



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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No. S-02-030

“COOPERATION AND CONSENSUS IN THE DEVELOPMENT OF DECOMMISSIONING APPROACHES”

Remarks by

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at the

International Conference on
The Safe Decommissioning For Nuclear Activities:
Assuring The Safe Termination of Practices
Involving Radioactive Materials

Berlin, Germany
October 14-18, 2002

Introduction

Good morning. Let me begin by mentioning what a pleasure it is for me to be here today and to have the opportunity to share my thoughts on this very important topic. I also want to extend my appreciation to the International Atomic Energy Agency (IAEA) and our German hosts for formalizing and sponsoring this effort, as well as to welcome all of you that are participating in the week's events. I can see by the diversity in the number of countries in attendance that the international community has a sincere collective interest in the establishment and implementation of a sound infrastructure to safely manage our legacy and future decommissioning wastes. We are all here because we do recognize that it is an international responsibility to safely manage these wastes in a way that reasonably assures adequate protection to the worker, the general public, and the environment, for both our present and future generations. We are also here to address the fundamentals that are needed for establishing, implementing, and integrating decommissioning programs so that site remediation can take place effectively and efficiently.

Over the years, the progress that has been achieved in the area of decommissioning and environmental restoration is due, in large, to the consensus and cooperation forged by the collection of efforts among international and national organizations to rehabilitate facilities and sites located throughout the global community. The collective representation and efforts of international components such as the IAEA, the International Commission on Radiological Protection (ICRP), the Nuclear Energy Agency (NEA), and the European Commission recognize that in order to facilitate better protection of workers, the general public, and the environment, the decommissioning of aging and/or non-operational nuclear installations needs to be conducted.

In the United States (U.S.), as is the case in many other countries, the situation is complicated. There is a diverse range of entities with vested interests and active roles in areas involving decommissioning and environmental restoration, which I will discuss later.

I believe this collective assembly of international experts share a common vision with respect to decommissioning and restoration, and has set into motion a vertical structure for radioactive waste management, under which decommissioning and restoration are included. The top of this structure is lead by international treaties such as the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management (Waste Convention), and is complemented with related regulatory fundamentals, standards, and guidance. In this fashion, the international regulatory community has constructed a top to bottom template for establishing a regulatory system for managing radioactive waste in general, and decommissioning in a more focused sense. Following along these lines, many Member States have put into place a similar set of laws, regulations and guidance.

This conference forum will serve as an opportunity for all of us to discuss decommissioning in general, as well as specific component issues such as timeliness, finality, and institutional considerations, to name a few.

International Environment

Whether the aim is termed *decommissioning* or whether decommissioning is part of the broader goal of safety and environmental protection, the focus in mind remains the same. Specifically, that is to maintain reasonable and consistent levels of radiation safety and protection of the environment. Recognizing that there may be differences in the terminology chosen or the process utilized, by which each nation arrives at safe and stable termination practices or in the remediation strategy associated with interventions, I remind you that such differences should only be viewed as preferential nomenclature as long as the fundamental objective is to return a site or facility to a safe and, if possible, beneficial state. Whether decommissioning is part of the radioactive waste management program or a separate element of the cradle-to-grave spectrum of a practice, we should not let terminology or regulatory distinctions hamper the focus in mind.

I have already mentioned several of these international organizations with efforts fostering this focus. Because what efforts they have underway will be subjects of discussion throughout this conference, I will mention them occasionally during the remainder of my comments.

I will briefly discuss the complex system in the U.S. and then get into some of the policy and technical issues we face.

The United States Structure

In the U.S. we have a number of organizations which have an investment and a role in the decommissioning and remediation of both legacy and non-legacy sites. For example, the NCRP has a similar role on the U.S. domestic level to that of the ICRP on the international level, and works closely with the ICRP in addressing radiation protection strategies and approaches. Specifically, the NCRP provides recommendations to assist in the formulation of the technical basis for radiation protection efforts in the U.S.¹ Governmental organizations, industry, and other non-governmental groups solicit the NCRP for guidance and information with respect to their specific radiation protection programs and activities.

In this same vein, the U.S. Federal and State regulatory community also has access to independent expert bodies such as the National Academy of Science to provide independent advice, insights, and support in waste related and decommissioning areas. Additionally, the Health Physics Society, the CRCPD, and the Organization of Agreement States (OAS) are examples of other organizations that cut through institutional boundaries to provide a balanced approach in addressing issues important to the use of nuclear materials in American society on national and regional levels.

These organizations of excellence provide two important services to the U.S. regulatory and stakeholder communities with respect to decommissioning and environmental restoration. They provide:

1. A national level of expertise for guiding regulatory authorities and developers in the safe conduct of nuclear activities, including facility decommissioning; and
2. An objective venue to deliberate the pros and cons of decommissioning strategies and approaches.

