

# COMMISSION OF THE EUROPEAN COMMUNITIES

COM (75) 60 final

Brussels, 25 February 1975

## HILLMAN

COMMUNICATION FROM THE COMMISSION TO THE COUNCIL  
ON TECHNOLOGICAL PROBLEMS OF NUCLEAR SAFETY

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DRAFT RESOLUTION

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## I. Preamble

According to the Resolution on Energy and the Environment adopted by the Council on 7 November 1974 "... the Communities and the Member States should investigate the special problems associated with the development of atomic energy, particularly the dangers of radiation, the problems of reactor safety..."<sup>(1)</sup>

This Communication, which forms part of the "Nuclear Plan of Action" presented by the Commission in February 1974<sup>(2)</sup>, is in line with this Resolution, particularly in view of the privileged place which nuclear power holds in the Community's energy policy objectives (160 GWe installed in 1985 and, if possible, 200 GWe)<sup>(3)</sup>.

## II. Nuclear energy and the environment

Public opinion is becoming increasingly aware of the effect which industrial and technological development in general has on the environment. In this connection, it is essential to take note of the increasing criticism which is being directed against the growth in the peaceful uses of nuclear energy and which, in some countries, takes the form of a struggle between the environment protection movements and the promoters of nuclear development.

Because of the special historical origins of nuclear power, the measures taken to protect persons occupationally exposed to radiation and the general public, as well as to safeguard the environment are extremely stringent and have reached a level of safety rarely found in other sectors of industry.

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(1) Doc. R/2996/74(ENV 137 ; ENER 48) of 14 November 1974

(2) Doc. COM(74)10 final

(3) Council Resolution of 17 December 1974 on "The objectives of a Community energy policy".

This is reflected both in the severity applied to the fixing of danger thresholds as regards ionising radiation and in the technological design of plant and related equipment and, above all, in the regular analysis of the various possibilities of failure or of accidents and of the ways of guarding against such possibilities.

However, the fast-growing use of nuclear energy and the constant technological development in this sector mean that vigorous and long-term action must be taken.

The main aim of the project is to ensure that the nuclear objective set by the Council is achieved under economically viable conditions, without in any way sacrificing safety.

As with all other industrial activity, the benefits of the peaceful use of nuclear energy must be set against its inherent disadvantages and there must be an objective comparison with the benefits and disadvantages of the currently available alternatives (e.g., danger of pollution from coal and oil).

It should, however, be noted that nuclear plant safety is only one aspect of the "Protection of public health and of the environment" section of the nuclear plan of action presented by the Commission. Mention should be made of the other aspects, viz., radiation, heat pollution, transport of radioactive material, management and storage of radioactive waste, and decommissioning of nuclear installations which have already been or will be the subject of appropriate measures by the Commission.

### III. Nuclear safety techniques : objective and prospects

Nuclear safety raises many problems of a technological and industrial nature.

These relate mainly to arrangements and measures to :

- prevent abnormal operating conditions in nuclear plants (power plants, fuel cycle plants) and accidents of internal or external origin (for instance, seismic phenomena, explosions, aircraft crashes) ;
- limit the consequences of abnormal conditions or accidents ;
- ensure that, in normal operating conditions, the permitted radiological limits for gaseous and liquid effluent are not exceeded.

The various circles concerned, i.e., the operators, constructors and public authorities responsible for nuclear safety, cope with these problems in ways varying from one country to another :

- by applying case-by-case analysis and inspection methods
- by preparing and applying a whole series of measures (specifications, regulations, general and detailed guide criteria, industrial standards affecting safety) which may be generally referred to as "nuclear standards" ;
- by implementing applied research programmes.

Because of the rapidly changing nature of nuclear technology<sup>(1)</sup>, work on nuclear safety at present is based on a desire to avoid constraining standards which might hamper subsequent development.

This tendency is apparent from the laws and administrative procedures which come within the purview of the national or even regional<sup>(2)</sup> authorities.

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(1) In fifteen years, reactor capacity has risen from about 200 MWe to over 1000 MWe per unit.

(2) Federal Republic of Germany

As a result of accelerated recourse to nuclear energy, safety techniques are tending to develop disparately from country to country, with the risk of incurring the following adverse effects :

- proliferation of barriers to trade ;
- growing divergences between nuclear plant licensing procedures, with a corresponding lengthening of lead times ;
- lack of uniformity in the presentation of information to the public, which is making increasing demands for fuller details on these matters ;
- possibility that disparities will eventually develop in the quality of the protection of the general public ;
- proliferation of pointless duplications in applied research programmes.

#### IV. Means and ends of Community action

The Community is required by the Treaties to contribute to the development of the nuclear industry in compliance with requirements for safety and the protection of the health of the general public, and also to ensure the smooth functioning of the Common Market.

It must therefore step up its measures to prevent the above-mentioned adverse trends becoming irreversible.

Furthermore, since nuclear safety problems go beyond not only the frontiers of the Member States but also those of the Community as a whole, it is incumbent on the Commission to act as a catalyst for the measures which are often taken on a broader international plane.

It is recommended that the Commission should pursue and intensify the two types of action in which it has been engaged hitherto, namely :

- 1) measures to harmonize safety techniques and standardize equipment
- 2) measures to encourage the coordination of applied research programmes.

Measures of the first type are, for the moment, mainly undertaken by a working party on Light Water Reactor Safety set up at the end of 1972 and composed of representatives of the Commission, of national authorities responsible for nuclear safety, power plant operators and constructors.

Because the legislative responsibility for nuclear safety rests with the national authorities and because, as has already been said, this is a fast-developing technological field, the Commission intends, as a preliminary step, to promote the gradual harmonization of standards by regularly organizing consultation and discussion between the competent parties at Community level and by regularly disseminating the results of this work among the various circles involved.

This work, which is mainly of a technical nature, must be supplemented by reciprocal exchanges of information on the licensing laws and administrative procedures in force in the Member States. A preliminary information report on the current situation regarding laws and procedures in this field will be published at the beginning of 1975. The Member States are requested to give notification of any new draft law, regulation or administrative provision on the safety of nuclear installations in order that consultations and exchanges of information may be organized by the Commission at Community level.

If work on technical harmonization enjoys the constant support of the parties concerned, and above all the responsible governmental authorities, the Commission believes it will be able to draw up general recommendations on the basis of the second indent of Article 124 of the EAEC Treaty by 1978.

By undertaking such measures at Community level, it will be possible, to a large extent, to parry the adverse effects referred to above. In addition, as the guardian of the smooth functioning of the Common Market, the Commission may, at some future date, present draft "directives" to the Council on the basis of Article 100 of the EEC Treaty.

