COUNCIL DESICION

of 15 December 1994

adopting a specific programme of research and technological development, including demonstration, to be implemented by the Joint Research Centre for the European Atomic Energy Community (1995 to 1998)

(94/919/Euratom)

THE COUNCIL OF THE EUROPEAN UNION,

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] which has consulted 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, by Decision 94/268/Euratom [4], the Council adopted a framework programme for Community activities in the field of research and training for the European Atomic Energy Community (1994 to 1998), specifying *inter alia* the activities to be implemented by the Joint Research Centre (JRC) for the European Atomic Energy Community; whereas this Decision takes account of the grounds set out in the preamble to that Decision;

Whereas Article 2 of Decision 94/268/Euratom stipulates that the framework programme shall be implemented through specific programmes adopted in accordance with Article 7 of the Treaty;

Whereas the RTD activities carried out by means of direct action are conducted by the JRC; whereas these activities consist of institutional research activities for which the JRC has expertise and special, if not unique, facilities in the Community and of institutional, scientific and technical support activities which necessitate the neutrality of the JRC;

Whereas the amount deemed necessary for carrying out this programme is ECU 300 million; whereas the appropriations for each financial year shall be laid down by the budgetary authority, subject to the availability of resources within the financial perspectives and the conditions set out Article 1 (3) of Decision 94/268/Euratom;

Whereas the content of the framework programme of Community activities in the field of research and training was established in accordance with the subsidiarity principle; whereas this specific programme specifies the content of the activities to be implemented by the JRC for the European Atomic Energy Community (EAEC) in accordance with this principle;

Whereas Decision 94/268/Euratom (framework programme 1994 to 1998) lays down that a Community action is justified if, *inter alia*, research contributes to the strengthening of the economic and social cohesion of the Community and the promotion of its overall harmonious development, while being consistent with the pursuit of scientific and technical quality; whereas this programme is intended to help meet these objectives;

Whereas this programme may make a significant contribution to the stimulation of growth, to the strengthening of competitiveness and to the development of employment in the Community, as indicated in the White Paper on 'Growth, competitiveness and employment'; whereas it is therefore necessary to promote the prenormative research activities considered to be necessary under other Community policies;

Whereas, as part of the direct action, the scientific and technical activities to support Community policies should remain consistent with the requirements of these policies for the duration of the implementation of this programme;

Whereas the JRC may also take part in the indirect action carried out under the other specific programmes in the same way as third parties situated in a Member State or an associated State;

Whereas the Commission must ensure that research activities carried out as part of the direct and the indirect actions respectively are complementary;

Whereas the JRC may also take part, on a competitive basis, in any other activity implemented by the Community and carry out research on behalf of third parties;

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(1) OJ No C 113, 23. 4. 1994, p. 24.
(2) OJ No C 341, 5. 12. 1994.
(3) Opinion delivered on 14 September 1994 (not yet published in the Official Journal).
(4) OJ No L 115, 6. 5. 1994, p. 31.

Whereas exploratory research should be encouraged;

Whereas the JRC, with its laboratories and installations, can make an effective contribution to the training and mobility of researchers, and whereas, to this end, cooperation should be encouraged in all the Member States between laboratories and public and private scientific institutes;

Whereas the JRC may contribute to other European research and technological development activities; whereas the JRC should be better integrated into networks or consortia with partners in all the Member States, in both its institutional and its competitive activities; whereas it should, in particular, be a driving force in improving links between research laboratories and institutions in all regions of the Community;

Whereas the Commission should undertake the tasks incumbent upon it in the area of nuclear safety, making use of the technical expertise of the JRC;

Whereas particular attention should be paid to the safety of the nuclear fuel cycle and its impact on the environment;

Whereas, in the field of safeguards, the JRC should contribute to the development of the new technologies needed to ensure, in this area, compliance with the obligations arising from the Treaty;

Whereas, more generally, the Commission should, by making use of the capabilities of the JRC, continue to contribute to the setting up of a coherent, reliable international system of safeguards through its cooperation with the competent international organizations, in particular the International Atomic Energy Agency and with any third countries which also wish to take part in such a system;

Whereas the work and experience of the JRC, in particular in the field of reactor safety and safeguards, should be usefully exploited by the Community in enhancing the effectiveness of its activities to help the central and east European countries and the new independent States on aspects of nuclear fission safety;

Whereas it may be appropriate to engage in international cooperation activities with international organizations and third countries for the purpose of implementing this programme;

