

NUCLEAR
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Contents

<i>Legislative and Regulatory Activities</i>	4
<hr/>	
<i>Case Law and Administrative Decisions</i>	18
<hr/>	
<i>International Organisations and Agreements</i>	27
<hr/>	
<i>Texts</i>	36
<hr/>	
<i>Studies and Articles</i>	39
<hr/>	

Nuclear Energy Agency

Organisation for Economic Co-operation and Development

LIST OF CORRESPONDENTS TO THE NUCLEAR LAW BULLETIN

- ARGENTINA - Mr. MARTINEZ FAVINI, Head of Legal Department, National Atomic Energy Commission
- AUSTRALIA - Mr. COOMBS, Office of External Relations, Australian Atomic Energy Commission
- AUSTRIA - Dr. STEINWENDER, Director at the Federal Chancellery
- BELGIUM - Miss HARDENNE, Attaché to the Cabinet of the Minister of Economic Affairs
- Mr. STALLAERT, Social Security Administration, Ministry of Employment and Labour
- The Secretary General of the Prime Minister's Cabinet for Programmation of Scientific Policy
- BRAZIL - Mr. AYRTON SA PINTA DE PAIVA, Legal Adviser, Comissao Nacional de Energia Nuclear
- CANADA - Mr. MacISAAC, Legal Adviser, Atomic Energy Control Board
- DENMARK - Mr. ARILDSEN, Head of Section, Ministry of Justice
- Mr. ØHLENSCHLAEGER, Chief of Division, National Health Service
- FINLAND - Mr. SUONTAUSTA, President of the Atomic Liability Committee
- FRANCE - Mr. VERGNE, Head of Legal Affairs, Atomic Energy Commission
- GERMANY - The Institute of Public International Law of Göttingen University, Department of Nuclear Law (Dr. PELZER)
- GHANA - Mr. LEBRECHT HESSE, State Attorney, Ministry of Justice
- GREECE - External Relations Office, Greek Atomic Energy Commission
- INDONESIA - Mrs. SOEPRAPTO, Head of Legal Division, National Atomic Energy Agency
- IRELAND - Mr. SWEETMAN, Barrister-at-law; and Department of Transport and Power
- ISRAEL - Dr. MEIR ROSENNE, Legal Adviser of the Ministry of Foreign Affairs
- ITALY - Mr. MARCHETTI, Head of Legislative Office, Ministry of Industry, Commerce and Crafts
- Dr. NOCERA, National Committee for Nuclear Energy, Health Protection and Control Division

JAPAN - Mr. SHIMOYAMA, Deputy Manager of Financial and Purchasing Department, Japan Atomic Power Company

- The Head of the Policy Division, Atomic Energy Bureau, Science and Technology Agency, (Mr. NAKAMURA)

KOREA - Mr. SHIYOHL PARK, Chief of Nuclear Reactor Division, Atomic Energy Bureau, Ministry of Science and Technology

MEXICO - Mr. ORTIZ-MONASTERIO, Legal Adviser, National Nuclear Energy Commission

NETHERLANDS - Mr. BOSSCHER, Head of the Desk Atomic Affairs, Ministry of Foreign Affairs

NEW ZEALAND - Mr. O'LEARY, Executive Secretary of the Atomic Energy Committee

NORWAY - Mr. SKARPNES, Head of Division, Department of Legislation, Ministry of Justice

PHILIPPINES - Mr. CRISTOBAL, Chief, Legal Division, Atomic Energy Commission

PORTUGAL - Mr. COUTINHO, Adviser to the Junta de Energia Nuclear

SPAIN - Mr. DE LOS SANTOS LASURTEGUI, Legal Adviser, Junta de Energia Nuclear

SWEDEN - Mr. JACOBSSON, Legal Adviser, Ministry of Justice

SWITZERLAND - Mr. PFISTER, Deputy, Office of Energy Economy, Federal Department for Transport, Communications and Energy

TURKEY - Secretariat of the Turkish Commission for Nuclear Energy

UNITED KINGDOM - Mr. COLEMAN, Assistant Treasury Solicitor, Treasury Solicitor's Department, Department of Trade and Industry

- Mr. RITCHIE, Deputy Legal Adviser of the Atomic Energy Authority of the United Kingdom

UNITED STATES - Mr. BRUSH, Office of the General Counsel, United States Atomic Energy Commission

ZAIRE - Mr. MALU WA KALENGA, Commissioner for Nuclear Science

ZAMBIA - Mr. ZULU, Solicitor General, Ministry of Legal Affairs

IAEA - Mr. STEIN, Legal Division, International Atomic Energy Agency

EURATOM - Mr. PRELLE, Ispra Joint Research Centre, Commission of the European Communities

WHO - Mr. DE MOERLOOSE, Head of the Health Legislation Unit, World Health Organization

LEGISLATIVE AND REGULATORY ACTIVITIES

• *Australia*

NUCLEAR LEGISLATION

Amendments to the Atomic Energy Act 1953-1966

The Australian Atomic Energy Act was recently amended by two Acts. The first Act, No. 31 of 13th November 1973, concerns an amendment to Section 9 of the Atomic Energy Act and lays down that the Australian Atomic Energy Commission now consists of a Chairman, a Deputy Chairman and not more than three other members, instead of one member as was previously provided.

The second group of amendments is contained in the Statute Law Revision Act 1973 of 19th December 1973 and consists of the omission of the word "Commonwealth" in the Federal Acts and in particular in the Atomic Energy Act.

• *France*

ORGANISATION AND STRUCTURE

Decree No. 73-1132 of 21st December 1973 / Official Gazette of the French Republic of 23rd December 1973/

A Decree of 21st December 1973 has appointed a Delegate General for Energy, under the authority of the Prime Minister and nominated by a Decree of the Council of Ministers. The Delegate General is responsible for proposing to the Government, and implementing all necessary measures for the supply of energy to France.

As regards nuclear power, the Minister for Industry, Commerce and Crafts has handed over to the Delegate General, the powers attributed previously to that Ministry's Secretary General for energy. He is res-

possible for watching over the activities of the Commissariat à l'Energie Atomique concerned with energy production and supply of basic nuclear materials.

Following transfer to the Ministry of Industry, Commerce and Crafts of the duties attributed to the former Ministry for Industrial and Scientific Development /Decree No. 74-217 of 7th March 1974 (Official Gazette of 8th March 1974)/, the above-mentioned Decree of 21st December 1973 has had to be amended accordingly /Decree No. 74-208 of 7th March 1974 (Official Gazette of 8th March 1974)/.

REGIME OF NUCLEAR INSTALLATIONS

Order of 26th February 1974 /Official Gazette of the French Republic of 12th March 1974/

The Minister for Industrial and Scientific Development (now the Minister for Industry, Commerce and Crafts), after obtaining the Opinion of the Interministerial Committee for Basic Nuclear Installations, has issued an Order concerning application of the regulations on pressurized components for light water reactor steam supply systems.

This Order mainly comprises technical provisions for the construction, maintenance and operation of the main primary circuits of light water steam supply systems and their control and safety devices. The Head of the Mineralogical District (Chef d'Arrondissement Minéralogique) is responsible for ensuring that the provisions of this Order are appropriately observed in the case of installations placed under his control.

