nuclear activities. Whereas the JRC is accomplishing savings in 1986 and has presented an economy budget proposal for 1987, the successive budgets approved under the current programme period in comparison with the funds estimated necessary in 1983 for execution of the programme require an adjustment to the funds for other expenditures than those on staff of 32,8 mio ECU in order to execute the programme proposed for 1987. That year will be, for the JRC, a transition year towards new policies which for the future should take account of the recommendations of a high level panel of experts recently appointed by the Commission to examine in particular the industrial implication of JRC work.

It is in this context the Commission requests the Council to approve the proposal given in chapter IV of the present document, for a decision revising the JRC programme 1984-1987.

Revision for 1987 of the JRC Programme 1984-1987

Summary

In view of the changes which have occurred in the overall strategy for Community research and technological development since the adoption of the current 1984-1987 JRC programme, there is a need to revise this programme for its last year 1987. The programme revision will align the JRC research activities in 1987 to the priority trends as set out for the proposed Framework Programme for Research and Technological Development 1987-1991, whilst awaiting a detailed assessment of the JRC medium term activities. This examination will be completed in the autumn. Furthermore, the programme revision will provide the JRC under strict economies with the resources allowing the Centre to fulfill its tasks.

Historical Archives of the European Communities

Impact on Small and Medium Sized Enterprises

In view of the important impact of the JRC Programme on European industry, a description of the impact on small and medium sized enterprises is included as annex 2 in the proposal for the 1987 programme revision.

Historical Archives of the European Commission

Impact on Regional Policies

1. The JRC Programme 1984-1987 and the proposed revision for the last year 1987 take account of the necessity of community programmes to provide an impact on Community regional policies.
2. For the research work proposed for the year 1987 this is particularly important in the Programme on the Applications of Remote Sensing Techniques (RAP Environment). Here the project on Land Monitoring and Management will deal with land characterisation in European marginal areas and the project Agriculture will also be of value to the Regional policy.
Moreover, the project on non-polluting thermal energy systems in the Programme Reference Methods for Non-Nuclear Energy Systems (RAP Non-Nuclear Energy Sources) is specifically oriented towards certain regions in the Community, and may give rise to a new distribution of work with national activities.
3. Other programmes and projects included in the JRC revised Programme for 1987 have a more indirect effect on regional policy by their contributions to industrial competitiveness, quality of life and the reinforcement of Europe's scientific and technical potential. Amongst those are particular items which may give promise of having a more direct impact on regional policies, and these include the proposed new programme on Materials and Structures - Reliability and Safety.



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Whereas the JRC is accomplishing savings in 1986 and has presented an economy budget proposal for 1987, the successive budgets approved under the current programme period in comparison with the funds estimated necessary in 1983 for execution of the programme require an adjustment to the funds for other expenditures than those on staff of 32,8 mio ECU in order to execute the programme proposed for 1987. That year will be, for the JRC, a transition year towards new policies which for the future should take account of the recommendations of a high level panel of experts recently appointed by the Commission to examine in particular the industrial implication of JRC work.

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COMMISSION
OF THE
EUROPEAN COMMUNITIES

General Secretariat

COM(86) 416

Brussels, 9 July 1986

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AG 836 - 16.7.86

Proposal for a Council Decision adopting a revision for the year 1987 of the research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and the European Economic Community (1984-1987)

(presented by the Commission to the Council)

(Communication from Mr NARJES)

N.B. La version française du présent document a été diffusée dans les meilleurs délais.

- This question is on the agenda for the 836th meeting of the Commission on Wednesday 16 July 1986.

TO : Members of the Commission
Mr CONTZEN
Mr BRAUN
Mr DEGIMBE
Mr LEGRAS
Mr FRISCH
Mr FAIRCLOUGH
Mr CARPENTIER
Mr AUDLAND
Mr STRASSER
Mr FACINI
Mr EHLERMANN



Bruxelles, le 2 juillet 1986

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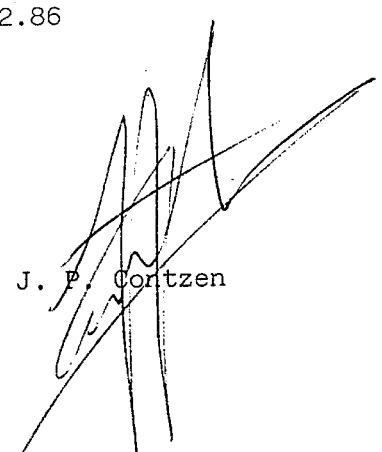
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and this requires some changes in the current programme in both its non-nuclear and its nuclear activities.

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Proposal for a Council Decision adopting a revision for the year 1987 of
the research programme to be implemented by the Joint Research Centre for
the European Atomic Energy Community and the European Economic Community
(1984-1987)

(presented by the Commission to the Council)

Historical Archives of the European Commission

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I. THE RATIONALE FOR A PROGRAMME REVISION

1. The Joint Research Centre is presently executing the multiannual programme 1984-1987, decided by the Council in December 1983 (1), in its four Establishments : Geel (B), Ispra (I), Karlsruhe (FRG) and Petten (NL). That programme is characterized by research in the sectors of safety, environmental protection and pre-normative research in nuclear and other fields. The work is performed as part of the current 1984-1987 Framework Programme for research, development and demonstration activities, and it contributes to five selected research action programmes.

The programme emphasizes a concentration of the JRC activities towards the themes listed above. Its detailed elaboration is based on considerations valid in 1983, but which may not be entirely consistent with the situation in 1986. In fact, substantial changes in the Community research and development strategy have occurred.

2. The strategic orientations for the new Framework Programme for Community research and technological development (RTD) for the years 1987-1991 have been the subject of discussions over the last few months in the Council, the Parliament and the Economic and Social Committee, based on considerations in CREST and the EURATOM Scientific and Technical Committee. Taking into account these extensive discussions, the Commission has now presented a formal proposal (2) for the new Framework Programme. The future activities of the Joint Research Centre should be seen in the context of this strategic perspective. Without prejudging the outcome of the discussions on the new Framework Programme, the proposed revision of the JRC Programme for the year 1987, i.e. for the short term, should nevertheless take into account the general medium-term trends set out in the framework document.

Community Framework Programme research actions fall under five basic lines of action listed below :

1. Competitiveness of Industry and Services
2. Quality of Life
3. Reinforcement of Europe's Scientific and Technological Potential
4. Management of Energy
5. International scientific and technological cooperation - Science and Technology for Development

(1) O.J. L 3/22, 5.1.84

(2) COM (86) final, 17.3.86

In the Commission's opinion, priority should be given to activities contributing towards :

- competitiveness at industrial level;
- improvements in the quality of life;
- the reinforcement of Europe's scientific and technical potential

Future Joint Research Centre actions will therefore be directed into lines 1, 2 and 3 in the above list to ensure that the Commission's own R and D contributions are brought to bear on areas of the highest priority, although a contribution from the programme into other lines, and in particular management of energy, will occur and general scientific support will continue to be provided to other Commission services on request.

3. As part of its overall reassessment of the rôle of R. T. D in the Community, the Commission has decided to reexamine the aims and objectives of its Joint Research Centre to identify ways in which its competence and resources could best serve Community interests notably by performing tasks serving industry as well as other tasks of a central character linked with other Community priorities.

Indeed, following substantial discussions in the JRC Board of Governors, the JRC Scientific Council, and the relevant sectorial advisory committees, the Commission presented its views on future developments of the Joint Research Centre (3) which were debated in Council (Research) on 8th April. In the document, it was proposed to embark on a new multi-annual programme as of 1987. In presenting its views, the Commission was also guided by the results of the mid-term evaluation (4) carried out by eight independent sectorial evaluation panels and by the JRC Scientific Council. Their report contains a number of recommendations, some of which require urgent implementation.

The debate in Council (Research) on 8th April clearly demonstrated concern for a more substantial reexamination of the future of the Joint Research Centre, and its role in a technological society. To this end, and responding to proposals made in the Council, the Commission decided to set up a high level Panel to examine the future mission of the JRC. This examination is to be made in the light of the proposed emphasis envisaged for Community Research and Technological Development programmes promoting European industrial competitiveness. The Panel is to study the various contributions which the Joint Research Centre can make to meet the Community's industrial needs as well as other central tasks requiring Community action, especially in the fields of prenormative research, safety and the environment in which the JRC has special competence. In the light of its examination, it is to make recommendations as to the future mission of the JRC, together with such organisational and managerial measures as may be required. The panel is to report by

(3) COM (86) 145 final

(4) COM (86) 145, Annex I

mid-November 1986. Following considerations by the JRC Board of Governors, The Commission will present the report to the Council and the Parliament. The formulation of a new multiannual Programme for the Joint Research Centre should obviously take into account the recommendations of the panel as well as the valuable advice provided by the formal consultative bodies, including the JRC Scientific Council as well as opinions of the European Parliament and of the Economic and Social Committee. Whilst this review will mainly reconsider the Joint Research Centre's relations with industry, the

Commission intends to continue to develop its long-term plans to concentrate present JRC competence in the mission of pre-normative research, nuclear and non-nuclear safety, and the environment, a process that has been gradually developing during the 1980-1984 and 1984-1987 multiannual programmes.

This policy is not in contradiction with the concept of closer liaison with industry; on the contrary, each of the aspects of the mission should be of high industrial relevance.

4. Meanwhile, the Commission considers that some re-alignment of its Joint Research Centre will be needed in order to adapt it more closely to the policy trends for the future, and also to introduce some urgent actions. The Commission proposes to revise the last year of the 1984-1987 programme. 1987 should thus bridge policy change and provide time to accomplish the in-depth studies required for a successful launch towards new endeavours and match optimal structural and organisational points with the best possible utilisation of resources. As mentioned above, it would be unwise to launch a fully-fledged programme before the advice from the Panel has been received and fully considered. The programme revision will, however, take account of the ongoing debate on the JRC and of the lessons learned from the execution of the programme, including the urgent recommendations resulting from the mid-term evaluation and its indications of strengths and weaknesses which, taken together with the trends expressed in the orientations for the Framework Programme, point the way forward into the 1990's and constitute a first indication of the rôle the JRC should play in Community research.

Working towards this end, the JRC will pursue its existing efforts on the Norms and Standards theme, and continue to emphasize research leading to improved safety with an eye to industrial implications. In this connection, the nuclear safety chapter should also be reviewed.

Programme execution during 1987 will continue in closer contact and collaboration with related shared-cost and concerted actions. The JRC will intensify its efforts to establish working relations with scientific institutions and industrial firms notably in the new member countries, and to ensure the integration of nationals from these countries in the establishments of the Centre. The Centre will likewise continue and increase its activities on training in fields relevant to the competences acquired in the four establishments.

5. As already announced in the document on the future developments of the Joint Research Center the new rôle of the JRC and the expected change in its orientations will also require a number of changes to the present methods of management. This also follows recommendations by the Scientific Council in their Mid Team Evaluation Report. Without prejudging recommendations on these questions which was given by the above mentioned Panel of experts the Commission already envisages a certain number of measures which should take effect at a short term

- continuation of the integration of the various forms for research actions by attributing the overall responsibility to the Director General of the JRC - who is also Deputy Director General of DG XII - in those areas where the JRC efforts carry major weight. In this respect the following areas are presently envisaged : nuclear fission, environment, prenormative research
- readjust the internal management structures, in particular in the Ispra Establishment, in order to cater for the evolution in the JRC mission and this in particular by readjusting the balance between the management of the projects and the management of the scientific-technical departments,
- continue the strengthening of the collaboration between the four establishments of the JRC which has also been emphasized by the proposal to create a new inter establishment programme on materials and structures
- create or reinforce in the establishments the rôle of research broker in order to strengthen together, with the competent services of DG XII, the contact between the industry and the JRC.

6. In executing the current programme, the Commission has been concerned with preserving, in real terms, the level of the programme activities as initially defined. This concern has been reflected in the successive budget proposals by the Commission for the years 1984, 1985 and 1986 and in the budgets for these years approved by the Budget Authority. The budget execution during these years has clearly been performed under this overall guideline. In comparison with the amount of funds estimated necessary for the programme execution in the December 1983 programme decision, this guideline has led - as indicated every year in the budgets - to a situation where the amount of funds remaining for 1987 would be considerably lower than in previous years.

In November 1985 the JRC Board of Governors drew attention to this matter and informed the Council that the remaining funds for 1987 would be insufficient. It suggested making use of the provisions in the programme decision to proceed either with a programme revision for 1987 or to embark on a new multiannual programme as of that year. In the meantime, the situation has been partly countered by a savings scheme for 1986 and a reduction in the budget proposal for 1987 in comparison with that originally envisaged. Austerity measures are being applied in 1986 to this end so that money thus made available in 1986 will contribute to funding the 1987 budget and reduce to a minimum the need for additional funds.

It is the combination of the above considerations which has led the Commission to confirm its intention to proceed with a programme revision for 1987, the last year of the 1984-1987 multiannual exercise.

II THE SCIENTIFIC AND TECHNICAL CONTENTS OF THE PROPOSED REVISION AND THEIR RELATIONSHIP TO OVERALL COMMUNITY S & T POLICY

1. 1984-1987 Programme Items

The multiannual programme presently being executed was built around two main themes - safety and protection of the environment and standardisation. These themes were applied to research undertaken under five research action programmes : Industrial Technology, Fusion, Fission, Non-Nuclear Energy Sources, Environment, together with the complementary programme High Flux Reactor (HFR). Other activities comprise scientific support to the Commission. The actual programme items can be found in annex I compared to the revised situation.

It is recalled that the programme was decided by the Council in December 1983 (5) supplemented by the decision from July 1985 (6) on the implementation of a Tritium Handling Laboratory in Ispra.

2. Evolution towards the Future

It is intended to make every effort to improve the use of JRC competences and facilities in 1987 and concentrate the efforts on priority areas. To this end, the Commission intends to :

- a) wind up certain actions;
- b) continue those activities which are related to an institutional task of the Community or otherwise correspond to a clear Community need;
- c) prepare new actions in areas where an urgent need has been identified.

For the various actions to be included in the programme for 1987, particular efforts are being made to ensure that such actions contain the requisite element of Community added value, and moreover, that they meet the requirements of users and of potential users of the results to be obtained.

Whenever possible, the actions should be of service to industries in the Community countries, and it is a guiding principle that the research planning identifies clear goals and milestones in comparison with which, an evaluation of the results can be performed.

In drawing up the detailed scheme the Commission, as already stated, has been guided by the Council discussions including those on the new Community strategy for research and development and moreover, by considerations in the JRC Board of Governors, the Scientific Council

(5) O.J. L 3/22, 5.01.84

(6) O.J. L 210/28, 7.08.85

and by the opinions from the sectorial advisory committees on the future of the JRC programmes. Broadly speaking, even for the transitional year, there will be increased efforts in areas related to competitiveness of industry and services and in those related to the quality of life, whilst actions on energy management will be somewhat reshaped. It can be seen that the themes "safety and protection of the environment" and "standardisation" of the 1984-1987 multiannual programme have been refined during the first years of the exercise and throughout the revised year 1987, efforts will be concentrated on pre-normative research, nuclear and non-nuclear safety and environmental protection.

The multiannual programme's structure will be maintained and during the year individual research programmes will continue to be executed under the five research action programmes (RAPs) set out below.

Within the frame set out by the Council decision on the multiannual programme 1984-1987 a possibility exists for flexible programme adaptations - within stated limits - from year to year under the control of the JRC Board of Governors, the JRC Scientific Council and following the continuing discussions in the relevant sectorial advisory committees. Some of the changes proposed for 1987 are clearly within this margin of flexibility. Others are of a more substantial nature and, both from a formal point of view as well as in substance, they entail a modification in the programme and project structure in comparison with the original structure of the 1984-1987 programme.

Although there may well be reasons for some changes, it is however proposed for 1987 to maintain the original basic structure of five research action programmes (RAP's), and the complementary programme "Exploitation of the HFR Reactor".

The more substantial changes to be noted are the following :

Under the RAP Industrial Technologies the work will be characterized by pre-normative research and emphasized by the formulation of a programme on Materials and Structures with special weight on Reliability and Standards. Based at the Petten Establishment with its high temperature materials research, and in collaboration with the Ispra Establishment, the programme will be carried out in both establishments with a contribution from the Karlsruhe Establishment in a later development.

For the RAP Fission it is essential that the whole area of reactor safety research be evaluated in view of the recent accident at Tchernobyl to re-define priorities both within the RAP and in relation to research activities in other fields. Direct and cost shared JRC activities will centre on present research into severe accidents and ways means to contain their consequences and reliability of components and systems including increased studies on probabilistic risk assessment methodologies.

The work of collecting and collating information on reactor incidents entrusted to the JRC will be enhanced in view of the Community need for reliable international information for collaborative purposes. At the same time work on materials and sodium thermohydraulics for fast breeder reactors will be brought to a close. The work is performed both by direct and cost shared actions.

The action relating to the RAP Non-Nuclear Energy Sources will be reviewed and concentrated in line with the norms and standards brief during the transition year. Research undertaken in the Ispra Establishment on photovoltaic systems, testing of active solar systems etc., which for testing and reference purposes has at its disposal a unique installation, will continue to be active in this area for the benefit of European industries and other Community programmes. The programme has given rise to intensified collaboration with Member States. When further examining the future of activities in this field, consideration will be given to a new division of work with national activities.

Under the RAP Environment, the work will be based mainly on the present activities for Protection of the Environment, in studies on Industrial Hazards, and in the use of remote sensing data for environmental protection, management of resources, agriculture and desertification research. There will be changes in the detailed structure of the work, and the remote sensing activities are strongly oriented towards meeting the stated needs of the users.

Furthermore, a new programme on Radiation Evaluation and Monitoring is proposed as a one-year exploratory exercise dealing with collection of relevant data and in particular those generated after the Chernobyl accident; review of mathematical models to describe the environmental evolution of radio-nuclides released from nuclear installations and various experiments. This programme is closely linked with activities under the RAP Health and Safety and will be coordinated with the shared-cost action programme 1985-1989 on Radiation Protection.

Since 1987 is considered as being a year of transition, no investments in any new scientific-technical installations not included in the existing plans for the 1984-1987 programme period are planned. The scheduled work on the Tritium Handling Laboratory will continue, the construction phase of the PERLA facility for the Safeguards Programme will be nearly completed by the end of the year, and the first commissioning of the PETRA facility for the Waste Management programme will take place early in 1987.

For the latter facility, following a recommendation by the Scientific Council, a "users' group" has been established to programme the use of the installation. The programme to be executed in 1987 will otherwise be supported by the existing facilities of which the most important are the linear accelerators in Geel, the nuclear installations in Karlsruhe, the HFR reactor in Petten and the installations in Ispra for reactor safety research, structural mechanics research, testing of solar energy components, as well as the general computing installations.

Intentions for a transitional programme for 1987 are shown above. They represent an intermediate step between the present multiannual programme and further considerations on the preliminary orientations developed in the Commission document "Future Developments for the Joint Research Centre - Discussion Paper for an Orientative Debate" (COM (86) 145) put before the Council for its meeting on 8th April 1986.

The Programme for 1987 should remain flexible to enable adaptations to the findings of the "Expert Panel" and other important Community developments arising during the transition period, most notably the decision on the new Framework Programme. To this end, the Commission can profit from the flexibility measures laid down in the terms of reference for the JRC Board of Governors allowing for transfer of funds - within certain limits - between the individual programmes.

For the JRC, however, the year will be not only a transition year at the programme level, but above all it should be the year where the Centre develops new working relationships with the outside world, most importantly with industries in the Member States and at the same time enhancing its services in support of other Commission activities. In parallel with these actions, procedures and structures must be adapted to ensure maximum efficacy in the performance of the new task.

