National Report

Statens strålevern

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IMPLEMENTATION OF THE OBLIGATIONS OF THE CONVENTION ON NUCLEAR SAFETY IN NORWAY.

The second Norwegian report in accordance with Article 5 of the Convention.

Contents:

A. Introduction.

A.1. General.

This report is issued according to Article 5 of the Convention on Nuclear Safety. Norway signed and ratified the Convention on 20 September 1994, the first day it was open for signing.

As Norway is not a nuclear state according to the terms of the Convention, this report will give a brief overview over the nuclear research activities going on in Norway and some brief comments on how the different Articles are applied to that activity. Part A of the report provides general information about the situation in Norway and Part B provides the article-by-articles approach to show the compliance with the Convention. *Changes in the situation which have occurred since the first report in 1998 are written in italics.*

A.2. Nuclear Activities in Norway.

The Norwegian nuclear activities were started in 1948 by the establishment of Institutt for Atomenergi (The Institute for Atomic Energy, at present The Institute for Energy Technology) at Kjeller north-east of Oslo. The first research reactor, JEEP I, reached criticality in 1951. It was follwed by the Halden Boiling Heavy Water Reactor in Halden in 1959, (the OECD Halden Reactor Project). The NORA reactor was built in 1961, shut down in 1968 and later decommissioned, the same had happened to JEEP I in 1967. JEEP II was built and reached criticality in December 1966. At present, the JEEP II and the HBWR are in use. JEEP II has a thermal capacity of 2 MW. HBWR has a thermal capacity of 25 MW, but it is usually run at less than 20 MW. Both reactors are owned and operated by the Institute for Energy Technology.

A.3. The Institute for Energy Technology.

The Institute for Energy Technology is a free foundation devoted to research in all fields of energy technology. Part of its budget is paid by the Government, the rest is paid by research contracts with industry and other research institutions.

A.4. The Regulatory Body.

The Norwegian Radiation Protection Authority is the regulatory body for nuclear activities in Norway. It is divided into *two* technical departments and one administrative department. The department responsible for nuclear safety is *the Department of Health Physics and Nuclear*

Safety and the department responsible for emergency preparedness is *the Department of Emergency Preparedness and Environmental Protection.*

A.5. Other Activities in the Nuclear Field.

The Institute for Energy Technology is responsible for handling, storage and final disposal of all radioactive waste, and for that purpose, the institute also operates the Combined Storage and Repository for Low and Medium Level Radioactive Waste in Himdalen 25 km south-east of Kjeller. The capacity is about 10 000 barrels of waste, and it is expected to be filled around 2030.

The Government of Norway has several years ago issued a plan of action to ease the problems stemming from the nuclear activities in the former Soviet Union, especially in the north-west region of the Russian Federation. The work is mainly carried out through the Royal Ministry of Foreign Affairs and the Norwegian Radiation Protection Authority. One of the main objectives of this work has been to enhance the safety of the Kola Nuclear Power Plant to minimize the risk of radioactive contamination of Norwegian territory.

As Norway is a member state of the IAEA, Norwegian authorities are taking part in various activities organised by the IAEA.

B. Compliance with Articles 4 to 19.

Article 4: IMPLEMENTING MEASURES.

The measures to fulfill the obligations of the Convention are discussed in this report.

Article 5: REPORTING.

The present report constitutes the *second* Norwegian report issued in obligation with Article 5.

Article 6: EXISTING NUCLEAR INSTALLATIONS.

According to the terms of the Convention, Norway has no nuclear installations. However, there are two research reactors:
1. JEEP II at Kjeller. Heavy water pool reactor with thermal capacity 2 MW.
2. HBWR in Halden. Boiling heavy water reactor with maximum thermal capacity of 25 MW.

Article 7: LEGISLATIVE AND REGULATORY FRAMEWORK.