The provisions of the Order were supplemented by a Circular from the competent Minister dated 26th February 1974 concerning application of the regulations on the main primary circuits of light water reactor steam supply systems.

TRANSPORT OF RADIOACTIVE MATERIALS

Decree of 12th February 1974 /Official Gazette of the French Republic of 20th February 1974/

Decree No. 74-120 of 12th February 1974 publishes amendments to Annexes A and B of the European Agreement on the international transport of dangerous goods by road (ADR) of 30th September 1957, which were deposited with the United Nations Organisation on 19th August 1972. Annexes A and B of the Agreement contain provisions on radioactive materials.

FOOD IRRADIATION

Decree of 12th February 1973 /Official Gazette of the French Republic of 15th February 1973/

Decree No. 73-138 of 12th February 1973 was made in implementation of the Act of 1st August 1905 on the prevention of fraudulent practices, with respect to chemical products for human consumption and materials and objects coming into contact with foods, products and beverages intended for human and animal consumption, as well as processes and products used for cleansing such materials and objects.

The present Decree provides in particular that components, materials and objects which will come into contact with foods, products and beverages for human consumption may be submitted to ionizing radiation only in accordance with the conditions and limits determined by the regulations in force. This also applies to cleansing processes for such materials and objects.

• *Germany*

REGIME OF RADIOACTIVE MATERIALS

Use of radioisotopic cardiac pacemakers

The Federal Minister of the Interior published on 31st October 1973 Recommendations for the licensing and control procedure concerning the handling of radioisotopic sources in cardiac pacemakers (Gemeinsames Ministerialblatt 1973 No. 28 p. 509). These Recommendations state that the implantation of cardiac pacemakers containing radioisotopic sources constitutes handling of radioactive substances and that the clinic carrying out such implantation must be licensed pursuant to the First Radiation Protection Ordinance. The bearer of such a pacemaker does not need a licence, as he does not "handle" radioactive substance within the legal sense. Cardiac pacemakers with radioisotopic sources are also subject to the provisions of the Medicaments Act (Arzneimittelgesetz) and the Medicaments Ordinance (Arzneimittelverordnung).

With a view to securing uniform treatment of cardiac pacemakers with radioisotopic sources in the individual States (Länder), the Recommendations establish in detail the licensing requirements and the conditions to be imposed when a licence is granted.

The clinic must fulfil the licensing requirements set forth in Section 3(2) of the First Radiation Protection Ordinance. This means, in particular, that the responsible personnel must be experienced in the handling of radioactive substances, including measurements of contamination and actions to be taken in case of contamination, and know about the effects of radiation on the bearer and his relatives. The implanting physician must have experience in the implantation of cardiac pacemakers

and the control of their functioning. The clinic must provide financial security to cover the radiation and toxicity risk connected with the storage, implantation and removal of the pacemaker. In order to gain experience in the functioning of radioisotopic cardiac pacemakers and on the effectiveness of the registration and control measures licences should be granted for a period of two years only.

Among the conditions to be imposed when a licence is granted are the following: The licensee has to inform the bearer and his relatives about the radiation exposure connected with the implantation, the consequences of a release of the radioactive substance, and their obligations. The latter includes the instruction that the pacemaker may be removed after the bearer's death pursuant to an order to be issued under the Atomic Energy Act (Atomgesetz).

An implantation may be effected only if a number of documents and certificates have been furnished. A detailed description of the pacemaker is required which must contain a written guarantee by the manufacturer that the radioisotopic sources (i.e. the radioisotopic substance of the battery and all envelopes for the safe encapsulation of the source) comply with the requirements of the latest NEA recommendations on the design, construction, testing and control of radioisotopic cardiac pacemakers (*). Control certificates by various federal agencies must have been issued.

The bearer must undertake in writing to constantly carry with him a cardiac pacemaker identity card and a metal bracelet, to undergo regular examinations and to notify any change of address to the controlling clinic or physician.

The identity card must contain, apart from the name and address of the bearer, the date of the implantation, the implanting clinic, the type of pacemaker, the radioisotopic fuel contained therein and its activity at the time of implantation, the location of the pacemaker in the human body, the control dates, a check list for the bearer in case of an accident and of travel abroad and the address of the clinic or physician to be notified in case of emergency or death. The metal bracelet shall be marked with the bearer's name, the words "plutonium (promethium) cardiac pacemaker and the symbol indicating the radionuclide in the source.

The functioning of the pacemaker has to be controlled regularly by the licensee. The licensing authority fixes the intervals between such controls which in general may not exceed six months.

The licensee has to inform the competent authority and the Federal Health Agency (Bundesgesundheitsamt) of every implantation and removal of a radioisotopic cardiac pacemaker as well as the address of the supervising clinic or physician. Implanted pacemakers must be sent to the Physikalisch-Technische Bundesanstalt (PTB) in Brunswick. The licensee must maintain records showing the whereabouts of pacemakers from the date of receipt from the manufacturer until return to the PTB. The licensee is further obliged to submit to the licensing authority an annual report on the experience gained with implanted and removed cardiac pacemakers. Special events have to be reported immediately, such as leakages, damages and malfunctioning

(*) On this subject, see "Nuclear Energy Agency" in Chapter III of the present issue.

• Ireland

ORGANISATION AND STRUCTURE

Nuclear Energy Board Act

The Nuclear Energy (An Bord Fuinnimh Nuicléigh) Act, 1971 (Act No. 12 of 5th July 1971) which was reproduced in Nuclear Law Bulletin No. 8 was brought into force on 30th November 1974 by the Minister for Transport and Power who is the supervisory authority, following the appointment of the members of the Board (Commencement Order - S I No 319 of 1973). It is recalled that the duties of the Board are mainly of an advisory nature.

RADIATION PROTECTION

Factories Ionising Radiations (Unsealed Radioactive Substances) Regulations, 1972

The text of these Regulations, which came into operation on 1st December 1972, follows very closely that of the United Kingdom's Ionising Radiations (Unsealed Radioactive Substances) Regulations 1968, which have been analysed in Nuclear Law Bulletin No. 3.

The Regulations apply to factories in which a process involving the use of unsealed radioactive substances is carried on and where the total activity of the unsealed radioactive substances exceeds specified levels or where there are objects contaminated in excess of certain levels.

The Regulations are divided into nine Parts and also include three Schedules. Part I contains general provisions such as the definitions, the scope of application and the exemptions. Part II deals with ^{travelling} administration, notifications and records. Part III comprises the basic principles for the protection of workers against exposure to ionising radiations and contamination. Part IV deals with radiological supervision, while the arrangements for medical supervision are laid down in Part V. Part VI sets forth the measures for protection to be taken on the premises and within the plant. Part VII concerns the personal protection of the workers. The procedure to be followed for the utilization, ^{with} accounting, storage and transport within a factory of unsealed radioactive substances is laid down in Part VIII and Part IX covers the use and ^{with} maintenance of monitoring instruments as well as the procedure for preventing bodily contamination, contamination of protective equipment, personal clothing and all other surfaces. The Schedules, finally, specify the maximum radiation doses and the maximum permissible levels of contamination and provide for a classification of radionuclides.