3. Reinforcement of the Scientific and Technical Potential of Europe

The Joint Research Centre will continue, in a number of ways, to contribute to Community activities related to the achievement of a true Researchers' Europe. It is expected that some 25 visiting scientists, on sabbatical leave or detachment from their organisations, will be hosted by the JRC and the fellowship scheme provides for young research fellows to work at the establishments, mainly on post-doctoral theses. More than 100 junior or senior scientists will work under these and other schemes in the JRC establishments, and will include visitors from developing countries.

At the same time, contracts and agreements with universities and research institutes will provide an important degree of cross-fertilisation and the JRC will continue to participate in a certain number of the "Stimulation" Programme projects as an equal partner with other European research teams. Ispra courses provide places for some 400 persons per year at courses lasting from two days up to some weeks in a wide range of general and specialised subjects. Some courses are even organized in the Member States and developing countries under collaboration arrangements. At Petten a "Meeting Point" activity corresponds to the organisation of courses, seminars and information exchange between scientists working in industry, universities and research institutions for high temperature materials, and at Geel and Karlsruhe healthy communication will be maintained with individual scientists and industries working in their respective fields of interest.

4. Activities on Direct Request from Customers

Finally, studies requested by other Commission Directorates General in support of their sectorial policies will be continued outside the programme, and with special budgetary arrangements.

In this way, the Commission services draw direct use of the competences and technical laboratories of the JRC and request work under circumstances where the JRC is often placed in a competitive situation with other laboratories, industry etc. Studies are under way to examine to what extent this type of activity may be expanded in the future, and this will in all likelihood be one of the items to be studied in more detail by the new Panel of experts.

III. CONSIDERATIONS RELATED TO PROGRAMME APPROPRIATIONS

1. The commitment appropriations estimated as necessary for the execution of the 1984-1987 programme of the JRC were fixed by Council Decisions 84/1/EEC, Euratom and 85/373/Euratom at the level of 700 MIOECUs. An indicative breakdown of this amount was given at that time and is recorded in the Decision 84/1/EEC, Euratom : 400 MIOECUs for expenditure on staff and 300 MIOECUs for other expenditures.

A more precise repartition was fixed by the 1984 budgetary procedure :

- staff credits	=	398.8 MIOECUs
- operational credits	=	301.2 MIOECUs

2. The current situation can be described as follows :

A. Expenditure on staff

Appropriations earmarked for expenditure on staff were updated annually, as part of the budgetary procedure, in accordance with Council decisions on salaries and wages.

Successive decisions by the Budgetary Authority and what is proposed for the preliminary draft budget 1987 bring the evaluation of staff credits for the execution of the revised programmes to the level of 464.2 MIOECUs.

It should be noted that because of understaffing and economies in 1986 and 1987, the increase of the cost of the programme due to Council decisions on salaries and wages (464.2 - 398.8 = 65.4 MIOECUs) is smaller by 13 MIOECUs as compared to the theoretical full cost of the JRC staff in the period 1984 to 1987.

B. Other expenditures (Credits for Operations)

As stated above, the original estimate for funds for expenditures other than staff expenditures was 301.2 MIOECUs.

Taking into consideration the successive budgets approved by the Budgetary Authority, the budget executions in 1984 and 1985 and the planned economy budget proposed in the preliminary draft budget for 1987 *) an amount of 334 MIOECUs is estimated for the revised programme.

*) The figure proposed in the 1987 preliminary draft budget is 67 MIOECUs whereas the corresponding figure for 1986 was approved to be 89 MIOECUs from which the JRC is saving 10 MIOECUs.

The difference between the original estimate and the present one for expenditures other than staff amounts to 32.8 MIOECUs (334 MIOECUs minus 301.8 MIOECUs).

The table shows the distribution of the other expenditures for the revised programme and the distribution of the 32.8 MIOECUs necessary for inclusion in the programme revision.

For coherence the same table also provides the distribution of the staff expenditures discussed above for the revised programme.

Historical Archives of the European Commission

TABLE 1

REVISED 1984-1987 PROGRAMME OF THE JRC -- INDICATIVE BREAKDOWN RESOURCES

(Appropriations in millions of ECU)

PROGRAMMES	REVISED PROGRAMME			SUPPLEMENTARY CREDITS FOR OPERATIONS
	Staff Credits	Credits for operations	TOTAL	
Industrial technologies				
- Nuclear measurements and reference materials	43.7	30.8	74.5	2.7
- Materials & structures : reliability & standards (High-temperature materials)	22.2	15.1	37.3	2.3
Total	65.9	45.9	111.8	5.0
Fusion				
Fusion technology and safety	38.2	30.6	68.8	3.5
Total	38.2	30.6	68.8	3.5
Fission				
- Reactor safety	126.4	82.1	208.5	5.3
- Management of radioactive waste	38.4	18.3	56.7	3.2
- Safeguarding and management of fissile materials	36.1	15.8	51.9	2.6
- Nuclear fuels and actinides research	37.6	36.2	73.8	4.0
Total	238.5	152.4	390.9	15.1
Non-nuclear energy sources				
- Reference methods for non-nuclear energy systems	28.0	14.0	42.0	1.0
Total	28.0	14.0	42.0	1.0
Environment				
- Environmental protection	39.9	18.6	58.5	1.7
- Application of remote-sensing techniques	20.4	14.0	34.4	0.6
- Industrial hazards	14.6	7.6	22.2	0.1
- Radiation evaluation and monitoring	1.7	0.7	2.4	0.7
Total	76.6	40.9	117.4	3.1
Activities of scientific departments				
Exploitation of the HFR (complementary programme)	17.0	50.2	67.2	5.1
Total	17.0	50.2	67.2	5.1
Total programme (1984 to 1987)	464.2	334.0	798.2	32,8

IV. PROPOSAL FOR A COUNCIL DECISION

On the following pages is provided the text of the proposed Council decision revising a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the European Economic Community (1984-1987).

The Annex A of this proposed Council decision outline the modifications to be introduced for 1987 in the Council decisions of December 1983 and July 1985 on the four-year programme 1984-1987 of the Joint Research Centre.

The Annex B of the proposed Council decision gives the corresponding changes in the resources estimated necessary for executing the revised 1984-1987 programme and the indicative breakdown of those resources between the programmes and subprogrammes.

The Commission requests the Council to adopt the proposed decision.

Historical Archives of the European Commission

COUNCIL DECISION
of

revising a research programme to be implemented by the
Joint Research Centre for the European Atomic Energy Community
and for the European Economic Community (1984-1987)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy
Community, and in particular Article 7 and Article 8 thereof,

Having regard to the Treaty establishing the European Economic
Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission (1), presented after
consultation, with regard to nuclear projects, of the Scientific and
technical Committee,

Having regard to the opinion of the European Parliament (2),

Having regard to the opinion of the Economic and Social Committee (3),

Whereas, in the context of the common policy relating to the field of
science and technology, the multiannual research programme is one of
the principal means whereby the European Atomic Energy Community can
contribute to the safety and development of nuclear energy and to the
acquisition and dissemination of information in the nuclear field;

Whereas Article 2 of the Treaty establishing the European Economic
Community assigns to the Community inter alia the task of promoting
throughout the Community a harmonious development of economic
activities, a continuous and balanced expansion and increase
stability, whereas the objectives of activities engaged in by the
Community to this end are set out in Article 3 of the said Treaty;

Whereas the non-nuclear projects provided for by this Decision appear
necessary for the attainment of these objectives;

(1) COM(86)
(2)
(3)

Whereas on 14 January 1974 the Council adopted a resolution on the coordination of national policies and the definition of projects of interest to the Community in the field of science and technology (1);

Whereas the programme was drawn up in accordance with the Council resolution of 17 December 1970, concerning the procedures for adopting research and training programmes (2);

Whereas it is of advantage to define and embody the common science and technology strategy in multiannual Framework programmes setting out the complete range of scientific and technical activities being carried out or due to be carried out on the basis of the three Treaties whereas this advantage was confirmed by the Council in its resolution of 25 July 1983 on Framework programmes for Community research, development and demonstration activities, and a first Framework programme 1984 to 1987 (3);

Whereas the Commission has submitted on July 1986 a proposal for decision by the Council on a Framework programme of community research and technological development 1987-1991 (4);

Whereas the Joint Research Centre (JRC) should be fully integrated in the actions of this new Framework programme and must continue to play a central rôle in the Community's research strategy and to carry out work of common interest;

Whereas Article 3 of Council Decisions 77/488/EEC, Euratom (5), 80/317/EEC, Euratom (6) and 84/1/EEC, Euratom (7), provides for a review of the programme during its third year,

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- (1) O.J. No C 7 of 29.1.1974, p. 2
(2) O.J. No L 16 of 20.1.1971, p. 13
(3) O.J. No C 208 of 04.8.1983, p. 1
(4)
(5) O.J. No L 200 of 08.8.1977, p. 4
(6) O.J. No L 72 of 18.3.1980, p. 11
(7) O.J. No L 3 of 05.1.1984, p. 21

HAS DECIDED AS FOLLOWS

Article 1

The research programme 1984-1987, as defined in the Annex A of Council Decision 84/1/EEC, Euratom, of 22 December 1983 (1) complemented by Council Decision 85/373/Euratom of 25 July 1985 (2), is replaced for the year 1987 by a revised programme as set out in Annex A of the present decision.

Article 2

Taking into account the decisions already adopted by the Council as part of the budgetary procedure, the expenditure commitment estimated as necessary for the execution of the revised programme should be increased for the year 1987 by 32.8 million ECU for expenditures other than those on staff.

An indicative breakdown of the expenditure commitment for the revised multiannual programme is given in Annex B.

Article 3

Before proposing the next multiannual programme of the JRC, the Commission shall communicate to the Council and to the European Parliament the conclusions of an examination of the future rôle of the JRC, carried out by a high level Panel.

Done at Brussels,

For the Council

The President

(1) O.J. No L 3 of 5.1.1984, p. 21
(2) O.J. No L 210 of 7.8.1985, p. 28

ANNEX A

JOINT RESEARCH CENTRE
RESEARCH PROGRAMME FOR THE YEAR 1987

(last year of the quadriannual programme 1984-1987
revised by the present decision)

The following modifications are introduced in the programme adopted with the Decisions 84/1/CEE, Euratom of 22 December 1983 and 85/573/Euratom of 25 July 1985 :

RESEARCH ACTION PROGRAMME
INDUSTRIAL TECHNOLOGIES

Materials and structures : reliability and standards
(Extending the programme "High-temperature materials")

- High Temperature Structural Alloys
- Advanced Engineering Ceramics
- High Temperature Materials Data Bank and Information Centre
- Methods for assessment of reliability in materials and structures

RESEARCH ACTION PROGRAMME
FISSION

Reactor safety

- Reliability and risk assessment
- Integrity of components and systems in light-water reactors
- Study of abnormal behaviour in core-cooling systems in light-water reactors
- Containment studies
- Source term
- Modelling of accident situations in fast breeder reactors

RESEARCH ACTION PROGRAMME
NON-NUCLEAR ENERGY SOURCES

Reference methods for non-nuclear energy systems

(Replacing the programmes "Techniques for solar energy tests" and "Management of energy in dwellings")

- Photovoltaic energy systems
- Non-polluting energy systems

RESEARCH ACTION PROGRAMME
ENVIRONMENT

Environmental protection

- Environmental chemicals
- Atmospheric pollution
- Water quality
- Chemical waste

Application of remote sensing techniques

- Land monitoring and management
- Protection of the marine environment
- Agriculture

Radiation evaluation and monitoring

The other programmes are not modified

The new level of resources for the various programmes is reported in the ANNEX B.

REVISED 1984-1987 PROGRAMME OF THE JRC - INDICATIVE BREAKDOWN OF RESOURCES

(Appropriations in millions of ECU)

Programmes	APPROVED PROGRAMME		SUPPLEMENTARY CREDITS FOR OPERATIONS	REVISED PROGRAMME
	Decisions 84/1-85/373	Including Budgetary Decisions *)		
Industrial technologies				
- Nuclear measurements and reference materials	64	71.8	2.7	74.5
- Materials & structures : reliability & standards (High-temperature materials)	28	35.0	2.3	37.3
Total	92	106.8	5.0	111.8
Fusion				
Fusion technology and safety	59	65.3	3.5	68.8
Total	59	65.3	3.5	68.8
Fission				
- Reactor safety	192	203.2	5.3	208.5
- Management of radioactive waste	49	53.5	3.2	56.7
- Safeguarding and management of fissile materials	45	49.3	2.6	51.9
- Nuclear fuels and actinides research	66	69.8	4.0	73.8
Total	352	375.8	15.1	390.9
Non-nuclear energy sources				
- Reference methods for non-nuclear energy systems	39	41.0	1.0	42.0
Total	39	41.0	1.0	42.0
Environment				
- Environmental protection	49	56.8	1.7	58.5
- Application of remote-sensing techniques	29	33.8	0.6	34.4
- Industrial hazards	21	22.1	0.1	22.2
- Radiation evaluation and monitoring	-	1.7	0.7	2.4
Total	99	114.4	3.1	117.5
Activities of scientific departments				
Exploitation of the HFR (complementary programme)	59	62.1	5.1	67.2
Total	59	62.1	5.1	67.2
Total programme (1984 to 1987)	700	765.4 **)	32.8	798.2

*) As well the re-allocation of staff as proposed by this programme revision.

***) It should be observed that, because of understaffing and of economies in 1986-87, the increase of the cost of the programme due to Council decisions on salaries and wages (65.2 MIOECUs) is smaller by some 13 MIOECUs as compared to the theoretical full cost of JRC staff in the period 1984 to 1987.

TECHNICAL CONTENT OF THE PROGRAMME IN THE TRANSITION PERIOD

This annex describes the manner in which the Joint Research Centre's Programmes will be adapted in view of the transition period. The system of classifying these activities under five Research Action Programmes (RAP's) and the complementary programme on the High Flux Reactor in Petten - as set out in the Council decision of December 1983 - will be maintained.

1. Industrial Technologies

Further emphasis will be placed on the programmes on Nuclear Reference Materials and Reference Measurements and Materials and Structures, through enlarging the sphere of activity in support of Fusion Research and by means of increased activity in the areas of pre-normative research respectively

The laboratories in the Petten and Ispra establishments will collaborate closely on the Materials and Structures programme, and a contribution from the Karlsruhe establishment is anticipated at a later stage. It is likewise envisaged that the methods for materials development and analysis, originally developed for nuclear technologies, will be adapted to the area of non-nuclear materials.

Close collaboration will continue between the laboratories in Geel and the BCR.

In this way, the recommendations of various advisory bodies are largely heeded and by means of close contact with industry at different levels, a proper execution of the programme can be achieved.

1.1 Nuclear Reference Materials and Reference Measurements

The revised programme on Nuclear Reference Measurements stresses, in particular, the following activities :

- Measurement of Standard-Neutron Data
- Determination of the Neutron emission cross-sections for use in Fusion technology (NET)
- Investigations into Neutron Data for nuclear fission which was described in an OECD priority list, and the analysis of which is constantly requested by the advisory bodies (CGC, Evaluation Panel).

An important project in the sphere of Nuclear Metrology is the development of a plastic calorimeter for the measurement of Neutron Dose with absorption properties which resemble those of human tissue.

The research project on Reference Materials is pursuing, and furthermore promoting, a Community programme for measurement and evaluation of nuclear analytical data on a European level. Moreover, efforts are being

further concentrated on the exact determination of the atomic weight of silicon in connection with cooperative attempts for a more precise determination of the Avogadro number.

Finally, the activities of the Community Bureau of Reference (BCR) will be supported on a wider scale.

The "LOLERM" Project (Low Level Radioactivity Reference Materials) will be temporarily suspended. A new approach in this area is, however, being considered in the light of the Chernobyl accident.

1.2. Materials and Structures

As far as this programme is concerned, on the one hand the work begun in Petten on the High-Temperature Materials Alloys and High Performance Ceramics will be continued, and on the other hand, methods are to be developed in Ispra by means of which the suitability and lifetime of selected materials for a specific technical application can be tested.

In order to guarantee an optimal application of these methods, close contact with national and international research institutions must be sought. The work is aimed at supporting industrial technologies and contributing towards industrial competitiveness.

By their application high temperature structural alloys are subject to the combined effect of chemical (corrosive), mechanical and thermal stress. The studies currently being carried out in Petten should increase understanding of the behaviour of these alloys and of the damage mechanisms to which they are exposed in industrial use. With improved knowledge and with the aid of appropriate analytical models, a catalogue of properties can be drawn up to serve as a basis for the selection of materials for design of plant components, and which makes it possible to forecast their life expectancy and reliability. This project provides a contribution in particular to the petrochemical and energy-producing industries.

The objectives are similar for the projects dealing with Advanced Structural Ceramics, though in this case the development will be directed towards new manufacturing technologies. Methods developed in the JRC-Karlsruhe for Nuclear-Ceramics will also be applied for Material characterisation, and the analysis of mechanical, thermodynamic and transport properties.

Both projects, on high temperature alloys, and high temperature ceramics, will be carried out under multilateral, and international collaboration, such as COST (for alloys) IEA (for ceramics), as well as BRITE, EURAM, VAMAS and EUREKA (for both areas).

A third project concerns the collection, assessment and supply of data on high temperature materials. The data-bank in Petten will continue operation and be accessible to interested parties from all Community countries. The services of the Information Centre on High Temperature Materials can be called upon on a Europe-wide basis for information.

The transition programme envisages :

- The collection, assessment and distribution of Materials data, for industrial requirements, for the development of norms and for the application of Advanced Materials.
- The setting up of a Forum for exchange of information and know-how in the area of HTM in Europe, and for promoting Community activities:
- An analysis of the industrial requirements for norms and standards in the area of advanced and newly developed materials.

The contribution of the Ispra Establishment to the Materials and Structures programme will concentrate, in the present programme situation, on 2 activities : the development of methods for reliability assessment of plant components and materials, and the design of a community facility (reaction wall) for testing response of large and complex structural and mechanical systems under significant static and dynamic loads to improve design criteria and construction codes.

The reliability analysis concerns, above all, steel structures which are employed in the chemical, the petrochemical and energy-producing industries.

Non-destructive test procedures for failure detection will thus be developed and mathematical models will be designed which will enable forecasts as to the life expectancy of a machine part or a plant component under given stress factors.

Suggestions as to procedures for standards will be collected, on the one hand by comparing the suitability of various techniques (acoustic emission, laser-holography, ultra-sonic and thermal techniques and modern methods for the microstructural analysis and for the examination of physical properties), and on the other hand by the intercomparison between different laboratories of procedures (round robin tests) and of result for the same techniques (Benchmark Exercises).

In 1987 a survey on new materials will be concluded and evaluated. This survey, in collaboration with national laboratories and industries, as well as with research programmes such as BRITE, EURAM, VAMAS, should establish the need for methods for the characterisation and reliability assessment of new materials for advanced technologies (for example aeronautics). The results of the tests allow the necessary metrological equipment to be made available, or, if possible, the conversion of existing installations.

The plans for a Reaction Wall will be accompanied by tasks which relate to the selection of the research projects and to the fixing of priorities. The continuing study on this facility will be conducted in close collaboration with national experts, with the aim of designing a true Community facility.

The inclusion of national experts in this project is planned, and moreover, an institutional structure must be created under the shared-cost actions, for the building and use of such installations.

The contribution of the Ispra and Petten establishments to the Materials and Structures programme concerns, above all, the application of scientific and technical methods for the support of national and international institutes in providing specifications, norms and the

definition of standards for assessing the possibilities for application and the safety of industrial products. These "prenormative" activities are looked upon as the pace-setting phase of the standardisation procedure. As an example, the work on the mechanical behaviour of tubular elements contributes to a BRITE project aiming at the up-grading of B.S., DIN and other relevant codes.