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With regard to measures of the second type (coordination of research), the work in connection with light water reactors is being conducted by a working party similar to the one mentioned above, but including representatives of the national research centres, and in the case of fast breeder reactors by groups associated with the Coordinating Committee on Fast Reactors, which was set up by the Council in April 1970.

The research in progress in the Community at the present time consists of a number of national programmes, accounting for the greater part of the approved research in this field, and also the programme of the JRC at Ispra.

It is necessary that the Community should first fix its attention on :

- systematic improvement of the flow of information on research programmes and their results ;
- consultation and greater efforts at alignment between the experts in accordance with the priorities obtained by comparing the requirements of the government authorities responsible for nuclear safety, the constructors, the operators and the research centres.

It should be noted, moreover, that non-member countries well advanced in the nuclear field (e.g. the United States) are devoting considerable effort to research on nuclear safety, and are very receptive towards the promotion of exchanges of information and schemes for bi-national or multinational collaboration.

In the course of 1975, the Commission proposes to ask the Council for a brief to negotiate a protocol to the Outline Cooperation Agreement between the EAEC and USAEC, dealing specifically with questions of light water reactor safety.



The resulting intensification of Community and international cooperation might well give rise to joint programmes other than those of the JRC. The Commission intends to submit specific proposals in this connection.

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The general report annexed to this Communication gives a detailed account and description of Community activities in the area of "Nuclear safety", and discusses their future prospects. Among other questions, it considers the working methods of the groups already set up and the results obtained until now.

The Council's attention is drawn to the fact that, if the current activities are to be successfully carried through, a substantial effort will be required in the way of preparatory back-up studies and coordinating work, involving the participation of experts from the various centres concerned. This means that appropriations of about 10 million Belgian Francs will have to be allocated annually to provide basic financial support for this work.

#### V. Conclusions

The problems of nuclear safety caused on a national level by the rapid development of nuclear programmes tend at this moment to polarize the attention and activity of the government authorities responsible for nuclear safety as well as of operators, constructors and research centres.

Instead of being in the common interest intensified and accelerated the work done on Community level is likely to be slowed down.

An engagement at the highest possible Community level seems therefore necessary in order to avoid the tendency of falling back to national activity.

For this reasons and on the basis of this Communication and the accompanying general report, the Council is requested to adopt the appended Resolution.

DRAFT RESOLUTION

The Council of the European Communities

Having regard to the Treaty establishing the European Atomic Energy Community

Having regard to the Opinion of the ~~European~~ Parliament

Having regard to the Opinion of the Economic and Social Committee

Whereas the Commission has sent the Council a communication and combined report on technological problems of nuclear safety;

Whereas nuclear power is required to play a privileged part in the supply of energy to the Community

Whereas the technological problems relating to nuclear safety call for appropriate action at Community level

Whereas through an alignment of safety techniques the national authorities responsible for nuclear safety and the electricity producers will be able to benefit from a harmonized approach to the problem at Community level

Whereas the problems of nuclear safety go beyond the frontiers not only of Member States but of the Community as a whole and it is the Commission's role to act as a catalyst for schemes which have been launched on a broader international scale

has adopted this resolution

The Council

~ asks the licensing authorities and the associated safety and inspection authorities, the operators, the constructors and the



agencies responsible for applied research programmes to intensify their collaboration at Community level in accordance with the ways and objectives indicated by the Commission in order :

- . to assure the same degree of protection of the population and to eliminate or to avoid barriers to trade by harmonization of practice and criteria in nuclear safety ;
- . to avoid useless duplications in programmes of applied research by a greater effort of co-ordination in this respect ;
- asks the Member States to communicate to the Commission any draft laws, regulations or administrative provisions regarding safety of nuclear plants so that the Commission may arrange appropriate consultations at Community level ;
- asks the Member States to adopt a common position within the competent international organizations for any problems concerning harmonization of practice and criteria as well as co-ordination of research in nuclear safety ;
- asks the Commission to submit annual reports on the progress achieved ;
- notes that for the successful implementation of the measures described in the communication of the Commission appropriate funds should be provided each year for the financing of back-up studies.

Draft Report from the Commission to the Council

on the implementation of "Guidelines and Priority Measures  
for a Community Energy Policy" (COM(74) 10 final, 1 February 1974)

Report concerning technological problems relating  
to nuclear safety



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I. Introduction to the subject : interest and general justification of action

1. Nuclear power and public opinion

The rapid developments taking place in the more highly industrialized countries, and the medium- and long-term programmes and forecasts of most other countries indicate that the use of nuclear power for peaceful purposes is destined to assume an increasingly predominant role.

At the same time, public opinion has become more sensitive to matters concerning the environmental repercussions of any industrial or technological development. Even the peaceful applications of nuclear power constitute a target in the controversies which sometimes arise between public opinion and the promoters of such developments. This trend - often amplified by emotional reactions - is assuming disquieting proportions in certain countries or regions and arousing international interest.

And yet, as far as environmental protection is concerned, the historical origins on nuclear power have - at least as regards the peaceful applications of such power - led to safety measures and devices rarely equalled in modern technology. This is illustrated by the severe danger thresholds set for ionizing radiations, the design of nuclear plants themselves and above all the systematic analysis of the various sources of faults, malfunctions or serious accidents, and the means of protection against such events.

All these efforts lead to very exacting requirements and a continual search for ever safer solutions which inevitably have economic repercussions. As in the case of any activity of modern society, it is normal that the benefits which mankind derives from this source of power should eventually be weighed against the risks inherent in the use thereof. Public opinion should also realize that, by setting up unreasonable barriers, it runs the risk of stepping up the dangers of pollution against which it legitimately wishes to protect itself.

2. Safety techniques : aims, parties concerned, role and nature of Commission measures

Apart from radiological aspects<sup>(1)</sup> - which are not dealt with in this Report - the development of nuclear power in strict compliance with safety and public health requirements poses numerous technological and industrial problems.

The principal technological problems all stem from the fact that, depending on the particular features of their sites, nuclear plants must be designed, built and maintained to extremely high safety standards throughout their operating life and that, in the event of minor incidents or more serious accidents, the possible consequences for workers and the general public must be kept within acceptable limits. Furthermore, allowances must be made for the effects of

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<sup>(1)</sup> The radiological aspects are in particular dealt with in the framework of the pluriannual research program of the Community "Biology and health protection".

external events such as earthquakes, explosions (e.g. proximity of chemical industries, dangerous shipments), aircraft crashes or exceptional circumstances (riots, wars, sabotage).

