

Safety Codes and Guides for Nuclear Power Plants

by Enzo Iansiti

The Codes of Practice and Safety Guides that are being developed by the International Atomic Energy Agency are divided in five topical areas: Governmental Organization, Siting, Design, Operation and Quality Assurance. In each area, a scientific secretary is responsible for developing the documents and five Technical Review Committees composed of 10 to 12 experts from various Member Countries revise the drafts at different stages. A Senior Advisory Group supervises the entire programme and revises the document. A scientific co-ordinator is responsible for the co-ordination within the programme with other sections of the IAEA, and with other international organizations.

In preparing a document (Table 1), information on the practice adopted by Member States is collected, a group of experts is convened for preparing a preliminary draft on the basis of this material and the draft is then reviewed by the appropriate Technical Review Committee. The document is translated into various languages, reviewed by the Senior Advisory Group and sent to Member States for comments. After the comments of Member States have been received, the Technical Review Committee and then the Senior Advisory Group are convened again for the final revision of the document.

Some 25 drafts, listed in Table 2, are in different stages of development. Preparation of a document in its final form takes about two years. The programme started in 1975 and to date most of the safety codes and a few safety guides have been sent to Member States for comments. These documents will have gone through the entire development procedure by early 1977.

The Senior Advisory Groups and the Technical Review Committees meet on the average four times a year for a week at a time. Until now these meetings have been mainly concerned with the development of new documents or with that part of the procedure which precedes the transmission of the draft to Member States for comments. The next series of meetings will deal with the revisions needed to incorporate the comments received from Member States.

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There are some characteristics of this programme that should be pointed out:

1. The preparation of the documents on each particular subject involves the collection of a large amount of information. This includes not only published data but also questionnaires which are prepared by the Agency and filled out by experts in different Member States. Moreover, other unpublished material is also sent to the Agency and used for the preparation of the draft.

2. The drafts are prepared by groups of international experts and the reviewed by experts from more than 10 countries. Comments are later requested from the Member States. At the end of this development procedure, the final documents should be fully representative of the practices used in Member States.

3. The documents prepared through this process contain original and highly technical material. The critical reviews performed by the Senior Advisory Groups, the Technical Review Committees and Member States ensure that the final draft is complete and of high quality.

The work performed by the experts of Member States at the Agency's Headquarters amounts to approximately 150 expert-weeks per year. In addition to this, a substantial amount of work is carried out by the experts in their own countries. The exchange of information which has taken place on specific topics has substantially increased mutual knowledge of the safety practices used in different Member States, and the resulting Codes of Practice and Safety Guides will provide internationally approved standards for the safe operation of nuclear power plants.

Table 1: Time Schedule for Preparing a Document

Months from the start	Collection of information on the subject
5	Presentation of Report on Collation of Information to Senior Advisory Group
7	Preparation of Preliminary Draft by Working Group
10	Technical Review Committee Revision of Draft Translation
14	Senior Advisory Group Revision of Draft
18	Draft sent to Member States
20	Technical Review Committee Meeting to Incorporate Comments of Member States into Draft
22	Final Senior Advisory Group Review of Draft Translation
25	Publication of the Document

Table 2:

GOVERNMENTAL ORGANIZATION

(Drafts already prepared)

Safety code

Governmental Organization for the Regulation of Nuclear Power Plants

Safety guides

- SG—G1 Qualifications and Training of the Regulatory Body Staff
- SG—G2 Information to be Submitted in Support of Licence Applications
- SG—G3 The Conduct of Regulatory Review and Assessment of Licence Applications
- SG—G4 Inspection and Enforcement by the Regulatory Body

(Drafts being prepared)

Safety guides

- SG—G6 On-Site and Off-Site Emergency Preparedness
- SG—G7 Establishing and Maintaining a Regulatory Public Information Programme
- SG—G8 Preparation of Licences for Nuclear Power Plants (format, content, conditions)

DESIGN

(Drafts already prepared)

Safety code

Practice on Design of Nuclear Power Plant

Safety guides

- SG—D1 Safety Functions and Component Classification for BWR, PWR and PTR
- SG—D2 Fire Protection in Nuclear Power Plants
- SG—SD3 Protection Systems in Nuclear Power Plants
- SG—SD4 Protection against Missiles and their Secondary Failure Effects

(Drafts being prepared)

Safety guides

- SG—SD6 Ultimate Heat Sink
- SG—D7 Emergency Electrical Systems
- SG—D8 Instrumentation and Control
- SG—D9 Radiation Protection in Design

SITING

(Drafts already prepared)

Safety code

Nuclear Power Plant Siting

Safety guides

- SG—S1 Earthquakes and Associated Topics for Nuclear Power Plant Siting
- SG—S3a Meteorology in Nuclear Power Plant Siting
 - A. Climatology, Diffusion and Transport

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- SG–S3a Meteorology in Nuclear Power Plant Siting
 - B. Extreme Meteorological Conditions
 - SG–S4 Population Distribution around Nuclear Power Plant Siting
 - SG–S5 Man Induced Events Related to Nuclear Power Plant Siting
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QUALITY ASSURANCE

(Drafts already prepared)

Safety code

Quality Assurance for Nuclear Power Plant

Safety guides

- SG–QA1 Quality Assurance Programme for Nuclear Power Plant
- SG–QA2 Quality Assurance Documentation System
- SG–QA3 Quality Assurance For Procurement of Items and Services for Nuclear Power Plant

(Drafts being prepared)

Safety guides

- SG–QA4 Quality Assurance during Construction Phase of Nuclear Power Plant
 - SG–QA5 Quality Assurance for Operation of Nuclear Power Plant
 - SG–QA8 Quality Assurance for Fabrication of Items for Nuclear Power Plant
 - SG–QA10 Quality Assurance Audit for Nuclear Power Plant
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OPERATION

(Drafts already prepared)

Safety code

Operation of Nuclear Power Plants

Safety guides

- SG–01 Staffing, Recruitment, Training and Authorization of Operating Personnel
- SG–02 In-service Inspection
- SG–03 Operational Limits and Conditions
- SG–04 Commissioning Procedures

(Drafts being prepared)

Safety guides

- SG–05 Operational Aspects of Radiological Protection
- SG–06 Emergency Arrangements of the Operating Organization
- SG–07 Maintenance of Nuclear Power Plants