2. Thermonuclear Fusion

As in the past, the Ispra establishment will contribute to the European Fusion Research Programme, but will orient its contribution more towards problems of safety, which is illustrated by the high priority placed on the construction and equipping of the Tritium Laboratory.

In the field of Reactor Studies, JRC will continue to support the NET-team at Garching on aspects related to the mechanical configuration, remote maintenance and design of components (plasma facing components and breeding blanket).

The experimental activity on Breeding Blanket Technology will be focused, as in past years, on the completion of the data base on $^{17}\text{Li}^{83}\text{Pb}$, the liquid tritium breeder taken as the reference for NET-studies. Contribution from Ispra and Petten will deal with compatibility problems with steel and tritium recovery (out-of-pile and in pile experiments).

The Structural Materials Studies will deal with the measurement of the mechanical properties under irradiation of low activation Mn-Cr steels. As in the past, the irradiations will be performed in the Ispra MC-40 cyclotron and in the Petten HFR. The investigations on thermal fatigue of NET first wall panels will be undertaken by exploiting a facility now in advanced construction at Ispra.

The risk Assessment studies will include theoretical analyses of first wall and blanket accidents (loss-of-coolant) and of experiments on plasma-wall disruption simulation and $^{17}\text{Li}^{83}\text{Pb}$ /water interaction. For these two experiments a new electron gun and a large scale facility, available by the end of 1986, will be used. The analysis of the atmospheric diffusion of tritium in the environment will be pursued.

The activities in the Tritium Laboratory will, in collaboration with contractors from European industry, concentrate on detailed design. Furthermore, information, which must be presented to the Italian Safety Authorities in order to obtain an operating licence, will be made available so that construction can begin before the end of 1987. The preparation of the activities to be carried out in the Laboratory will be continued. Simulation experiments with hydrogen and deuterium shall be executed, and the Tritium rework technique will be tested.

3. Safety of Nuclear Fission

In the area of Reactor Safety research, priorities must be examined in the light of the considerations resulting from the Chernobyl accident, and, should the need arise, new priorities should be set. Without prejudging the results of the detailed analysis which has still to take place, it is to be anticipated that greater attention be paid to the problems concerning severe accidents in which the hard core melts and to the limitation of the consequences thereof. Moreover, efforts will be increased in the sphere of development of probabilistic techniques for

risk-evaluation. The tasks entrusted to the JRC - collection and assessment of data on reactor incidents - acquire a special significance in this connection.

On the other hand, activities in the area of Sodium Thermohydraulics for Fast Breeder Reactors will be drawn to a close in the near future.

Research into the safety of the nuclear fuel cycle will, on the whole, be continued with a slight increase in scope, with the exception of studies into the sub-seabed disposal of radio-active waste. A new installation in Ispra - PERLA - will shortly become operational for the activities concerning the safeguarding of fissile materials. Work on radioactive waste will be concentrated around a recently completed experimental facility (PETRA) to be exploited in association with national laboratories.

3.1 Reactor Safety

The programme will include six activities which are :

- Reliability and risk assessment
- Integrity of components and systems in light-water reactors
- Study of abnormal behaviour in core-cooling systems in light-water reactors
- Containment studies
- Source term
- Modeling of accident situations in fast breeder reactors

Some important elements for the transition programme are listed below :

As far as the studies into Reliability and Risk Evaluation are concerned, emphasis will be placed on a systematic analysis of the data already stored in the AORS (ERDS) data-base. 1987 will see the compilation of guidelines for the application of techniques for probabilistic risk-analysis. In support of this action, several study groups will participate in a Community Benchmark Exercise on severe accident analysis.

The activities on the evaluation of the life-span of components of light-water reactor primary-systems will be continued, as a result of which the importance of component safety for the prevention of accidents will be better appreciated.

The results of the LOBI test programme on the analysis of the consequences of failure in the cooling system of light-water reactors will be compared with the forecasts of mathematical models which are being developed for large systems under conditions of coolant loss, and particular transient stress.

New studies on source-term problems will be directed by Ispra, carried out in 1987 as cost-shared actions. In order to analyse the results, the team of analysts in Ispra will be reinforced in preparation for an integral Test Programme as suggested by one of the Member States.

The programme on investigation into austenitic steel will be brought to a close in 1987, and a programme on concrete for safety containment will be prepared in its place. This will be included in a project on containment studies to be conducted in close collaboration with institutions in the member countries.

The safety analysis of fast-breeder reactors concentrates on severe accidents in which local and complete core failure will be considered.

The FARO and PAHR (in-pile) projects will continue in 1987 as originally foreseen. Work on the development of European Accident Codes (EAC) will be completed, and the analysis of local (Sub-Assembly) failure will be given more attention.

The test programme on sodium thermohydraulics will be terminated. Moreover, the research area liquid Metal Fast Breeder Reactor materials properties and structural behaviour will also be terminated. The present programme on evaluation of a vibrating table was already brought to an end in 1986. In the transition year, plans will be made for a reinforcement of the analytical work at the JRC through a reduction of the activities on large thermohydraulic system codes.

The overall work will continue in close collaboration with national research centres, utilities and regulatory bodies who will benefit from the results to be obtained. The collaborative efforts with industry will be emphasised by continuation of the shared-cost activities initiated in 1985.

3.2 Radio-active Waste Management

The previous structure of the project will be maintained in 1987 : the sphere of activity on Waste Management and the Nuclear fuel cycle consists of, along with radiochemical studies and Actinide Measurements, the setting-up of the PETRA installation. The safety aspects of storing radio-active waste in continental geological formations will be examined, as will the possibility of sub-seabed disposal.

The transition towards a new programme will be prepared in 1987. In this respect, problems concerning characterisation and quality control are to be considered.

During the course of 1987, the PETRA installation will begin its "cold" operations. In this connection, the nuclear test phase will come to an end by the end of the year. One of the user groups, established at the suggestion of the competent CGC, will schedule the tests to be carried out, and will encourage the exchange of information between interested parties. The JRC-Karlsruhe will collaborate more actively on the programme, and will provide contributions to the characterisation of waste, and quality control.

The cooperation on the project on storage of sub-seabed waste disposal will be reduced, and wound up in 1988.

3.3 Safeguards and Fissile Material Management

This programme will further develop techniques and instrumentation for the assay of Fissile Materials, and its containment and surveillance in nuclear installations, it will also deal with the processing, transmission and evaluation of data relevant to safeguards, and will study integrated methods for control of the flow of fissile materials through the various stages of the nuclear fuel cycle.

The setting up of the calibration and training Laboratory PERLA in Ispra, which should be completed in 1987 shall be given priority. Emphasis shall also be placed on the systematic development of integrated systems for containment and surveillance of the storage of nuclear materials. Finally, special attention will be given to the development of data-bases for accountancy declarations of fissile materials and their exploitation using decision support systems.

3.4 Nuclear fuels and actinide research

An essential part of the programme carried out in the JRC-Karlsruhe, the contribution to the development of nuclear fuels, to the safety of the actinide cycle, and to basic actinide research will be continued. In this respect, and in view of the next multiannual programme, some shift of emphasis is planned :

In the area of analysis of the behaviour at high temperature of reactor materials, greater consideration will be given to the problem of "post accident heat removal" (PAHR).

The aerosol studies, previously limited to active particles shall be extended to other nuclear and non-nuclear aerosols such as the application of purification aerosols. In the area of development of nuclear fuels, the advisory bodies recommend the inclusion of fast-breeder nuclear fuels in the transient-programme, and to examine more closely the special problems of nuclear fuels, such as that which arises upon the recycling of Plutonium in Light Water reactors. Building on the many years of experience gained in the area of nuclear fuels analysis, certain prospective studies are to examine the possibilities of laser application for the treatment of materials and for the preparation of high purity materials samples (isotopes) as calibration substances for basic research on Actinides (and where possible for nuclear medicine).

As described in point 3.1 and 3.2 the JRC-Karlsruhe shall be more involved in the future in the Materials research programme and the Radio-active Waste Disposal Programme.

4. Non-Nuclear Energies

This programme is to be completely restructured. The programme Energy Management in Habitat and the testing of Solar Energy Systems will be replaced by a programme on Reference Methods for Non-Nuclear Energies, whereby the mission of the JRC for the development of Norms and Standards will be emphasised.

The new programme encompasses two projects:

The first concerns development and trials of test methods for photovoltaic convertors in the European Solar Testing Installation (ESTI), in which area the characterisation of advanced photovoltaic materials (amorphous silicon) is moving into the foreground.

The second project on non-polluting thermal energy systems is concerned with the testing of active solar systems and passive solar test methodologies. This is done in concertation with and coordination of national activities.

5 Environment

As in the past, the programme encompasses Protection of the Environment; the development and the application of remote sensing techniques; the identification of industrial risks and the problems of radiation protection. In 1987 the publicly accessible ECDIN Data bank on substances, potentially toxic to the environment, shall be transferred to the competent service of the Commission, whilst the JRC shall remain responsible for the supply of data.

5.1 Protection of the Environment

The most important developments for 1987 in comparison with the original programme are the inclusion of an activity on chemical waste, and increased activities on modelling and on the effects of pollution in the environment on man, and the ecosystem.

In the light of experience during the first three years of the programme it is proposed to reclassify the ongoing research activities in four categories: "Environmental Chemicals", "Atmospheric Pollution", "Water Quality" and "Chemical Waste", (this last being based on activities previously carried out within the "Industrial Hazards" programme).

Environmental chemicals and their potential danger will be described and evaluated in ECDIN (Environmental Chemicals Data Information Network). The data are publicly accessible. Atmospheric pollution in enclosed spaces, and its effect on human beings gains significance as a research project and is studied within the framework of a JRC led COST action. Trace metals and their consequences on health will be further examined.

In the context of harmful substances in the atmosphere, acid deposition constitutes one of the foremost research areas, whilst the analysis of photochemical effects will be considered in more detail with emphasis on its effect on plants. Mathematical models should prove helpful in gaining a better understanding of the transport of pollutants in the atmosphere, as well as of the problem of mass balance for which the Community measurement actions provide field data.

Important contributions are envisaged both to the COST 611 Action (physico-chemical behaviour of atmospheric pollutants) and to the EUREKA project EUROTRAC.

In the Central Laboratory for atmospheric pollution, further work will be carried out, by means of suggestions for harmonisation of analytical techniques, thresholds for sulphur dioxide and suspended particulates, in accordance with the Council decision.

Analyses of water quality will be concentrated on the distribution of trace metals and their possible harmful effects on the environment in hydrous ecological systems.

A further research project (that was previously carried out in the context of harmful industrial substances) deals with the distribution and possible metamorphosis of harmful chemical waste, its management and its effect on the environment, in the sense of the Council decision 78/319 on toxic waste products.

5.2 Radiation measurements and evaluation of risk from radiation

This is a study prepared for inclusion in the Programme proposal for 1988, which, within the meaning of chapter III of the EURATOM Treaty, and in the light of the Chernobyl disaster, aims at creating or improving the scientific tools for further Commission activities in the area of Radiation protection.

In particular, the following are envisaged :

- Examination of the possibilities of collecting all information on environmental characteristics and the biological effect of radio nuclides in one data base;
- The analysis of the capability, on a European scale, of mathematical models to calculate the distribution of radio-nuclides which are released from a nuclear facility (under normal operating conditions, or in the case of an accident) and to evaluate the resulting collective dose for the population;
- as a complement to the shared-cost programme "Radiation Protection", there will be an activity for gathering and assessing the data obtained from environmental monitoring of the Ispra site. The new programme will include work on calibration of measurement methods for air sampling, and campaigns for intercomparison of results.

5.3 Remote sensing

For this programme, 1987 will constitute a transition towards the new projects structure and objectives to be implemented in the subsequent multiannual programme. The main evolutions will be as follows.

Concerning micro-wave remote sensing, preparatory studies for a future project on the application of synthetic aperture radar (SAR) will be undertaken. An important effort will be devoted to the handling and application of the data obtained from the 1986 AGRISAR campaign.

The current project on coastal transport of sea pollution will be brought to such a stage as a significant reorientation might be decided at the end of 1987. A method for mapping bio-physical parameters connected with sea pollution and a mathematical circulation/diffusion model for the description and prediction of pollution pathways should become available. During the second half of the year, the prototype of laser-fluorosensor developed for detecting and analysing oil slicks at sea will be ready for in-field testing. Studies as to whether this technique may be used equally to detect and identify chemical pollutants at sea will take place, in view of an eventual expansion of the programme in this area.

Concerning marine productivity, the present exploratory activity using test sites in typical upwelling zones of the Atlantic coast of Marocco will be enlarged with the view of setting up a specific project in the 1988-91 programme.

In 1987, the action plan common to DG Agriculture, the SOEC and the JRC for the integration of remote sensing in a European Information System for Agriculture will be launched. The initial actions will be executed under contract and concern the development of a land use inventory methodology and the demonstration of crop yield indicators based on remotely sensed data.

The project on natural disasters, actually limited to a feasibility study, will be discontinued.

5.4 Industrial Hazards

The JRC's activities in this area will be carried out in close cooperation with DG Environment, Consumer Protection and Nuclear Safety. Since this is an area in which the JRC is particularly specialised in respect of risk assessment and risk management, it can therefore fall back on its competences which have been developed for problems in reactor safety.

As a result of the groundwork carried out in 1984 and 1985, and on the basis of discussions with representatives from Industry and the Safety Authorities, the new JRC Programme will deal with two aspects of industrial safety : Accident Prevention, and Damage Limitation.

The activities on Accident Prevention include trials of models for risk analysis, which will partly be carried out in collaboration with other research groups, which should therefore serve in the harmonisation of methods to be used. Furthermore, in this connection, research projects of other institutions (EuReData - European Reliability Databank Association - and ESRA - European Safety and Reliability Association) shall be coordinated and data obtained in various research programmes shall be exchanged.

The activities on Accident Mitigation and Control shall concentrate on experimental and theoretical studies of the so-called Runaway Reactions, that is processes which, once out of control, increase the damage effect rapidly. The studies foreseen encompass kinetic and thermodynamic aspects; the carrying out of modelling tests, and the analysis of the effectiveness of relief systems.

The project on chemical waste materials, previously dealt with under Industrial Hazards, will be added to the environment protection programme in 1987; the development of techniques for non-destructive testing of materials will be continued under the programme Industrial Technologies.

6. Exploitation of the High Flux Reactor

This complementary programme will, in accordance with the plans discussed in the competent committees and advisory boards, be continued in 1987.

As a result of the reconstruction undertaken between 1984 and 1986, a high performance, modern installation, eminently suited to the testing of materials, and as an intensive neutron source, is now available.

The principal areas of application are, as in the past :

- Technologically oriented research in the sphere of nuclear fuels development for nuclear fission reactors, and the analysis of the behaviour of structural materials under stress
- Material experiments for fusion reactors
- Hard-core physical experiments
- Application of neutron radiation for the testing of material structures
- Production of radio isotopes for medical, industrial and scientific use
- Activation analysis

A N N E X 2

Impact on Small and Medium Sized Entreprises (SME's)

1. The execution of the planned programme for 1987 will have direct and indirect impacts in several ways on small and medium sized enterprises, where these are defined to the firms with a staff of less than 100 and 500 persons respectively.
2. The direct impact falls into two categories
 - i) benefits which SME's derive from the programme execution
 - ii) circumstances where the JRC acts as a customer of SME's.

The indirect benefits are those which SME's (alongside other enterprises, national research bodies, regulatory bodies, etc) derive from JRC results reported in the technical literature, at public seminars and conferences and to national authorities through the regular reporting of JRC work and results and through the sectorial Advisory Committees for Management and Coordination.

3. With regard to the direct benefits for SME's, firms in this category are regular users of JRC activities on the collection, assessment and dissemination of knowledge such as for example
 - the high temperature materials data base in Petten
 - the Ispra data base ECDIN, on chemical toxicological substances (now in commercial operation at an outside firm)

SME's are users of test facilities in the JRC including the solar test facility in Ispra which also gives rise to further development of the methods applied.

Likewise as in the past, in 1987 SME's will be engaged in collaborative efforts with the JRC establishments on instrument developments for use in several programmes, development of new methodologies including information transport and handling techniques (safeguards systems, remote sensing techniques, etc). It is characteristic that new scientific disciplines for the use of programmes have often been developed in collaboration with SME's (artificial intelligence as an example) moreover, most projects on valorisation of JRC research results are conducted with SME's. This will continue in 1987.

A final spin-off from JRC research results has been the stimulation it has given to the setting up of new SME's in the field of high technology. There are particular recent examples of this stemming from the programme on JRC application of remote sensing from space techniques.

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DECISION

of 22 December 1983

adopting a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the European Economic Community (1984 to 1987)

(84/1/Euratom, EEC)

THE COUNCIL OF THE EUROPEAN
COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission⁽¹⁾, presented after consultation, with regard to nuclear projects, of the Scientific and Technical Committee,

Having regard to the opinion of the European Parliament⁽²⁾,

Having regard to the opinion of the Economic and Social Committee⁽³⁾,

Whereas, in the context of the common policy relating to the field of science and technology, the multi-annual research programme is one of the principal means whereby the European Atomic Energy Community can contribute to the safety and development of nuclear energy and to the acquisition and dissemination of information in the nuclear field;

Whereas Article 2 of the Treaty establishing the European Economic Community assigns to the Commu-

nity *inter alia* the task of promoting throughout the Community a harmonious development of economic activities, a continuous and balanced expansion and increased stability; whereas the objectives of activities engaged in by the Community to this end are set out in Article 3 of the said Treaty;

Whereas the non-nuclear projects provided for by this Decision appear necessary for the attainment of these objectives;

Whereas on 14 January 1974 the Council adopted a resolution on the coordination of national policies and the definition of projects of interest to the Community in the field of science and technology⁽⁴⁾;

Whereas the programme was drawn up in accordance with the Council resolution of 17 December 1970 concerning the procedures for adopting research and training programmes⁽⁵⁾;

Whereas Article 3 of Council Decisions 77/488/EEC, Euratom⁽⁶⁾ and 80/317/EEC, Euratom⁽⁷⁾ provides for a review of the programme during its third year;

Whereas it is of advantage to define and embody the common science and technology strategy in multi-annual framework programmes setting out the complete range of scientific and technical activities being carried out or due to be carried out on the basis of the three Treaties; whereas this advantage was confirmed by the

⁽¹⁾ OJ No C 311, 16. 11. 1983, p. 5.

⁽²⁾ OJ No C 307, 14. 11. 1983, p. 116.

⁽³⁾ OJ No C 341, 19. 12. 1983, p. 9.

⁽⁴⁾ OJ No C 7, 29. 1. 1974, p. 2.

⁽⁵⁾ OJ No L 16, 20. 1. 1971, p. 13.

⁽⁶⁾ OJ No L 200, 8. 8. 1977, p. 4.

⁽⁷⁾ OJ No L 72, 18. 3. 1980, p. 11.

Council in its resolution of 25 July 1983 on framework programmes for Community research, development and demonstration activities; and a first framework programme 1984 to 1987⁽¹⁾;

Whereas, during the period 1984 to 1987, the Joint Research Council (JRC) must continue to play a central role in the Community's research strategy and to carry out work of common interest by drawing on a level of resources which is the equivalent of the present level;

Whereas, more generally, the JRC programme as a whole must be in keeping with the conclusions of the Council of 10 March 1983,

HAS DECIDED AS FOLLOWS:

Article 1

The research programme, hereinafter referred to as 'the programme', set out in Annex A is hereby adopted for a period of four years, starting on 1 January 1984.