• *Italy*

RADIATION PROTECTION

Decree of 15th February 1974 relating to the establishment of lists of approved experts and authorised doctors in charge of the surveillance of radiation protection from the viewpoint of physics and medicine

This Ministerial Decree, published on 5th April 1974, relates to the establishment with the Ministry of Labour and Social Welfare of lists of approved experts and authorised doctors in charge of the surveillance of radiation protection, and stipulates that inclusion in the lists shall take place in accordance with the provisions laid down in the Decree of the President of the Republic of 12th December 1972 (see Nuclear Law Bulletin No. 12). Following inclusion in the lists the Ministry of Labour and Social Welfare must issue a certificate stating the number, the date of inclusion and the period of validity.

NUCLEAR-POWERED SHIPS

Decree of 14th November 1972 /Official Gazette of 10th May 1973/

Decree No. 1154 of 14th November 1972 of the President of the Republic has approved Regulations on the safety of navigation and of life at sea. The purpose of these Regulations is to incorporate into Italian legislation the provisions of the London Convention of 1960 on the Safety of Life at Sea (Solas) which was ratified by Italy in accordance with Act No. 538 of 26th May 1966.

Basic Act No. 1860 of 1962 on nuclear energy already made provision for the establishment of technical and administrative standards ^{rules} on nuclear-powered navigation which have not yet been published. The provisions of the present Regulations which, in particular, concern the control and safety measures which govern nuclear ships, especially during visits, lay down the first rules applicable to those ships. These rules are closely based on the corresponding provisions of the Solas Convention.

• Netherlands

NUCLEAR-POWERED SHIPS

Act of 24th October 1973 concerning the Liability of Operators of Nuclear Ships

The provisions of the Act are based on the 1962 Brussels Convention on the Liability of Operators of Nuclear Ships, whose ratification by the Netherlands was recently approved by Parliament.

The Act provides that the operator of a nuclear ship is absolutely liable for any damage caused by a nuclear incident in which the nuclear fuel or radioactive products of his ship are involved. This absolute liability is limited to the equivalent in guilders of 1500 million francs (1 franc corresponds to 65.5 milligrams of gold of millesimal fineness 900) for each nuclear incident. The Act requires the operator of a nuclear ship flying the Dutch flag to cover his liability with an insurance or other financial security on terms specified by the Minister of Finance. In the case of an operator of a foreign nuclear ship the Minister of Finance has to determine whether the liability is sufficiently covered.

The right to compensation for nuclear damage expires after a period of ten years. Without prejudice to this extinction period actions for compensation have to be submitted within three years after the date the interested person had or should have had knowledge of the damage and of the operator liable.

The operator of a nuclear ship is not held liable for damage which is due to an act of war, hostilities, civil war or insurrection.

In cases where the 1962 Brussels Convention is not applicable the operator has to conclude an agreement with the Netherlands authorities to compensate damage for which he may be held liable under the Act before he is granted a licence to ^{operate} his ship.

Finally, the Netherlands authorities may conclude with States, not Party to the 1962 Brussels Convention, agreements which deviate from the provisions of the Act regarding liability in respect of nuclear warships and nuclear government ships, provided that such States guarantee equivalent security.

The text of the Act, when still a Bill, was reproduced in the Supplement to Nuclear Law Bulletin No. 7.

• Norway

ORGANISATION AND STRUCTURE

Regulations of 9th February 1973 concerning the Organisation and Functions of the Nuclear Safety Authority

The Regulations, issued on 1st March 1973 in consequence of Section 10 of the Atomic Energy Act of 12th May 1972, contain more specific provisions concerning the organisation and functions of the Nuclear Energy Safety Authority.

The Regulations provide that the Nuclear Energy Safety Authority will come under the competency of the Ministry of Industry and will be directed by an Executive Board consisting of a Chairman, a Vice-Chairman and five Members, appointed by the King for a period of four years. The main responsibilities of the Board include the carrying out of the functions referred to the Nuclear Energy Safety Authority by the Atomic Energy Act and the participation in the preparatory work concerning site choices for nuclear installations

The Regulations are reproduced in the Chapter "Texts" of this Bulletin.

TRANSPORT OF RADIOACTIVE MATERIALS

Regulations of 7th January 1974 concerning the Carriage of Dangerous Substances by Civil Aircraft

The Regulations were made in pursuance of the Aviation Act of 16th December 1960 and the Act concerning the Handling of Inflammable Articles of 3rd May 1871 and entered into force immediately.

The Regulations, which apply to the carriage of dangerous substances by civil aircraft in Norway and by aircraft registered in Norway for carriage outside Norwegian territory, provide that dangerous substances, including radioactive materials, shall be carried in accordance with the IATA Restricted Articles Regulations. The Directorate of Aviation and the State Institute of Radiation Hygiene will assist in cases where there are difficulties with respect to the interpretation or implementation of the IATA Restricted Articles Regulations.

• *Sweden*

NUCLEAR-POWERED SHIPS

Extension of the validity of the Act on compensation for damage caused by the operation of nuclear ships

Act No. 822 of 16th November 1973 extends the validity of Act No. 158 of 17th May 1963 on compensation for damage caused by the operation of nuclear ships which expired on 31st December 1973. The 1963 Act, which had already been extended in 1970, will remain in force until 31st December 1976. It is recalled that the legislation on the third party liability of operators of nuclear ships is closely based on the former Act on the third party liability of operators of land-based installations, whose provisions consequently apply mutatis mutandis to the operators of nuclear ships (see Nuclear Law Bulletin No. 7).

• *United Kingdom*

ORGANISATION AND STRUCTURE

Atomic Energy Authority (Weapons Group) Act 1973

This Act, which came into force on 6th March 1973 and modified Section 2 of the Atomic Energy Authority Act 1954 in respect of the Authority's power to do work on explosive nuclear devices, made provision for the transfer to the Secretary of State for Defence of the Weapons Group of the Atomic Energy Authority.

Section 1 sets out the activities, property, rights etc. of the Authority which were transferred on 1st April 1973 (the day appointed for that purpose by the Secretary of State). For constitutional reasons the necessary powers and duties are transferred simply to "the Secretary of State". The main establishment of the Weapons Group of the United Kingdom Atomic Energy Authority was the Atomic Weapons Research Establishment at Aldermaston, Berkshire. There was also a major out-station at Foulness, Essex, and some minor out-stations. There were excepted from this transfer any rights, liabilities and obligations under contracts of employment and pensions schemes, and also the patents and other industrial property rights as specified in the Schedule to the Act.

Section 2 terminates the employment by the Authority of the Weapons Group personnel and provides for their being taken into the Civil Service under arrangements made by the Secretary of State. The duties, powers and privileges of Special Constables (Police) previously employed by the Authority but now transferred to the Ministry of Defence, will remain unaffected.

Sections 3 and 4 contain supplementary provisions relating to the property, rights, liabilities and obligations transferred under the Act.

Section 5 provides for the use by the Secretary of State of technical information, patents and other industrial property rights, and for certain technical information in the possession of the Secretary of State or his employees, to be made available to the Authority.