Whereas this programme should also comprise activities for the dissemination and exploitation of RTD results;

Whereas an analysis should be made of possible socio-economic consequences and technological risks associated with the programme;

Whereas progress with this programme should be continuously and systematically monitored with a view to adapting it, where appropriate, to scientific and technological developments in this area; whereas in due course there should be an independent evaluation of progress with the programme so as to provide all the background information needed in order to determine the objectives of the next framework programme of research and training activities for the EAEC; whereas at the end of this programme there should be a final evaluation of results obtained compared with the objectives set out in this Decision; and whereas the conclusions of these evaluations should be submitted to the European Parliament, the Council and the Economic and Social Committee;

Whereas the Board of Governors of the JRC plays an important role in the operation of the Centre and in the implementation of its activities,

HAS ADOPTED THIS DECISION:

Article 1

A specific programme concerning research and technological development activities to be conducted by the Joint Research Centre is hereby adopted for the period from 1 January 1995 to 31 December 1998.

Article 2

1. The activities referred to in Article 1 shall include institutional research activities and institutional scientific and technical support activities.

2. The institutional research activities, as described in Annex IA, are those for which the JRC has expertise and special, if not unique, facilities in the Community which contribute to the implementation of the RTD policy of the Community. They shall be carried out in such a way as to ensure their complementarity with corresponding indirect action contained in the other specific programmes of the framework programme.

3. The institutional scientific and technical support activities, as described in Annex IB, are the activities necessary for the formulation and implementation of Community policies and the tasks assigned to the Commission under the Treaty which necessitate the neutrality of the JRC.

Article 3

1. The JRC shall participate in the implementation of Community action on research and training in the fields of nuclear fission safety and controlled thermonuclear fusion and through its exploratory research activities.

Article 4

1. The operational budget of the JRC under this programme is ECU 300 million.

2. An indicative breakdown of this amount is given in Annex II.

3. The budgetary authority shall lay down the appropriations for each financial year, subject to the availability of resources within the financial perspectives and in accordance with the conditions set out in Article 1 (3) of Decision 94/268/Euratom, taking into account the principles of sound management referred to in Article 2 of the Financial Regulation applicable to the general budget of the European Communities.

If additional funding is approved in accordance with Article 1 (3) of Decision 94/268/Euratom, the JRC will receive a share proportional to its share of the present overall amount for the framework programme, provided that, after evaluation, the European Parliament and the Council consider that the JRC is making satisfactory progress towards increased openness to competition.

Article 5

1. The general rules for the Community's financial contribution are laid down in Annex IV to Decision 94/268/Euratom.

2. Annex III sets out the specific rules for implementing this programme, supplementary to those referred to in paragraph 1.

Article 6

The Commission shall be responsible for the implementation of this programme and, to this end, shall call upon the services of the JRC. The Commission shall be assisted in this task by the Board of Governors of the JRC (hereinafter referred to as the 'Board of Governors'.

Article 7

1. In order to help ensure, *inter alia,* the cost effective implementation of the activities, the Commission, assisted by the Board of Governors, shall continually and systematically monitor progress on the implementation of the direct action in relation to the objectives set out in Annex I. It shall assess in particular whether the objectives, priorities and financial resources are still appropriate to the changing situation. It shall, if necessary in the light of the results of the monitoring process, submit proposals to the Council to adapt or supplement the institutional research activities. With regard to the institutional scientific and technical support activities, the Commission will, if necessary, make adaptations to ensure that they are consistent with the requirements of the relevant Community policies.

2. The Commission shall each year before 15 April submit to the European Parliament, the Council and the Economic and Social Committee a report on the implementation of the activities of the JRC. This report shall be accompanied by the comments of the Board of Governors as contained in its annual report. The latter may also submit, through the Commission, to the European Parliament, the Council and the Economic and Social Committee a separate report on any aspect of the implementation of the JRC's activities.

3. In order to contribute towards the evaluation of Community activities, as required by Article 4 (2) of Decision 94/268/Euratom and in compliance with the timetable laid down in that paragraph, the Commission, after consulting the Board of Governors, shall have an external assessment conducted by independent experts of the activities carried out by the JRC within the areas covered by this programme and their management during the five years preceding this assessment. The concussions of this evaluation shall be submitted to the Council, the European Parliament and the Economic and Social Committee.