Article 2

The expenditure commitment estimated as necessary for the execution of the programme should be 700 million ECU, including expenditure on a staff of 2 260. An indicative breakdown of this amount, consisting of approximately 400 million ECU for expenditure on staff and 300 million ECU for other expenditure, is given in Annex B.

Article 3

Appropriations earmarked for expenditure on staff shall be updated annually, as part of the budgetary procedure, in accordance with Council decisions on salaries and wages. In the case of other expenditure, the JRC Board of Governors shall each year assess the programme's financial requirements and its report shall be forwarded to the Council in the context of the budgetary procedure. If, after the initial years of the programme, the Board of Governors concludes that certain aspects have made it impossible to continue the programme for the whole of its duration, or that the programme requires substantial amendment, the Commission shall refer the matter to the Council in the third year of the programme so that it can decide either to revise the programme or to initiate a new multiannual programme.

Article 4

Termination-of-service measures designed to permit the introduction of new skills and a reduction in the average age of staff will be implemented as soon as the Council has approved the relevant Regulation. Throughout the duration of the programme, the cost of implementing these measures shall be included in the estimated overall cost of the programme.

Article 5

During the third year, the programme will be the subject of a review which may lead to a Council decision on a further four-year programme in accordance with the appropriate procedure.

Article 6

Dissemination of the information resulting from implementation of the non-nuclear parts of the programme shall be carried out in accordance with Council Regulation (EEC) No 2380/74 of 17 September 1974 adopting provisions for the dissemination of information relating to research programmes for the European Economic Community⁽²⁾.

Article 7

The Commission, assisted by the JRC Board of Governors, shall be responsible for carrying out the programme and, to this end, shall call upon the services of the Joint Research Centre.

Article 8

Before the next proposal for a multiannual programme, the Commission shall submit to the Council and to the European Parliament a critical analysis carried out by independent experts of the programmes launched by the Joint Research Centre.

This analysis shall contain a quantitative and qualitative assessment of the results of the research.

In addition, the Commission shall each year prepare a report for the Council and the European Parliament on the execution of the programme.

Done at Brussels, 22 December 1983.

For the Council

The President

C. VAITSOS

⁽¹⁾ OJ No C 208, 4. 8. 1983, p. 1.

⁽²⁾ OJ No L 255, 20. 9. 1974, p. 1.

ANNEX A**RESEARCH PROGRAMME (1984 TO 1987) OF THE JOINT RESEARCH CENTRE****RESEARCH ACTION PROGRAMME — INDUSTRIAL TECHNOLOGIES****Nuclear measurements and reference materials**

- Nuclear measurements
- Reference materials

High-temperature materials

- Research on steels and alloys
- Research on sub-assemblies
- Research on ceramics
- Data bank on high-temperature materials
- Information centre on high-temperature materials

RESEARCH ACTION PROGRAMME — FUSION**Fusion technology and safety**

- Studies in respect of reactors
- Technology of the breeding blanket
- Study on structural materials
- Risk assessment
- Studies concerning a tritium-handling laboratory

RESEARCH ACTION PROGRAMME — FISSION**Reactor safety**

- Reliability and risk assessment
- Integrity of components and systems for light-water reactors
- Study on abnormal behaviour in core-cooling systems in light-water reactors
- Study on severely damaged fuel
- Construction models relating to accidents in fast reactors
- Study on the properties of materials and on the behaviour of structures in fast reactors
- Evaluation of a vibrating table

Management of radioactive waste

- Waste management and the fuel cycle
- Safety factors connected with the storage of waste in continental geological formations
- Feasibility and safety of storing waste in deep ocean sediments

Safeguarding and management of fissile materials

- Methods and instruments for the determination of fissile materials and for containment and monitoring
- Processing, transmission and evaluation of safeguards data
- Integration of safeguards activities

Nuclear fuels and actinides research

- Limits to the use of nuclear fuels
- Behaviour of oxide fuels under transitory conditions and release of fission products in the event of severe damage
- Safety of the actinide cycle
- Research on actinides

RESEARCH ACTION PROGRAMME — NON-NUCLEAR ENERGY SOURCES**Techniques for solar energy tests**

- Photovoltaic systems
- Heat conversion

Management of energy in dwellings

- Evaluation of hybrid systems
- Passive technologies
- Energy audit

RESEARCH ACTION PROGRAMME — ENVIRONMENT**Environmental protection**

- Chemical products in the environment
- Quality of the environment
- Energy and the environment

Application of remote-sensing techniques

- agriculture and soil management
- protection of the marine environment
- natural disasters

Industrial hazards

- accident prevention
- accident management and control

ACTIVITIES OF SCIENTIFIC DEPARTMENTS

(Complementary programme)

Exploitation of the HFR reactor

Should the need arise: European research activities of particular significance⁽¹⁾

⁽¹⁾ Implementation of the conclusions reached by the Council on 10 March 1983 with regard to European research activities of particular significance will be the subject of proposals which the Commission will present in good time to enable the Council to take a decision before the end of the first six months of 1984.

ANNEX B

INDICATIVE BREAKDOWN OF RESOURCES

(Appropriations in millions of ECU)

Programmes	Commitment appropriations
Industrial technologies	
— Nuclear measurements and reference materials	64
— High-temperature materials	28
Total	92
Fusion	
Fusion technology and safety	46,5 ⁽¹⁾
Total	46,5
Fission	
— Reactor safety	192 ⁽²⁾
— Management of radioactive waste	49
— Safeguarding and management of fissile materials	45
— Nuclear fuels and actinides research	66
Total	352
Non-nuclear energy sources	
— Techniques for solar energy tests	22
— Management of energy in dwellings	17
Total	39
Environment	
— Environmental protection	49
— Application of remote-sensing techniques	29
— Industrial hazards	21
Total	99
Activities of scientific departments	
Exploitation of the HFR (complementary programme)	59 ⁽³⁾
Total	59
Specific appropriations provided for European research activities of particular significance	
	12,5 ⁽⁴⁾
Total	12,5
Total programme (1984 to 1987)	700⁽⁵⁾

⁽¹⁾ Including an indicative sum of 500 000 ECU for studies concerning a tritium-handling laboratory.

⁽²⁾ Including an indicative sum of 2 500 000 ECU to continue studies concerning a large capacity vibration table.

⁽³⁾ The Member States' financial contributions for this complementary programme are included in the 700 million ECU, the breakdown being as follows:

Operation of the HFR reactor:

- Germany 50 %,
- Netherlands 50 %.

⁽⁴⁾ Allocation of this amount of 12 500 000 ECU will be determined by a future decision of the Council.

⁽⁵⁾ Non-programmed research is carried out within the overall level of resources of 700 million ECU. When the annual resources made available to the JRC to implement the programme are adequate to permit exploratory research of this kind, the nature of which has not yet been identified, a sum not exceeding 5 % of the total specific scientific appropriations can be entered for this purpose in Chapter 100 of the budget of the relevant year.

COUNCIL DECISION

of 25 July 1985

complementing Decision 84/1/Euratom, EEC with a view to the realization of a tritium-handling laboratory

(85/373/Euratom)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the proposal from the Commission⁽¹⁾, presented after consultation of the Scientific and Technical Committee,

Having regard to the opinion of the European Parliament⁽²⁾,

Having regard to the opinion of the Economic and Social Committee⁽³⁾,

Whereas, in the context of the common policy relating to the field of science and technology, the multiannual research programme is one of the principal means whereby the European Atomic Energy Community can contribute to the safety and development of nuclear energy and to the acquisition and dissemination of information in the nuclear field;

Whereas, during the period 1984 to 1987, the Joint Research Centre must continue to play a central role in the Community's research strategy and to carry out work of common interest by drawing on a level of resources which is the equivalent of the level of the previous multiannual programme;

Whereas, more generally, the Joint Research Centre programme as a whole must be in keeping with the conclusions of the Council of 10 March 1983 with regard to European research activities of particular significance;

Whereas Council Decision 84/1/Euratom, EEC of 22 December 1983 adopting a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the

European Economic Community (1984 to 1987)⁽⁴⁾ underlines a particular role of the Centre in the field of fusion technology and safety,

HAS DECIDED AS FOLLOWS:

Article 1

The European research activities of particular significance, to which the Council refers in its Decision 84/1/Euratom, EEC, must have as their objective realization of a tritium-handling laboratory at the Ispra establishment of the Joint Research Centre.

Article 2

The construction and exploitation of the tritium-handling laboratory shall be fully integrated into the 1984 to 1987 programme of the Joint Research Centre, as part of the 'Fusion technology and safety' sub-programme. With reference to Annex A of Decision 84/1/Euratom, EEC, the project 'studies concerning a tritium-handling laboratory' shall be replaced by 'realization of a tritium-handling laboratory'.

Article 3

With reference to Annex B to Decision 84/1/Euratom, EEC, the line entitled 'Specific appropriations for projects of European significance' shall be transferred to the 'Fusion technology and safety' entry in the fusion programme.

Done at Brussels, 25 July 1985.

For the Council

The President

J. POOS

⁽¹⁾ OJ No C 198, 27. 7. 1984, p. 6.

⁽²⁾ OJ No C 25, 28. 1. 1985, p. 9.

⁽³⁾ OJ No C 46, 18. 2. 1985, p. 72.

⁽⁴⁾ OJ No L 3, 5. 1. 1984, p. 21.

ANNEX 5

OPINION OF THE CST ORIENTATION OF JRC PROGRAMMES FOR 1987

At its meeting of 4 July 1986 the CST summarily examined proposals for the revision of JRC programmes for 1987 summed up in the document entitled "The Joint Research Centre in 1987. A transition towards a new policy" (CA(86)008 of 4 June 1986).

In its opinion on the orientations of the Framework Programme of Community Research and Technological Development Activities 1987-1991, formulated during the preceding meeting on 12 May 1986 (document SEC(86)1021 of 12 June 1986), the Committee expressed its feeling that under no circumstances should the volume of activities related to the Safety of Nuclear Fission Installations be reduced below its present level. Thus it has noted with satisfaction that the proposed revision noticeably increases the level of these activities as compared to previous orientations and it approves this orientation.

The CST in its above-mentioned opinion has applied the same reasoning to Radioprotection. It has taken note of an oral Communication from Commission representatives concerning the intention to begin a new programme in 1987 on "Radiation Evaluation and Monitoring" (REM). Without judging the contents of this Programme, which should be examined in the general framework of Radioprotection programmes, it considers that this proposal merits taking into consideration.

Historical Archives of the European Commission

Nouvelles pages du doc.
COM(86)416 après réunion
spéciale des Chefs de
Cabinet.

AG 836 - 16.7.86

Proposal for a Council Decision adopting a revision for the year 1987 of
the research programme to be implemented by the Joint Research Centre for
the European Atomic Energy Community and the European Economic Community
(1984-1987)

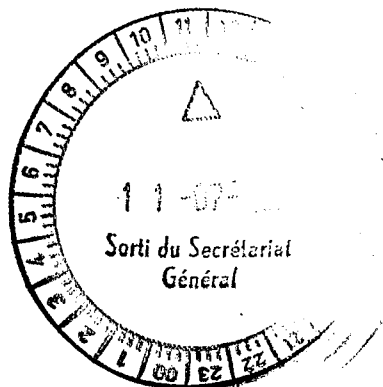
(presented by the Commission to the Council)

(Communication from Mr NARJES)

N.B. La version française du présent document sera diffusée dans les
meilleurs délais.

- This question is on the agenda for the 836th meeting of the
Commission on Wednesday 16 July 1986.

TO : Members of the Commission
Mr CONTZEN
Mr BRAUN
Mr DEGIMBE
Mr LEGRAS
Mr FRISCH
Mr FAIRCLOUGH
Mr CARPENTIER
Mr AUDLAND
Mr STRASSER
Mr FACINI
Mr EHLERMANN



5. As already announced in the document on the future developments of the Joint Research Center the new rôle of the JRC and the expected change in its orientations will also require a number of changes to the present methods of management. This also follows recommendations by the Scientific Council in their Mid Term Evaluation Report. Without prejudging recommendations on these questions which might be given by the above mentioned Panel of experts the Commission already envisages a certain number of measures which should take effect at a short term

- continuation of the integration of the various forms for research actions by attributing the overall responsibility to the Director General of the JRC - who is also Deputy Director General of DG XII - in those areas where the JRC efforts carry major weight. In this respect, the following areas are presently envisaged: nuclear fission, environment, prenormative research
- readjust the internal management structures, in particular in the Ispra Establishment, in order to cater for the evolution in the JRC mission and this in particular by readjusting the balance between the management of the projects and the management of the scientific-technical departments,
- continue the strengthening of the collaboration between the four establishments of the JRC which has also been emphasized by the proposal to create a new inter establishment programme on materials and structures
- create or reinforce in the establishments the rôle of research broker in order to strengthen together, with the competent services of DG XIII, Telecommunications Industries, Training and Innovation the contact between the industry and the JRC.

6. In executing the current programme, the Commission has been concerned with preserving, in real terms, the level of the programme activities as initially defined. This concern has been reflected in the successive budget proposals by the Commission for the years 1984, 1985 and 1986 and in the budgets for these years approved by the Budget Authority. The budget execution during these years has clearly been performed under this overall guideline. In comparison with the amount of funds estimated necessary for the programme execution in the December 1983 programme decision, this guideline has led - as indicated every year in the budgets - to a situation where the amount of funds remaining for 1987 would be considerably lower than in previous years.

In November 1985 the JRC Board of Governors drew attention to this matter and informed the Council that the remaining funds for 1987 would be insufficient. It suggested making use of the provisions in the programme decision to proceed either with a programme revision for 1987 or to embark on a new multiannual programme as of that year. In the meantime, the situation has been partly countered by a savings scheme for 1986 and a reduction in the budget proposal for 1987 in comparison with that originally envisaged. Austerity measures are being applied in 1986 to this end so that money thus made available in 1986 will contribute to funding the 1987 budget and reduce to a minimum the need for additional funds.

The action related to the RAP Non-Nuclear Energy Sources will be reviewed and concentrated in line with the norms and standards brief during the transition year. Research undertaken in the Ispra Establishment on photovoltaic systems, testing of active solar systems etc., which for testing and reference purposes has at its disposal a unique installation, will continue to be active in this area for the benefit of European industries and other Community programmes and other research in the area which has reached maturity will be terminated. The programme has given rise to intensified collaboration with Member States. For the future of these activities, the possibility of transferring some of them to member States' laboratories will be considered.

Under the RAP Environment, the work will be based mainly on the present activities for Protection of the Environment, in studies on Industrial Hazards, and in the use of remote sensing data for environmental protection, management of resources, agriculture and desertification research. There will be changes in the detailed structure of the work, and the remote sensing activities are strongly oriented towards meeting the stated needs of the users.

Furthermore, a new programme on Radiation Evaluation and Monitoring is proposed as a one-year exploratory exercise dealing with collection of relevant data and in particular those generated after the Chernobyl accident; review of mathematical models to describe the environmental evolution of radio-nuclides released from nuclear installations and various experiments. This programme is closely linked with activities under the RAP Health and Safety and will be coordinated with the shared-cost action programme 1985-1989 on Radiation Protection.

Since 1987 is considered as being a year of transition, no investments in any new scientific-technical installations not included in the existing plans for the 1984-1987 programme period are planned. The scheduled work on the Tritium Handling Laboratory will continue, the construction phase of the PERLA facility for the Safeguards Programme will be nearly completed by the end of the year, and the first commissioning of the PETRA facility for the Waste Management programme will take place early in 1987.

For the latter facility, following a recommendation by the Scientific Council, a "users' group" has been established to programme the use of the installation. The programme to be executed in 1987 will otherwise be supported by the existing facilities of which the most important are the linear accelerators in Geel, the nuclear installations in Karlsruhe, the HFR reactor in Petten and the installations in Ispra for reactor safety research, structural mechanics research, testing of solar energy components, as well as the general computing installations.

Intentions for a transitional programme for 1987 are shown above. They represent an intermediate step between the present multiannual programme and further considerations on the preliminary orientations developed in the Commission document "Future Developments for the Joint Research Centre - Discussion Paper for an Orientative Debate" (COM (86) 145) put before the Council for its meeting on 8th April 1986.

III. CONSIDERATIONS RELATED TO PROGRAMME APPROPRIATIONS

1. The commitment appropriations estimated as necessary for the execution of the 1984-1987 programme of the JRC were fixed by Council Decisions 84/1/EEC, Euratom and 85/373/Euratom at the level of 700 MIOECUs. An indicative breakdown of this amount was given at that time and is recorded in the Decision 84/1/EEC, Euratom : 400 MIOECUs for expenditure on staff and 300 MIOECUs for other expenditures.

A more precise repartition was fixed by the 1984 budgetary procedure :

- staff credits	=	398.8 MIOECUs
- operational credits	=	301.2 MIOECUs

2. The current situation can be described as follows :

A. Expenditure on staff

Appropriations earmarked for expenditure on staff were updated annually, as part of the budgetary procedure, in accordance with Council decisions on salaries and wages.

Successive decisions by the Budgetary Authority and what is proposed for the preliminary draft budget 1987 bring the evaluation of staff credits for the execution of the revised programmes to the level of 464.2 MIOECUs.

B. Other expenditures (Credits for Operations)

As stated above, the original estimate for funds for expenditures other than staff expenditures was 301.2 MIOECUs.

Taking into consideration the successive budgets approved by the Budgetary Authority, the budget executions in 1984 and 1985 and the planned economy budget proposed in the preliminary draft budget for 1987 *) an amount of 334 MIOECUs is estimated for the revised programme.

*) The figure proposed in the 1987 preliminary draft budget is 67 MIOECUs whereas the corresponding figure for 1986 was approved to be 89 MIOECUs from which the JRC is saving 10 MIOECUs.

The difference between the original estimate and the present one for expenditures other than staff amounts to 32.8 MIOECUs (334 MIOECUs minus 301.2 MIOECUs).

The table shows the distribution of the other expenditures for the revised programme and the distribution of the 32.8 MIOECUs necessary for inclusion in the programme revision.

For coherence the same table also provides the distribution of the staff expenditures discussed above for the revised programme.

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ANNEX B

REVISED 1984-1987 PROGRAMME OF THE JRC - INDICATIVE BREAKDOWN OF RESOURCES

(Appropriations in millions of ECU)

Programmes	APPROVED PROGRAMME		SUPPLEMENTARY CREDITS FOR OPERATIONS	REVISED PROGRAMME
	Decisions 84/1-85/373	Including Budgetary Decisions *)		
Industrial technologies				
- Nuclear measurements and reference materials	64	71.8	2.7	74.5
- Materials & structures : reliability & standards (High-temperature materials)	28	35.0	2.3	37.3
Total	92	106.8	5.0	111.8
Fusion				
Fusion technology and safety	59	65.3	3.5	68.8
Total	59	65.3	3.5	68.8
Fission				
- Reactor safety	192	203.2	5.3	208.5
- Management of radioactive waste	49	53.5	3.2	56.7
- Safeguarding and management of fissile materials	45	49.3	2.6	51.9
- Nuclear fuels and actinides research	66	69.8	4.0	73.8
Total	352	375.8	15.1	390.9
Non-nuclear energy sources				
- Reference methods for non-nuclear energy systems	39	41.0	1.0	42.0
Total	39	41.0	1.0	42.0
Environment				
- Environmental protection	49	56.8	1.7	58.5
- Application of remote-sensing techniques	29	33.8	0.6	34.4
- Industrial hazards	21	22.1	0.1	22.2
- Radiation evaluation and monitoring	-	1.7	0.7	2.4
Total	99	114.4	3.1	117.5
Activities of scientific departments				
Exploitation of the HFR (complementary programme)	59	62.1	5.1	67.2
Total	59	62.1	5.1	67.2
Total programme (1984 to 1987)	700	765.4	32.8	798.2

*) As well the re-allocation of staff as proposed by this programme revision.

