

Consideration of Regulatory System for Decommissioning of Nuclear Facilities in France, Germany and the United Kingdom

Sang-Kyu AHN, In-Young JEON
Korea Institute of Nuclear Safety, 19, GUSUNG-DONG YUSONG-GU, TAEJON
k052ask@kins.re.kr, k137jiy@kins.re.kr

1. Introduction

In Korea, twenty units of nuclear power plant are operating at present and especially Kori Unit 1 and Wolsung Unit 1 beyond twenty years. Usually it takes several years for operators to prepare the long-term decommissioning strategic plans of their own facilities before starting decommissioning, and also for regulator to revise the Atomic Energy Act and its regulations, which are the basis of operators' activities. In the light of this situation, it is time that we are going to check and, if necessary, to enhance the domestic regulatory institutional system for decommissioning of nuclear facilities. Of course, a lot of studies of the safety and costs for decommissioning have been carried out in domestic, but the study on the regulatory institutional aspects is less enough than them.

In this paper, the results of survey and analysis of the regulatory system for decommissioning of the EU countries such as France, Germany and the United Kingdom are described, which will be useful in finding the direction of enhancement in our own system.

2. Decommissioning Policy in France, Germany and the United Kingdom

Nation policy refers to governmental policy, and includes all governmental(national and regional) choices, as described in laws, regulations, standards and mandatory requirements that will influence the framework in which decommissioning takes place. Also, decommissioning strategy refers to industrial approaches, and includes all aspects of decommissioning projects that are proposed to national competent authorities in the context of application for permission to decommission.

2.1 Definition of Decommissioning

The national policy defines and delimits, in scope and sometimes in time, the decommissioning of a nuclear power plant. In France, it concerns the whole set of operations carried out with a view to achieving a given final state that allows the facility to be declassified.

The decommissioning phase succeeds the operating phase of the facility and concludes with the end of the process of declassifying the installations.

In German, it covers all measures which are taken after final cessation of operation, aimed at the safe enclosure or dismantling of the facility, or dismantling of parts of the facility, including occupancy of the safe enclosure or partially dismantled facility.

In the United Kingdom, it is the set of actions taken at the of a nuclear facility's operation life to take it permanently out of service with adequate regard for the health and safety of workers and the public and the protection of the environment. It is not necessarily a single step process and may involve stages spread over a number of years.

2.2 Decommissioning License

In the United Kingdom, no specific decommissioning license is needed, however, in both German and France, specific decommissioning license is needed before decommissioning of nuclear facilities. In France, a decree authorizing the final close-down and decommissioning of the installation is issued. In Germany, the issue of licenses as defined in § 7 Para. 3 of the Atomic Energy Act in part licenses is possible if an application has been made, which is to be decided in part licenses.

2.3 Statutory Procedures for the Decommissioning

In France, pursuant to the first paragraph of Article 6 b of the Decree of the 11 December 1963, the operator must notify the DGSNR of his decision to close down the operation of his installation on a precise date. Operator shall include with this letter a file detailing the operations involved in the final cessation activities that he intends to carry out. The file must be sent at least 6 months before the date of the start of the operations involved in the final cessation of activities announced by the operator. The Director-General of the DGSNR shall acknowledge receipt of the decision to close down the installation. The reply, if necessary, will be accompanied by additional requests and new technical specification. In order for all the operations involved in the decommissioning phase to be authorized, the operator must provide a file setting out explicitly all the different stages envisaged and showing, for each stage, the nature and extent of the risk presented by the installation as well as the measures put into effect to bring them under control. The declassification of a nuclear installation will come about after the accomplishment of the decommissioning work and proof of the achievement of the final intended status or any discrepancy. The declassification of a nuclear installation corresponds to the whole set of administrative and statutory operations intended to change the administrative status of the installation.

In Germany, the permissions and conditions of a decommissioning license as defined in § 7 Para. 3 of the Atomic Energy Act are specified on the basis the license application by appropriate application of § 7 Para. 2 of the Act, taking account of the potential hazard of facility. Depending upon the type of application, the decommissioning of nuclear facilities can be regulated by a single license or can be divided into sections which are licensed separately with their own licenses as defined in § 7 Para. 3 of the Act. In addition to this, licenses can be down into part licenses on request. It is recommended that, for large projects, such as the dismantling of nuclear power plants or nuclear fuel cycle facilities, decommissioning work is divided up into technically delimited sections which can be licensed separately. A comprehensive

decommissioning license could be advantages for smaller projects e. g. for research reactors or possibly for bringing about a state of safe enclosure. If the operating license is suspended on issue of the decommissioning license, then conditions and regulation of the operating license, which continue to be applicable must be incorporated in the license. Dividing up the decommissioning sequence means that new techniques can be introduced and experience which has been gained in the previously completed phase can be applied. Assessment of the next step can be take place in parallel to execution of the phase which has already been licensed. In certain circumstances these can also result in a time saving on the overall project.