The various parties concerned (i.e., operators, constructors and public authorities) cope with these problems, with varying thoroughness from one country to another, in the following ways :

- by making specific analyses in each case and by formulating and applying regulations, specifications, general or detailed guiding criteria and industrial standards with safety implications<sup>(1)</sup>:

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(1) These regulations and specifications (e.g., certain regulations concerning pressurized steam appliances, the 10 CFR 50 basic requirements in the US, the "Regelwerk" in preparation by the KTA in West Germany), guide criteria (e.g. the "general design criteria" drawn up in West Germany and the United States, siting criteria, the USAEC regulatory guides relating to the design of systems and accident analysis, the "Fachnormen DIN Kernenergie" mainly concerned with systems), and industrial standards (e.g. the "Fachnormen DIN Kernenergie", mainly concerned with components, or general industrial standards for the design and manufacture of mechanical, electromechanical and electronic components and subassemblies) may be grouped under the heading of "nuclear standards". These "standards" are generally formulated via the "compulsory" channels (safety and inspection authorities and agencies) and "non-compulsory" channels (joint efforts by operators, construction companies and safety and inspection authorities and agencies), within the framework of various standards organizations or industrial associations : e.g., Deutscher Normenausschuss (DINA), Kerntechnischer Ausschuss (KTA), VDE-VDI, Dampfkesselverein,

- by checking that the equipment (from the angle of design, construction and operation) complies with the current codified standards of good industrial practice and safety (specifications, criteria and industrial standards), or supplementary standards (non-mandatory) ;
  
- by implementing applied research programmes designed to clarify any uncertainty which may persist in this field.

All these technical measures are based on the laws and administrative procedures of each country, which are subject to constant revision.

Safety techniques, therefore, tend to develop differently from one country to another, possibly giving rise to barriers to trade and lengthy approval procedures and, in the future to divergent degrees of protection of the population. Nuclear power production may thus be jeopardized.

Now that industrial and technological collaboration is becoming increasingly frequent across national frontiers and the international market for nuclear plant is expanding, it would be unthinkable to allow the above situation to become permanent.

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V.d.TÜV, American Nuclear Society (ANS), American National Standards Institute (ANSI), Association of Mechanical Engineers (ASME), Institute for Electrical and Electronic Engineers (IEEE), etc...

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Under the Euratom Treaty, the Community has the obligation to contribute towards the development of the nuclear industry, while ensuring the safety and protection of the health of its inhabitants.

Apart from radiological aspects, the technical problems involved in guaranteeing the safety of nuclear power plants play a determining role in the harmonious development of these industries in favourable economic conditions.

Generally speaking, bearing in mind particular site characteristics and environmental hazards, the technological aspects of nuclear plant safety (all types) consist of :

- safety measures and devices employed in the design, construction and operation of the plant to guard against abnormal conditions or accidents ; safety measures and devices employed to limit the consequences of abnormal conditions or accidents ;
- in normal conditions, practical limits on the discharge of liquid or gaseous effluent and safety devices and measures employed to ensure respect of usually accepted radiological standards ; protective measures taken in connection with the storage and processing of medium and high-activity waste produced during operation.

The thermal effects of nuclear plants - especially power plants - are also undoubtedly extremely important from the point of view of the site and its environment. However, this question needs to be studied in a broader context than that of nuclear power production alone, because other types of power production and industrial activity (e.g., iron and steel plants) create similar effects. There is no reason to treat the nuclear industry in a way which might jeopardize it.

With due allowance for the prerogatives and responsibilities of the national authorities, the Commission therefore has the task - within the Community - of trying to promote the harmonious development of nuclear power applications, to ensure an equivalent degree of safety and protection for workers and the general public and to bring about the gradual removal of technical barriers to trade. Measures taken to attain these ends will mainly affect :

- electricity producers and operators of the various types of nuclear plants (power plants, reprocessing plants, waste storage plants) through the resulting rationalization and shortening of approval procedures ;
- the licensing authorities and safety and inspection agencies, by the application of similar analytical methods, specifications, criteria and standards, thereby avoiding, in the future, possible qualitative disparities in the protection of the inhabitants of the various countries ;
- industrial architects and construction companies, by facilitating the unimpeded growth of cross-frontier contracting ;

- the authorities and agencies responsible for applied research programmes, by avoiding too great a dispersal of staff effort and expenditure, and useless duplication of work.

The gradual alignment of practices and criteria in the various countries will facilitate the "standardization" of industrial units and equipment and lead to increased profitability.

The progressive "standardization" of design, manufacturing procedures, safety standards and quality control serves economic interests as well as the public interest. At the same time, this standardization enables the authorities responsible for issuing permits for the siting, construction and operation of such plants to apply simplified procedures for their review of applications submitted. This is particularly important in view of the rapid growth of nuclear industries and the resulting proliferation of applications for permits. Finally, this standardization can also facilitate relations and exchanges of information with both the industrially advanced and the developing countries outside the Community.

Furthermore, with regard to environmental hazards, to which the general public attaches increasing importance, the public relations of electricity producers, licensing authorities and associated safety and inspection agencies could benefit from an approach which was as closely aligned throughout the Community as possible.

For achieving such objectives, the Commission provides an appropriate framework, particularly because of its past

experience in this field, in cooperation with the various relevant technical agencies of the Member States, of third countries and other international agencies.

So far, the measures taken by the Commission have been of two types. It is recommended that increased efforts be made along the same lines :

- 1) measures to harmonize safety techniques and standardize equipment ;
- 2) measures to coordinate applied research programmes.

Briefly speaking, the aim of the first type of measure is :

- to achieve an equivalent standard of health and safety for workers and the general public ;
- to reduce technical barriers to trade inside and outside the Community by facilitating the balanced development of the nuclear industry.

The aim of the second type of measure is :

- to facilitate consultation and coordination in this field by improving the flow of information about research programmes and their results ;
- to arrive at a better definition of the importance of the various programmes through a compromise between the problems of the licensing authorities and safety agencies and those of the constructors and operators ;



- to achieve economies on an international scale by avoiding useless duplication.

## II. Background

Since 1959, the Commission has been endeavouring, in collaboration with the various technical agencies of the Member States competent in this matter, to prevent wherever possible the development of excessive disparities within the Community. Initially, this was achieved principally by a pragmatic approach, i.e., by pooling and comparing technical expertise and experience with specific problems relating to nuclear safety.