TECHNICAL CONTENT OF THE PROGRAMME IN THE TRANSITION PERIOD

This annex describes the manner in which the Joint Research Centre's Programmes will be adapted in view of the transition period. The system of classifying these activities under five Research Action Programmes (RAP's) and the complementary programme on the High Flux Reactor in Petten - as set out in the Council decision of December 1983 - will be maintained.

1. Industrial Technologies

Further emphasis will be placed on the programmes on Nuclear Reference Materials and Reference Measurements and Materials and Structures, through enlarging the sphere of activity in support of Fusion Research and by means of increased activity in the areas of pre-normative research respectively

The laboratories in the Petten and Ispra establishments will collaborate closely on the Materials and Structures programme, and a contribution from the Karlsruhe establishment is anticipated at a later stage. It is likewise envisaged that the methods for materials development and analysis, originally developed for nuclear technologies, will be adapted to the area of non-nuclear materials.

Close collaboration will continue between the laboratories in Geel and the BCR.

In this way, the recommendations of various advisory bodies are largely heeded and by means of close contact with industry at different levels, a proper execution of the programme can be achieved.

1.1 Nuclear Reference Materials and Reference Measurements

The revised programme on Nuclear Reference Measurements stresses, in particular, the following activities :

- Measurement of Standard-Neutron Data
- Determination of the Neutron emission cross-sections for use in Fusion technology (NET)
- Investigations into Neutron Data for nuclear fission which was described in an OECD priority list, and the analysis of which is constantly requested by the advisory bodies (CGC, Evaluation Panel).

An important project in the sphere of Nuclear Metrology is the development of a plastic calorimeter for the measurement of Neutron Dose with absorption properties which resemble those of human tissue. The research project on Reference Materials is pursuing, and furthermore promoting, a Community programme for measurement and evaluation of nuclear analytical data on a European level. Moreover, efforts are being

The transition programme envisages :

- The collection, assessment and distribution of Materials data, for industrial requirements, for the development of norms and for the application of Advanced Materials.
- The setting up of a Forum for exchange of information and know-how in the area of HTM in Europe, and for promoting Community activities:
- An analysis of the industrial requirements for norms and standards in the area of advanced and newly developed materials.

The contribution of the Ispra Establishment to the Materials and Structures programme will concentrate, in the present programme situation, on 2 activities : the development of methods for reliability assessment of plant components and materials, and the design of a community facility (reaction wall) for testing response of large and complex structural and mechanical systems under significant static and dynamic loads to improve design criteria and construction codes.

The reliability analysis concerns, above all, steel structures which are employed in the chemical, the petrochemical and energy-producing industries.

Non-destructive test procedures for failure detection will thus be developed and mathematical models will be designed which will enable forecasts as to the life expectancy of a machine part or a plant component under given stress factors.

Suggestions as to procedures for standards will be collected, on the one hand by comparing the suitability of various techniques (acoustic emission, laser-holography, ultra-sonic and thermal techniques and modern methods for the microstructural analysis and for the examination of physical properties), and on the other hand by the intercomparison between different laboratories of procedures (round robin tests) and of result for the same techniques (Benchmark Exercises).

In 1987 a survey on new materials will be concluded and evaluated. This survey, in collaboration with national laboratories and industries, as well as with research programmes such as BRITE, EURAM, VAMAS, should establish the need for methods for the characterisation and reliability assessment of new materials for advanced technologies (for example aeronautics). The results of the tests allow the necessary metrological equipment to be made available, or, if possible, the conversion of existing installations.

The plans for a Reaction Wall will be accompanied by tasks which relate to the selection of the research projects and to the fixing of priorities. The continuing study on this facility will be conducted in close collaboration with national experts, with the aim of designing a true Community facility.

The inclusion of national experts in this project is planned, and moreover, an institutional structure must be created under the shared-cost actions, for the building and use of such installations.

The contribution of the Ispra and Petten establishments to the Materials and Structures programme concerns, above all, the application of scientific and technical methods for the support of national and international institutes in providing specifications, norms and the

definition of standards for assessing the possibilities for application and the safety of industrial products. These "prenormative" activities are looked upon as the pace-setting phase of the standardisation procedure. As an example, the work on the mechanical behaviour of tubular elements contributes to a BRITE project aiming at the up-grading of B.S., DIN and other relevant codes.

2. Thermonuclear Fusion

As in the past, the Ispra establishment will contribute to the European Fusion Research Programme, but will orient its contribution more towards problems of safety, which is illustrated by the high priority placed on the construction and equipping of the Tritium Laboratory.

In the field of Reactor Studies, JRC will continue to support the NET-team at Garching on aspects related to the mechanical configuration, remote maintenance and design of components (plasma facing components and breeding blanket).

The experimental activity on Breeding Blanket Technology will be focused, as in past years, on the completion of the data base on $^{17}\text{Li}^{83}\text{Pb}$, the liquid tritium breeder taken as the reference for NET-studies. Contribution from Ispra and Petten will deal with compatibility problems with steel and tritium recovery (out-of-pile and in pile experiments).

The Structural Materials Studies will deal with the measurement of the mechanical properties under irradiation of low activation Mn-Cr steels. As in the past, the irradiations will be performed in the Ispra MC-40 cyclotron and in the Petten HFR. The investigations on thermal fatigue of NET first wall panels will be undertaken by exploiting a facility now in advanced construction at Ispra.

The risk Assessment studies will include theoretical analyses of first wall and blanket accidents (loss-of-coolant) and of experiments on plasma-wall disruption simulation and $^{17}\text{Li}^{83}\text{Pb}$ /water interaction. For these two experiments a new electron gun and a large scale facility, available by the end of 1986, will be used. The analysis of the atmospheric diffusion of tritium in the environment will be pursued.

The activities in the Tritium Laboratory will, in collaboration with contractors from European industry, concentrate on detailed design. Furthermore, information, which must be presented to the Italian Safety Authorities in order to obtain an operating licence, will be made available so that construction can begin before the end of 1987. The preparation of the activities to be carried out in the Laboratory will be continued. Simulation experiments with hydrogen and deuterium shall be executed, and the Tritium rework technique will be tested.

3. Safety of Nuclear Fission

In the area of Reactor Safety research, priorities must be examined in the light of the considerations resulting from the Chernobyl accident, and, should the need arise, new priorities should be set. Without prejudging the results of the detailed analysis which has still to take place, it is to be anticipated that greater attention be paid to the problems concerning severe accidents in which the core melts and to the limitation of the consequences thereof. Moreover, efforts will be increased in the sphere of development of probabilistic techniques for

5.2 Radiation measurements and evaluation of risk from radiation

This is a study prepared for inclusion in the Programme proposal for 1988, which, within the meaning of chapter III of the EURATOM Treaty, and in the light of the Chernobyl disaster, aims at creating or improving the scientific tools for further Commission activities in the area of Radiation protection.

In particular, the following are envisaged :

- Examination of the possibilities of collecting all information on environmental characteristics and the biological effect of radio nuclides in one data base;
- The analysis of the capability, on a European scale, of mathematical models to calculate the distribution of radio-nuclides which are released from a nuclear facility (under normal operating conditions, or in the case of an accident) and to evaluate the resulting collective dose for the population;
- as a complement to the shared-cost programme "Radiation Protection", there will be an activity for gathering and assessing the data obtained from environmental monitoring of the Ispra site. The new programme will include work on calibration of measurement methods for air sampling, and campaigns for intercomparison of results.

5.3 Remote sensing

For this programme, 1987 will constitute a transition towards the new projects structure and objectives to be implemented in the subsequent multiannual programme. The main evolutions will be as follows.

Concerning micro-wave remote sensing, preparatory studies for a future project on the application of synthetic aperture radar (SAR) will be undertaken. An important effort will be devoted to the handling and application of the data obtained from the 1986 AGRISAR campaign.

The current project on coastal transport of sea pollution will be brought to such a stage as a significant reorientation might be decided at the end of 1987. A method for mapping bio-physical parameters connected with sea pollution and a mathematical circulation/diffusion model for the description and prediction of pollution pathways should become available. During the second half of the year, the prototype of laser-fluorosensor developed for detecting and analysing oil slicks at sea will be ready for in-field testing. Studies as to whether this technique may be used equally to detect and identify chemical pollutants at sea will take place, in view of an eventual expansion of the programme in this area.

Concerning marine productivity, the present exploratory activity using test sites in typical upwelling zones of the Atlantic coast of Marocco will be enlarged with the view of setting up a specific project in the 1988-91 programme.

In 1987, the action plan common to DG Agriculture, the SOEC and the JRC for the integration of remote sensing in a European Information System for Agriculture will be launched. The initial actions will be executed under contract and concern the development of a land use inventory methodology and the demonstration of crop yield indicators based on remotely sensed data.

The project on natural disasters, actually limited to a feasibility study, will be discontinued.

Furthermore, the JRC will undertake to specify in detail, together with the DG's concerned, the actions to be taken to implement the recommendations given in the recent report of the study group (study group set up by the DG XII-JRC to advise on the development of remote sensing applications and led by Mr. Roy Gibson), in particular concerning the CORINE Programme and marine pollution.

5.4 Industrial Hazards

The JRC's activities in this area will be carried out in close cooperation with DG Environment, Consumer Protection and Nuclear Safety. Since this is an area in which the JRC is particularly specialised in respect of risk assessment and risk management, it can therefore fall back on its competences which have been developed for problems in reactor safety.

As a result of the groundwork carried out in 1984 and 1985, and on the basis of discussions with representatives from Industry and the Safety Authorities, the new JRC Programme will deal with two aspects of industrial safety : Accident Prevention, and Damage Limitation.

The activities on Accident Prevention include trials of models for risk analysis, which will partly be carried out in collaboration with other research groups, which should therefore serve in the harmonisation of methods to be used. Furthermore, in this connection, research projects of other institutions (EuReData - European Reliability Databank Association - and ESRA - European Safety and Reliability Association) shall be coordinated and data obtained in various research programmes shall be exchanged.

The activities on Accident Mitigation and Control shall concentrate on experimental and theoretical studies of the so-called Runaway Reactions, that is processes which, once out of control, increase the damage effect rapidly. The studies foreseen encompass kinetic and thermodynamic aspects; the carrying out of modelling tests, and the analysis of the effectiveness of relief systems.

The project on chemical waste materials, previously dealt with under Industrial Hazards, will be added to the environment protection programme in 1987; the development of techniques for non-destructive testing of materials will be continued under the programme Industrial Technologies.

6. Exploitation of the High Flux Reactor

This complementary programme will, in accordance with the plans discussed in the competent committees and advisory boards, be continued in 1987.

As a result of the reconstruction undertaken between 1984 and 1986, a high performance, modern installation, eminently suited to the testing of materials, and as an intensive neutron source, is now available.

The principal areas of application are, as in the past :

- Technologically oriented research in the sphere of nuclear fuels development for nuclear fission reactors, and the analysis of the behaviour of structural materials under stress
- Material experiments for fusion reactors
- Hard-core physical experiments
- Application of neutron radiation for the testing of material structures
- Production of radio isotopes for medical, industrial and scientific use
- Activation analysis

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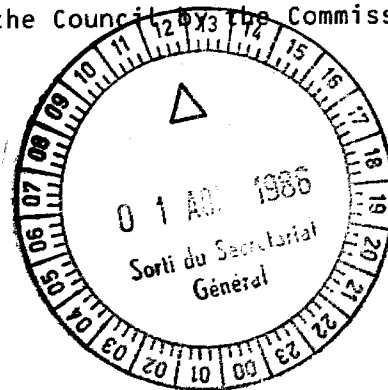
COM(86) 416 final

Brussels, 30 July 1986

PROPOSAL FOR A COUNCIL DECISION

revising a research programme to be implemented by the
Joint Research Centre for the European Atomic Energy Community
and for the European Economic Community (1984-1987)

(submitted to the Council by the Commission)



COM(86) 416 final

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I. THE RATIONALE FOR A PROGRAMME REVISION

1. The Joint Research Centre is presently executing the multiannual programme 1984-1987, decided by the Council in December 1983 (1), in its four Establishments : Geel (B), Ispra (I), Karlsruhe (FRG) and Petten (NL). That programme is characterized by research in the sectors of safety, environmental protection and pre-normative research in nuclear and other fields. The work is performed as part of the current 1984-1987 Framework Programme for research, development and demonstration activities, and it contributes to five selected research action programmes.

The programme emphasizes a concentration of the JRC activities towards the themes listed above. Its detailed elaboration is based on considerations valid in 1983, but which may not be entirely consistent with the situation in 1986. In fact, substantial changes in the Community research and development strategy have occurred.

2. The strategic orientations for the new Framework Programme for Community research and technological development (RTD) for the years 1987-1991 have been the subject of discussions over the last few months in the Council, the Parliament and the Economic and Social Committee, based on considerations in CREST and the EURATOM Scientific and Technical Committee. Taking into account these extensive discussions, the Commission has now presented a formal proposal (2) for the new Framework Programme. The future activities of the Joint Research Centre should be seen in the context of this strategic perspective. Without prejudging the outcome of the discussions on the new Framework Programme, the proposed revision of the JRC Programme for the year 1987, i.e. for the short term, should nevertheless take into account the general medium-term trends set out in the framework document.

Community Framework Programme research actions fall under five basic lines of action listed below :

1. Competitiveness of Industry and Services
2. Quality of Life
3. Reinforcement of Europe's Scientific and Technological Potential
4. Management of Energy
5. International scientific and technological cooperation - Science and Technology for Development

(1) O.J. L 3/22, 5.1.84

(2) COM (86) 430 final

In the Commission's opinion, priority should be given to activities contributing towards :

- competitiveness at industrial level;
- improvements in the quality of life;
- the reinforcement of Europe's scientific and technical potential

Future Joint Research Centre actions will therefore be directed into lines 1, 2 and 3 in the above list to ensure that the Commission's own R and D contributions are brought to bear on areas of the highest priority, although a contribution from the programme into other lines, and in particular management of energy, will occur and general scientific support will continue to be provided to other Commission services on request.

3. As part of its overall reassessment of the rôle of R & D in the Community, the Commission has decided to reexamine the aims and objectives of its Joint Research Centre to identify ways in which its competence and resources could best serve Community interests notably by performing tasks serving industry as well as other tasks of a central character linked with other Community priorities.

Indeed, following substantial discussions in the JRC Board of Governors, the JRC Scientific Council, and the relevant sectorial advisory committees, the Commission presented its views on future developments of the Joint Research Centre (3) which were debated in Council (Research) on 8th April. In the document, it was proposed to embark on a new multi-annual programme as of 1987. In presenting its views, the Commission was also guided by the results of the mid-term evaluation (4) carried out by eight independent sectorial evaluation panels and by the JRC Scientific Council. Their report contains a number of recommendations, some of which require urgent implementation.

The debate in Council (Research) on 8th April clearly demonstrated concern for a more substantial reexamination of the future of the Joint Research Centre, and its role in a technological society. To this end, and responding to proposals made in the Council, the Commission decided to set up a high level Panel to examine the future mission of the JRC. This examination is to be made in the light of the proposed emphasis envisaged for Community Research and Technological Development programmes promoting European industrial competitiveness. The Panel is to study the various contributions which the Joint Research Centre can make to meet the Community's industrial needs as well as other central tasks requiring Community action, especially in the fields of prenormative research, safety and the environment in which the JRC has special competence. In the light of its examination, it is to make recommendations as to the future mission of the JRC, together with such organisational and managerial measures as may be required. The panel is to report by

(3) COM (86) 145 final

(4) COM (86) 145, Annex I

mid-November 1986. Following considerations by the JRC Board of Governors, The Commission will present the report to the Council and the Parliament. The formulation of a new multiannual Programme for the Joint Research Centre should obviously take into account the recommendations of the panel as well as the valuable advice provided by the formal consultative bodies, including the JRC Scientific Council as well as opinions of the European Parliament and of the Economic and Social Committee. Whilst this review will mainly reconsider the Joint Research Centre's relations with industry, the Commission intends to continue to develop its long-term plans to concentrate present JRC competence in the mission of pre-normative research, nuclear and non-nuclear safety, and the environment, a process that has been gradually developing during the 1980-1984 and 1984-1987 multiannual programmes.

This policy is not in contradiction with the concept of closer liaison with industry; on the contrary, each of the aspects of the mission should be of high industrial relevance.

4. Meanwhile, the Commission considers that some re-alignment of its Joint Research Centre will be needed in order to adapt it more closely to the policy trends for the future, and also to introduce some urgent actions. The Commission proposes to revise the last year of the 1984-1987 programme. 1987 should thus bridge policy change and provide time to accomplish the in-depth studies required for a successful launch towards new endeavours and match optimal structural and organisational points with the best possible utilisation of resources. As mentioned above, it would be unwise to launch a fully-fledged programme before the advice from the Panel has been received and fully considered. The programme revision will, however, take account of the ongoing debate on the JRC and of the lessons learned from the execution of the programme, including the urgent recommendations resulting from the mid-term evaluation and its indications of strengths and weaknesses which, taken together with the trends expressed in the orientations for the Framework Programme, point the way forward into the 1990's and constitute a first indication of the rôle the JRC should play in Community research.

Working towards this end, the JRC will pursue its existing efforts on the Norms and Standards theme, and continue to emphasize research leading to improved safety with an eye to industrial implications. In this connection, the nuclear safety chapter should also be reviewed.

Programme execution during 1987 will continue in closer contact and collaboration with related shared-cost and concerted actions. The JRC will intensify its efforts to establish working relations with scientific institutions and industrial firms notably in the new member countries, and to ensure the integration of nationals from these countries in the establishments of the Centre. The Centre will likewise continue and increase its activities on training in fields relevant to the competences acquired in the four establishments.

5. As already announced in the document on the future developments of the Joint Research Center the new rôle of the JRC and the expected change in its orientations will also require a number of changes to the present methods of management. This also follows recommendations by the Scientific Council in their Mid Term Evaluation Report. Without prejudging recommendations on these questions which might be given by the above mentioned Panel of experts the Commission already envisages a certain number of measures which should take effect at a short term

- continuation of the integration of the various forms for research actions by attributing the overall responsibility to the Director General of the JRC - who is also Deputy Director General of DG XII - in those areas where the JRC efforts carry major weight. In this respect, the following areas are presently envisaged : nuclear fission, environment, prenormative research
- readjust the internal management structures, in particular in the Ispra Establishment, in order to cater for the evolution in the JRC mission and this in particular by readjusting the balance between the management of the projects and the management of the scientific-technical departments,
- continue the strengthening of the collaboration between the four establishments of the JRC which has also been emphasized by the proposal to create a new inter establishment programme on materials and structures
- create or reinforce in the establishments the rôle of research broker in order to strengthen together, with the competent services of DG XIII, Telecommunications, Information Industries, and Innovation the contact, between the industry and the JRC.

6. In executing the current programme, the Commission has been concerned with preserving, in real terms, the level of the programme activities as initially defined. This concern has been reflected in the successive budget proposals by the Commission for the years 1984, 1985 and 1986 and in the budgets for these years approved by the Budget Authority. The budget execution during these years has clearly been performed under this overall guideline. In comparison with the amount of funds estimated necessary for the programme execution in the December 1983 programme decision, this guideline has led - as indicated every year in the budgets - to a situation where the amount of funds remaining for 1987 would be considerably lower than in previous years.

In November 1985 the JRC Board of Governors drew attention to this matter and informed the Council that the remaining funds for 1987 would be insufficient. It suggested making use of the provisions in the programme decision to proceed either with a programme revision for 1987 or to embark on a new multiannual programme as of that year. In the meantime, the situation has been partly countered by a savings scheme for 1986 and a reduction in the budget proposal for 1987 in comparison with that originally envisaged. Austerity measures are being applied in 1986 to this end so that money thus made available in 1986 will contribute to funding the 1987 budget and reduce to a minimum the need for additional funds.