The U.S. regulatory infrastructure for decommissioning is however of a hybrid nature in that there is no one agency that is completely responsible for the entire decommissioning spectrum. From the U.S. perspective, this makes the international consensus achievement quite impressive. Although there is regulatory diversity in the U.S., our regulatory fabric is held together by laws and past experience, which help us manage the challenges in controlling the use and application of radioactive materials both within our confines and abroad. As we move in a direction where nuclear power installations and other regulated facilities may need to be decommissioned, we must assure that:

1. Decommissioning will be performed in a safe and environmentally sound fashion;
2. Safe decontamination and subsequent beneficial reuse is realistically considered; and
3. There are sufficient disposal options available for resultant radioactive wastes.

Within the U.S., the division of roles and responsibilities addressing the control of practices and the conduct of interventions generally sits as follows:

The NRC has the primary regulatory role in regulating practices relative to commercial nuclear facilities and operations, which primarily includes power reactor, as well as conversion, enrichment, fuel fabrication, and medical and other industrial facilities. With respect to decommissioning, the NRC

¹National Council on Radiation Protection and Measurements webpage -- URL -- www.ncrp.com

has a more expanded role which also includes regulatory involvement with its sister agency, the Department of Energy. Our involvement with DOE includes activities such as the Yucca Mountain High-Level Waste Repository, the West Valley Demonstration Project, and the MOX Fuel Fabrication and Reactor Operations. Additionally, the Environmental Protection Agency (EPA) has primary responsibility for addressing and establishing generally applicable public health and environmental standards, so at times, the EPA has issued regulatory standards for practices which the NRC has been required to adopt and implement on its licensed community.

However, DOE does maintain the lion's share of responsibility for remediation of legacy sites resulting from nuclear defense related programs. Frequently, other Federal agencies such as the U.S. Army Corps of Engineers, the U.S. Geological Survey, and the U.S. Department of Transportation are collectively involved in the final resolution of site and facility cleanup and remediation activities at these sites.

A nuance to all of this involves certain situations and specific conditions, whereby the NRC can relinquish its regulatory authority to individual States within the U.S., based on their ability to adequately regulate the possession and use of certain radioactive materials within the State's border. However, nuclear power plants nor their related operations are included in any such delegation of regulatory authority. Additionally, to ensure that a State continues to implement adequate requirements and effective protective measures, and maintains the requisite resources and expertise for effective program implementation, the NRC maintains oversight controls over any State to which the NRC relinquishes its regulatory responsibilities. During this conference you will continue to hear from other speakers who will address in more detail, the role of regional authorities in the U.S., as well as the respective infrastructure for which decommissioning and environmental restoration operations are carried-out.

International Factors and National Decommissioning Strategy

When developing or amending National regulatory infrastructures, one should take advantage of the available experience, data, and recommendations founded by accomplishments of the international nuclear community. Utilizing this information would not only serve to help formulate a sound technical basis, but to also aid in facilitating a more harmonized approach to radiation protection in general. However, existing climates, environments, resource availability, and politics may result in some differences affecting the way systems are implemented. It should also be noted that differences in terminology in which the same word may lead to different interpretations could potentially affect the development of legislative and regulatory infrastructures. Although not necessarily a safety-related issue, it is an implementation nuance that could be of significant importance within a given national regulatory program, which could lead to misunderstandings among Member States. A prime example, as expressed in the Waste Convention, is the need to explicitly address both *radioactive waste* and *spent fuel*.

Approaches to conducting facility decommissioning could also vary depending on Member State interpretation and perspective. Ultimately, this may be the result of whether a national authority would adopt the international view that decommissioning is part of the overall pre-disposal radioactive waste management system or view environmental restoration within the realm of an intervention. However, in some instances decommissioning and environmental restoration are viewed as both returning facilities and sites to uncontrolled or unrestricted use conditions, without distinguishing whether the

activities are practices or interventions.

This issue becomes more noteworthy when the criteria for compliance is factored into the overall picture. For example, restoration of a contaminated land area to the ICRP-82 suggested constraint of 0.30 mSv/a (30 mRem/y) as opposed to the target for clearance of 10 μ Sv/a (1 mRem/y) represents a vast difference both in resultant doses, as well as the resources needed to achieve compliance -- saying nothing of the difference in the volume of radioactive waste inventories generated for disposal.

From another perspective, separating decommissioning and restoration could prove to be counterproductive if different dose levels are utilized. For instance, different dose protection levels creates a perception of non-uniform levels of protection, which in turn, may be *perceived* to correspond to significantly inconsistent risk levels. Furthermore, in cases where significant efforts would be needed to comply with inordinately stringent dose constraints, alternative strategies could raise the impression of regulatory disparity or environmental inequity. The perception may be that cleanup is held hostage to economics and as a result, national authority's would more likely rely on the use of institutional controls. If a more realistic level is used, remediation could be accomplished by utilizing the ICRP optimization approach which would foster safe, environmentally-sound, and more feasible clean-up levels.