In the United Kingdom, decommissioning will be subject to the same licensing regime as that applied during the proceeding design, construction, operation, and shut down phases. The licensee's period of responsibility under the nuclear site license will be continued until HSE (NSD/NII) will continue to exercise its regulatory powers. Once a nuclear site license has been granted then, unless a license is issued to another corporate body for the same site, the original licensee's period of responsibility continues until HSE has expressed an opinion that there has ceased to be any danger from ionizing radiations from anything on the site. Requirements for the site can be delicensed. When a licensee wishes to end its period of responsibility, NII expects similar arrangements to be applied to this process as are applied to an operational plant. These include arrangements for the assessment of safety documentation.

2.4 Safety Documents to be required in the Licensing Process

In France, when operator notifies the DGSNR of his decision to close down the operation of his installation, he submit to the DGSNR a file which describes the planned operations, any modifications envisaged in terms of the organization and management of human resources, the program envisaged and planned state at the end of the final cessation of activities. The file submitted in support of an application for authorization for final close-down and decommissioning must include the following documents.

Under the terms of Article 6 b of the Decree of the 11 of December 1963 : document justifying the chosen state and indicating the stages of the subsequent decommissioning, report, general supervisory and maintenance rules, updating of the internal emergency plan. Under the terms of Decree 77-1141 of the 12 October 1977 : study on the impact of the work that is planned to carry out and non-technical summary. Under the terms of Article 20 and 21 of the order of the 31 December 1999 : waste study.

In Germany, according to § 3 Para. 1 of the Nuclear Licensing Procedures Ordinance, all of the documents which are necessary to check the preconditions for approval as defined in § 7 Para. 2 of the Atomic Energy Act must be attached to the application for issue of a decommissioning license. The following detailed descriptions are required: the facility and the site, legal provisions, the decommissioning procedures and the planned decommissioning techniques, the new systems and systems to be modified, safety studies including accident analysis, registration and evaluation of the radioactive inventory, classification of the radioactive wastes, the radioactive discharges, program for environmental monitoring, precautions of protection of workers and

radiological protection during performance of the decommissioning work, operational organization and responsibilities, accompanying controls (quality assurance) and their performance (e.g. by means of the work schedules), planned measurement program for the clearance of the site, planned reporting to the supervisory authorities, and physical protection measures. In addition, the following should be submitted for the safe closure: description of the physical-technical state of the facility in safe closure, the planned monitoring and maintenance program, and description of existing and new systems for maintaining the safe closure.

In the United Kingdom, NII requires licensees to undertake strategic planning for decommissioning including the future management and disposal of all the radioactive waste which may result. Because of the common interests of HSE and the environment agencies, the licensee should develop the strategy by liaising with the regulatory bodies to avoid unnecessary conflicts and oversights. Licensee should demonstrate that their strategy is consistent with Government Policy and identify and justify any differences. The strategy should describe how the licensee will provide and maintain the arrangements to ensure that the nuclear facilities and the decommissioning process is managed safely until the site is delicensed. NII requires licensees to prepare program for decommissioning which, where appropriate, will be approved by NII. A detailed decommissioning program, scheduling the activities which will be carried out to address the complete inventory of liabilities will be required prior to the planned cessation of use of a plant. Also, NII requires licensees to prepare safety cases for decommissioning which, where appropriate, will be assessed by NII. The safety case should address the changing hazards from a plant which may occur as a result of modifications to the plant which take place during the stages of decommissioning.

3. Conclusion

The regulatory systems for decommissioning of France, Germany and the United Kingdom are surveyed and analyzed. Various different features of licensing type, regulatory process, and safety documents to be prepared in decommissioning are found.

However, some parts are common to ensure the safety during the stages of decommissioning. For example, there are accident analysis, radioactive waste disposal, protection of workers, environmental monitoring and regulatory action after completion of decommissioning. They will be useful to us in enhancing domestic system.

REFERENCES

- [1] Decommissioning Nuclear Power Plants, Policies, Strategies and Costs, OECD/NEA, 2003
- [2] Statutory Procedures for the Decommissioning of Basic Nuclear Installations, Nuclear Safety Authority in France, 2003.3.2
- [3] Guide to the Decommissioning of Facilities as defined in § 7 of the Atomic Energy Act, BMU in Germany, 1996.6.14
- [4] Guidance for Inspectors on Decommissioning on Nuclear Licensed Sites, 2001.3.13
- [5] S.K.AHN, et al., Nuclear Safety Regulation for Decommissioning of Nuclear Facilities in Europe Countries, KINS/RR-396, 2005.2