However, on repeated occasions since 1965, the Commission has been urged - particularly by industry and certain government authorities - to take more decisive and above all more systematic steps towards a closer approximation of methodologies, specifications, criteria and safety standards used inside the Community, and more coordination in the handling of research topics of common interest in this field. In this respect, mention should be made of the results of numerous consultations between the Commission and the relevant circles (government authorities, UNIPED for the electricity producers and UNICE for the constructors).

In particular, UNICE has repeatedly stressed to the Commission the interest and urgency of such measures<sup>(1)</sup>.

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(1) namely :

- in a letter dated 1 October 1970 to the Commission ;

It is also relevant to recall the favourable recommendations formulated previously by the various Community bodies the European Parliament<sup>(2)</sup>, the Economic and Social Committee (ESC)<sup>(3)</sup>, the Euratom Scientific and Technical Committee (STC)<sup>(4)</sup>.

Since 1972, in response to the repeated appeals made to it, the Commission has taken a number of new steps described later in this report. At the same time, the Commission has committed itself, before the Council, to submitting in due course a general report on measures concerning nuclear safety (discussions in the Council of new applications for funds since 1972, letter from President M. MANSHOLT dated 4 May 1972 and appended document R/976/72 (FIN 267) (ATO 67), supplementary document R/1368/72 (FIN 388) (ATO 93).

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- in a study and recommendations drawn up by a UNICE study group on the safety aspects of the European Community's energy supplies (Chapter 4 : Nuclear Energy) dated 5 October 1973 ;

- in the opinion of the UNICE Nuclear Committee, dated 13 May 1974, on document COM(74)10 final of 1 February concerning the "Promotion of the Use of Nuclear Energy".

(2) Resolution on the Tenth General Report of the EURATOM Commission adopted at the meeting of 18 October 1967 (1350/67 (ASS 622)).

(3) Comments on the "General Report on the Community's Nuclear Policy" (CES 215/69 and CES 257/69 of 12 August 1969).

(4) Opinion of the STC on document EUR/C/4100/67 ; SEC(67) 4149 confirmed by the STC meeting on 5 March 1968 ; opinion endorsed on several occasions thereafter and confirmed on the basis of this document on 18 December 1974.

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Furthermore, the nuclear programme (COM(74) 10 final) submitted to the Council on 8 February 1974, in connection with the guidelines and priority measures for a Community energy policy, also provides for the submission of this consolidated report.

Finally, explicit reference to the problems of nuclear safety was made in document SEC (74) 2592 (final) of 17 July 1974 "Energy for Europe" : research and development (strategic sector : nuclear energy) and in the Resolution on "Energy and the Environment" (point 11) adopted by the Council on 7 November 1974.

### III. Legal considerations

Activities relating to nuclear safety are covered by the Euratom Treaty because they constitute a decisive factor in the development of the Community's nuclear industries (see Treaty Articles 1 and 2 in particular).

The Commission is therefore empowered to undertake programmes of research into problems affecting the safety of nuclear plants in general (Articles 7 and 10), to take steps to promote consultation and coordination (Articles 5 and 135) and to deliver opinions and formulate recommendations (second indented subparagraph of Article 124),

Furthermore, the Commission has a contractual obligation to keep abreast of the safety problems of demonstration power stations accepted under the Agreement for Cooperation between the United States and Euratom in 1958 (Article 3 of the basic

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contracts resulting from this Agreement between the EAEC and SENA, KRB and ENEL, for the nuclear plants at Chooz, Gundremmingen and Garigliano respectively).

From a legal standpoint, the Commission has, in connection with nuclear plant safety, availed itself of the possibilities offered by Article 124 of the Euratom Treaty (opinions and recommendations) only on isolated occasions, i.e., for safety evaluations of specific projects (see Chapter IV below).

At the present stage this is because nuclear development - even in the case of proven-type nuclear power plants - is likely to undergo further substantial changes which make it impossible for the time being to issue opinions or recommendations of general application on the subject of safety.

Furthermore, the effects of the progressive approximation of analytical methods, specifications, criteria and standards and the rationalization of research programmes can already, in an initial stage, be effectively achieved by systematically promoting consultation and the pooling of expertise at Community level, and by systematically disseminating the results of this work in the various quarters concerned.

Finally, since this type of activity - which naturally includes experts' recommendations - is mainly intended to remove technical barriers to trade in the nuclear sector, it bears some - technical - resemblance to the programmes of action implemented under Article 100



of the EEC Treaty, particularly the General Programme for the Removal of Technical Barriers to Trade approved by the Council in 1969 for conventional products and activities. While bearing in mind the need for a gradual approach, and especially the objective impossibility of issuing "directives" on nuclear safety at this stage, the implications of the provisions of this EEC article must not be overlooked in the future, either for nuclear technologies or, more generally, for other leading technologies.

IV. Working methods ; objectives

1. Measures to harmonize safety techniques and standardize nuclear equipment

1.1. Introduction

In the various Member States, the laws and administrative procedures governing the issue of permits for locating, building and operating nuclear plant and equipment differ in varying degrees as regards technical criteria and practice.

Having regard more specifically to the possibilities offered by the Euratom Treaty (see Chapter III of the present report), it seemed advisable to begin by

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focusing efforts on the harmonization of technical aspects, this being the first compulsory stage on the road to approximating laws and administrative procedures.

1.2. Studies of specific projects - harmonization by a pragmatic approach

Safety evaluations of specific projects for nuclear plants have been made either by virtue of the contractual obligations mentioned earlier (basic contract between Euratom and the operators of nuclear power plants accepted under the Agreement for Cooperation between the USAEC and Euratom), at the request of the competent authorities of certain Member States, or as result of individual technical cooperation arrangements put into effect on proposals by the competent departments of the Commission.

Since 1959, this activity has been pursued with the cooperation of national experts, often within the framework of research contracts. Eleven nuclear industrial plants have been covered and about twenty assessment reports submitted.

Until now, the second indented subparagraph of Article 124 of the Euratom Treaty (opinions and recommendations) has applied only to power plants studied pursuant to the basic contracts mentioned earlier or when an express request was made to the Commission. In the case of other safety assessments, the reports

comprising the opinions and recommendations made by the specially-formed panels of experts are transmitted to the authorities and agencies of the country concerned for information purposes.

These assessments on specific projects by Community panels of experts should be continued in cooperation with the licensing and safety authorities of the countries concerned, a guarantee being given that the legal and administrative prerogatives of the competent national authorities will be safeguarded.