The nuclear field is regulated by two different instruments, the Atomic Energy Act of 12 May 1972 and the *Act on Radiation Protection and Use of Radiation of 12 May 2000*. Licence for operation of nuclear facilities is granted by the Government in accordance with the Atomic Energy Act, with the Norwegian Radiation Protection Authority as the regulatory body. Licences

are normally issued for a period of ten years. *Several specific regulations are issued pursuant to each of the acts.*

Article 8: REGULATORY BODY.

The regulatory body is the Norwegian Radiation Protection Authority. It is organised as a directorate under the Ministry for Health and Social Affairs. It has the responsibility for both nuclear safety, nuclear emergency preparedness and radiation protection, and is organised in *three* departments:

- *Department of Health Physics and Nuclear Safety*
- *Department of Emergency Preparedness and Environmental Protection*
- *Department of Planning and Administration*

The departments are further divided into specialised sections. The NRPA has a total staff of about 90 persons and a basic annual budget of around *50* million NOK. In addition to this, the NRPA is funded from other governmental sources for miscellaneous projects.

The *Department of Health Physics and Nuclear Safety* is responsible for the safety of the nuclear facilities *and radiation protection*. The staff of this department consists of *around 30* persons. This department works for the Ministry of Foreign Affairs on several projects in the Russian Federation and other Eastern European countries.

The *Department of Health Physics and Nuclear Safety* handles applications for licences and renewal of licences for the operation of nuclear facilities. The report with recommendations is then sent to the Ministry of Health and Social Affairs for further handling. Licence is given by the Government. The department also carries out regular inspections to ensure that the requirements of a licence are fulfilled.

The *Department of Emergency Preparedness and Environmental Protection* acts as the secretariat for the emergency preparedness organisation against nuclear accidents, see article 16. *The staff consists of around 30 persons.*

Article 9: RESPONSIBILITY OF THE LICENCE HOLDER.

The Institute for Energy Technology is the licence holder for the two research reactors and the waste repository. It is their responsibility to keep the safety as high as possible and in accordance with the licence requirements and appropriate international standards. As all licences are reviewed every ten years, this means a more or less continuous revision of the safety documents. *The present licence expires 31 December 2008.* The experimental programmes have to be kept within the safety requirements of the licence and the safety documents. It is also the responsibility of the licence holder to provide the necessary financial and human resources needed for keeping the safety at an appropriate level.

Article 10: PRIORITY TO SAFETY.

According to the Atomic Energy Act, the regulatory body has the power to close the facilities if it finds that the safety requirements are not fulfilled. As economy does not play an important role

for the operation of these research reactors, and the operation of them involves considerable shut down periods for experimental preparations, the operator is able to lay down considerable resources in safety, both for the reactor safety and for the radiation protection of the staff. The main tool for keeping the doses to the staff as low as reasonably achievable has been intensive monitoring and planning of the work.

Article 11: FINANCIAL AND HUMAN RESOURCES.

The Institute for Energy Technology provides the financial resources and the staff to operate the two research reactors. It also organises the necessary training and retraining of their staff, *i.e.* a «reactor school» for both new and old staff at Kjeller. The role of the Norwegian Radiation Protection Authority is to ensure that the resources and training/retraining provided are appropriate. The Atomic Energy Act enables the Authority to impose sanctions to the Institute if this is deemed insufficient to keep the safety standard at an acceptable level.

Article 12: HUMAN FACTORS.

The Institute for Energy Technology conducts a considerable research on the relation between man and technology in connection to the OECD Halden Reactor Project. Much of the result from this research is used in the foreign nuclear industry as well as in non-nuclear industry. The institute also makes use of the results of this research in the operation of its own facilities, and the research is largely integrated with the control room operation at the HBWR in Halden. See also Article 11.

Article 13: QUALITY ASSURANCE.

The Institute for Energy Technology has established a system for quality assurance including the research reactors and the waste repository that takes care of all aspects of operating a nuclear facility. This QA-system is supervised by the regulatory body.