Section 6 modifies the powers of the Authority contained in the Atomic Energy Authority Act 1954 (Section 2) by providing that the Authority shall not engage in any research, experiment, development or production work on explosive nuclear devices except in accordance with arrangements made with the Secretary of State.

FOOD IRRADIATION

Food (Control of Irradiation) (Amendment) Regulations 1972 - S.I. No. 205

These Regulations, which came into operation on 1st April 1972 amended the Food (Control of Irradiation) Regulations 1967, as amended by the Food (Control of Irradiation) (Amendment) Regulations 1969 by increasing the low level of irradiation that is permitted under the Regulations from 10 rad to 50 rad. The Regulations permit irradiation of food, which is certified to be intended for consumption by patients who require a sterile diet as an essential factor in their treatment and in respect of which the person who subjects it to ionizing radiation so notifies the Department of Health and Social Security and keeps records containing particulars of the certificate that the food is to be used by the above patients, the food subjected to irradiation, the quantity to which it has been subjected and the despatch of the food.

Similar Regulations have been made for Scotland (S.I. No. 307).

• *United States*

ORGANISATION AND STRUCTURE

Reorganisation of the Atomic Energy Commission

The U.S. Congress is presently considering a number of legislative proposals which would reorganise the energy functions of the U.S. Government. Among these is "The Energy Reorganization Act of 1973" (H.R. 11510, 93rd Congress) which the House of Representatives passed on 19th December 1973. Prior to enactment as law, the proposed Act must also be passed by the Senate and approved by the President.

The Energy Reorganization Act will, when enacted, reorganise and consolidate major energy research and development (R & D) functions in the Federal Government. The Bill provides for

- (1) The creation of an independent Energy Research and Development Administration (ERDA), which will encompass all non-regulatory functions of the Atomic Energy Commission and designated energy research and development functions transferred from other agencies.
- (2) Renaming the Atomic Energy Commission as the Nuclear Energy Commission (NEC), which will continue with the same membership, though in a much smaller organisation, to administer nuclear licensing and related regulatory functions.

Building upon the scientific and technical base of the present Atomic Energy Commission, ERDA will be a central agency for the conduct and coordination of major Federal energy R & D programmes. The Bill gives the new agency a broad charter to conduct or sponsor R & D on all energy resources and utilization processes. Technologies for extraction, conversion, storage, transmission and utilization are included. ERDA will be so organised and managed, that fossil fuel, advanced energy sources, conservation of energy, and environmental considerations will receive full recognition and appropriate emphasis along with nuclear R & D functions.

Under the terms of the Bill, the following offices or functions will be transferred to ERDA from other Federal Departments or agencies

- All the functions of the Atomic Energy Commission, except those relating to licensing and related regulatory matters
- Such functions of the Department of the Interior as relate to the Office of Coal Research, the fossil fuel energy R & D programmes conducted by the Bureau of Mines' "energy centers" and synthane plant; and research in underground electric power transmission.
- Such functions of the National Science Foundation as relate to development work in solar energy and geothermal power
- Such functions of the Environmental Protection Agency as relate to development and demonstration of alternative automotive power systems and technologies to control emissions from stationary sources using fossil fuels.

The mission of NEC will be to insure the protection of the public and environment against nuclear health and safety risks associated with the use of nuclear materials and facilities and against unlawful diversion of nuclear materials under regulatory control. The five-member AEC, including its staff offices, licensing boards, and regulatory dictatorates, will form the nucleus of NEC, which will be an independent regulatory commission responsible for licensing of civilian use of nuclear power and materials.

REGIME OF NUCLEAR INSTALLATIONS

New AEC general siting guides for nuclear plants

The United States Atomic Energy Commission has issued, and will continue to issue, Regulatory Guides in order to describe and make available to the public methods acceptable to the AEC regulatory staff of implementing specific parts of the Commission's Regulations to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. These Guides do not substitute the Regulations and compliance with them is not required. Methods and solutions different from those set out in the Guides will be acceptable if they provide a basis for the findings required before the Commissions may issue or continue a permit or licence.

These Guides are issued in ten broad divisions

- | | |
|-----------------------------------|------------------------|
| 1. Power Reactors | 6. Products |
| 2. Research and Test Factors | 7. Transportation |
| 3. Fuels and Materials Facilities | 8. Occupational Health |
| 4. Environmental and Siting | 9. Antitrust Review |
| 5. Materials and Plant Protection | 10. General |

In division 4 three Guides have been published so far.

- (a) Regulatory Guide 4.1 (18th January 1973) "Measuring and Reporting of Radioactivity in the Environs of Nuclear Power Plants".

This Guide describes an acceptable basis for designing a programme to measure and report levels of radiation and radioactivity in the plant environs. The provisions and principles in ICRP Publication 7 pertaining to the releases of radioactivity during normal plant operation should be used as additional guidance in developing a programme of this nature. Licensees of nuclear production and utilization facilities have to submit such a report semi-annually pursuant to sub-paragraph 2(a) of paragraph 50.36(a) of 10 Code of Federal Regulations (CFR) Part 50.

- (b) Regulatory Guide 4.2 (2nd March 1973) "Preparation of Environmental Reports for Nuclear Power Plants".

This Guide describes in considerable detail the standard format and content of the environmental reports to be submitted by the applicant for a construction permit and an operating licence for a nuclear production or utilization facility. Pursuant to paragraph 50.30(f) of 10 CFR Part 50 and Appendix D thereto, two environmental reports are required. The first one is the "Applicant's Environmental Report - Construction Permit Stage" which must be submitted in conjunction with the construction permit application. The second one is the "Applicant's Environmental Report - Operating Licence Stage" which must be submitted later in conjunction with the operating licence application and is, in effect, an updating of the first one. These reports must comply with the National Environmental Policy Act (NEPA) which

entered into force on 1st January 1970, as interpreted by the U.S. Court of Appeals for the District of Columbia in the Calvert Cliffs case (see NLB No. 8 and Mr. Abel's Article in this Bulletin) and implemented in the revised version of Appendix D.

The Guide recommends that the environmental reports be divided into the following 13 chapters: Purpose of the proposed facility; the site; the plant; environmental effects of the site preparation, plant and transmission facilities construction; environmental effects of plant operation; effluent and environmental measurements and monitoring programmes; environmental effects of accidents economic and social effects of plant construction and operation, alternative energy sources and sites, plant design alternatives; summary benefit-cost analysis; environmental approvals and consultations, references.

- (c) Regulatory Guide 4.3 (September 1973) "Measurements of Radionuclides in the Environment - Analysis of I-131 in Milk" This Guide has been issued to assist licensees in making the required surveys and reports; it deals with a specific aspect of Regulatory Guide 4.1.

The AEC has further published a draft report entitled "General Environmental Siting Guides for Nuclear Power Plants - Topics and Bases". The topics considered are geology, atmospheric factors, hydrology, ecology, public exposure to radiation, land use, human interest factors and esthetics. This document was prepared to provide a basis for discussion by interested persons. All comments that are received will be considered in the development of environmental siting guides by the AEC.

