

## COUNCIL DECISION

of 18 July 1989

adopting a research and training programme for the European Atomic Energy Community in the field of remote handling in hazardous or disordered nuclear environments (1989 to 1993)

TELEMAN

(89/464/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, submitted after consulting the Scientific and Technical Committee <sup>(1)</sup>,

Having regard to the opinion of the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas, by its Decision 87/516/Euratom, EEC <sup>(4)</sup> as amended by Decision 88/193/EEC, Euratom <sup>(5)</sup>, the Council adopted a framework programme for Community activities in the field of research and technological development (1987 to 1991), which acknowledges the importance of contributing to improving the level of scientific and technical knowledge relevant to nuclear safety;

Whereas the inherent radioactivity of nuclear plant makes remote handling essential for the conduct of nuclear operations on an industrial scale;

Whereas the safety of nuclear installations and protection of their environment depends on operators being able to inspect, maintain and repair plant when necessary;

Whereas exposure of man to radiation should be kept as low as reasonably practicable;

Whereas an action in research on remote handling in hazardous and disordered nuclear environments offers an opportunity to realize these goals more efficiently,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

A specific research and training programme (TELEMAN) for the European Atomic Energy Community in the field of

<sup>(1)</sup> OJ No C 311, 6. 12. 1988, p. 6.

<sup>(2)</sup> OJ No C 96, 17. 4. 1989, p. 215.

<sup>(3)</sup> OJ No C 102, 24. 4. 1989, p. 13.

<sup>(4)</sup> OJ No L 302, 24. 10. 1987, p. 1.

<sup>(5)</sup> OJ No L 89, 6. 4. 1988, p. 35.

remote handling in hazardous or disordered nuclear environments, as defined in the Annex, is hereby adopted for a period from 18 July 1989 to 31 December 1993.

*Article 2*

The funds estimated as necessary for the execution of the programme amount to ECU 19 million, including expenditure on a staff of four.

An indicative allocation of these funds is set out in the Annex.

*Article 3*

Detailed rules for the implementation of the programme and the rate of the Community's financial participation are set out in the Annex.

*Article 4*

The Commission shall be assisted in the implementation of the programme by the Management and Coordination Advisory Committee CGC-5 for Nuclear Fission Reactors and Safety, Safeguards and Fissile Materials Management, set up by Council Decision 84/338/Euratom, ECSC, EEC of 29 June 1984 dealing with structures and procedures for the management and coordination of Community research, development and demonstration activities <sup>(6)</sup>.

Contracts concluded by the Commission shall govern the rights and obligations of each party, in particular arrangements for the dissemination, protection and exploitation of research results.

*Article 5*

In the third year of implementation, the Commission shall undertake a review of the programme and send a report on the results of its review to the European Parliament, the Council and the Economic and Social Committee. This

<sup>(6)</sup> OJ No L 177, 4. 7. 1984, p. 25.

report shall be accompanied, where necessary, by proposals for the amendment or extension of the programme.

At the end of the programme, an evaluation of the results achieved shall be conducted by the Commission, which shall report thereon to the European Parliament and the Council.

The abovementioned reports shall be established having regard to the objectives set out in the Annex to this Decision and in accordance with Article 2 (2) of Decision 87/516/Euratom, EEC.

*Article 6*

This Directive is addressed to the Member States.

Done at Brussels, 18 July 1989.

*For the Council*  
*The President*  
R. DUMAS

## ANNEX

## PROGRAMME OBJECTIVES, CONTENTS, IMPLEMENTATION, INDICATIVE ALLOCATION OF FUNDS AND EVALUATION CRITERIA

## 1. OBJECTIVES

TELEMAN's objective is to realize advanced tele-operators that respond to the ultimate needs of the nuclear industry in order to reinforce the scientific and technological base used for the design of nuclear remote handling equipment. Tele-operators contribute to the safety and profitability of man and plant employed in all parts of the nuclear industry, from mining through reactor operation to reprocessing and decommissioning. This programme concerns the contribution that tele-operators can make to nuclear safety in the areas of accident management where the environment may have changed unpredictably and decommissioning, including prevention, inspection and maintenance.

The tele-operators of interest are mechanical arms to which a variety of tools and sensors can be attached, manipulators attached to movable gantries and partially autonomous vehicles equipped for specialized jobs.

In particular, TELEMAN will help the nuclear industry to comply with the requirements that workers be exposed to the minimum practicable amount of radiation, always remaining within relevant limits, without compromising inspection, maintenance and repair operations.