It is the combination of the above considerations which has led the Commission to confirm its intention to proceed with a programme revision for 1987, the last year of the 1984-1987 multiannual exercise.

11 THE SCIENTIFIC AND TECHNICAL CONTENTS OF THE PROPOSED REVISION AND THEIR RELATIONSHIP TO OVERALL COMMUNITY S & T POLICY

1. 1984-1987 Programme Items

The multiannual programme presently being executed was built around two main themes - safety and protection of the environment and standardisation. These themes were applied to research undertaken under five research action programmes : Industrial Technology, Fusion, Fission, Non-Nuclear Energy Sources, Environment, together with the complementary programme High Flux Reactor (HFR). Other activities comprise scientific support to the Commission. The actual programme items can be found in annex I compared to the revised situation.

It is recalled that the programme was decided by the Council in December 1983 (5) supplemented by the decision from July 1985 (6) on the implementation of a Tritium Handling Laboratory in Ispra.

2. Evolution towards the Future

It is intended to make every effort to improve the use of JRC competences and facilities in 1987 and concentrate the efforts on priority areas. To this end, the Commission intends to :

- a) wind up certain actions;
- b) continue those activities which are related to an institutional task of the Community or otherwise correspond to a clear Community need;
- c) prepare new actions in areas where an urgent need has been identified.

For the various actions to be included in the programme for 1987, particular efforts are being made to ensure that such actions contain the requisite element of Community added value, and moreover, that they meet the requirements of users and of potential users of the results to be obtained.

Whenever possible, the actions should be of service to industries in the Community countries, and it is a guiding principle that the research planning identifies clear goals and milestones in comparison with which, an evaluation of the results can be performed.

In drawing up the detailed scheme the Commission, as already stated, has been guided by the Council discussions including those on the new Community strategy for research and development and moreover, by considerations in the JRC Board of Governors, the Scientific Council

(5) O.J. L 3/22, 5.01.84

(6) O.J. L 210/28, 7.08.85

and by the opinions from the sectorial advisory committees on the future of the JRC programmes. Broadly speaking, even for the transitional year, there will be increased efforts in areas related to competitiveness of industry and services and in those related to the quality of life, whilst actions on energy management will be somewhat reshaped. It can be seen that the themes "safety and protection of the environment" and "standardisation" of the 1984-1987 multiannual programme have been refined during the first years of the exercise and throughout the revised year 1987, efforts will be concentrated on pre-normative research, nuclear and non-nuclear safety and environmental protection.

The multiannual programme's structure will be maintained and during the year individual research programmes will continue to be executed under the five research action programmes (RAPs) set out below.

Within the frame set out by the Council decision on the multiannual programme 1984-1987 a possibility exists for flexible programme adaptations - within stated limits - from year to year under the control of the JRC Board of Governors, the JRC Scientific Council and following the continuing discussions in the relevant sectorial advisory committees. Some of the changes proposed for 1987 are clearly within this margin of flexibility. Others are of a more substantial nature and, both from a formal point of view as well as in substance, they entail a modification in the programme and project structure in comparison with the original structure of the 1984-1987 programme.

Although there may well be reasons for some changes, it is however proposed for 1987 to maintain the original basic structure of five research action programmes (RAP's), and the complementary programme "Exploitation of the HFR Reactor".

The more substantial changes to be noted are the following :

Under the RAP Industrial Technologies the work will be characterized by pre-normative research and emphasized by the formulation of a programme on Materials and Structures with special weight on Reliability and Standards. Based at the Petten Establishment with its high temperature materials research, and in collaboration with the Ispra Establishment, the programme will be carried out in both establishments with a contribution from the Karlsruhe Establishment in a later development.

For the RAP Fission it is essential that the whole area of reactor safety research be evaluated in view of the recent accident at Tchernobyl to re-define priorities both within the RAP and in relation to research activities in other fields. Direct and cost shared JRC activities will centre on present research into severe accidents and ways means to contain their consequences and reliability of components and systems including increased studies on probabilistic risk assessment methodologies.

The work of collecting and collating information on reactor incidents entrusted to the JRC will be enhanced in view of the Community need for reliable international information for collaborative purposes. At the same time work on materials and sodium thermohydraulics for fast breeder reactors will be brought to a close. The work is performed both by direct and cost shared actions.

The action related to the RAP Non-Nuclear Energy Sources will be reviewed and concentrated in line with the norms and standards brief during the transition year. Research undertaken in the Ispra Establishment on photovoltaic systems, testing of active solar systems etc., which for testing and reference purposes has at its disposal a unique installation, will continue to be active in this area for the benefit of European industries and other Community programmes and other research in the area which has reached maturity will be terminated. The programme has given rise to intensified collaboration with Member States. For the future of these activities, the possibility of transferring some of them to member States' laboratories will be considered.

Under the RAP Environment, the work will be based mainly on the present activities for Protection of the Environment, in studies on Industrial Hazards, and in the use of remote sensing data for environmental protection, management of resources, agriculture and desertification research. There will be changes in the detailed structure of the work, and the remote sensing activities are strongly oriented towards meeting the stated needs of the users.

Furthermore, a new programme on Radiation Evaluation and Monitoring is proposed as a one-year exploratory exercise dealing with collection of relevant data and in particular those generated after the Chernobyl accident; review of mathematical models to describe the environmental evolution of radio-nuclides released from nuclear installations and various experiments. This programme is closely linked with activities under the RAP Health and Safety and will be coordinated with the shared-cost action programme 1985-1989 on Radiation Protection.

Since 1987 is considered as being a year of transition, no investments in any new scientific-technical installations not included in the existing plans for the 1984-1987 programme period are planned. The scheduled work on the Tritium Handling Laboratory will continue, the construction phase of the PERLA facility for the Safeguards Programme will be nearly completed by the end of the year, and the first commissioning of the PETRA facility for the Waste Management programme will take place early in 1987.

For the latter facility, following a recommendation by the Scientific Council, a "users' group" has been established to programme the use of the installation. The programme to be executed in 1987 will otherwise be supported by the existing facilities of which the most important are the linear accelerators in Geel, the nuclear installations in Karlsruhe, the HFR reactor in Petten and the installations in Ispra for reactor safety research, structural mechanics research, testing of solar energy components, as well as the general computing installations.

Intentions for a transitional programme for 1987 are shown above. They represent an intermediate step between the present multiannual programme and further considerations on the preliminary orientations developed in the Commission document "Future Developments for the Joint Research Centre - Discussion Paper for an Orientative Debate" (COM (86) 145) put before the Council for its meeting on 8th April 1986.

The Programme for 1987 should remain flexible to enable adaptations to the findings of the "Expert Panel" and other important Community developments arising during the transition period, most notably the decision on the new Framework Programme. To this end, the Commission can profit from the flexibility measures laid down in the terms of reference for the JRC Board of Governors allowing for transfer of funds - within certain limits - between the individual programmes.

For the JRC, however, the year will be not only a transition year at the programme level, but above all it should be the year where the Centre develops new working relationships with the outside world, most importantly with industries in the Member States and at the same time enhancing its services in support of other Commission activities. In parallel with these actions, procedures and structures must be adapted to ensure maximum efficacy in the performance of the new task.

3. Reinforcement of the Scientific and Technical Potential of Europe

The Joint Research Centre will continue, in a number of ways, to contribute to Community activities related to the achievement of a true Researchers' Europe. It is expected that some 25 visiting scientists, on sabbatical leave or detachment from their organisations, will be hosted by the JRC and the fellowship scheme provides for young research fellows to work at the establishments, mainly on post-doctoral theses. More than 100 junior or senior scientists will work under these and other schemes in the JRC establishments, and will include visitors from developing countries.

At the same time, contracts and agreements with universities and research institutes will provide an important degree of cross-fertilisation and the JRC will continue to participate in a certain number of the "Stimulation" Programme projects as an equal partner with other European research teams. Ispra courses provide places for some 400 persons per year at courses lasting from two days up to some weeks in a wide range of general and specialised subjects. Some courses are even organized in the Member States and developing countries under collaboration arrangements. At Petten a "Meeting Point" activity corresponds to the organisation of courses, seminars and information exchange between scientists working in industry, universities and research institutions for high temperature materials, and at Geel and Karlsruhe healthy communication will be maintained with individual scientists and industries working in their respective fields of interest.

4. Activities on Direct Request from Customers

Finally, studies requested by other Commission Directorates General in support of their sectorial policies will be continued outside the programme, and with special budgetary arrangements.

In this way, the Commission services draw direct use of the competences and technical laboratories of the JRC and request work under circumstances where the JRC is often placed in a competitive situation with other laboratories, industry etc. Studies are under way to examine to what extent this type of activity may be expanded in the future, and this will in all likelihood be one of the items to be studied in more detail by the new Panel of experts.

III. CONSIDERATIONS RELATED TO PROGRAMME APPROPRIATIONS

1. The commitment appropriations estimated as necessary for the execution of the 1984-1987 programme of the JRC were fixed by Council Decisions 84/1/EEC, Euratom and 85/373/Euratom at the level of 700 MIOECUs. An indicative breakdown of this amount was given at that time and is recorded in the Decision 84/1/EEC, Euratom : 400 MIOECUs for expenditure on staff and 300 MIOECUs for other expenditures.

A more precise repartition was fixed by the 1984 budgetary procedure :

- staff credits	=	398.8 MIOECUs
- operational credits	=	301.2 MIOECUs

2. The current situation can be described as follows :

A. Expenditure on staff

Appropriations earmarked for expenditure on staff were updated annually, as part of the budgetary procedure, in accordance with Council decisions on salaries and wages.

Successive decisions by the Budgetary Authority and what is proposed for the preliminary draft budget 1987 bring the evaluation of staff credits for the execution of the revised programmes to the level of 464.2 MIOECUs.

B. Other expenditures (Credits for Operations)

As stated above, the original estimate for funds for expenditures other than staff expenditures was 301.2 MIOECUs.

Taking into consideration the successive budgets approved by the Budgetary Authority, the budget executions in 1984 and 1985 and the planned economy budget proposed in the preliminary draft budget for 1987 *) an amount of 334 MIOECUs is estimated for the revised programme.

The difference between the original estimate and the present one for expenditures other than staff amounts to 32.8 MIOECUs (334 MIOECUs minus 301.2 MIOECUs).

*) The figure proposed in the 1987 preliminary draft budget is 67 MIOECUs whereas the corresponding figure for 1986 was approved to be 89 MIOECUs from which the JRC is saving 10 MIOECUs.

The table shows the distribution of the other expenditures for the revised programme and the distribution of the 32.8 MIOECUs necessary for inclusion in the programme revision.

For coherence the same table also provides the distribution of the staff expenditures discussed above for the revised programme.

Historical Archives of the European Commission

TABLE 1

REVISED 1984-1987 PROGRAMME OF THE JRC - INDICATIVE BREAKDOWN RESOURCES

(Appropriations in millions of ECU)

PROGRAMMES	REVISED PROGRAMME			SUPPLEMENTARY CREDITS FOR OPERATIONS
	Staff Credits	Credits for operations	TOTAL	
Industrial technologies				
- Nuclear measurements and reference materials	43.7	30.8	74.5	2.7
- Materials & structures : reliability & standards (High-temperature materials)	22.2	15.1	37.3	2.3
Total	65.9	45.9	111.8	5.0
Fusion				
Fusion technology and safety	38.2	30.6	68.8	3.5
Total	38.2	30.6	68.8	3.5
Fission				
- Reactor safety	126.4	82.1	208.5	5.3
- Management of radioactive waste	38.4	18.3	56.7	3.2
- Safeguarding and management of fissile materials	36.1	15.8	51.9	2.6
- Nuclear fuels and actinides research	37.6	36.2	73.8	4.0
Total	238.5	152.4	390.9	15.1
Non-nuclear energy sources				
- Reference methods for non-nuclear energy systems	28.0	14.0	42.0	1.0
Total	28.0	14.0	42.0	1.0
Environment				
- Environmental protection	39.9	18.6	58.5	1.7
- Application of remote-sensing techniques	20.4	14.0	34.4	0.6
- Industrial hazards	14.6	7.6	22.2	0.1
- Radiation evaluation and monitoring	1.7	0.7	2.4	0.7
Total	76.6	40.9	117.4	3.1
Activities of scientific departments				
Exploitation of the HFR (complementary programme)	17.0	50.2	67.2	5.1
Total	17.0	50.2	67.2	5.1
Total programme (1984 to 1987)	464.2	334.0	798.2	32.8

IV. PROPOSAL FOR A COUNCIL DECISION

On the following pages is provided the text of the proposed Council decision revising a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the European Economic Community (1984-1987).

The Annex A of this proposed Council decision outline the modifications to be introduced for 1987 in the Council decisions of December 1983 and July 1985 on the four-year programme 1984-1987 of the Joint Research Centre.

The Annex B of the proposed Council decision gives the corresponding changes in the resources estimated necessary for executing the revised 1984-1987 programme and the indicative breakdown of those resources between the programmes and subprogrammes.

The Commission requests the Council to adopt the proposed decision.

COUNCIL DECISION
of

revising a research programme to be implemented by the
Joint Research Centre for the European Atomic Energy Community
and for the European Economic Community (1984-1987)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy
Community, and in particular Article 7,

Having regard to the Treaty establishing the European Economic
Community, and in particular Article 235 thereof, (1)

Having regard to the proposal from the Commission (2), presented after
consultation, with regard to nuclear projects, of the Scientific and
technical Committee,

Having regard to the opinion of the European Parliament (3),

Having regard to the opinion of the Economic and Social Committee (4),

Whereas, in the context of the common policy relating to the field of
science and technology, the multiannual research programme is one of
the principal means whereby the European Atomic Energy Community can
contribute to the safety and development of nuclear energy and to the
acquisition and dissemination of information in the nuclear field;

Whereas Article 2 of the Treaty establishing the European Economic
Community assigns to the Community inter alia the task of promoting
throughout the Community a harmonious development of economic
activities, a continuous and balanced expansion and increase
stability, whereas the objectives of activities engaged in by the
Community to this end are set out in Article 3 of the said Treaty;

(1) When the Single European Act enters into force, this legal basis
"Article 235" will have to be replaced by the new Article 130 Q
(1) of the EEC Treaty, introduced by the said Act.
(2) COM(86) 416 final
(3)
(4)

Whereas the non-nuclear projects provided for by this Decision appear necessary for the attainment of these objectives;

Whereas on 14 January 1974 the Council adopted a resolution on the coordination of national policies and the definition of projects of interest to the Community in the field of science and technology (1);

Whereas the programme was drawn up in accordance with the Council resolution of 17 December 1970, concerning the procedures for adopting research and training programmes (2);

Whereas it is of advantage to define and embody the common science and technology strategy in multiannual Framework programmes setting out the complete range of scientific and technical activities being carried out or due to be carried out on the basis of the EURATOM and EEC Treaties whereas this advantage was confirmed by the Council in its resolution of 25 July 1983 on Framework programmes for Community research, development and demonstration activities, and a first Framework programme 1984 to 1987 (3);

Whereas the Joint Research Centre (JRC) should be fully integrated in the actions of this Framework programme and must continue to play a central rôle in the Community's research strategy and to carry out work of common interest;

Whereas Article 3 of Council Decisions 77/488/EEC, Euratom (4), 80/317/EEC, Euratom (5) and 84/1/EEC, Euratom (6), provides for a review of the programme during its third year,

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- (1) O.J. No C 7 of 29.1.1974, p. 2
 - (2) O.J. No L 16 of 20.1.1971, p. 13
 - (3) O.J. No C 208 of 04.8.1983, p. 1
 - (4) O.J. No L 200 of 08.8.1977, p. 4
 - (5) O.J. No L 72 of 18.3.1980, p. 11
 - (6) O.J. No L 3 of 05.1.1984, p. 21

HAS DECIDED AS FOLLOWS

Article 1

The research programme 1984-1987, as defined in the Annex A of Council Decision 84/1/EEC, Euratom, of 22 December 1983 (1) complemented by Council Decision 85/373/Euratom of 25 July 1985 (2), is replaced for the year 1987 by a revised programme as set out in Annex A of the present decision.

Article 2

The decisions already adopted by the Council as part of the budgetary procedure, the expenditure commitment estimated as necessary for the execution of the revised programme is increased for the year 1987 by 33 million ECU for expenditures other than those on staff.

An indicative breakdown of the expenditure commitment for the revised multiannual programme is given in Annex B.

Article 3

Before proposing the next multiannual programme of the JRC, the Commission shall communicate to the Council and to the European Parliament the conclusions of an examination of the future rôle of the JRC, carried out by a high level Panel.

Done at Brussels,

For the Council

The President

(1) O.J. No L 3 of 5.1.1984, p. 21
(2) O.J. No L 210 of 7.8.1985, p. 28

ANNEX A

JOINT RESEARCH CENTRE RESEARCH PROGRAMME FOR THE YEAR 1987

(last year of the quadriannual programme 1984-1987
revised by the present decision)

The following modifications are introduced in the programme adopted with the Decisions 84/1/CEE, Euratom of 22 December 1983 and 85/373/Euratom of 25 July 1985 :

RESEARCH ACTION PROGRAMME
INDUSTRIAL TECHNOLOGIES

Materials and structures : reliability and standards

(Extending the programme "High-temperature materials")

- High Temperature Structural Alloys
- Advanced Engineering Ceramics
- High Temperature Materials Data Bank and Information Centre
- Methods for assessment of reliability in materials and structures

RESEARCH ACTION PROGRAMME
FISSION

Reactor safety

- Reliability and risk assessment
- Integrity of components and systems in light-water reactors
- Study of abnormal behaviour in core-cooling systems in light-water reactors
- Containment studies
- Source term
- Modelling of accident situations in fast breeder reactors

RESEARCH ACTION PROGRAMME
NON-NUCLEAR ENERGY SOURCES

Reference methods for non-nuclear energy systems

(Replacing the programmes "Techniques for solar energy tests" and "Management of energy in dwellings")

- Photovoltaic energy systems
- Non-polluting energy systems

RESEARCH ACTION PROGRAMME
ENVIRONMENT

Environmental protection

- Environmental chemicals
- Atmospheric pollution
- Water quality
- Chemical waste

Application of remote sensing techniques

- Land monitoring and management
- Protection of the marine environment
- Agriculture

Radiation evaluation and monitoring

The other programmes are not modified

The new level of resources for the various programmes is reported in the ANNEX B.

ANNEX B

REVISED 1984-1987 PROGRAMME OF THE JRC - INDICATIVE BREAKDOWN OF RESOURCES

(Appropriations in millions of ECU)

Programmes	APPROVED PROGRAMME		SUPPLEMENTARY CREDITS FOR OPERATIONS	REVISED PROGRAMME
	Decisions 84/1-85/373	Including Budgetary Decisions *)		
Industrial technologies				
- Nuclear measurements and reference materials	64	71.8	2.7	74.5
- Materials & structures : reliability & standards (High-temperature materials)	28	35.0	2.3	37.3
Total	92	106.8	5.0	111.8
Fusion				
Fusion technology and safety	59	65.3	3.5	68.8
Total	59	65.3	3.5	68.8
Fission				
- Reactor safety	192	208.2	5.3	208.5
- Management of radioactive waste	49	53.5	3.2	56.7
- Safeguarding and management of fissile materials	45	49.3	2.6	51.9
- Nuclear fuels and actinides research	66	69.8	4.0	73.8
Total	352	375.8	15.1	390.9
Non-nuclear energy sources				
- Reference methods for non-nuclear energy systems	39	41.0	1.0	42.0
Total	39	41.0	1.0	42.0
Environment				
- Environmental protection	49	56.8	1.7	58.5
- Application of remote-sensing techniques	29	33.8	0.6	34.4
- Industrial hazards	21	22.1	0.1	22.2
- Radiation evaluation and monitoring	-	1.7	0.7	2.4
Total	99	114.4	3.1	117.5
Activities of scientific departments				
Exploitation of the HFR (complementary programme)	59	62.1	5.1	67.2
Total	59	62.1	5.1	67.2
Total programme (1984 to 1987)	700	765.4	32.8	798.2

*) As well the re-allocation of staff as proposed by this programme revision.