Licensing Procedure

A bill "to amend the Atomic Energy Act of 1954 to provide for improved procedures for planning and environmental review of proposed nuclear power plants, and for other purposes" (H.R. 12923) has been introduced. The main features of the Bill, which has not yet been formally approved by the AEC or by the Administration, are as follows

The AEC may enter into an agreement with any State agency or regional agency under which such agencies shall conduct an environmental review of and shall issue or deny an application for a site certificate for any proposed nuclear power reactor site in the State or region with respect to which such agency has jurisdiction (new Section 275 of the Atomic Energy Act). The AEC review of any application for a construction permit for a nuclear power reactor shall be completed, to the extent practicable, within one year from the date of filing (amendment to Section 185). A proposed amendment to Section 189(a) is designed to speed up the hearing process. Further amendments deal with early site approval and standardization (Section 275), interstate co-operation and compacts for the purpose of resolving siting delays and promoting uniform State laws for nuclear power plant sites (Section 276), nuclear power park site survey (Section 277), and long-range planning (Section 278).

The AEC has published a notice of proposed rule-making (Federal Register, Vol. 39, No. 25 of 5th February 1974). If approved, this rule would amend Parts 2 and 50 of 10 CFR to permit an applicant for a construction permit, under certain circumstances, to perform cer-

tain excavation and preparation activities on-site prior to issuance of a construction permit.

The Commission has adopted "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors" and ECCS evaluation models (10 CFR 50 paragraph 50.46 and Appendix K).

CASE LAW AND ADMINISTRATIVE DECISIONS

CASE LAW

• *Germany*

LICENSING OF NUCLEAR INSTALLATIONS

Introduction

Pursuant to Section 7(a) of the Atomic Energy Act (Atomgesetz), the licensing authority may render, upon application, a provisional decision regarding certain licensing conditions, in particular the choice of the site for the nuclear installation. When this decision has become effective and final, third parties are barred from objecting to the licence in the subsequent licensing procedure on the basis of facts which had already or could have been put forward after the records had been made available to the public or the decision had been published [Section 7(b) of the Act].

Pursuant to Section 80 of the Code of Administrative Procedure (Verwaltungsgerichtsordnung) complaints against administrative acts and decisions have a suspending effect. This is not the case, inter alia, if the agency or authority concerned has ordered the immediate effect of its act or decision as being in the public interest or in the preponderant interest of a party. Parties having filed (or intending to file) a complaint against such acts or decisions may apply to the competent administrative court to restore the suspending effect of their complaint. The court must then decide on such application in a preliminary and summary proceeding which is separate from the main procedure on the complaint.

The Case

By decision of 7th September 1972, the two competent Ministries of the Land Schleswig-Holstein granted provisional site approval to two utility companies stating that the site chosen in Geesthacht/Kümmel on the Elbe river was suitable for the construction of a nuclear power plant

with a boiling water reactor of a thermal capacity of 3,690 MW (1300MWe). Immediate effect was given to the decision. The decision stated expressly that the provisional site approval did not relate to the design of the nuclear power plant nor did it prejudice the licences required pursuant to other provisions. The decision stated further that it would have to be proved by independent experts that the operation of the nuclear power plant at the site chosen would be possible with direct river water cooling, taking into account all aspects of water economy and environmental protection; if that were not the case, it would have to be proved that the construction and operation of cooling towers were not objectionable from a legal or technical point of view nor would they be against the public interest.

The "Weltbund zum Schutze des Lebens e.V." (World Federation for the Protection of Life), a private association registered in the Federal Republic of Germany, and four citizens living in the vicinity of the site, filed complaints against this decision in the Administrative Court for the Land Schleswig-Holstein and applied for restoration of the suspending effect of their complaint. By Decree of 4th April 1973 the Administrative Court denied the application. All applicants appealed against this decree. The Administrative Court of Appeals rejected the appeals on 14th September 1973.

As regards the appeal of the Association, this was rejected as inadmissible, as this appellant was not entitled to file a complaint against the provisional site approval. The Court of Appeals stated that the provisional site approval did not affect the Association's purposes, as laid down in its statute, to promote the preservation of a healthy life for man, fauna and flora as well as their environment.

The applications of the four other appellants were held admissible but unfounded. The Court stated the principle that a provisional site approval may be granted only if, a priori, no insurmountable legal obstacles stand in the way of the planned installation. The success of the application to restore the suspending effect of the complaint would depend, firstly, on the question whether, in the light of the present stage of the proceedings, there was a preponderance of arguments militating in favour of a success of the complaint. The Court answered this question in the negative, as the arguments of the appellants were not of such a nature as to raise prevailing doubts about the legality of the provisional site approval. Based on the opinion of experts, the Court rejected the argument that the meteorological conditions had not duly been taken into account by the licensing authority. The appellants had further argued that the hydrological situation would oppose a positive general judgment concerning the planned installation, as the installation would use the water of the Elbe river and no joint cooling capacity plan for this river could at present be developed in co-operation with the two other riparian States, the Czechoslovak Socialist Republic and the German Democratic Republic. In this respect the Court referred to the restriction contained in the provisional site approval and stated that the utility companies would bear the full financial and economic risk that neither cooling system would be realised at the site in question without violating the law and the public interest. At any rate, at the present stage of proceedings, it could not be assumed that both systems were contrary to law and public interest. This question would have to be decided in the main proceeding.

The Court equally rejected a number of other arguments put forward by the appellants to support their doubts about the legality of the provisional site approval, such as incorrect calculations concerning the population affected by the plant and the danger of chemical nuisance.

As it could not be assumed, at the present stage of the proceedings, that the complaint would be successful, the Court concluded that a decision must be based on weighing the interests of the parties. The Court decided, in accordance with the lower Court's opinion, that the public interest in securing the supply of electricity in the years from 1977/78 onwards and the economic interests of the utility companies outweighed the interests of the applicants/appellants. The utility companies had shown that the additional demand for electricity to be expected in 1978 could only be met by the construction of the nuclear power plant in question. The Court rejected the appellants' argument that there was no public interest in expanding the supply of electricity. The appellants had based their denial of public interest in the immediate effect of the provisional site approval on basic considerations. They had argued that the planned nuclear power plant would not be necessary if the licensing authorities (the opponents) would use their influence to change the consumer-oriented mentality of the population and the utility companies' strive towards profit and maximization of production and if the opponents would live up to their duty to improve the quality of life of the population by saving energy. The Court refused to decide on these questions and remarked that the opponents' overall concept, oriented towards an increasing demand for electricity would make it also possible, in a more distant future, to replace energies more dangerous to the environment by electricity.

The Court held further that the interest of the utility companies in not having to suffer considerable financial losses through a further delay in the licensing procedure was prevailing over that of the appellants.

• *Norway*

LIABILITY FOR DAMAGE RESULTING FROM WORK INVOLVING IONIZING RADIATION

On 13th December 1973, the local Court of Notodden pronounced judgment in a case involving damage claims for personal injury and loss of income due to the death of the wage earner. Personal injury as well as death of the wage earner were allegedly caused by ionizing radiation received during work.

