

6 Harmonisation of nuclear safety: international initiatives

Background

To begin with, nuclear energy is developed mainly on a national basis and consequently applies national safety standards. It soon became apparent that when confronted with the same safety problem, two countries could come forward with different technical responses, possibly reflecting the fact that a nuclear facility which was judged to be satisfactory in one country might not be considered as compliant with practices or regulations in the other.

Over and above the potentially cross-border nature of harmful effects and risks of accidents, the need to harmonise approaches on nuclear safety and radiation protection issues is also a result of the economic environment. On the one hand, liberalisation of the electricity market in Europe and the global nature of the economy (well illustrated by the recent choice by Finnish electricity utility TVO of a Franco-German designed EPR reactor) are good reasons for such harmonisation. The nuclear safety authorities of different countries must see that enhanced competition does not give rise to a downgrading of safety. On the other hand, it must ensure that safety levels continue to improve. Furthermore, the existence of many new reactor construction projects in various countries around the world constitutes an opportunity for the safety authorities to share their resources and knowledge and harmonise the safety requirements placed on the new reactors. With this in mind, it is important to foster a joint approach in the nuclear safety field, without making the least concession on the essential point: nuclear safety must be the first priority.

This effort is illustrated by the work done by the WENRA association at a European level, as well as the MDEP programme and the work by the INRA association worldwide.

Harmonisation of nuclear safety in Europe: work by the WENRA association

In terms of objectives, for ASN, harmonisation of safety in Europe must not serve as a pretext for developing detailed European safety standards in parallel with those that exist at world level drawn up by the International Atomic Energy Agency (IAEA): how legitimate would such standards be, if they were not recognised outside Europe and were not the result of a wider consensus?

In terms of methods, harmonisation could not be carried out separately from existing safety approaches, nor without the link with organisations which today exert control. Currently, expertise on nuclear safety issues is situated at the level of each country, and it is for this reason that national nuclear safety authorities are in the best position to carry out such a process efficiently.

The IAEA, an organisation of the United Nations system, drafts texts describing safety principles and practices, that its member States may use as the basis for their national regulations. Drafting of these texts is a slow process as consensus must be reached between States and is supervised by the Commission on Safety Standards (CSS), chaired since 2005 by André-Claude Lacoste, which coordinates the work of the technical committees.

So as to meet the request for harmonisation between relatively homogeneous countries (from a political, scientific, technical and economic point of view), the European Commission put forward two proposed joint directives at the beginning of 2003 called “the nuclear package”, one of which defines general principles in the field of nuclear site safety, and the other deals with management of spent fuel and radioactive waste. It proved impossible to adopt these texts due to opposition from several EU Member States.

For their part, members of the WENRA association, created in 1999 on an ASN initiative and which brings together the 17 safety authority heads of the European Union’s “nuclear” countries plus Switzerland, have for several years been undertaking a programme aimed at harmonising technical rules in these two fields.

According to the definition used within the scope of WENRA’s work, harmonisation will be achieved when there no longer exists any substantial difference between countries with regard to national safety requirements and subsequent application to sites. The task, therefore, is on the one hand to define a minimum regulatory or para-regulatory framework for all countries concerned by the harmonisation process and on the other, to ensure that defined requirements are actually implemented by operators in these countries.

WENRA’s harmonisation programme is developed by two working groups. The first deals with existing nuclear power reactors and the second (created after obtaining initial encouraging results with reactors) with radioactive waste



Western European Nuclear Regulators' Association (WENRA)

management and dismantling. The ASN is taking an active part in the work of these two groups and, until January 2005, one of its representatives chaired the working group on radioactive waste management and dismantling.

At the end of 2005, two reports from the working groups had included common safety "reference levels" broadly taken from the IAEA standards. The working groups had also examined the situation in each country with respect to these "reference levels". The reports showed that most of these levels were already implemented

in the installations, but that many of them were not officially prescribed in regulatory texts. Consequently, if harmonisation is to be achieved, there must be significant effort to develop regulatory or para-regulatory texts.