Hitherto, these joint assessments on specific technical problems have constituted the most direct way of comparing the practices and criteria applied in the various countries.

Furthermore, experience has shown that the causes of malfunction in nuclear plants and the remedial measures applied should be studied in detail and jointly by the constructors and operators of power plants and the safety and inspection authorities. The recurrence of such incidents could be avoided by more systematic exchanges of information.

So far, collaboration at Community level as regards expert assessments on specific projects has been partly a consequence of the lack of sufficiently well-equipped safety and inspection bodies in certain

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countries and/or the complexity of certain new technical problems. Cooperation has been agreed upon case by case with the authorities and bodies directly concerned. The expenses of outside experts associated with the work have been entirely defrayed by the Community (because such studies are in the Community's interest),

In future, such operations should be organized more systematically. The Commission proposes to institute a basic cooperation procedure to govern its relations with the various national authorities and inspection and safety bodies, as well as the budgetary aspects of this type of work. In connection with these aspects, it might be possible, depending on the degree of Community interest, for certain studies to be completely funded by the CEC (the field being limited to the investigation of new technical problems such as those encountered when the operating limits of proven-type plants are extended, when probabilistic methods of analysis are applied or when prototype plants are used for industrial purposes), others to be funded on a shared-expense basis by the CEC and the contractor, and others still to be paid for entirely by the promoter.

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1.3. Systematic consultation on methodologies, regulations, specifications and guiding criteria, industrial standards affecting safety

(a) General considerations governing working methods

The field includes :

- safety methodologies (for instance: deterministic, probabilistic, semi-empirical) ;
- hypotheses and methods of analysis of accidents of varying severity ;
- general criteria for location, design and construction ;
- regulations, specifications, criteria or standards governing the design, manufacture, assembly and operation (for instance, frequency of tests and inspections, onload limits) of systems, sub-assemblies or single components.

Work in this field concerns practices and equipment most suitable for standardization. Consequently, when orders of priority are determined jointly by the various parties concerned, the following are among the factors which must be borne in mind :

- the relative importance of the equipment with regard to possible serious accidents (for instance, reactor vessel and primary circuit)

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and/or mitigation of the consequences of potential accidents (for instance, electrical emergency supply systems, secondary containment, general safety and emergency systems) ;

- developments towards "mass" production of nuclear equipment (industrial experience) : for instance, reactor vessel and internals, primary circuit, valves ;
- the trend towards growing international trade in designs and equipment (for instance, electromechanical apparatus, reactor vessels, secondary containments) ;
- progress to date in national and international standardization (in order to avoid duplication and carry out in-depth studies) ;
- the extent to which solutions to technical safety problems already exist and the slight probability of major changes being made in such solutions as a result of current R & D work ;
- the extent to which technical safety programmes are independent of research (for instance, redundancy and reliability of systems).



Working methods recommended at national and international level reflect a desire to refrain, for the time being, from imposing restrictive standards which might inhibit subsequent development.

The Commission must also take into account the steps which have been taken or are planned by other international organizations such as the IAEA, the ISO (International Standards Organization), the International Electrotechnical Commission (IEC) and the Nuclear Energy Agency of the OECD. It is therefore advisable to take measures which can be actively dovetailed with existing schemes, and above all to take more far-reaching measures along lines better suited to the Community context.

Thus, the Commission's role is one of a catalyst, acting on a well-defined regional level, for schemes which have sometimes been launched on a broader international scale.

One last general consideration which must be borne in mind when defining the methods for this phase of action is that there are several types of nuclear plant and equipment. Some studies or measures can apply - if necessary by extrapolation - to several types of plant (for instance, various reactor concepts), but

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others must be tailored to suit a specific type of plant or equipment (for instance, a particular reactor concept, reprocessing plants, effluent and waste processing).

b) Working method applied

In view of the very large range of subjects to be covered and all the private and public bodies involved, working methods must be mainly designed for an in-depth approach.

It is therefore not sufficient to set up working parties, or even specialized study groups.

Work on the various topics could not be sufficiently detailed and might fail to produce any tangible results unless:

- preliminary studies are made by a small number of experts as a basis for exchanges of views in a larger group;
- consolidated reports are drawn up by the experts and submitted for the opinion of the working parties or study groups.

Most of the topics to be covered are of interest to a large number of bodies which - for practical reasons - cannot all be associated with the work of the study groups. In order to take all opinions into account, consultation by

correspondence must therefore be arranged between the preparatory and final phases of the work referred to above.

The consolidated reports must set out both the points on which the experts agree and those on which views still differ.

c) Present progress

The progress made so far in this field (Chapter IV, 1.3.) is outlined in Annex I.

d) Ultimate objectives

At the present stage of development of nuclear power production and the associated industries, and bearing in mind the structure of the Community and the legal means at its disposal, it is felt that:

- consultation and collaboration between experts, backed up by preliminary and consolidated reports,
- the gathering of the opinions of all the bodies concerned, particularly by correspondence in addition to the work of the study group,
- widespread circulation of the consolidated reports on which the panels of experts will give their opinion,

are sufficient, in the first phase, to bring gradually into line the analytical methods, specifications, criteria and safety norms on which the issue of permits for the location, building and prolonged operation of nuclear plants is based. Since this is a new technology and since the relevant analytical methods and scientific data are developing extremely rapidly, the Commission will not, in view of the present conditions in which activities are being undertaken or planned, make use of the possibility of formulating general recommendations pursuant to the second indented sub-paragraph of Article 124 of the Euratom Treaty.

It feels that it will be in a position to do this by 1978, in the light of the experience gained during the first phase. The recommendations will probably concern light-water reactors; the Commission will choose the standards which are least liable to change (for instance, general design criteria for plants of this type; design and manufacturing requirements - in some cases inspection requirements - for systems, structures and mechanical components such as pressure vessels, primary tubing, safety containments; the redundancy requirements for electro-mechanical emergency or safety equipment; reliability standards for reactor-core protection systems; analyses of the consequences of certain accidents such as fuel handling accidents).

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Of course these recommendations may be revised periodically; specifications, criteria and industrial standards already in existence at national level are revised about every two years.

At a later date, possibly in the first half of the 1980s, the Commission considers that, for certain types of standards which are ready for adoption in legal form, it will be possible to begin gradually to propose to the Council draft directives based on EEC Treaty Article 100 according to a pre-established order of priority.

## 2. Measures to coordinate applied research programmes

### 2.1. Introduction

The main objective of safety research programmes is to try and throw light on the obscure or uncertain factors which still condition the siting and operation of various types of nuclear plants. Programmes usually focus on particular concepts of reactors or plants and auxiliary equipment (for instance, reprocessing, waste, containers and means of transport); sometimes they concern several concepts.