The facts of the case may be summarised as follows. In 1958, Olav Bergskås was engaged in a radiographic inspection of steel weldings in a Norwegian power station. In all, 243 X-ray films were taken during three periods. On 17th February 1959 Mr. Bergskås' wife gave birth to twins, one was stillborn and the second was born without his lower left arm. In May 1965 it was established that Mr. Bergskås suffered from myelogenous leukemia, from which he died on 1st August 1967.

Proceedings were subsequently brought principally against the firm which had carried out the radiographic inspection, claiming compensation for injury sustained during the course of work which involved ionizing radiation. The claim covered loss of income for

Mr. Bergskås himself during illness prior to his death, loss of future earning capacity for his son due to his congenital physical deformity and loss of income for the wife due to the death of the wage earner.

The plaintiffs contended that the defendant was guilty of negligence since Mr. Bergskås had been unnecessarily exposed to dangerous radiation during his work and that his injury and his son's malformation were the result of this radiation. Alternatively, it was contended that the defendant should be held absolutely liable in this case regardless of any question of guilt. This contention is based on the Norwegian law of torts which recognizes an unwritten rule establishing absolute liability in certain fields, especially in cases of dangerous activities, i.e. activities which involve a risk of causing damage which is both of a distinct and extraordinary nature, in other words, in cases where the accident risk clearly exceeds such hazards as are to be expected in daily life.

The defendant asserted that its employees had proceeded in conformity with the guidelines which were applicable in 1958 for radiographic inspection photography and that there was no evidence that the deceased had been exposed to dangerous radiation. The claim for damages, therefore, could not be based on negligence. In addition the defendant contended that there was no causal connection between the radiation and the injuries which had occurred. Finally, the defendant denied that there was any basis for establishing absolute liability in this case.

The Court examined in greater detail the possible causes of Mr. Bergskås' leukemia and his son's congenital injury. It found that Mr. Bergskås had undoubtedly been exposed to a series of minor radiation doses over a period of several months. Various experts had been called upon to determine the radiation dose to which Mr. Bergskås had been exposed. There was no certainty as to the exact dose of radiation received and the experts' views diverged on this question. They agreed, however, that this was a case of chronic myelogenous leukemia. They also accepted the defendant's acknowledgement of the fact that some radiation had taken place. The question in doubt among the experts centred on whether radiation could have been the cause of Mr. Bergskås' death from chronic myelogenous leukemia. This element of doubt was due to the fact that the calculation of the radiation doses received could not be determined with accuracy and the result of the calculation could be influenced by variations in data which were given for the calculation.

On the basis of the experts' calculations, which included calculations of radiation doses as well as evaluation of the probable cause of the son's malformation, the Court found that it would have to take due account of the possibility that Mr. Bergskås' leukemia and his son's congenital deformity were caused by the radiation to which he had been exposed in the course of the radiographic inspection and which had taken place 60 - 75 days prior to conception. The Court based this opinion on the fact that during the radiographic inspection process Mr. Bergskås had, on some occasions, come into the primary radiation beam and otherwise been within the danger area near the X-ray apparatus.

As to the radiation dose received, the Court observed that, on the basis of the maximum tension in the X-ray tube and of statements made by Mr. Bergskås, one expert had concluded that Mr. Bergskås had received a dose of about 40 rads to the gonads and about 10 rads to the bloodforming organs. The defendant had calculated that the dose to the gonads could only have amounted to 12 rads and the dose to the bloodforming organs to approximately 3 rads, taking into account that lower tensions than the maximum had been used.

The Court stated that it could not determine with any degree of certainty the amount of radiation Mr. Bergskås had received, but that it had arrived at the conclusion that a 5-second exposure from the primary radiation beam at pelvis level would give a radiation dose of approximately 1 rad to the gonads and some tenths of 1 rad to the bloodforming organs. Against this background, and in view of the fact that Mr. Bergskås had been exposed to primary radiation several times and furthermore had on occasion been in the dangerous exposure area, the Court found that Mr. Bergskås had been exposed to unnecessary radiation to a significant extent.

On the basis of statements by Mr. Bergskås concerning maximum radiation doses received, the experts also estimated the degree of probability of a causal connection between the radiation and Mr. Bergskås' leukemia as well as his son's congenital malformation. As regards Mr. Bergskås, the experts arrived at different degrees of probability of his leukemia being caused by radiation, but on the whole they agreed that the probability was somewhat over 50%. As to the son, the experts concluded that the probable degree of causal connection was 50%. Even in the absence of firm medical proof of causal connection between radiation and the injuries, the Court decided that a causal connection "was the most likely answer and concluded that this causal connection must be duly taken into account".

In addition, the Court found that the employees of the firm had not observed the safety precautions required of them during their radiographic inspection work. As a result, the Court held that the firm was guilty of negligence and therefore liable in tort. In consequence the firm was ordered to pay damages, which were apportioned as follows 240,000 Norwegian kr. to Mr. Bergskås' wife (divided into 60,000 Norwegian kr. for her husband's loss of income from the time he became ill until his death, and 180,000 Norwegian kr. for loss of income due to the death of her husband) and 150,000 Norwegian kr. to Mr. Bergskås' son for loss in future earning capacity. This decision is an example of the presently prevailing tendency of the courts to grant the benefit of doubt to presumed victims of such type of injury (cf. Case law "Mrs. Majoni", Nuclear Law Bulletin No. 1). Since the firm decided not to appeal, the judgment of the Court is final.

• *Switzerland*

FEDERAL COURT REJECTS COMPLAINTS AGAINST CONSTRUCTION PERMIT FOR KAISERAUGST NUCLEAR POWER PLANT

The decision of the Federal Court of Lausanne of 13th August 1973 has probably put an end to more than two years of struggle by a consortium of Swiss, French and German firms to obtain from the community of Kaiseraugst a construction permit for a nuclear power plant. The Federal Court ruling is of significance not only for the particular power plant in question but also for the Swiss licensing procedure for nuclear installations in general, as it has clarified the competence of the various federal, cantonal and community authorities involved in the

licencing procedure, and has given exclusive competence to the federal authorities not only in the licensing procedure itself but also with respect to certain environmental matters.

Background

In 1967 the "Study Consortium Nuclear Power Plant Kaiseraugst" (Studienkonsortium Kernkraftwerk Kaiseraugst), was founded which eventually consisted of thirteen Swiss, French and German firms. The Consortium was set up with a view to constructing a nuclear power reactor of the pressurized or boiling water type with a capacity of approximately 600 MWe on the territory of the community of Kaiseraugst, a small village situated in the Rhine Valley not far from the city of Basel. On 15th December 1969, the Federal Department of Transport and Energy granted a site permit to the Consortium in accordance with Article 4 of the Atomic Energy Act of 1959. Thereafter, certain modifications had to be made to the licence. As direct cooling through the waters of the Rhine and Aare rivers had been prohibited, the originally planned river water cooling had to be replaced by two cooling towers with a height of 150m and a base diameter of 92m; the capacity of the reactor was raised to approximately 850 MWe, and the site was slightly changed. All these modifications were approved by the Federal Department of Transport and Energy after it had received the positive advice of the Federal Commission for the Safety of Nuclear Installations, the Federal Commission for the Protection of Nature and the Administrative Council (Regierungsrat) of the Canton of Aargau.