The WENRA members decided to publish these reports on the www.wenra.org website and present them to the various parties concerned at a seminar in Brussels in February 2006.

The working groups took account of the comments made by the interested parties, aimed at optimising the "reference levels", which will be

definitively validated at the beginning of 2007 for nuclear power reactors.

In November 2006, each member of WENRA presented an action plan which, for the technical fields in which differences had been identified, aimed to bring its national practices into line with the “reference levels” defined. On this basis, transcription of the “reference levels” into the regulatory and para-regulatory texts was initiated by the majority of the safety authorities represented within WENRA. The final objective is for harmonisation of national practices by 2010.

The different approaches dealt with above are complementary and, in different ways, all lead to the harmonisation of nuclear safety in Europe. In particular, the European Commission’s “nuclear package” initiative and the steps taken by the WENRA association are bound, in the long run, to converge.

Without waiting, the ASN intends to take advantage of the results of on-going work to enhance its regulations and put other countries’ “good ideas” to use in order to heighten nuclear safety in France. With regards to power reactors, the ASN has begun work revising general technical regulations and has already taken into account discussions within WENRA’s “reactor” working group.

Finally, the direction taken by WENRA has already given rise to considerable work from organisations associated with it. It has made it possible to lay the foundations for future harmonisation work in Europe and could serve as an example in the radiation protection field.

Worldwide harmonisation of new reactor assessment: the Multinational design evaluation program (MDEP) and the work of the International Nuclear Regulators Association (INRA)

The MDEP programme was initiated by the American safety authority (NRC), and aims to pool the resources and know-how of the safety authorities who are or will be required to review the safety of new reactors. This cooperative work aims to bring about convergence of safety standards applicable to new reactors, while leaving each safety authority free to choose the evaluation process.

This programme, for which secretarial services are provided by the Nuclear Energy Agency, comprises three phases. The first phase concerns

new reactors for which the design is currently being investigated by one or more nuclear safety authorities. For the time being, only the EPR reactor is concerned and is the subject of cooperation between ASN, the Finnish safety authority (STUK) and NRC.

The second phase, which is carried out in parallel with the first, aims to facilitate the safety analysis of the generation III reactors. This is work designed to ensure convergence of the safety objectives, criteria, codes and standards associated with the safety analysis of a new reactor. This phase also aims to create a system which would give a nuclear safety authority the option of calling on another safety authority to inspect the manufacture of reactor components. Two working groups are in charge of these two parts of phase 2 of the MDEP respectively. Phase 2 of the MDEP officially began on 22 September 2006, at a meeting of the ten participating safety authorities and the IAEA.

Finally, the third phase aims to implement the output of the second phase for analysing the safety of generation IV reactors.

The MDEP programme lays the foundations for worldwide harmonisation of new reactor evaluation work, but also for improved use of resources and know-how, against a background of numerous reactor construction projects which will probably place intense demands on the nuclear safety authorities.

At a global level, mention must also be made of the work by the International Nuclear Regulators Association (INRA), which brings together safety authority heads from nine leading nuclear countries, i.e. Canada, France, Germany, Japan, South Korea, Spain, Sweden, the United Kingdom and the United States. The six-monthly meetings by the INRA, at which its members can compare their experiences and share their thoughts on subjects of common interest (safety culture, waste management, integration of nuclear safety and radiation protection), also contribute to harmonisation on a global level.

Outlook

With the work done since 2000 by the WENRA association and which is today well-advanced enough to offer hope for harmonisation of national practices by the year 2010, the European countries are at the forefront of nuclear safety harmonisation initiatives worldwide. The other global harmoni-

sation work, in particular the MDEP programme initiated in 2006, will be able to benefit from the experience acquired within this association.

In the field of radiation protection also, harmonisation efforts need to be continued. The radiation protection regulations applicable in Europe have been developed within the framework of the Euratom treaty, through directives

which have to be transposed and implemented by the Member States. It would appear that differences in practices between Member States persist, not always with any justification. In this context and in order to improve harmonisation of radiation protection rules and practices, ASN will in May 2007 be organising a meeting of the authorities responsible for the regulation of radiation protection in Europe.