

Basic safety principles for nuclear power plants: INSAG evaluation of the international response

Reaction to the issuance of a document on basic safety principles has been positive

The International Nuclear Safety Advisory Group (INSAG), appointed by the Director General of the IAEA, recently has completed an evaluation of comments received on its document *Basic Safety Principles for Nuclear Power Plants*.^{*} In response to a letter from the IAEA Director General, more than 56 sets of comments were received from individuals and organizations in 25 countries, representing a wide variety of opinions, ranging from individuals' comments to systematic comparison between the safety principles and national rules and regulations performed by national authorities. INSAG organized a working group to review and evaluate the comments and consider possible actions during its meeting of 22-24 February 1989.

The reaction of the international nuclear community to the *Basic Safety Principles* document was very positive. The general comments showed that it was well received and that it provided a synthesis of principles which would contribute to nuclear power plant safety if fully implemented. Certainly, no comments were received which suggested an urgent need to publish major revisions, corrections, explanations, or disclaimers. Overall, it seems that INSAG has provided a report which has met a perceived requirement to show to the international nuclear community, and indeed to the world at large, that it is possible to describe a regime of sound principles which have relevance to all the nations pursuing the nuclear power production option.

Comments were made on the value of the document, as a helpful checklist of good practices, in training, and in preparation of national regulations. It was judged that the document will be very useful for a country starting the implementation of a nuclear power programme. However, some responses showed doubts about its value for those countries with an established nuclear power programme. These last comments are regarded with some disappointment by INSAG, since the *Basic Safety Principles* were developed with the whole nuclear community in mind. The circumstances of the major nuclear accidents which have occurred demonstrate the need for

the application of the principles in any country regardless of the status of nuclear development.

It is incumbent on INSAG to report on certain critical points offered in the comments, and on other points made which suggest further action is necessary.

A number of comments referred to the structure of the report. Two particular points of view should be mentioned: some perceived an advantage from alternative ways to organize the document, to separate the various strands of requirements, facts, descriptions, and background information; and some proposed a different balance in the relative treatment of some of the topics.

Some comments questioned the possibility of subjective interpretation of the principles which may cause difficulties. Others anticipated difficulties in relation to implementation for backfitting and questioned the wisdom of appearing to prescribe management arrangements.

Omission of certain topics was remarked upon. Some of these topics had been discussed during the preparation of the document and were deliberately left out. Transport of nuclear materials, waste disposal, decommissioning, and criteria for restriction of foodstuff after a major release were considered outside the scope of the document since it is primarily related to ensuring safe operation of nuclear power plants. Other topics, such as the possibility of acts of war or sabotage, were not treated because any response would depend strongly on national circumstances.

A number of thoughtful comments were received which suggested the need for future studies by INSAG or for review of the position adopted in INSAG-3. INSAG intends to respond positively to many of these suggestions.

For example, the question of the relation between *Basic Safety Principles* and the IAEA Nuclear Safety Standards (NUSS) led some to conclude that there is a requirement for a fundamental document, based on INSAG-3, spanning and cementing together the NUSS Codes. This will be brought to the attention of the Nuclear Safety Standards Advisory Group (NUSSAG) for consideration later in 1989.

* Safety Series No. 75-INSAG-3, IAEA (March 1988).

The INSAG document, *Basic Safety Principles for Nuclear Power Plants*, is intended as a concise, integrated, self-standing statement of the objectives and principles of design and operation of nuclear power plants worldwide. As such a document was not previously available, the IAEA considered it appropriate that the task be undertaken by INSAG, an international group of senior nuclear safety experts from industry, research, education, and regulation that serves as an advisory body to the IAEA Director General.

The report reflects INSAG's understanding of principles underlying advanced safety policies in nuclear power countries and of the best practices of the nuclear power industry worldwide. It analyses, explains, and sets out the reasons for past safety and takes account of current practices. The objective is to promote better practices generally through a better understanding of the basis underlying safety measures and, thus, to stimulate the achievement of safety excellence at nuclear power plants.

Although INSAG consulted many other experts from various countries in preparing the report, the IAEA did not seek comments from Member States before publishing it. Thus the report is not an Agency Safety Standard and differs in this respect from the IAEA NUSS Codes of Practice which are an internationally agreed set of recommendations on safety requirements which have been adopted by the Board of Governors.

This report was first presented and discussed at the IAEA Symposium on Severe Accidents in Sorrento, Italy, in March 1988. Participants recommended that the Agency secure the widest possible distribution of the publication and stimulate study and discussion. Readers were asked to give it careful study, to make appropriate use of it wherever possible, and to communicate to the IAEA Division of Nuclear Safety any comments or proposals they may have.

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INTERNATIONAL NUCLEAR SAFETY ADVISORY GROUP

Basic Safety Principles for Nuclear Power Plants

A REPORT BY THE
INTERNATIONAL NUCLEAR SAFETY ADVISORY GROUP



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In the next part of its programme of work, INSAG is likely to touch on the linking of nuclear safety principles for power plants with those for radiation protection; the subject of safety goals and the use of probabilistic safety analysis; the question of tolerability of risks and the relation between assurance of safety and costs; and definitions of risk and the concept of risk aversion.

"Safety culture", a topic which received numerous comments, is already being pursued as a special item in INSAG's current programme on operational safety, and the work will be expanded to cover issues outside the confines of plant operation.

Certain other important topics will be developed further in INSAG's future programme. For example, many of the specific design issues raised in comments will be covered in consideration of the safety features desirable for new reactor design concepts. As a separate topic, development of a principle relating to backfitting will be considered.

Important comments on quality assurance will be taken into account considering a review of the existing INSAG document.*

* *Towards improvement in quality assurance*, INSAG Technical Note No. 1, IAEA (1987).

The Agency has already developed a digest of the *Basic Safety Principles* document suitable for public dissemination, as suggested by some comments.** The Agency will consider whether a further such initiative should be taken.

Finally, INSAG has recognized that, while the *Basic Safety Principles* document has successfully met its objective in most respects, a review should be considered which should fully take into account the comments. However, it is important to retain a degree of stability in documents of this kind if at all possible. The favourable reception of *Basic Safety Principles for Nuclear Power Plants* by the international nuclear community has encouraged INSAG to the view that early revision is neither necessary nor advisable. It intends however to consider the position carefully in mid-1991, and a revision will be prepared at that time if it is judged that the cause of enhanced nuclear safety thereby will be advanced. However, nothing in the comments received or in the subsequent discussion by INSAG suggested any of the primary content of the document would be changed by such a process.

** *IAEA Topics*, No. 1, prepared by the IAEA Division of Public Information (June 1988).