Since the aim of such programmes is to achieve optimum safety, they are of fundamental public interest.

Consequently, the cost of such programmes is generally met, or heavily subsidized, out of public funds. This provides added reasons for achieving economies on an international scale and promoting the rapid dissemination of information in this field.

In the Community, research programmes of this type are being developed chiefly on a national scale (in decreasing order of budget size<sup>1</sup>: West Germany, France, UK, Italy, Benelux) and also at the JRC - Ispra<sup>2</sup>.

Research programmes are also gaining in importance in the non-member countries most advanced in nuclear power development (for instance, the United States<sup>3</sup> and Japan).

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<sup>1</sup> As a guide:

- about 25 m.u.a. per year in West Germany (specifically on safety)
- about 10 m.u.a. per year in France (also including some reactor development).

<sup>2</sup> About 5 m.u.a. per year

<sup>3</sup> For instance, for the United States, the budget for USAEC alone (i.e. not counting the programmes of the EPRI - Electric Power Research Institute, for instance) was as follows for "reactor safety" research:

1973	\$ 34 million (full amount LWR)
1974	\$ 41 million (38 million on LWR)
1975	\$ 53 million (requested) (47,5 million on LWR).

NB : This expenditure is entirely devoted to "Safety", i.e. it does not include other major cost items entailed by the development of reactors such as LWR (\$ 29 million in 1973), LMFBR (\$ 143 million), gas reactors (\$ 7.7 million).



But budget forecasts and comparisons must be viewed with circumspection because they comprise numerous disparities : the breakdown of the budget itself (by reactor concept or not), distribution by type of facility (reactors, fuel cycle, waste), lack of equivalence between bodies responsible for management and implementation, different proportional amounts devoted to staff, etc.

So far the systematic provision of information concerning the progress of research programmes and their results has been organized to varying extents and with varying means in a certain number of countries.

## 2.2. Exchanges of information and consultation on research

### (a) General considerations governing working methods

The field covered embraces an extremely wide range of subjects and scientific disciplines concerned with the search for solutions to the problems involved in preventing potential accidents or in elucidating the phenomena of the occurrence and limitation of the consequences of potential accidents.

Some of the problems may apply - if necessary by extrapolation - to several types of facility or equipment<sup>1</sup>,

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<sup>1</sup> For instance: problems relating to mechanical and material aspects, or the release, transport and deposit of fission products.

but most of the problems are specific to a particular type of facility (for instance, a single reactor concept).

It is already difficult, at national level, to deal efficiently with a situation rendered complex by the materials involved (plethora of topics, rapid evolution of technical data) and by the authorities and agencies concerned. For the same reasons, the task is even more difficult at Community level. Furthermore, other international work, for instance that of the OECD-NEA, must also be taken into account.

The coordination of research programmes may be achieved by one or more of the following means, through a gradual and mutual process of alignment:

- (1) rapid circulation of periodical information concerning programmes and results obtained;
- (2) periodical meetings between experts on well-defined topics of interest;
- (3) multi-nation discussions with a view to coordinated measures in well-defined fields (may follow from (2));
- (4) exchanges of staff and equipment employed on experimental projects and analytical computer programmes;
- (5) implementation of coordinated programmes.

(6) joint operation of experimental facilities.

Bearing in mind these criteria, the Commission felt that the first steps should be taken towards improving the coordination of national and Community (JRC) programmes and facilitating exchanges of information with the non-member countries most advanced in this field

(b) Working method applied

In view of the foregoing considerations (range of subjects, complexity of structures, degree of possible coordination, etc.), it is advantageous:

- to subdivide the huge field of research to be covered;
- to focus efforts on improving exchanges of information both on programme modifications and developments and on progress and results obtained;
- to endeavour at the same time to arrive at the best compromise between the major technical problems to be solved and the research programmes and to identify priorities.

All this entails work by panels of experts and specialized study groups, backed up by preliminary studies and consolidated reports on specialized topics.

(c) Present progress

The progress made so far in this field (Chapter IV 2.2.) is

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briefly described in Annex 2.

(d) Ultimate objectives

Generally speaking, the ultimate objectives of the Commission's measure are:

1. to establish an efficient and rapid information network in the Community and to facilitate exchanges of information with industrially-developed non-member countries;
2. to promote - in selected fields and according to a pre-established order of priority - continuous consultation, coordination and cooperation between the specialized agencies and institutes of the Member States and, where appropriate, those of the non-member States.
3. to promote Community projects alongside JRC direct projects.

The nature of these activities places them within the scope of Article 5 and possible Article 7 (Community projects) of the Euratom Treaty and does not require the application of Article 124 of that Treaty.

Since the information network should be effectively launched by the end of 1974, the Commission proposes ~~that investigations be~~ started in early 1975 on the question of whether the Committee on Scientific and Technical Information and Documentation (CIDST), attached to the Committee for Scientific and Technical Research (CREST), could usefully be placed in charge of these activities (of other sectoral activities such as agricultural documentation, metallurgy, environmental protection).

### 3. Parallel measures

Under this heading, the following three types of action should be mentioned:

- Mutual information on licensing laws and administrative procedures in force

An up-to-date review of national licensing laws and administrative procedures for nuclear plants will be circulated at the end of 1974 for the Community countries, and probably in 1975 for non-member countries.

This activity arises more particularly out of point A (h) of the Commission's plan of action to promote the use of nuclear energy (COM(74) 10 final, 1 February 1974)

- Repercussions on environment and human beings

The repercussions on environment and human beings of the development of nuclear power in the medium and long term are studied both from the point of view of normal operation and from that of hypothetical accidental circumstances. The work consists of studies within the framework of the Community's pluriannual research programme "Biology and Health Protection" and published internal reports and more far-reaching investigations with the assistance of outside experts. This work is also intended to provide useful information in connection with controversies on nuclear issues.

- Probabilistic analytical methods

Studies on specific projects (Chapter IV 1.2.) and the examination of different safety methodologies (Chapter IV 1.3.) entail a more frequent use of probabilistic analytical methods and systematic consultations on the subject. Accordingly, the Commission has

always given its full cooperation to the OECD-NEA through the Committee for the Safety of Nuclear Installations (CSNI) for organizing specialized symposia in this field (5 symposia since 1968) and has advocated further probabilistic studies on the comparative reliability of emergency and safety systems or the probability of plant malfunction or accidents.