On 6th July 1971 the Consortium applied for a construction licence (which is required by cantonal law) from the Community Council of Kaiseraugst. Several citizens of Kaiseraugst filed objections against the application. In an extraordinary community assembly the project was rejected by 279 to 88 votes, mainly because it was feared that the cooling towers might have a negative influence on the climate and the environment. The Community Council of Kaiseraugst rejected the application on 19th July 1972 on the main grounds that the carrying out of the project was contrary to "a clear and unequivocal will of the citizens of Kaiseraugst."

Upon complaint by the Consortium, the Administrative Council of the Canton of Aargau quashed the Community Council's decision and instructed it to grant the requested licence under certain conditions.

The Administrative Council's decision was appealed against by

1. The Community Council of Kaiseraugst;
2. The Community Council of Rheinfelden, a neighbouring community;
3. The Community Council of Basel-Stadt, the neighbouring Canton; and
4. Nine citizens of Kaiseraugst who own real property in the vicinity of the projected nuclear power plant.

All appeals were rejected by the Administrative Court for the Canton of Aargau on 10th May 1973. All appellants instituted further appeals procedures in the Federal Court of Lausanne.

The Federal Court's decision

The Federal Court, by judgments of 26th July 1973, rejected the first three appeals on formal grounds. It considered only the fourth appeal on its merits but rejected it equally by judgment of 13th August 1973. It is this decision that contains the significant rulings referred to above.

The appellants had argued that the Cantonal Council's decision violated the autonomy of the community of Kaiseraugst. The Federal Court stated that the individual citizen, when claiming a violation of his constitutional rights, may invoke, as a preliminary question, the violation of the autonomy of communities. However, the Court confirmed the Cantonal Council's and the Administrative Court's view that the Cantonal Council was entitled to examine freely the Community Council's decision and to substitute its discretion for that of the latter, limited only by the prohibition of arbitrariness.

The appellants had argued further that the constitutional guarantee of private property (Article 4 of the Federal Constitution) had been violated by non-observance of cantonal building regulations. The Federal Court conceded that the neighbour directly affected by a building authorization was entitled to appeal against such a decision insofar as there were regulations intended to protect not only the general public but also the neighbour concerned. The Court nevertheless rejected this argument on the grounds that this question was not to be examined in the cantonal building authorization procedure. The Court confirmed the ruling of the Cantonal Council and of the Administrative Court that the Bund was exclusively competent to legislate in the field of nuclear energy (Article 24 quinquies of the Federal Constitution) and that the Cantons may not interfere therewith. Questions which had to be examined and decided upon in the federal licensing procedure could not at the same time be subject to an additional cantonal licensing procedure. The Federal Court states in this respect:

"In view of the great importance that the use of nuclear energy will have in the Swiss energy budget and taking account of the particular problems connected with the operation of nuclear installations, with which to cope adequately many cantons are not equipped, it proved to be indispensable to create uniform federal regulations for the construction and operation of nuclear installations and to entrust federal organs with their implementation; this is all the more true as the operation of a nuclear installation affects not only the interests of the canton where the installation is situated but also neighbouring cantons and foreign countries. This competence is intended to guarantee that in the case of the construction and installation of nuclear installations all safety measures are being taken that are possible and necessary according to the latest state of research and technology; on the other hand such competence shall prevent that the use of nuclear energy, which is in the interest of the whole country, will be unnecessarily restricted by unreasonable conditions and requirements. In this respect the Atomic Energy Act has the purpose of promoting the use of nuclear energy and making the construction of nuclear installations possible."

While the Court does not see the need in the present procedure to pronounce itself on the overall limits between cantonal and federal competence with respect to nuclear installations, it goes on to say that "not only the nuclear safety of the installations, but also the question of environmental protection, as far as the meteorological impacts and noises emanating from the cooling towers are concerned, have to be examined exclusively in the procedure pursuant to the Atomic Energy Act. The cooling system is an integral part of the nuclear power plant, its design is technically determined and its impacts on the environment are directly related to the operation of the plant... The competent Federal authorities have to examine, in the licensing procedure as well as during the exercise of their control, whether with respect to the cooling system all reasonable measures have been taken to protect man, property and important interests... It would be contrary to the purpose of the Atomic Energy Act if the Canton, on the basis of cantonal nuisance regulations aimed at the protection of the public or individual neighbours, i.e. on grounds already to be examined in the procedure pursuant to the Atomic Energy Act, could enforce technical changes of the project or even prevent its realization. As far as impacts are concerned, which are directly related to the technical design or the operation of the nuclear power plant, there is no room for the application of cantonal nuisance regulations." In this respect the Federal Court does not follow the Administrative Court's opinion which had assigned to the cantonal authorities an independent right of examining these questions.

The Federal Court leaves the question unanswered whether and to what extent the Federal Constitution and the Atomic Energy Act restrict the cantons in their competence in other respects, as the Court regards all other complaints either inadmissible or unfounded.

The appellants had argued that the dimensions of the two planned cooling towers contravened the zoning regulations of the community of Kaiseraugst. The Federal Court argued that even the two appellants whose real property would be closest to the towers had no right to appeal, as the towers would not interfere unreasonably with their enjoyment of daylight. Even if it were assumed that the appellants had such a right, the Cantonal Council, when authorizing the construction of the cooling towers, had used its discretion within the applicable guidelines of the community of Kaiseraugst without arbitrariness.

The appellants' argument that the nuclear power plant would violate cantonal and communal provisions on the protection of nature is considered as inadmissible by the Federal Court. The provisions of the aesthetic integration of buildings into the environment were aimed at protecting the interests of the general public and not of individual neighbours.

As a consequence of the Federal Court's judgment, the Community Council of Kaiseraugst granted the construction authorization on 5th December 1973, which was confirmed by the Administrative Council of the Canton of Aargau on 28th January 1974. On 29th January 1974 the Kernkraftwerk Kaiseraugst A.G. was founded with a present capital of one hundred million Swiss francs, which will be successively increased to four hundred and fifty million Swiss francs. The company's shareholders are the members of the former Study Consortium Kaiseraugst.

It is to be noted that the Federal Court's judgment is, formally speaking, only of a preliminary nature, as it does not terminate the building authorization procedure. A new appeals procedure can be instituted against the Community Council's decision to grant the requested

authorization. If this were the case, it is doubtful, in view of the fundamental nature of the Federal Court's judgment, whether questions other than those of detail would be examined during such an appeals procedure.

INTERNATIONAL ORGANISATIONS AND AGREEMENTS

INTERNATIONAL ORGANISATIONS

- *Nuclear Energy Agency*

INTERIM RADIATION PROTECTION STANDARDS FOR THE DESIGN, CONSTRUCTION, TESTING AND CONTROL OF RADIOISOTOPIC CARDIAC PACEMAKERS

The Steering Committee for Nuclear Energy approved on 24th April 1974 Interim Radiation Protection Standards for the Design, Construction, Testing and Control of Radioisotopic Cardiac Pacemakers, which will be subject to review in the light of research and practical experience and, in any event, before unlimited use of radioisotopic cardiac pacemakers can be authorised. These Standards are expected to be adopted in the coming months by the OECD Council. They are intended to provide a basis for national authorities to establish practices and procedures by which the radiation risks to the public, i.e. non-patients, from radioisotopic powered pacemakers can be kept to a minimum.

