INTERNATIONAL CONFERENCE ON LESSONS LEARNED FROM THE DECOMMISSIONING OF NUCLEAR FACILITIES AND THE SAFE TERMINATION OF NUCLEAR ACTIVITIES

11-15 December 2006, Athens, Greece

PRESIDENT'S FINDINGS

Background

A significant fraction of the world's nuclear facilities has now entered the decommissioning phase; it includes nuclear power plants, fuel cycle facilities, research reactors and other research facilities, uranium mines and military facilities. It was therefore appropriate that international attention was focussed, through this conference, on learning lessons from the significant amount of decommissioning experience that has been obtained.

In recent years, the international community began to anticipate the increasing importance of decommissioning with a series of international workshops and conferences. The International Atomic Energy Agency (IAEA) used the findings of the conference held in Berlin in 2002 to develop an international Action Plan on decommissioning and it is expected that the outcome of the present conference will be used to update that plan.

The successful decommissioning of many types of facility has provided valuable experience and this has encouraged the belief that there are lessons to be learned from these projects. Experience is much greater in some countries than in others and so events such as this conference can bring real benefits to countries that are just beginning to engage in decommissioning. In this context, there was a call during the conference for a more broadly based sharing of experience in the decommissioning area, especially in relation to funding schemes and technology. It may be appropriate for such an initiative to be launched through the auspices of the international organizations or through the existing global mechanism in this area, the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management.

International Safety Framework

At the Berlin conference, the international framework that exists for managing the safety of decommissioning was set out - with the legally binding Joint Convention as its focal point. The Joint Convention is supported by the safety standards of the IAEA and during this Athens

Conference it was shown that the framework of standards is now almost complete - with new Safety Requirements and Safety Guides covering all important areas of decommissioning.

Early planning for decommissioning

A fundamental lesson learned from past experience is that it is essential for there to be early planning for decommissioning. Unfortunately, this is a lesson which has been learned as a result of the inadequate planning for decommissioning in the early years of the nuclear activities. This early planning should take account of the lessons learned from decommissioning experience and cover issues such as designing for ease of decommissioning and arrangements for providing decommissioning funds.

Decommissioning Strategies

It seems that the original target of decommissioning projects, of returning sites to a 'green field' status, may be modified by the prospect of a renewed interest in nuclear energy and the possibility that existing sites will be reused for new nuclear facilities.

The discussions at the conference have shown that, while the generally preferred strategy for decommissioning is 'immediate dismantling', there are many situations where 'deferred dismantling' can be justified, because of lack of funding, lack of waste management arrangements, social and political reasons.

One advantage of immediate dismantling is that the existing workforce, with its skills and knowledge of the facility, can be employed for the decommissioning work. However, this workforce may not always be capable of such work, and there is a trend in countries with many nuclear facilities for key parts of decommissioning operations to be done by specialist companies or organisations with experience and skills in decommissioning planning and implementation.

Regulation of decommissioning

The decommissioning phase, unlike the operational phase, is dynamic in nature and there is a need for continuous changes and adjustments to be made in the regulatory process. In addition, the hazards associated with the various decommissioning operations are usually less than those in the normal operation of the facility and do not require the same degree of regulatory rigour. The experience obtained in this area has shown the need

for flexibility in the way in which the decommissioning process is regulated. Various examples of this were shown during the conference, including the French approach of giving flexibility to the licensee through the 'internal authorization' process, but with a proper oversight being maintained by the regulator. A graded regulatory approach may be used to take account of the different hazards presented in decommissioning and to appropriately utilize regulatory resources. Further international guidance on these aspects may be useful to harmonize regulatory approaches in this area.

Funding of decommissioning

The funding of decommissioning is a key issue and for many facilities it is the main reason for lack of progress in decommissioning. Ideally, arrangements should be made for funding decommissioning before a facility becomes operational. Unfortunately, this was often not done in the past and while decommissioning funds usually exist for civil nuclear power plants, for other types of facility they do not. One example presented at the conference concerned the many shutdown research reactors for which no provision has been made to cover the decommissioning costs. In view of the long-term potential hazard to the public and to the environment presented by these facilities, they should be decommissioned and, in this context, the funding issue warrants serious attention. Of course, the responsibility lies with the operators and ultimately with national governments but the international organizations should consider what help they can offer in this area.

Management of radioactive waste from decommissioning

There is an absence of suitable repositories for intermediate level waste in many countries but the clear view of the conference is that this is not normally a reason to prevent decommissioning going forward. Most waste types from decommissioning can be stored safely until repositories become available.

Clearance of materials from decommissioning

The vast majority of the material resulting from the decommissioning is inactive or below clearance levels and the use of clearance has the potential for saving considerable waste disposal costs. For this reason, the conference recognized that it is very desirable for clearance levels to be harmonized so as to avoid misunderstandings and transboundary problems. A step forward in achieving harmonization was achieved when the IAEA published its

Safety Guide on clearance levels in 2004. The clearance levels are accepted internationally and are gradually being introduced into national regulatory schemes, but it remains to be seen as to whether a complete harmonization between countries will be achieved in the coming years.

Decommissioning of small facilities

Small facilities, such as research reactors and research laboratories, often present unique technical decommissioning problems. The financial and technical support available for the decommissioning of these facilities is usually limited and in countries with few or no other nuclear facilities this presents particular difficulties. This is an area in which the international organizations can be effective in providing advice and in facilitating the transfer of knowledge.

Technology for decommissioning

The sessions on technological aspects showed that there are many lessons to be learned from the decommissioning experiences obtained to date, especially from those in the USA where many large scale decommissioning projects on nuclear power reactors have already been completed. It is evident that substantial savings of money and time can be achieved through learning from the experience of others. Various proposals were put forward on means to facilitate this transfer of knowledge between countries.

Knowledge management

The timescales for many decommissioning projects are long and important knowledge may be lost, for example, of plant configuration and operating history, as experienced members of the workforce retire. Mechanisms for saving and managing this knowledge are required and this may be an area in which international cooperation can be effective.

Decommissioning workforce

The conference recognized that there are often problems in retaining a knowledgeable and skilled workforce to do decommissioning work. Various ideas were put forward to help resolve this problem. They included ways of positively motivating the workforce through education and other means. One proposal was to promote the concept of professional qualifications in the decommissioning area – a Decommissioning Engineer- and to establish an internationally accepted curriculum for such a speciality.

Social aspects

The decommissioning of nuclear facilities usually has a major impact on local communities due to a loss of quality employment and, possibly, a decline in the local economy. While the negative consequences cannot be fully avoided they can be reduced through the involvement of concerned parties. An important lesson learned from decommissioning experiences is that plans to involve the concerned parties should be made early - at the same time as the decommissioning plan is developed.