Article 14: ASSESSMENT AND VERIFICATION OF SAFETY.

Verification by analysis, surveillance, testing and inspection is a part of the renewal process of the licences. *A status report on the safety of the installations is to be issued every three years. In addition to this, the NRPA carries out annual inspections.* It also constitutes a part of the preparation of the reactors before every start up for a new experimental cycle. In particular, this is applied to the HBWR with a shorter interval than the ordinary licensing period.

Article 15. RADIATION PROTECTION.

According to the *Act on Radiation Protection and Use of Radiation* with regulations, the operator reports the doses to each worker annually, and they have to be kept below the ICRP limit for each worker. These doses shall be registered by the operator.

The operator has developed a system for work planning to keep the doses to the staff as low as reasonably achievable especially during maintenance work. This has led to excellent improvements of the dose burden to the staff.

Doses to members of the public from releases of radioactivity have to be kept below 1 μSv/y for releases to the environment (except for ^{131}I to air, which has a limit of 100 μSv/y) for each of the facilities. Release limits are set according to this, and the real releases are a fraction of the limits.

Article 16: EMERGENCY PREPAREDNESS.

The Institute for Energy Technology has written plans for emergency situations on each of their sites. These plans deal with the situation on site. The off site response is planned by the local police department and coordinated with the Crisis Committee described below. The plans are tested every three years, internal plans are tested more frequently.

The national emergency preparedness against nuclear accidents in Norway is mainly directed towards foreign accidents.

According to a Royal Decree of 26 June 1998, the emergency preparedness organisation consists of a Crisis Committee for Nuclear Accidents consisting of

- NRPA
- *National Police Directorate*
- HQ Defence Command Norway
- Directorate of Civil Defence and Emergency Planning
- Norwegian Board of Health
- Norwegian Food Control Authority.

In addition, several other institutions act as advisors. The Institute for Energy Technology and the Norwegian Institute for Meteorology are the most important among them.

The NRPA has the chair of the Crisis Committee, and the *Department of Emergency Preparedness and Environmental Protection* constitutes the secretariat. The Crisis Committee has been given the authority to gather information, make assessments, implement or recommend countermeasures and give information to the public.

Norway has a national automatic gamma monitoring network operating, consisting of approx. 30 stations running continuously. The data acquired are directly available to the competent authority and the emergency response organisation.

In addition Norway has *5* high volume air samplers with alarming capability, GM-tubes on top of the filters.

The Nordic countries, Denmark, Finland, Iceland, Norway and Sweden have established an agreement that makes all the data from the national automatic gamma monitoring networks directly available to all Nordic countries. *This agreement also covers the rest of the countries around the Baltic Sea: Estonia, Germany, Latvia, Lithuania and Poland. The Russian Federation has not yet signed the agreement.*

Norway has established bilateral agreements on early notification with Finland, Germany, Lithuania, Netherlands, Poland, Russia, Sweden, Ukraine and *United Kingdom*. The texts in the

different agreements are slightly different but are all based on the IAEA Convention of Early Notification from 1986. We feel confident that these agreements will ensure a first notification if an accident at a facility covered by the agreements, should occur in the vicinity of Norway.

The Crisis Committee for Nuclear Accidents is operating with two levels of emergencies. These apply both for domestic and foreign accidents.

No countermeasures are automatically implemented on the basis of declaration of level of emergency. The countermeasures will be implemented on an ad hoc basis depending on the assessments of the situation.

Article 17: SITING.

Not applicable.

Article 18: DESIGN AND CONSTRUCTION.

Not applicable.

Article 19: OPERATION.

Not applicable.

CONCLUSION.

Based on the above reporting under the applicable articles for a party having no nuclear installations on their territory, we conclude that Norway is in compliance with its obligations according to the Convention on Nuclear Safety.

Österaas, 8 October 2001

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