4. At the end of this programme, the Commission, after consulting the Board of Governors, shall have an independent final evaluation carried out of the results achieved compared with the objectives set out in Annex III to the framework programme and Annex I to this Decision. The final evaluation report shall be forwarded to the European Parliament, the Council and the Economic and Social Committee.

Article 8

In order to ensure effective coordination between the JRC's institutional research activities and the other activities provided for in the framework programme, systematic exchanges of views will be held between the JRC, including the Board of Governors, and the committees for the specific programmes with due regard to their respective responsibilities.

Article 9

The Commission, assisted by the Board of Governors, may, on the basis of the criterion of mutual benefit, request the JRC to execute projects with legal entities established in third countries where this contributes effectively to the implementation of the JRC's activities.

Participation of legal entities from third countries shall not benefit from Community financing under this programme.

Article 10

This Decision is addressed to the Member States.

Done at Brussels, 15 December 1994.

For the Council

The President

A. MERKEL

ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND CONTENT

This specific programme fully reflects the orientations of the framework programme for the European Atomic Energy Community, in applying the selection criteria and in specifying its scientific and technological objectives.

Annex III of the framework programme constitutes the basis of the objectives of this programme.

The Joint Research Centre (JRC) will conduct strategic and applied research. It will be carried out as an integral part of the European science and technology system and should also contribute to the scientific foundation of the various Community policies. It will be based on:

— scientific and technical excellence,

— impartiality and independence,

— unique research facilities,

— openness to all Member States.

In line with the priorities defined in the White Paper 'Growth, competitiveness and employment', the scientific and technical activities carried out by the JRC should meet the needs of the Community as a whole, its institutions and Member States with the objectives of:

— helping to strengthen the scientific and technological basis of European industry and to encourage the development of its international competitiveness,

— providing the independent scientific expertise necessary for the implementation of Community policies and the tasks which the Treaty assigns to the Commission,

— providing scientific and technical services to Community institutions and making JRC capabilities and scientific and technical installations available to public and private bodies,

— contributing to the improvement of public safety aspects of new technologies,

— contributing to the improvement of environmental impact assessment and protection,

— contributing to the reduction of scientific and technological disparities between Member States.

The European dimension of its work must remain one of the fundamental strengths of the JRC. Its activity should be characterized by a multidisciplinary approach based on the broad span of its capabilities. This multidisciplinarity will be reflected in the subjects developed by its institutes, thus ensuring its ability to meet new challenges as they arise.

Thanks to its capabilities and its involvement in the formulation and implementation of Community policies, the JRC will contribute to the integration of national, Community and European activities. Thus it will participate in networks of public and private laboratories in the Member States or European research consortia and may be the focal point of such networks in its areas of expertise.

This large exposure should not, however, lead to an excessive dispersion of the activities undertaken. Without ignoring the expectations of its customers, the Centre and its management must have clear views on the proper scientific and technical policy for the JRC and be able to maintain a balance in order to ensure that the activities and contracts which are accepted can be executed at all times with the requisite level of competence, both qualitatively and quantitatively.

The research to be conducted by the JRC falls into two categories:

— institutional research activities,

— institutional scientific and technical activities in support of Community policies.

A. INSTITUTIONAL RESEARCH ACTIVITIES

These research, training and demonstration activities for which the JRC has capabilities and installations which are special, if not unique, in the Community contribute to the implementation of Community research policy.

Safety of nuclear fission

The objective is to increase scientific and technical knowledge and to contribute to the development of technologies aimed at improving the safety of the whole of the nuclear cycle and reducing the environmental impact of the use of nuclear energy, and to respond to the need to assume the responsibilities of the Community arising from implementation of the Treaty.

The JRC contribution will be in the following fields:

— reactor safety,

— fuel cycle safety

— safeguards and fissile materials management.

Reactor safety

JRC research will be focused mainly on the following areas:

— a contribution to accident prevention: the development of non-destructive analytical techniques (NDA) for the improvement and refinement of inspection procedures and the development of qualification methodologies to facilitate their harmonization,

— probabilistic safety studies: the JRC will contribute to the improvement of methodologies and to the emergence of a consensus on their implementation in safety studies,

— studies conducted through European networks into the mechanisms of component ageing, a method of attenuation, evaluation of the integrity of structures and inspection possibilities,

— studies on severe accidents will be conducted on the internal and external phenomena relating to the containment in experiments with degradation of the reactor core using real materials and operating at a real temperature. This contribution will include participation in the interpretation of the results of experiments simulating accidental releases conducted in national laboratories. Furthermore, the JRC will contribute to the study of the release of fission products and the transfer phenomena. These studies will be carried out in conjunction with the activities in this field foreseen under indirect actions and will thus contribute to a wider Community effort. In this context, optimum use should be made of the human, technical and financial resources of the JRC and the relevant bodies in the Member States, and of the experience gained through the implementation of the specific programme on 'Nuclear fission safety'.

