The IAEA Plans for Establishing Safety Codes and Guides for Nuclear Power Plants

Compiled by Jacques Servant and Enzo Tansiti

The safety of nuclear power plants in any country rests on many requirements. One is an adequate supply of trained personnel for the work involved and to staff a regulatory agency. Another is the ability to conduct a careful and detailed safety evaluation of a nuclear power plant project from its inception and at all stages throughout its life. A third is the ability to conduct an appropriate quality assurance programme including control and inspection. If these requirements are met, it is possible for the authorities of the country to assure themselves that nuclear power plants can be built and operated safely. Formalized safety criteria in the form of codes, guides, etc. can be of considerable assistance in ensuring that these basic requirements are understood and met. It must be emphasized, however, that safety criteria cannot be treated in isolation, and can only be used effectively by qualified personnel. Similarly, it is essential that regulatory and project personnel of a country proposing to build a nuclear power plant obtain in-depth knowledge of the characteristics of the type of plant it plans to build and operate and of the available body of pertinent information related to safety and regulatory activities, particularly in the country of origin of the plant.

The rapid growth of nuclear power projected both in industrialized and developing Member States has led to a re-evaluation of the role the Agency should play pursuant to its statutory obligation in the area of nuclear power plant safety.

Safety codes and guides

Accordingly the Agency is developing a programme responding to all the safety requirements referred to above. But only the It is clear that such a case-by-case treatment part concerned with safety codes and guides is dealt with in this article. It is understood that such codes and guides can only be in the nature of recommendations, except when otherwise provided for in the Agency's Statute, as decisions on safety matters are, in the last resort, a matter for national authorities. During the initial period of the

development of nuclear power the Agency was not in a position to develop safety criteria except in a few fields. Hence, a case-by-case approach to matters of nuclear power plant safety and safety-related reliability was often adopted by the Agency, an approach more time-consuming and less consistent in its results than if such criteria were available.

of safety is not adequate in the context of rapidly expanding world-wide use of nuclear power and the associated international trade. As in several other fields, it is desirable to collate and prepare safety codes and guides that could be used by regulatory bodies, utilities, designers and constructors, especially in view of the number of countries embarking for the first time on nuclear power programmes recommendations and the experts manpower and in the process of setting up their own regulatory procedures. It is now possible to collate existing safety criteria and experience and to begin to prepare such safety codes and guides as could be used by the Agency in advising interested Member States. Although these codes and guides establish an essential basis, they may not be sufficient or entirely applicable. In some cases, in response to particular circumstances, additional requirements may be established. Moreover, there will be special topics which have to be judged by experienced experts on a case-bycase basis.

The Agency, therefore, has put forward plans to accelerate its work on codes and guides for nuclear power plant safety foreseen for the period 1975-80 and intends to collate and develop a comprehensive set of recommendations, as far as possible and necessary, for the safety of nuclear power plants, together with the reliability requirements directly related to safety, which would serve as a standard frame of reference for analysing nuclear power plant safety and reliability. These recommendations should be supplemented to the extent possible by detailed guidance related to specific topics for their practical implementation.

Outline of the programme

In order to reflect the different approaches which are possible, the programme for this work will take into account national standards, guides, practices, the contributions which could be made by Member States having experience in the matter of nuclear power plant safety, and the activities of other organizations. The objective of the programme is to collate and develop recommendations, as far as possible and necessary, for the safety of thermal neutron power plants.

In evaluating what is possible account will be taken of the amount of relevant knowledge and experience accessible as a basis for useful and other means available for implementation of the procedures of this programme.

In evaluating what is necessary account will be taken of the types of recommendations which are most important for the safety of nuclear power plants, the types of recommendations which are requested by Member States soliciting advice or assistance from the Agency and the types of recommendations which the Agency needs for Agency projects.

The programme aims at the development of three types of documents:

Codes of Practice which would establish the objectives and minimum requirements which must be fulfilled to provide adequate safety for these plants, their systems and components.

Safety Guides which would recommend a procedure or procedures that might be followed to implement the Codes of Practice. In order to provide for Agency safety guides, the various existing national guides, standards and practices should be collated. This collation will be made to ensure that Agency guides are fully representative of relevant national practices. Such a fully representative picture is a prerequisite to the drafting of an Agency safety guide.

Users' Manuals which would be directed primarily to nuclear power plant operators and would normally present one or several possible methods and techniques to solve specific problems. As regards Users' Manuals the Agency might, at an appropriate time, provide for an evaluation of the need and possibility for their development.

Senior Advisory Group

The Agency is advised in this programme by a Senior Advisory Group. This group will exercise general surveillance over the development and direction of the programme, defines the priorities to be established and

advises on the acceptability of the draft codes be taken into account in the preparation of and guides. The group consists of twelve eminent experts from Member States in which the regulation of nuclear power plants has reached a level of relatively high development.

Five main fields of wants have been identified namely:

- governmental organization,
- siting.
- design.
- operation,
- quality assurance.

The mechanism to establish the documents is as follows:

Work on each code and guide is initiated by small working groups consisting of two or three experts and Agency staff members. The work on the five codes of practice relating group prepares working documents having available relevant documents relating to national and international standards and practices collated by the Agency. Those documents are then submitted to Technical Review Committees specialized in each of the five main fields mentioned above. All draft codes and guides prepared by the Technical Review Committees are then reviewed by the Senior Advisory Group. The recommended drafts will be submitted to Member States for comment. Any comments provided will

the final version of Agency codes and guides.

International Organizations concerned are invited to be represented at the meetings of the Technical Review Committees and the Senior Advisory Group.

It is felt that the difference in the nature of the types of documents proposed, as well as the step-by-step process of collating and developing safety codes and guides by the Agency with the aid of experts from Member States, will provide a flexible and progressive approach.

The programme is now at its first stage. The Senior Advisory Group met for the first time on 21-25 October 1974. It established detailed procedures for the preparation of codes and guides and recommended that the to the five main fields mentioned previously should be initiated immediately. It also recommended that collation should start immediately in preparation for a number of safety guides. Further decision on these will be taken by the Senior Advisory Group at the time of its second meeting, in spring 1975. It is hoped that the objectives of a first phase of the programme could be attained by completing the work on priority codes and guides in a period of about two years.