V. Implications of the measures

1. Appropriations for research contracts

The complexity of the subjects at issue, their multidisciplinary character, together with the working methods applied in order to tackle the problems in depth (Chapters I and IV) will require back-up research carried out under contract with qualified national experts selected from the various circles directly concerned by the problems under investigation. On the basis of experience gained so far, the Commission considers that to finance this research provision should be made for an annual appropriation of about Bfrs 10 million (scheme to become fully operational by 1976). This amount is to be considered as a basic support in order to allow the existing study groups, and especially those working in the field of water-cooled reactors, to work efficiently. If development of investigation, especially with regard to the consultation on research programmes, brought up the necessity of an increased effort by the Community, the Commission reserves the possibility of submitting to the Council appropriate proposals.

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2. Implications for relations with non-member countries

Naturally, in the various fields covered by this Report, the Community's relations with the specialized bodies of non-member countries (for instance the United States, Japan, Sweden) will continue under the auspices of various other international institutions such as the IAEA, the ISC and the OECD-NEA.

However, more particular relations already exist and should be developed in the near future:

- (a) continuous relations have been maintained with the USAEC since 1959, mainly in connection with the joint safety assessments of first-generation light water power plants approved under the USAEC-EAEC cooperation agreement. The industrial development of the light-water reactor concept on both sides of the Atlantic has also helped to keep collaboration as close as possible. Relations take the form of exchanges of views on specific technical safety problems and general exchanges of information (reports etc). For some years, however, these contacts have been placed on a rather informal footing.

In view of the development of the activities referred to in Chapters I and IV and of the existence of bilateral cooperation agreements recently concluded by some Member States, the Commission feels it would be advisable to establish formal procedures of collaboration on the specific question of "nuclear safety" of light-water reactors for instance, under the USAEC-EAEC cooperation agreement (making allowances, of course, for structural changes which may occur

in the meantime in the United States, for instance through the creation of the Nuclear Regulatory Commission (NRC) and the Energy Research and Development Agency (ERDA)).

The procedures of cooperation should therefore relate to the technical problems arising in connection with licensing (licensing regulations and standards) and in connection with the Safety Research programmes. Provision could be made, for instance, for American experts to participate regularly as observers in the work of the panels of experts concerned with light-water reactor safety (see Annexes 1 and 2), and possibly for the joint use of some experimental facilities.

The Commission therefore intends to ask the Council in 1975 for a brief to negotiate with the relevant American authorities, on the basis of the existing USAEC-EAEC outline cooperation agreement, a protocol specifically concerned with safety problems.

- (b) More systematic consultations with the Scandinavian (Denmark, Sweden, Norway and Finland) association for reactor safety (NARS) is now possible by virtue of the participation of Danish experts in the activities referred to in Chapter IV, sections 1 and 2, of this report.

If it later proved useful to conclude a formal agreement with the Scandinavian authorities on this subject, the Commission would introduce a request to the Council for a negotiating brief.

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Finally, in the international organizations, the CEC should continue to collaborate closely, in the IAEA and ISO mainly on new safety methodologies and standards (specifications, codes of good practice, guide criteria, industrial safety standards) and in the OECD-NEA on exchanges of information concerning research programmes.

Progress to date ; systematic consultation on methodologies,  
regulations, specifications and guide criteria,  
industrial standards with safety implications  
(Chap. IV 1.3)

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1) Light-water reactors

Since the end of 1972 a working party on light-water reactor safety was set up with the task of holding systematic consultations on methodologies, specifications, general and detailed guides, criteria and standards relating to safety problems.

The group includes experts from all the circles referred to in Chapter I.

Briefly speaking, the group's work has consisted of :

- studying the complex problem of the terminology of safety standards ;
- reaching agreement on a broad range of subjects to be covered, including general plant concepts, systems (sets of components), and individual structures and components ;
- setting itself an order of priority for its inventory and comparison of practices and standards, namely, to deal first of all with hypotheses and analyses of accidents originating inside and outside plants, together with general design criteria, rather than more detailed criteria and standards concerning subassemblies of components ; in accordance with this order of priority, the members of the working party answered a number of questions set out in a questionnaire

devised by the Commission's department with the help of outside experts ; certain aspects of the replies will be studied comparatively, by order of priority ;

- producing surveys of the technical/administrative requirements and usual procedures for issuing licences for the siting, construction and operation of nuclear facilities in the respective countries ; the administrative data supplied in these surveys was also used for the systematic information work referred to in Chapter IV - 1.3 of the Report ;
- keeping an up-to-date classified record of the various specifications, criteria, standards, etc. (Standards) in preparation or planned in the CEC and non-member countries.
- The Group will also, in the near future : establish an order of priority for comparative studies of standards for systems, structures or components, according to various criteria (e.g., stage of development of standards, importance for safety, international market considerations, etc.).

## 2) Gaseous or liquid waste

In response mainly to the repeated appeals of UNICE and UNIPEDE, the Commission called a meeting in October 1974 between representatives of the relevant authorities and representatives of electricity producers (UNIPEDE).

The object of this first meeting was to allow preliminary consultation on :

- practices and criteria currently observed for fixing limits on the release of radioactive gaseous and liquid waste from nuclear power plants ;

- the approach envisaged for the future, in view of the growing importance of nuclear electricity programmes.

Finally, more systematic attention should be paid at Community level to the removal and storage of the medium-activity solid waste which accumulates at nuclear power plants as a result of the processing of liquid and gaseous waste.



ANNEX 2

Progress to date in exchanges of information  
and consultation on research  
(Chap. IV 2.2)

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1) Light-water reactors

At the end of 1972 a working party on light-water reactor safety was set up with the task of holding systematic consultations on national and Community (JRC) safety research programmes.

The working party groups are representative of all the circles concerned by these problems, i.e., the same bodies as those represented in the first working party (see Annex I, 1), but also - and above all - representatives of the authorities responsible for managing research programmes financed out of public funds.

Briefly speaking, the group's work has consisted of:

- (a) drawing up, mainly on the basis of a working paper prepared by the Commission's departments, an up-dated account of research programmes devoted essentially to light-water reactors or other fields of common interest;
- (b) drafting jointly the details of a classification system to be used as a basis for the regular and rapid pooling of information on the development of programmes in hand or in preparation in the Community and on the progress and results of such research. This system will be implemented in cooperation with the CID of Luxembourg; the group has stressed the fact that a system of this type could play a useful roll in a systematic exchange of information, via appropriate channels, with similarly advanced non-member countries (e.g. United States and Japan).