This research will continue to be the subject of a major cooperation effort within the framework of the networks involving European and non-European partners. It is aimed in particular at the development of common design tools intended for industry and the authorities responsible for safety.

It will make extensive use of the JRC's ability to set up cooperation networks between the European partners concerned and thus to participate in the implementation of the Community policy provided for in the Treaty.

Fuel cycle safety

The main objective of the studies conducted by the JRC is to reduce the environmental impact of using nuclear energy by means of research into the fuel cycle permitting optimized management of the end of the cycle. They will be conducted in close cooperation with the activities in this field foreseen under indirect actions.

This research will be aimed at improving the understanding of actinides and the plutonium cycle and contribute to improved solutions for the management of radioactive waste, with a view in particular to reducing the volume and radiotoxicity of such waste. It will take account of changes in reactor design.

It will also be aimed at supporting the Member States' current strategy of deep burial of radioactive waste and exploring management strategies which would make it possible to reduce the amount of waste

produced by future fuel-cycle installations. This research will be conducted in close cooperation with national laboratories.

The subjects covered will include:

— studies of the safety of the behaviour of nuclear fuels (UO_2) and mixed oxide),

— study of fundamental and solid-state physico-chemical analyses of actinides,

— study of nuclear aerosols,

— minimization of secondary actinides and other radionucleides with long half-lives in the nuclear fuel cycle,

— plutonium fuel technology,

— characterization of spent fuel with a view to its elimination,

— radionucleides for medical applications.

Safeguards and fissile materials management

The research conducted at the JRC is aimed at obtaining, in good time, results or new techniques implementation of which is necessary for compliance with obligations arising from safeguards provided for in the Treaty and the Non-Proliferation Treaty.

It is necessary in particular to develop new techniques to meet the new challenges related to the development of the fuel cycle and the strengthening of the control systems.

These activities are aimed at the development and improvement of techniques including:

— non-destructive test techniques using gamma and neutron radiation on intermediate and final products,

— measurements relating to volume and weight in large tanks in fuel production and reprocessing plants,

— sealing techniques and new marking systems for objects containing nuclear materials and for containers,

— surveillance systems using the storage and processing of digital images for automatic surveillance and examination and for improvement of recordings in the long term without inspectors.

A particular effort will be devoted to research on the design of multisensoral integrated systems able to function in the absence of inspectors by using mobile robotic technology. These systems will use intelligent software for the production of data and the accounting of materials.

These activities will be conducted in particular using the experimental installations Perla ('Performance and training laboratory'), Tame ('Tank measurement') and Lasco ('Surveillance and containment') of the JRC which offer experimental conditions which are representative of reality in an installation.

Lastly, the JRC research in the field of safeguards also forms part of a process of European cooperation as illustrated by the Esarda network ('European Safeguards Research and Development Association') and international cooperation with the USA, Canada, Japan and Russia.

Controlled nuclear fusion

This activity forms part of the Community fusion research programme. It is aimed at improving the pool of knowledge and the technology of the 'safety and environment' dimension of future machines intended for the European programme. The bulk of the work will be dedicated to support for the International Thermonuclear Experimental Reactor (ITER) but may also involve any other fusion reactor.

For this purpose, the JRC has designed and constructed the European Tritium Handling Laboratory (Ethel). The aim of this installation is the development of methods of handling tritium, but special attention will be paid to the verification and validation of methods of preventing and reducing tritium and activation product waste in the work area and the environment under both normal and accident conditions.

The laboratory is also able to offer research capability to any other European organization which is a member of the Community fusion programme or is associated with it.

Part of the activities will concern the development and characterization of materials to meet the following requirements: good compatibility with tritium, behaviour as effective barriers against infiltration of tritium with low induced radioactivity. The JRC, which has long experience in this field, will make a significant contribution within the framework of the ITER and for the longer term requirements of the Fusion programme.

In addition to these activities, more general studies, including operational safety during maintenance, will be conducted by the JRC in line with specific demands relating to the ITER project or, more broadly, the Fusion programme, in particular studies on low-activation materials and remote handling.