ANNEX I

TECHNICAL CONTENT OF THE PROGRAMME IN THE TRANSITION PERIOD

This annex describes the manner in which the Joint Research Centre's Programmes will be adapted in view of the transition period. The system of classifying these activities under five Research Action Programmes (RAP's) and the complementary programme on the High Flux Reactor in Petten - as set out in the Council decision of December 1983 - will be maintained.

1. Industrial Technologies

Further emphasis will be placed on the programmes on Nuclear Reference Materials and Reference Measurements and Materials and Structures, through enlarging the sphere of activity in support of Fusion Research and by means of increased activity in the areas of pre-normative research respectively.

The laboratories in the Petten and Ispra establishments will collaborate closely on the Materials and Structures programme, and a contribution from the Karlsruhe establishment is anticipated at a later stage. It is likewise envisaged that the methods for materials development and analysis, originally developed for nuclear technologies, will be adapted to the area of non-nuclear materials.

Close collaboration will continue between the laboratories in Geel and the BCR.

In this way, the recommendations of various advisory bodies are largely heeded and by means of close contact with industry at different levels, a proper execution of the programme can be achieved.

1.1 Nuclear Reference Materials and Reference Measurements

The revised programme on Nuclear Reference Measurements stresses, in particular, the following activities :

- Measurement of Standard-Neutron Data
- Determination of the Neutron emission cross-sections for use in Fusion technology (NET)
- Investigations into Neutron Data for nuclear fission which was described in an OECD priority list, and the analysis of which is constantly requested by the advisory bodies (CGC, Evaluation Panel).

An important project in the sphere of Nuclear Metrology is the development of a plastic calorimeter for the measurement of Neutron Dose with absorption properties which resemble those of human tissue.

The research project on Reference Materials is pursuing, and furthermore promoting, a Community programme for measurement and evaluation of nuclear analytical data on a European level. Moreover, efforts are being further concentrated on the exact determination of the atomic weight of silicon in connection with cooperative attempts for a more precise determination of the Avogadro number.

Finally, the activities of the Community Bureau of Reference (BCR) will be supported on a wider scale.

The "LOLERM" Project (Low Level Radioactivity Reference Materials) is temporarily suspended. A new approach in this area is, however, being considered in the light of the Chernobyl accident.

1.2. Materials and Structures

As far as this programme is concerned, on the one hand the work begun in Petten on the High-Temperature Materials Alloys and High Performance Ceramics will be continued, and on the other hand, methods are to be developed in Ispra by means of which the suitability and lifetime of selected materials for a specific technical application can be tested.

In order to guarantee an optimal application of these methods, close contact with national and international research institutions must be sought. The work is aimed at supporting industrial technologies and contributing towards industrial competitiveness.

By their application high temperature structural alloys are subject to the combined effect of chemical (corrosive), mechanical and thermal stress. The studies currently being carried out in Petten should increase understanding of the behaviour of these alloys and of the damage mechanisms to which they are exposed in industrial use. With improved knowledge and with the aid of appropriate analytical models, a catalogue of properties can be drawn up to serve as a basis for the selection of materials for design of plant components, and which makes it possible to forecast their life expectancy and reliability. This project provides a contribution in particular to the petrochemical and energy-producing industries.

The objectives are similar for the projects dealing with Advanced Structural Ceramics, though in this case the development will be directed towards new manufacturing technologies. Methods developed in the JRC-Karlsruhe for Nuclear-Ceramics will also be applied for Material characterisation, and the analysis of mechanical, thermodynamic and transport properties.

Both projects, on high temperature alloys, and high temperature ceramics, will be carried out under multilateral, and international collaboration, such as COST (for alloys) IEA (for ceramics), as well as BRITE, EURAM, VAMAS and EUREKA (for both areas).

A third project concerns the collection, assessment and supply of data on high temperature materials. The data-bank in Petten will continue operation and be accessible to interested parties from all Community countries. The services of the Information Centre on High Temperature Materials can be called upon on a Europe-wide basis for information.

The transition programme envisages :

- The collection, assessment and distribution of Materials data, for industrial requirements, for the development of norms and for the application of Advanced Materials.
- The setting up of a Forum for exchange of information and know-how in the area of HTM in Europe, and for promoting Community activities:
- An analysis of the industrial requirements for norms and standards in the area of advanced and newly developed materials.

The contribution of the Ispra Establishment to the Materials and Structures programme will concentrate, in the present programme situation, on 2 activities : the development of methods for reliability assessment of plant components and materials, and the design of a community facility (reaction wall) for testing response of large and complex structural and mechanical systems under significant static and dynamic loads to improve design criteria and construction codes.

The reliability analysis concerns, above all, steel structures which are employed in the chemical, the petrochemical and energy-producing industries.

Non-destructive test procedures for failure detection will thus be developed and mathematical models will be designed which will enable forecasts as to the life expectancy of a machine part or a plant component under given stress factors.

Suggestions as to procedures for standards will be collected, on the one hand by comparing the suitability of various techniques (acoustic emission, laser-holography, ultra-sonic and thermal techniques and modern methods for the microstructural analysis and for the examination of physical properties), and on the other hand by the intercomparison between different laboratories of procedures (round robin tests) and of result for the same techniques (Benchmark Exercises).

In 1987 a survey on new materials will be concluded and evaluated. This survey, in collaboration with national laboratories and industries, as well as with research programmes such as BRITE, EURAM, VAMAS, should establish the need for methods for the characterisation and reliability assessment of new materials for advanced technologies (for example aeronautics. The results of the tests allow the necessary metrological equipment to be made available, or, if possible, the conversion of existing installations.

The plans for a Reaction Wall will be accompanied by tasks which relate to the selection of the research projects and to the fixing of priorities. The continuing study on this facility will be conducted in close collaboration with national experts, with the aim of designing a true Community facility.

The inclusion of national experts in this project is planned, and moreover, an institutional structure must be created under the shared-cost actions, for the building and use of such installations.

The contribution of the Ispra and Petten establishments to the Materials and Structures programme concerns, above all, the application of scientific and technical methods for the support of national and international institutes in providing specifications, norms and the definition of standards for assessing the possibilities for application and the safety of industrial products. These "prenormative" activities are looked upon as the pace-setting phase of the standardisation procedure. As an example, the work on the mechanical behaviour of tubular elements contributes to a BRITE project aiming at the up-grading of B.S., DIN and other relevant codes.

2. Thermonuclear Fusion

As in the past, the Ispra establishment will contribute to the European Fusion Research Programme, but will orient its contribution more towards problems of safety, which is illustrated by the high priority placed on the construction and equipping of the Tritium Laboratory.

In the field of Reactor Studies, JRC will continue to support the NET-team at Garching on aspects related to the mechanical configuration, remote maintenance and design of components (plasma facing components and breeding blanket).

The experimental activity on Breeding Blanket Technology will be focused, as in past years, on the completion of the data base on $^{17}\text{Li}^{83}\text{Pb}$, the liquid tritium breeder taken as the reference for NET-studies. Contribution from Ispra and Petten will deal with compatibility problems with steel and tritium recovery (out-of-pile and in pile experiments).

The Structural Materials Studies will deal with the measurement of the mechanical properties under irradiation of low activation Mn-Cr steels. As in the past, the irradiations will be performed in the Ispra MC-40 cyclotron and in the Petten HFR. The investigations on thermal fatigue of NET first wall panels will be undertaken by exploiting a facility now in advanced construction at Ispra.

The risk Assessment studies will include theoretical analyses of first wall and blanket accidents (loss-of-coolant) and of experiments on plasma-wall disruption simulation and $^{17}\text{Li}^{83}\text{Pb}$ /water interaction. For these two experiments a new electron gun and a large scale facility, available by the end of 1986, will be used. The analysis of the atmospheric diffusion of tritium in the environment will be pursued.

The activities in the Tritium Laboratory will, in collaboration with contractors from European industry, concentrate on detailed design. Furthermore, information, which must be presented to the Italian Safety Authorities in order to obtain an operating licence, will be made available so that construction can begin before the end of 1987. The preparation of the activities to be carried out in the Laboratory will be continued. Simulation experiments with hydrogen and deuterium shall be executed, and the Tritium rework technique will be tested.

3. Safety of Nuclear Fission

In the area of Reactor Safety research, priorities must be examined in the light of the considerations resulting from the Chernobyl accident, and, should the need arise, new priorities should be set. Without prejudging the results of the detailed analysis which has still to take place, it is to be anticipated that greater attention be paid to the problems concerning severe accidents in which the core melts and to the limitation of the consequences thereof. Moreover, efforts will be increased in the sphere of development of probabilistic techniques for risk-evaluation. The tasks entrusted to the JRC - collection and assessment of data on reactor incidents - acquire a special significance in this connection.

On the other hand, activities in the area of Sodium Thermohydraulics for Fast Breeder Reactors will be drawn to a close in the near future.

Research into the safety of the nuclear fuel cycle will, on the whole, be continued with a slight increase in scope, with the exception of studies into the sub-seabed disposal of radio-active waste. A new installation in Ispra - PERLA - will shortly become operational for the activities concerning the safeguarding of fissile materials. Work on radioactive waste will be concentrated around a recently completed experimental facility (PETRA) to be exploited in association with national laboratories.

3.1 Reactor Safety

The programme will include six activities which are :

- Reliability and risk assessment
- Integrity of components and systems in light-water reactors
- Study of abnormal behaviour in core-cooling systems in light-water reactors
- Containment studies
- Source term
- Modeling of accident situations in fast breeder reactors

Some important elements for the transition programme are listed below :

As far as the studies into Reliability and Risk Evaluation are concerned, emphasis will be placed on a systematic analysis of the data already stored in the AORS (ERDS) data-base. 1987 will see the compilation of guidelines for the application of techniques for probabilistic risk-analysis. In support of this action, several study groups will participate in a Community Benchmark Exercise on severe accident analysis.

The activities on the evaluation of the life-span of components of light-water reactor primary-systems will be continued, as a result of which the importance of component safety for the prevention of accidents will be better appreciated.

The results of the LOBI test programme on the analysis of the consequences of failure in the cooling system of light-water reactors will be compared with the forecasts of mathematical models which are being developed for large systems under conditions of coolant loss, and particular transient stress.

New studies on source-term problems will be directed by Ispra, carried out in 1987 as cost-shared actions. In order to analyse the results, the team of analysts in Ispra will be reinforced in preparation for an integral Test Programme as suggested by one of the Member States.

The programme on investigation into austenitic steel will be brought to a close in 1987, and a programme on concrete for safety containment will be prepared in its place. This will be included in a project on containment studies to be conducted in close collaboration with institutions in the member countries.

The safety analysis of fast-breeder reactors concentrates on severe accidents in which local and complete core failure will be considered.

The FARO and PAHR (in-pile) projects will continue in 1987 as originally foreseen. Work on the development of European Accident Codes (EAC) will be completed, and the analysis of local (Sub-Assembly) failure will be given more attention.

The test programme on sodium thermohydraulics will be terminated. Moreover, the research area liquid Metal Fast Breeder Reactor materials properties and structural behaviour will also be terminated. The present programme on evaluation of a vibrating table was already brought to an end in 1986. In the transition year, plans will be made for a reinforcement of the analytical work at the JRC through a reduction of the activities on large thermohydraulic system codes.

The overall work will continue in close collaboration with national research centres, utilities and regulatory bodies who will benefit from the results to be obtained. The collaborative efforts with industry will be emphasised by continuation of the shared-cost activities initiated in 1985.

3.2 Radio-active Waste Management

The previous structure of the project will be maintained in 1987 : the sphere of activity on Waste Management and the Nuclear fuel cycle consists of, along with radiochemical studies and Actinide Measurements, the setting-up of the PETRA installation. The safety aspects of storing radio-active waste in continental geological formations will be examined.

The transition towards a new programme will be prepared in 1987. In this respect, problems concerning characterisation and quality control are to be considered.

During the course of 1987, the PETRA installation will begin its "cold" operations. In this connection, the nuclear test phase will come to an end by the end of the year. One of the user groups, established at the suggestion of the competent CGC, will schedule the tests to be carried out, and will encourage the exchange of information between interested parties. The JRC-Karlsruhe will collaborate more actively on the programme, and will provide contributions to the characterisation of waste, and quality control.

The cooperation on the project on storage of sub-seabed waste disposal will be reduced, and wound up in 1988.

3.3 Safeguards and Fissile Material Management

This programme will further develop techniques and instrumentation for the assay of Fissile Materials, and its containment and surveillance in nuclear installations, it will also deal with the processing, transmission and evaluation of data relevant to safeguards, and will study integrated methods for control of the flow of fissile materials through the various stages of the nuclear fuel cycle.

The setting up of the calibration and training Laboratory PERLA in Ispra, which should be completed in 1987 shall be given priority. Emphasis shall also be placed on the systematic development of integrated systems for containment and surveillance of the storage of nuclear materials. Finally, special attention will be given to the development of data-bases for accountability declarations of fissile materials and their exploitation using decision support systems.

3.4 Nuclear fuels and actinide research

An essential part of the programme carried out in the JRC-Karlsruhe, the contribution to the development of nuclear fuels, to the safety of the actinide cycle, and to basic actinide research will be continued. In this respect, and in view of the next multiannual programme, some shift of emphasis is planned :

In the area of analysis of the behaviour at high temperature of reactor materials, greater consideration will be given to the problem of "post accident heat removal" (PAHR).

The aerosol studies, previously limited to α -active particles shall be extended to other nuclear and non-nuclear aerosols such as the application of purification aerosols. In the area of development of

nuclear fuels, the advisory bodies recommend the inclusion of fast-breeder nuclear fuels in the transient-programme, and to examine more closely the special problems of nuclear fuels, such as that which arises upon the recycling of Plutonium in Light Water reactors. Building on the many years of experience gained in the area of nuclear fuels analysis, certain prospective studies are to examine the possibilities of laser application for the treatment of materials and for the preparation of high purity materials samples (Isotopes) as calibration substances for basic research on Actinides (and where possible for nuclear medicine).

As described in point 3.1 and 3.2 the JRC-Karlsruhe shall be more involved in the future in the Materials research programme and the Radio-active Waste Disposal Programme.

4. Non-Nuclear Energies

This programme is to be completely restructured. The programme Energy Management in Habitat and the testing of Solar Energy Systems will be replaced by a programme on Reference Methods for Non-Nuclear Energies, whereby the mission of the JRC for the development of Norms and Standards will be emphasised.

The new programme encompasses two projects:
The first concerns development and trials of test methods for photovoltaic convertors in the European Solar Testing Installation (ESTI), in which area the characterisation of advanced photovoltaic materials (amorphous silicon) is moving into the foreground.

The second project on non-polluting thermal energy systems is concerned with the testing of active solar systems and passive solar test methodologies. This is done in concertation with and coordination of national activities.

5 Environment

As in the past, the programme encompasses Protection of the Environment; the development and the application of remote sensing techniques; the identification of industrial risks and the problems of radiation protection. In 1987 the publicly accessible ECDIN Data bank on substances, potentially toxic to the environment, shall be transferred to the competent service of the Commission, whilst the JRC shall remain responsible for the supply of data.

5.1 Protection of the Environment

The most important developments for 1987 in comparison with the original programme are the inclusion of an activity on chemical waste, and increased activities on modelling and on the effects of pollution in the environment on man, and the ecosystem.

In the light of experience during the first three years of the programme it is proposed to reclassify the ongoing research activities in four categories: "Environmental Chemicals", "Atmospheric Pollution", "Water Quality" and "Chemical Waste", (this last being based on activities previously carried out within the "Industrial Hazards" programme).

Environmental chemicals and their potential danger will be described and evaluated in ECDIN (Environmental Chemicals Data Information Network). The data, including those on substances in the lists I and II in the directive 76/464/CEE, are publicly accessible. Atmospheric pollution in enclosed, spaces, and its effect on human beings gains significance as a

research project and is studied within the framework of a JRC led COST action. Research on trace metals and their consequences on health and the biosphere will be continued.

In the context of harmful substances in the atmosphere, acid deposition constitutes one of the foremost research areas, whilst the analysis of photochemical effects will be considered in more detail with emphasis on its effect on plants. Mathematical models should prove helpful in gaining a better understanding of the transport of pollutants in the atmosphere, as well as of the problem of mass balance for which the Community measurement actions provide field data.

Important contributions are envisaged both to the COST 611 Action (physico-chemical behaviour of atmospheric pollutants) and to the EUREKA project EUROTRAC.

In the Central Laboratory for atmospheric pollution, further work will be carried out, by means of suggestions for harmonisation of analytical techniques, thresholds for sulphur dioxide and suspended particulates, in accordance with the Council decision.

Analyses of water quality will be concentrated on the distribution of trace metals and their possible harmful effects on the environment in hydrous ecological systems.

A further research project (that was previously carried out in the context of harmful industrial substances) deals with the distribution and possible metamorphosis of harmful chemical waste, its management and its effect on the environment, in the sense of the Council decision 78/319 on toxic waste products.

5.2 Radiation measurements and evaluation of risk from radiation

This is a new action which, within the meaning of chapter III of the EURATOM Treaty, and in the light of the Chernobyl disaster, aims at creating or improving the scientific tools for further Commission activities in the area of Radiation protection. The action may lead to a programme in the next multiannual exercise.

In particular, the following are envisaged :

- Examination of the possibilities of collecting all information on environmental characteristics and the biological effect of radio nuclides in one data base;
- The analysis of the capability, on a European scale, of mathematical models to calculate the distribution of radio-nuclides which are released from a nuclear facility (under normal operating conditions, or in the case of an accident) and to evaluate the resulting collective dose for the population;
- as a complement to the shared-cost programme "Radiation Protection", there will be an activity for gathering and assessing the data obtained from environmental monitoring of the Ispra site. The new programme will include work on calibration of measurement methods for air sampling, and campaigns for intercomparison of results.

5.3 Remote sensing

For this programme, 1987 will constitute a transition towards the new projects structure and objectives to be implemented in the subsequent multiannual programme. The main evolutions will be as follows.

Concerning micro-wave remote sensing, preparatory studies for a future project on the application of synthetic aperture radar (SAR) will be undertaken. An important effort will be devoted to the handling and application of the data obtained from the 1986 AGRISAR campaign.

The current project on coastal transport of sea pollution will be brought to such a stage as a significant reorientation might be decided at the end of 1987. A method for mapping bio-physical parameters connected with sea pollution and a mathematical circulation/diffusion model for the description and prediction of pollution pathways should become available. During the second half of the year, the prototype of laser-fluorosensor developed for detecting and analysing oil slicks at sea will be ready for in-field testing. Studies as to whether this technique may be used equally to detect and identify chemical pollutants at sea will take place, in view of an eventual expansion of the programme in this area.

Concerning marine productivity, the present exploratory activity using test sites in typical upwelling zones of the Atlantic coast of Morocco will be enlarged with the view of setting up a specific project in the 1988-91 programme.

In 1987, the action plan common to DG Agriculture, the SOEC and the JRC for the integration of remote sensing in a European Information System for Agriculture will be launched. The initial actions will be executed under contract and concern the development of a land use inventory methodology and the demonstration of crop yield indicators based on remotely sensed data.

The project on natural disasters, actually limited to a feasibility study, will be discontinued.