- (c) confirming the usefulness of the joint CEC/NEA working party, under the auspices of the NEA Committee for the Safety of Nuclear Installations (CSNI), set up in 1970 to study "the mechanical and materials problems of the safety of steel components in nuclear power plants", particularly because of the crucial importance of these problems for the integrity of the primary circuit;
  
- (d) also paying priority attention to the problems of loss-of-coolant accidents and the reliable operation of emergency cooling systems; in this connection, the working party is at present studying the advisability of entrusting particular aspects of these problems to a specialized study group (e.g., certain technical parameters involved in the analysis of physical phenomena or comparative studies of computational models based on one or more standard examples), while taking care to avoid duplication with other activities in the same general field (such as the work of a study group of the JRC Safety Programme Management Advisory Committee, whose brief is to prepare the 'Community portion' of the depressurization loop under the JRC safety programme).

2) Sodium-cooled (LMFBR), and gas-cooled fast breeder (HTGR)

In view of the present stage of development of these concepts, it was considered appropriate to report on current progress in the part concerning research coordination. Nonetheless, some of the work in hand relates to Chapter IV.1 of this document.

Since safety problems affect the development of these advanced concepts, they will also be dealt with in a report to be presented by the Commission during the year 1975, pursuant to point B f) of the nuclear safety programme (COM(74) 10 final).

(a) Sodium-cooled fast reactors

In 1970 the Council of Ministers decided to set up a Fast Reactor Coordinating Committee (CCRR) to facilitate the introduction and commercial use of this type of reactor through improved coordination and cooperation under the various national programmes.

When the Fast Reactor Coordinating Committee first examined the question, it found that, in view of the importance and magnitude of the type of problem involved, the safety aspects were particularly suited for collaboration.

In 1972, the CCRR decided to set up a Safety Working Party with a brief to:

- improve exchanges of information and programme coordination;
- prepare the basic technological material for developing and harmonizing safety criteria.

Accordingly, the Safety Working Party has so far:

- prepared an inventory of R&D activities in the field of safety;
- drawn up a list of typical accidents for sodium-cooled fast reactors;
- prepared failure trees as a basis for discussion of the origins of accidents and the evolution of accidents, with due regard to protective measures;

- compared safety strategies applied in the different fast reactor projects community;

- discussed specific aspects of safety.

The Working Party has paid particular attention to the primary containment as a safety barrier. In view of the importance of the containment, the Working Party has set up a study group to identify the accidental conditions which must be taken into consideration when designing the containment. It is planned to set up a second study group to study the loading and behaviour of the primary containment structure during a serious accident.

In a first round of talks, the first of the two study groups, which has been in existence for a year, studied the problems involved in the mathematical treatment of the accidents to be contained by the containment. It is now drawing up an inventory of existing codes and comparing the various approaches for analysing this type of accident in existing reactor concepts.

Other subjects have been discussed with guest experts (e.g., earthquake-proof design, behaviour of aerosols, results of experiments performed in the CADRI reactor).

With regard to future activities, the Fast Reactor Safety Working Party will continue, as laid down in its brief, to prepare the ground for the harmonization of safety criteria.

The comparison of safety strategies applied in the various current projects represents a first step in this direction. Discussions based on a document prepared by the reactor constructors will be pursued in further detail and account will be taken of the viewpoints of the utilities and licensing authorities.

The Working Party will continue its study of specific subjects in order to submit, where appropriate, proposals for new projects to the Fast Reactor Coordinating Committee.

Another subjects tackled by the CCRR in connection with safety and the licensing of fast reactors has been that of codes and standards for sodium-cooled fast reactors.

The CCRR felt that it was important to begin joint action in this field during the phase of FBR prototype development in order to avoid a diversification of codes and standards which might later impede the development of a Community market, on which the commercial use of fast breeders will be heavily dependent.

The Codes and Standards Working Party was therefore set up in spring 1974.

In accordance with its brief, the working party will compare the codes and standards applied in fast reactor concepts in the Community for the design of components and choice of structural materials. It will also identify the points on which views coincide or diverge and, where appropriate, indicate the fields in which further theoretical or experimental data appear desirable.

At its first meeting, held in September 1974, the group discussed its work plan. To begin with, it decided to exchange data on the specifications of certain components and compare the codes applied. A list of codes and standards to be discussed in order of priority will also be drawn up.

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(b) Gas-cooled fast reactors

At the request of the Gas Breeder Reactor Association (GBRA) that a symposium on gas-cooled breeder reactor safety be held, and in view of the interest shown by various other circles, the Commission decided to set up an ad hoc working party to study the preliminary safety report on the GBRA-4 project.

The first meeting of this working party was held at the end of November 1974.

(c) Gas-cooled high temperature reactors

The Commission has worked on HTGR Safety problems under the Dragon Agreement. Its work falls into two main categories:

1. Safety of high-temperature reactor cores.
2. Safety of the high temperature reactor concept.

In the first case, calculations were made in order to predict the release of fission products from a standard power reactor core composed of integrated block elements. With regard to concept safety, detailed research was carried out on the confinement of a power plant equipped with a high-temperature reactor.

In a preliminary study of the discharge of waste from a HTGR, the question of radioactivity releases was studied. In connection with the discharge of radioactive waste, a qualitative study of the production and release of tritium was made.

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In view of the importance of these questions, and the growing interest they are arousing, it was necessary to collaborate closely with the numerous outside bodies concerned in this field.

A Working Party on High-Temperature Reactor Safety was set up to carry out a periodical review on available data and calculating methods, in connection with the requirements of industry and the control authorities.

3) Waste processing

This point is mentioned merely for the record because it is related to the safety of nuclear facilities and equipment.

The problem of radioactive waste has been dealt with in a specific programme proposal at the end of 1974; it bears relevance both to the Environment Programme approved by the Council on 22 July 1973 and to the nuclear safety programme (COM(74)10 final point A) e.

From 1975 onwards, it is probable that the implementation of various recoverable-waste storage systems and high- and medium-activity waste transport will raise technological safety problems which will have to be investigated in greater detail.

It must also be borne in mind that proposals for action must lead to systematic consultation on the guiding principles and specifications, criteria or standards applicable in the management of waste storage. Such action is therefore related to the work referred to in Chapter IV.1 of this document.

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4) JRC Safety Programme Management Advisory Committee (CCMGP)

For the record, it must be noted that the Safety CCMGP, whose task is to help ensure the best possible implementation of the JRC programme in this field, could provide an additional forum for consultation on Safety research programmes.