As a result, the path to cooperation and consensus will need to be pursued actively from both the national and international deliberation arenas.

From the perspective of the international arena, the Waste Convention provides the prime focus in establishing the venue and mechanism for safe and environmentally-sound management of spent fuel and radioactive waste. Subsequent symposia such as the March 2000 International Conference on the Safety of Radioactive Waste Management in Cordoba, the current conference, and the December 2002 Conference in Vienna on Issues and Trends in Radioactive Waste Management, all provide an incremental push to achieve consensus in areas of decommissioning and environmental restoration.

Most international organizations and Member States acknowledge the role of intermediate or prolonged storage as part of the overall decommissioning strategy. Certainly, where deferred actions would result in advantages from short-lived radionuclide decay, serious consideration would be merited.

Although the international expert community has provided a radiological framework for individual nations to utilize for successful decommissioning, as well as to promote regulatory harmonization among Member States, we must realize that the path to global success in this area may not always be so direct or effortless.

Other considerations

Most of you are aware of, if not already involved with, the effort to reassess how the radiological protection community addresses environmental protection. In this area, the ICRP, NEA, and other organizations have established efforts leading to an evolution of how we assess the impact to the environment from practices and for that matter, interventions (e.g., doses to biota). For example, the European Commission has established a requirement for environmental review and the U.S. has had

established law in place since 1969 (National Environmental Policy Act - NEPA). Within the U.S., all facets of society are bound to perform a NEPA analysis in cases where the proposed activity may impact the environment. Even a majority of U.S. Federal agencies have NEPA obligations and are required to conduct a NEPA analysis to accompany the promulgation of their regulations. Another milestone in the unfolding role of environmental protection includes the ongoing ICRP effort to provide a framework for protection of Non-Human Species from Ionizing Radiation.

So far, I have primarily addressed what is needed, or I should say desired, purely from an approach, strategy, and consistency standpoint. However, the fundamental complement that is most essential in linking progress toward any decommissioning final end-state is disposal capacity availability. Without such availability there is no final end-state. On this front, progress has been made in moving toward increasing the feasibility of such availability within the next decade or so. Specifically, with the DOE Yucca Mountain site recommendation being approved by President Bush and both U.S. Houses of Congress, complemented with the progress made in Finland toward the licensing phase of the geologic disposal of spent fuel wastes, these decisions have created more optimistic climates regarding the future of nuclear power. Removing this barrier brings forth options for resuming a balanced energy strategy for some countries and the only reliable energy strategy for others. This is most favorable for the decommissioning of ageing nuclear power reactors, however, decommissioning also requires access and capacity for disposition of low and intermediate level radioactive wastes. Progress in many countries such as France (L'Aube), Sweden (Forsmark), Germany (Konrad), and the U.S. (Barnwell, Nevada Test Site) in this area makes the accomplishment of successful decommissioning more feasible.

Due to issues such as limited or unavailable disposal capacity, decommissioning and environmental restoration are often exacerbated by uneven or disrupted regulatory control. Additionally, if the regulatory framework fails or is inconsistent in its function, the scope and extent of decommissioning or cleanup becomes more complex. The control of sources is a ready example of this situation. The problems such as in Goiânia and many other examples remind us of how the scale of decommissioning is often directly related to the degree of control of the spread and dispersion of radioactive materials.

Up to this point, focus has been on the regulatory community -- both international and national. A very important factor in successful implementation of a national decommissioning framework is to provide access to and to gather input from stakeholders such as the general public. In this facet, national authorities have generally had more exposure and experience than international organizations. Most of this being attributable to the fact that an international organization, such as the IAEA, would face much difficulty in lending a formal voice to the general public living amongst the 147 Member States. However, international organizations do acknowledge the importance of providing a path for stakeholders into the deliberations of a nation's nuclear energy policy development, but providing advice on the international level is difficult due the range of cultural and geographic diversity. What works in one country may not serve as the appropriate template for another, which brings forth the realism that consensus and uniformity may need to be tempered with reality and geographic equity.

Summary

Although my remarks addressed the progress made in decommissioning and environmental restoration in the broad conceptual sense, there is also an underlying theme of flexibility for national implementation. For example, and to reiterate a prior point, although terminology may differ from

country to country, the focus of maintaining consistent levels of radiation safety and protecting the environment remains the same. Regardless of one's preferred nomenclature, the concept of transforming contaminated sites or facilities into one's that are clean and safe, clearly is in the best interest to all of us, as well as to our future generations.

In ending, let me offer the words of Albert Einstein in stating that "The significant problems we face today cannot be solved by the same level of thinking that created them."

Thank you.