## 2. PROGRAMME TECHNICAL CONTENT

	<i>Indicative allocation of funds (millions of ecus)</i>
<b>Area 1: Tele-operator component and sub-system development</b>	8,8
In the framework of the abovementioned nuclear safety objectives, research and development will be carried out on the utilization, modification and, where necessary, the development of sensors, perception and decision-making systems, information transmission and engineering for tele-operator mobility and dexterity in nuclear environments.	
<b>Area 2: Environmental tolerance</b>	2,5
Research will be carried out throughout the life of the programme on the adaptation of sensors and electronic hardware to nuclear environments, the development of machine monitoring systems and design strategies that permit easy repair or recovery of stranded machines.	
<b>Area 3: Research machine projects</b>	6,4
Development will be focussed on tele-operators that respond to the demands of the nuclear industry for enhanced safety. These will be defined in consultation with end-users who in turn will be expected to test new tele-operators in their installations (cf. Area 4). Definition of industry's needs will precede the launching of research in Areas 1 and 2.	
Products of research on components and sub-systems will be demonstrated by incorporating them into research machines that already exist or into new machines that typify nuclear industry requirements, such as intelligent manipulators and cranes equipped with control systems suitable for use in high radiation fields, and a mobile platform for information gathering under normal and abnormal conditions.	
<b>Area 4: Product evaluation and studies</b>	1,3
End-users of TELEMAN technology will be encouraged to test and evaluate the practicality and reliability of the products of the programme in realistic environments to guide the subsequent commercialization of successful ones by industry. Studies will be made of topics relating to the application of new technologies, new uses for computer assisted tele-operators, the evolution of guidelines and standards and programme development.	
<b>TOTAL</b>	<u>19,0</u>

### 3. IMPLEMENTATION

The programme consists of activities carried out by means of shared-cost research contracts with competent public organizations or private firms established in the Member States. The participation of small and medium-sized enterprises in the programme will be encouraged.

The Commission shall distribute, in all Community languages, information packs to accompany the invitation to participate in order to guarantee equal opportunities for the undertakings, universities and research centres in the Member States.

In addition to shared-cost research contracts, the programme may also be carried out by means of study contracts, coordination projects and awards of training and mobility grants. Such contracts and grants shall, where appropriate, be awarded following a selection procedure based on calls for proposals published in the *Official Journal of the European Communities*.

Participants in shared-cost contracts may be industrial organizations, research institutes and universities, established in the Community. Each contracting party will be expected to make a significant contribution to projects. The contracting party shall be expected to bear a substantial proportion of the costs, 50 % of which shall normally be borne by the Community. Alternatively, in respect of universities and similar organizations carrying out projects, the Community may bear up to 100 % of the additional expenditure involved.

Shared-cost research projects should, where appropriate, be carried out by participants from more than one Member State.

The information resulting from the implementation of the shared-cost activities shall be made accessible on an equal basis to all Member States. Licences and/or other rights developed in the framework of the programme will be subject to the normal contractual conditions of the Community.

### 4. EVALUATION CRITERIA

The Commission requires that, where possible, the objectives and milestones of each research programme be set out in a quantitative form to facilitate evaluation.

The long term objectives (2 000) are that operators of nuclear installations should be able to buy world-class computer assisted tele-operators from Community-based manufacturers and that the radiation exposure of workers should be appreciably reduced.

TELEMAN's principal technical objectives relate to reinforcing the scientific and engineering base upon which the design of nuclear remote handling is based, to solving problems of manipulation, material transport and mobile surveillance within the nuclear environment and to demonstrating the feasibility of the solutions offered.

The technical criteria in terms of which the different aspects of the programme are to be evaluated, initially in 1992 to 1993 and more thoroughly in about 1996, are:

- the extent to which projects were selected against credible technical criteria,
- the development achieved within TELEMAN projects, e.g. whether TELEMAN projects achieved a significant (100 %) improvement in performance and performance/price ratios. Typical performance parameters might be sensor resolution, power/weight ratio, system response time, etc.,
- the extent to which different technologies have been integrated,
- the performance and acceptance of research machines in tests conducted with the participation of potential end-users,
- whether the projects were of high scientific value as judged by the number and impact of patents, publications in referred journals and invited contributions to conferences. Output should be compared with that from other similar programmes being executed elsewhere.

TELEMAN's industrial objectives relate to more effective application of investment in research, generation of awareness of the potential of computer assisted tele-operators, and creation of a pool of experienced firms and engineers able to exploit research machines and manage the application of the new technology.

The industrial criteria in terms of which the different aspects of the programme are to be evaluated are:

- whether the calls for proposals attracted sufficient industrial interest to permit formulation of a coherent programme. The criterion of sufficiency would be that the ratio resources proffered by industrial contractors to Community funding is to be greater than 1,5,
  - the extent to which projects were selected against credible industrial criteria,
  - that at least half the proposals received envisage a major role for a university or research laboratory in a Member State other than that of an industrial partner,
  - the extent to which links formed to execute TELEMAN projects have continued and led to joint development of industrial products, new multinational firms or new research projects,
  - application of technology and patents arising from TELEMAN are applied by other firms and in other industries.
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