B. INSTITUTIONAL SCIENTIFIC AND TECHNICAL SUPPORT ACTIVITIES

These activities are necessary for the formulation and implementation of Community policies and tasks assigned to the Commission under the Treaty.

The following description, which is based on current Community policy requirements, is given by way of guidance and may be modified in accordance with the relevant provisions of Article 7 (1).

Nuclear fission safety - Reactor safety

The aim of this activity is to meet specific demands with regard to fostering a harmonized approach to reactor safety and demands relating to Community activities concerning the safety of nuclear plants in the countries of central and eastern Europe and the republics of the former USSR.

Safeguards

The objective is to provide scientific and technical support for the implementation of safeguards in accordance with the Euratom Treaty and support to the Commission in the framework of the Community's collaboration with the IAEA.

The fields covered by support for the Community include:

— the development and operation of on-site laboratories to carry out analyses in connection with checks in certain major fuel-cycle installations in the Member States (communication from the Commission to the Council and to Parliament of 24 March 1992),

— analyses of safeguards samples (European Commission's Safeguards Analytical Measurements Ecsam) as part of a network operated by the JRC,

— non-destructive tests, inspection of tanks, development and calibration of instrumentation and measurement systems,

— development of sealing technologies for fuels and containers and identification and surveillance techniques,

— development of integrated surveillance systems not needing the presence of inspectors and of computerized systems for nuclear materials compatibility and the management of databases,

— analysis of nuclear materials being unlawfully transported in the Community and seized by the national authorities,

— training of Euratom inspectors in all of the above techniques and support to the Euratom Safeguards Directorate in terms of health protection.

The support to the Commission in the framework of the Community's collaboration with the IAEA will in particular cover:

— analytical measurement and surveillance techniques for tanks, including the development and calibration of instrumentation for inspectors and the operation of an international network for the quality assurance of control measures,

— non-destructive techniques, including tests and calibration of methods and instrumentation and the development of the associated software to meet the requirements of the Agency inspectors,

— development of sealing techniques for the dry storage of irradiated fuel, its transportation and its storage in containers,

— development of surveillance techniques for the verification of information on the design of nuclear installations,

— development of integrated systems of measurement,

— study of new techniques to strengthen the international controls carried out by the Agency, including the development of ultrasensitive analysis of samples taken from the environment,

— training of inspectors and operators;

— the development of techniques which make use of remote sensing.

These support activities will make use of the specialized experimental installations available in several JRC establishments (Geel, Ispra and Karlsruhe).

ANNEX II

INDICATIVE BREAKDOWN OF THE AMOUNT DEEMED NECESSARY FOR THIS PROGRAMME

(ECU million)

Nuclear fission safety	254 (1)
Controlled thermonuclear fusion	46
Total	300 (2) (3)

(1) Of which an amount of ECU 87 million is estimated necessary for institutional support activities.
(2) Of which approximately 6 % may be allocated to exploratory research.
(3) This total includes the JRC's budget contribution necessary for its participation in shared-cost actions.

ANNEX III

SPECIFIC RULES FOR IMPLEMENTING THE PROGRAMME

1. The Commission, assisted by the Board of Governors of the JRC, shall implement the direct action on the basis of the scientific objectives and contents described in Annex I. The activities relating to this action shall be performed in the relevant institutes of the Joint Research Centre (JRC).

2. In the implementation of its activities, the JRC will, whenever appropriate and feasible, participate in or organize networks of public and private laboratories in the Member States or European research consortia. Particular attention shall be paid to cooperation with industry, especially with small and medium-sized enterprises. Research bodies established in third countries may also cooperate on projects, in accordance with the relevant provisions of Article 9 and, where applicable, of agreements for S&T cooperation between the Community and the third countries concerned. Particular attention will be paid to cooperation with research laboratories and institutes in the countries of central and eastern Europe and the former Soviet Union.

   The knowledge gained through implementation of the projects will be disseminated by the JRC itself.

3. The accompanying measures shall include:

   — the organization of visits to JRC institutes of grant holders, visiting scientists and seconded experts,

   — organization of the secondment of JRC staff to national laboratories, industrial laboratories and universities,

   — systematic exchange of information, through *inter alia* the organization of scientific seminars, workshops, colloquiums and scientific publications,

   — specialized training with the emphasis on multidisciplinarity,

   — the independent scientific and strategic evaluation of the performance of the projects and programmes.