Furthermore, the JRC will undertake to specify in detail, together with the DG's concerned, the actions to be taken to implement the recommendations given in the recent report of the study group (study group set up by the DG XII-JRC to advise on the development of remote sensing applications and led by Mr. Roy Gibson), in particular concerning the CORINE Programme and marine pollution.

5.4 Industrial Hazards

The JRC's activities in this area will be carried out in close cooperation with DG Environment, Consumer Protection and Nuclear Safety. Since this is an area in which the JRC is particularly specialised in respect of risk assessment and risk management, it can therefore fall back on its competences which have been developed for problems in reactor safety.

As a result of the groundwork carried out in 1984 and 1985, and on the basis of discussions with representatives from Industry and the Safety Authorities, the new JRC Programme will deal with two aspects of industrial safety : Accident Prevention, and Damage Limitation.

The activities on Accident Prevention include trials of models for risk analysis, which will partly be carried out in collaboration with other research groups, which should therefore serve in the harmonisation of methods to be used. Furthermore, in this connection, research projects of other institutions (EuReData - European Reliability Databank Association - and ESRA - European Safety and Reliability Association) shall be coordinated and data obtained in various research programmes shall be exchanged. At the same time, appropriate activities will be coordinated with those of the shared cost action on major technological hazards.

The activities on Accident Mitigation and Control shall concentrate on experimental and theoretical studies of the so-called Runaway Reactions, that is processes which, once out of control, increase the damage effect rapidly. The studies foreseen encompass kinetic and thermodynamic aspects; the carrying out of modelling tests, and the analysis of the effectiveness of relief systems.

The project on chemical waste materials, previously dealt with under Industrial Hazards, will be added to the environment protection programme in 1987; the development of techniques for non-destructive testing of materials will be continued under the programme Industrial Technologies.

6. Exploitation of the High Flux Reactor

This complementary programme will, in accordance with the plans discussed in the competent committees and advisory boards, be continued in 1987.

As a result of the reconstruction undertaken between 1984 and 1986, a high performance, modern installation, eminently suited to the testing of materials, and as an intensive neutron source, is now available.

The principal areas of application are, as in the past:

- Technologically oriented research in the sphere of nuclear fuels development for nuclear fission reactors, and the analysis of the behaviour of structural materials under stress
- Material experiments for fusion reactors
- Hard-core physical experiments
- Application of neutron radiation for the testing of material structures
- Production of radio isotopes for medical, industrial and scientific use
- Activation analysis

Historical Archives of the European Commission

Impact on Small and Medium Sized Entreprises (SME's)

1. The execution of the planned programme for 1987 will have direct and indirect impacts in several ways on small and medium sized enterprises, where these are defined to the firms with a staff of less than 100 and 500 persons respectively.
2. The direct impact falls into two categories
 - i) benefits which SME's derive from the programme execution
 - ii) circumstances where the JRC acts as a customer of SME's.

The indirect benefits are those which SME's (alongside other enterprises, national research bodies, regulatory bodies, etc) derive from JRC results reported in the technical literature, at public seminars and conferences and to national authorities through the regular reporting of JRC work and results and through the sectorial Advisory Committees for Management and Coordination.

3. With regard to the direct benefits for SME's, firms in this category are regular users of JRC activities on the collection, assessment and dissemination of knowledge such as for example
 - the high temperature materials data base in Petten
 - the Ispra data base ECDIN, on chemical toxicological substances (now in commercial operation at an outside firm)

SME's are users of test facilities in the JRC including the solar test facility in Ispra which also gives rise to further development of the methods applied.

Likewise as in the past, in 1987 SME's will be engaged in collaborative efforts with the JRC establishments on instrument developments for use in several programmes, development of new methodologies including information transport and handling techniques (safeguards systems, remote sensing techniques, etc). It is characteristic that new scientific disciplines for the use of programmes have often been developed in collaboration with SME's (artificial intelligence as an example) moreover, most projects on valorisation of JRC research results are conducted with SME's. This will continue in 1987.

A final spin-off from JRC research results has been the stimulation it has given to the setting up of new SME's in the field of high technology. There are particular recent examples of this stemming from the programme on JRC application of remote sensing from space techniques.

4. The preliminary draft budget for 1987 estimates that of the expenses other than staff some 29 MIOECUs will be used for the operations of the general administration and infrastructure. This amount cover the services necessary for the operations of the four establishments (supplies of energy, transport, upkeep of buildings and technical installations, general service facilities etc). It is estimated that around a third of the funds will be spent on contracts with SME's. A further 12 MIOECUs are estimated for scientific-technical support functions of which a substantial share is likewise foreseen for expenditure on contracts with SME's. The same applies to the 36 MIOECUs set aside for expenditures relevant to execution of the direct programme including the HFR reactor in Petten. In this connection the greater part of the fabrication of the disposable devices used in irradiations is carried out by SME's and considerable recourse is made to local workshops by all the JRC establishments for construction of scientific equipment, specimen preparation etc.

Historical Archives of the European Commission

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DECISION

of 22 December 1983

adopting a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the European Economic Community (1984 to 1987)

(84/1/Euratom, EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission⁽¹⁾, presented after consultation, with regard to nuclear projects, of the Scientific and Technical Committee,

Having regard to the opinion of the European Parliament⁽²⁾,

Having regard to the opinion of the Economic and Social Committee⁽³⁾,

Whereas, in the context of the common policy relating to the field of science and technology, the multi-annual research programme is one of the principal means whereby the European Atomic Energy Community can contribute to the safety and development of nuclear energy and to the acquisition and dissemination of information in the nuclear field;

Whereas Article 2 of the Treaty establishing the European Economic Community assigns to the Commu-

nity *inter alia* the task of promoting throughout the Community a harmonious development of economic activities, a continuous and balanced expansion and increased stability; whereas the objectives of activities engaged in by the Community to this end are set out in Article 3 of the said Treaty;

Whereas the non-nuclear projects provided for by this Decision appear necessary for the attainment of these objectives;

Whereas on 14 January 1974 the Council adopted a resolution on the coordination of national policies and the definition of projects of interest to the Community in the field of science and technology⁽⁴⁾;

Whereas the programme was drawn up in accordance with the Council resolution of 17 December 1970 concerning the procedures for adopting research and training programmes⁽⁵⁾;

Whereas Article 3 of Council Decisions 77/488/EEC, Euratom⁽⁶⁾ and 80/317/EEC, Euratom⁽⁷⁾ provides for a review of the programme during its third year;

Whereas it is of advantage to define and embody the common science and technology strategy in multi-annual framework programmes setting out the complete range of scientific and technical activities being carried out or due to be carried out on the basis of the three Treaties; whereas this advantage was confirmed by the

⁽¹⁾ OJ No C 311, 16. 11. 1983, p. 5.

⁽²⁾ OJ No C 307, 14. 11. 1983, p. 116.

⁽³⁾ OJ No C 341, 19. 12. 1983, p. 9.

⁽⁴⁾ OJ No C 7, 29. 1. 1974, p. 2.

⁽⁵⁾ OJ No L 16, 20. 1. 1971, p. 13.

⁽⁶⁾ OJ No L 200, 8. 8. 1977, p. 4.

⁽⁷⁾ OJ No L 72, 18. 3. 1980, p. 11.

Council in its resolution of 25 July 1983 on framework programmes for Community research, development and demonstration activities; and a first framework programme 1984 to 1987⁽¹⁾;

Whereas, during the period 1984 to 1987, the Joint Research Council (JRC) must continue to play a central role in the Community's research strategy and to carry out work of common interest by drawing on a level of resources which is the equivalent of the present level;

Whereas, more generally, the JRC programme as a whole must be in keeping with the conclusions of the Council of 10 March 1983,

HAS DECIDED AS FOLLOWS:

Article 1

The research programme, hereinafter referred to as 'the programme', set out in Annex A is hereby adopted for a period of four years, starting on 1 January 1984.

Article 2

The expenditure commitment estimated as necessary for the execution of the programme should be 700 million ECU, including expenditure on a staff of 2 260. An indicative breakdown of this amount, consisting of approximately 400 million ECU for expenditure on staff and 300 million ECU for other expenditure, is given in Annex B.

Article 3

Appropriations earmarked for expenditure on staff shall be updated annually, as part of the budgetary procedure, in accordance with Council decisions on salaries and wages. In the case of other expenditure, the JRC Board of Governors shall each year assess the programme's financial requirements and its report shall be forwarded to the Council in the context of the budgetary procedure. If, after the initial years of the programme, the Board of Governors concludes that certain aspects have made it impossible to continue the programme for the whole of its duration, or that the programme requires substantial amendment, the Commission shall refer the matter to the Council in the third year of the programme so that it can decide either to revise the programme or to initiate a new multiannual programme.

Article 4

Termination-of-service measures designed to permit the introduction of new skills and a reduction in the average age of staff will be implemented as soon as the Council has approved the relevant Regulation. Throughout the duration of the programme, the cost of implementing these measures shall be included in the estimated overall cost of the programme.

Article 5

During the third year, the programme will be the subject of a review which may lead to a Council decision on a further four-year programme in accordance with the appropriate procedure.

Article 6

Dissemination of the information resulting from implementation of the non-nuclear parts of the programme shall be carried out in accordance with Council Regulation (EEC) No 2380/74 of 17 September 1974 adopting provisions for the dissemination of information relating to research programmes for the European Economic Community⁽²⁾.

Article 7

The Commission, assisted by the JRC Board of Governors, shall be responsible for carrying out the programme and, to this end, shall call upon the services of the Joint Research Centre.

Article 8

Before the next proposal for a multiannual programme, the Commission shall submit to the Council and to the European Parliament a critical analysis carried out by independent experts of the programmes launched by the Joint Research Centre.

This analysis shall contain a quantitative and qualitative assessment of the results of the research.

In addition, the Commission shall each year prepare a report for the Council and the European Parliament on the execution of the programme.

Done at Brussels, 22 December 1983.

For the Council
The President
C. VAITSOS

⁽¹⁾ OJ No C 208, 4. 8. 1983, p. 1.

⁽²⁾ OJ No L 255, 20. 9. 1974, p. 1.

ANNEX A

RESEARCH PROGRAMME (1984 TO 1987) OF THE JOINT RESEARCH CENTRE

RESEARCH ACTION PROGRAMME — INDUSTRIAL TECHNOLOGIES

Nuclear measurements and reference materials

- Nuclear measurements
- Reference materials

High-temperature materials

- Research on steels and alloys
- Research on sub-assemblies
- Research on ceramics
- Data bank on high-temperature materials
- Information centre on high-temperature materials

RESEARCH ACTION PROGRAMME — FUSION

Fusion technology and safety

- Studies in respect of reactors
- Technology of the breeding blanket
- Study on structural materials
- Risk assessment
- Studies concerning a tritium-handling laboratory

RESEARCH ACTION PROGRAMME — FISSION

Reactor safety

- Reliability and risk assessment
- Integrity of components and systems for light-water reactors
- Study on abnormal behaviour in core-cooling systems in light-water reactors
- Study on severely damaged fuel
- Construction models relating to accidents in fast reactors
- Study on the properties of materials and on the behaviour of structures in fast reactors
- Evaluation of a vibrating table

Management of radioactive waste

- Waste management and the fuel cycle
- Safety factors connected with the storage of waste in continental geological formations
- Feasibility and safety of storing waste in deep ocean sediments

Safeguarding and management of fissile materials

- Methods and instruments for the determination of fissile materials and for containment and monitoring
- Processing, transmission and evaluation of safeguards data
- Integration of safeguards activities

Nuclear fuels and actinides research

- Limits to the use of nuclear fuels
- Behaviour of oxide-fuels under transitory conditions and release of fission products in the event of severe damage
- Safety of the actinide cycle
- Research on actinides

RESEARCH ACTION PROGRAMME — NON-NUCLEAR ENERGY SOURCES

Techniques for solar energy tests

- Photovoltaic systems
- Heat conversion

Management of energy in dwellings

- Evaluation of hybrid systems
- Passive technologies
- Energy audit

RESEARCH ACTION PROGRAMME — ENVIRONMENT

Environmental protection

- Chemical products in the environment
- Quality of the environment
- Energy and the environment

Application of remote-sensing techniques

- agriculture and soil management
- protection of the marine environment
- natural disasters

Industrial hazards

- accident prevention
- accident management and control

ACTIVITIES OF SCIENTIFIC DEPARTMENTS

(Complementary programme)

Exploitation of the HFR reactor

Should the need arise: European research activities of particular significance⁽¹⁾

⁽¹⁾ Implementation of the conclusions reached by the Council on 10 March 1983 with regard to European research activities of particular significance will be the subject of proposals which the Commission will present in good time to enable the Council to take a decision before the end of the first six months of 1984.

ANNEX B

INDICATIVE BREAKDOWN OF RESOURCES

(Appropriations in millions of ECU)

Programmes	Commitment appropriations
Industrial technologies	
— Nuclear measurements and reference materials	64
— High-temperature materials	28
Total	92
Fusion	
Fusion technology and safety	46,5 ⁽¹⁾
Total	46,5
Fission	
— Reactor safety	192 ⁽²⁾
— Management of radioactive waste	49
— Safeguarding and management of fissile materials	45
— Nuclear fuels and actinides research	66
Total	352
Non-nuclear energy sources	
— Techniques for solar energy tests	22
— Management of energy in dwellings	17
Total	39
Environment	
— Environmental protection	49
— Application of remote-sensing techniques	29
— Industrial hazards	21
Total	99
Activities of scientific departments	
Exploitation of the HFR (complementary programme)	59 ⁽³⁾
Total	59
Specific appropriations provided for European research activities of particular significance	
	12,5 ⁽⁴⁾
Total	12,5
Total programme (1984 to 1987)	700⁽⁵⁾

(¹) Including an indicative sum of 500 000 ECU for studies concerning a tritium-handling laboratory.

(²) Including an indicative sum of 2 500 000 ECU to continue studies concerning a large capacity vibration table.

(³) The Member States' financial contributions for this complementary programme are included in the 700 million ECU, the breakdown being as follows:

Operation of the HFR reactor:

- Germany 50 %,
- Netherlands 50 %.

(⁴) Allocation of this amount of 12 500 000 ECU will be determined by a future decision of the Council.

(⁵) Non-programmed research is carried out within the overall level of resources of 700 million ECU. When the annual resources made available to the JRC to implement the programme are adequate to permit exploratory research of this kind, the nature of which has not yet been identified, a sum not exceeding 5 % of the total specific scientific appropriations can be entered for this purpose in Chapter 100 of the budget of the relevant year.

COUNCIL DECISION

of 25 July 1985

complementing Decision 84/1/Euratom, EEC with a view to the realization of a tritium-handling laboratory

(85/373/Euratom)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the proposal from the Commission⁽¹⁾, presented after consultation of the Scientific and Technical Committee,

Having regard to the opinion of the European Parliament⁽²⁾,

Having regard to the opinion of the Economic and Social Committee⁽³⁾,

Whereas, in the context of the common policy relating to the field of science and technology, the multiannual research programme is one of the principal means whereby the European Atomic Energy Community can contribute to the safety and development of nuclear energy and to the acquisition and dissemination of information in the nuclear field;

Whereas, during the period 1984 to 1987, the Joint Research Centre must continue to play a central role in the Community's research strategy and to carry out work of common interest by drawing on a level of resources which is the equivalent of the level of the previous multiannual programme;

Whereas, more generally, the Joint Research Centre programme as a whole must be in keeping with the conclusions of the Council of 10 March 1983 with regard to European research activities of particular significance;

Whereas Council Decision 84/1/Euratom, EEC of 22 December 1983 adopting a research programme to be implemented by the Joint Research Centre for the European Atomic Energy Community and for the

European Economic Community (1984 to 1987)⁽⁴⁾ underlines a particular role of the Centre in the field of fusion technology and safety,

HAS DECIDED AS FOLLOWS:

Article 1

The European research activities of particular significance, to which the Council refers in its Decision 84/1/Euratom, EEC, must have as their objective realization of a tritium-handling laboratory at the Ispra establishment of the Joint Research Centre.

Article 2

The construction and exploitation of the tritium-handling laboratory shall be fully integrated into the 1984 to 1987 programme of the Joint Research Centre, as part of the 'Fusion technology and safety' sub-programme. With reference to Annex A of Decision 84/1/Euratom, EEC, the project 'studies concerning a tritium-handling laboratory' shall be replaced by 'realization of a tritium-handling laboratory'.

Article 3

With reference to Annex B to Decision 84/1/Euratom, EEC, the line entitled 'Specific appropriations for projects of European significance' shall be transferred to the 'Fusion technology and safety' entry in the fusion programme.

Done at Brussels, 25 July 1985.

For the Council

The President

J. POOS

⁽¹⁾ OJ No C 198, 27. 7. 1984, p. 6.

⁽²⁾ OJ No C 25, 28. 1. 1985, p. 9.

⁽³⁾ OJ No C 46, 18. 2. 1985, p. 72.

⁽⁴⁾ OJ No L 3, 5. 1. 1984, p. 21.

OPINION OF THE CST ORIENTATION OF JRC PROGRAMMES FOR 1987

At its meeting of 4 July 1986 the CST summarily examined proposals for the revision of JRC programmes for 1987 summed up in the document entitled "The Joint Research Centre in 1987. A transition towards a new policy" (CA(86)008 of 4 June 1986).

In its opinion on the orientations of the Framework Programme of Community Research and Technological Development Activities 1987-1991, formulated during the preceding meeting on 12 May 1986 (document SEC(86)1021 of 12 June 1986), the Committee expressed its feeling that under no circumstances should the volume of activities related to the Safety of Nuclear Fission Installations be reduced below its present level. Thus it has noted with satisfaction that the proposed revision noticeably increases the level of these activities as compared to previous orientations and it approves this orientation.

The CST in its above-mentioned opinion has applied the same reasoning to Radioprotection. It has taken note of an oral Communication from Commission representatives concerning the intention to begin a new programme in 1987 on "Radiation Evaluation and Monitoring" (REM). Without judging the contents of this Programme, which should be examined in the general framework of Radioprotection programmes, it considers that this proposal merits taking into consideration.

COMMISSION OF THE EUROPEAN COMMUNITIES

CORRIGENDUM

COM(86) 416 final/2

APPLIES TO THE FR/DE/EN/ VERSIONS

Brussels, 24 September 1986



PROPOSAL FOR A COUNCIL DECISION

revising a research programme to be implemented by the
Joint Research Centre for the European Atomic Energy
Community and for the European Economic Community (1984-1987)

(submitted to the Council by the Commission)

COM(86) 416 final/2

C O R R I G E N D U M

COM(86)416 final : Chapter I, point 2., paragraph 2 onwards should read as follows:

Community Framework Programme research actions fall under eight basic lines of action listed below :

1. Quality of life
2. Towards an information society
3. The life blood of the large market
4. Application of the new technologies to the modernization of industrial sectors
5. Continuation and updating of activities in the energy sector
6. Biotechnology : a new technological crossroads
7. Exploitation of the seabed and use of marine resources
8. A Europe of research workers

Future Joint Research Centre actions will be principally oriented according to the objectives of lines 1,4,5 and 8 in the above list; within these actions it must be assured that the Commission's own R and D contributions are brought to bear on areas of the highest priority. Specific contributions from the JRC's programme to other actions in the Framework Programme are certainly not excluded, and general scientific support will continue to be provided to other Commission services on request.

COM(86)416 final: p.16, Article 2 should read as follows:

Article 2

In view of the decisions already adopted by the Council as part of the budgetary procedure, the expenditure commitment estimated as necessary for the execution of the revised programme is increased for the year 1987 by 33 million ECU for expenditures other than those on staff.

An indicative breakdown of the expenditure commitment for the revised multiannual programme is given in Annex B.