To this end the Standards lay down a number of design safety requirements including provisions concerning the physical and chemical form of the fuel, the containment and the maximum permissible dose of radiation which may be delivered externally by the pacemaker. In order to enable identification of the pacemaker, its radioisotopic source, the battery housing and the pacemaker housing must be marked appropriately, i.e. with the basic trefoil symbol and the words "radioactive pacemaker". In addition, the battery housing and the pacemaker housing must show the words "contact Health Authority for disposal", the year of sealing of the principal radioisotope at the time of sealing of the radioactive source and the name of the manufacturer and serial number of the battery and the pacemaker.

The Standards also provide that, in countries where this has not yet been done, a licensing system should be set up for manufacturers and distributors to manufacture, receive, handle and store radioisotopic

sources and to build or repair pacemakers, and that implantation of radioisotopic pacemakers may only be performed with the formal authorization of the competent authority in each country.

Once a pacemaker has been implanted it remains subject to certain regulatory and administrative controls, which are designed to ensure the maximum probability of recovery of the radioisotopic source on death of the bearer or prior removal and which should draw attention to potential radiation hazards in the event of an accident involving a pacemaker bearer. As a first measure the countries have to ensure in their legislation that, in the case of death of the bearer or prior removal of the pacemaker, the radioactive source is recovered. Provisions to this effect may include a requirement that the bearer formally authorises the removal of the pacemaker at death and may also specify, if appropriate, that removal is in the public interest. Secondly, the countries are invited to establish similar systems of pacemaker bearer identification. These systems should consist of a bracelet containing the words "radioactive pacemaker", the name of the bearer and the telephone number where medical information on the bearer may be obtained, and an identity card with the name and address of the pacemaker bearer and the telephone number of the hospital to be contacted in case of an accident.

Finally, the Standards recommend that each OECD country communicate the administrative measures taken to implement the above control procedures, together with the names and addresses of the competent authorities, to the Director General of NEA, who will then inform the other countries in order to assist the authorities of each country in making the necessary contacts in the case of death or accident during international travel of a pacemaker bearer.

The Appendix to the Standards sets out prototype testing procedures which must demonstrate that the design safety requirements are met and also provides a quality control programme to ensure that each production unit will be a replica of units which have successfully passed the required prototype tests.

It has been suggested that, when the Standards are adopted by the OECD Council, the IAEA might take appropriate steps for proposing their adoption by the Board of Governors so that the Standards can be applied on a world-wide basis.

• *International Atomic Energy Agency*

SAFEGUARDS

Eighty-three States have now ratified or acceded to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Since the last report in this Bulletin, the Sudan and Gabon have become party to the Treaty.

At its meeting in September 1973 the Board of Governors approved the Safeguards Agreement between Bolivia and the Agency in connection with the Treaty for the Prohibition of Nuclear Weapons in Latin America and the NPT. Similar agreements with Haiti and Nicaragua were also approved provisionally and subsequently this approval was confirmed. At its meeting in February 1974 the Board approved safeguards agreements in connection with NPT to be concluded with Australia and Thailand respectively.

A total of forty-six safeguards agreements (including that with the Non-Nuclear-Weapons-States Members of Euratom and the Commission) in connection with NPT have now been approved by the Board of Governors. Of these, forty have been signed and thirty have already come into force.

ADVISORY SERVICES AND TRAINING IN NUCLEAR LAW

Under the IAEA technical assistance programme for 1973, a number of staff members were provided as experts to advise the Government of Iran on the feasibility of introducing nuclear power into the electricity system by 1983 and on the preparation of appropriate legislation. A member of the Legal Division was thus assigned to the Ministry of Water and Power in Teheran in October 1973 for detailed discussions with the Iranian authorities on the legal framework and regulatory steps required for licensing nuclear power plants. After approval by the authorities, the recommendations resulting from such discussions will serve as guidelines for the drafting of legislation.

The IAEA also provided the advisory services of a member of its Legal Division to the Governments of Singapore and the Philippines in November-December 1973 in conjunction with their nuclear power projects. In Singapore discussions were held in relation to current legislation on radioisotopic applications and further legislation required for a nuclear power programme. Subsequently, two sets of draft regulations on radiation protection and for the safe transport of radioactive materials, prepared by the Singapore authorities in 1973, were reviewed at their request by the IAEA Secretariat prior to promulgation by the authorities early this year.

In the Philippines, the IAEA Secretariat assisted the Atomic Energy Commission in the final review of draft regulations for the licensing of atomic energy facilities, expected to be issued by the Commission in the course of this year in connection with the Government's decision to implement the first nuclear power project in the country.

• *Euratom*

INCIDENCE ON THE EURATOM TREATY OF THE ACCESSION OF DENMARK, IRELAND AND THE UNITED KINGDOM

Geographical Scope of Treaty

Article 27 of the Accession Treaty of these three States had added a further paragraph to Article 198 of the Euratom Treaty and especially concern Denmark and the United Kingdom.

As regards Denmark, the Faroe Islands are excluded from the scope of the Treaty, unless otherwise declared before 31st December 1975

As regards the United Kingdom, the following are excluded the British zone in Cyprus as well as the countries and overseas territories having a special relationship with the United Kingdom which are not mentioned in Annex IV of the Treaty (amended by the Accession Treaty) setting up the EEC. This applies to Hong-Kong or Rhodesia for instance

On the other hand, the Treaty applies to the Channel Islands and the Isle of Man, but only insofar as necessary to ensure application of the regime for these Islands, provided by the Accession Treaty (cf. Protocol No. 3, Article 3).

Dissemination of Information

Protocols No 25, 26 and 28 attached to the Accession Treaty, grant the three adherent Member States as well as their nationals or undertakings, within the meaning of the Treaty, access to information acquired by the Commission prior to as well as since their accession. In return, adherent States have undertaken to provide the Commission with an equivalent amount of information.

AGREEMENTS

• *Germany*

RATIFICATION OF CONVENTION No. 115 CONCERNING THE PROTECTION OF WORKERS AGAINST IONIZING RADIATIONS

On 26th December 1973, the Federal Republic of Germany ratified the Convention concerning the protection of workers against ionizing radiations.

This Convention, which came into force on 17th June 1962 and to date has been ratified by 28 countries, applies to all activities involving exposure of workers to ionizing radiations in the course of their work. In order to restrict the exposure of workers to ionizing radiations and also to avoid any unnecessary exposure, the Convention provides that maximum permissible radiation doses must be fixed for workers directly or indirectly engaged in radiation work and that such doses are to be kept under constant review in the light of current knowledge. The Convention also lays down that medical examinations must be organised at regular intervals and workers must undergo appropriate monitoring; such monitoring equally applies to workplaces to ascertain that the applicable levels are respected.

The countries having ratified Convention No. 115 to date are as follows:

Barbados	France	Italy	Sweden
Belgium	Germany	Japan	Switzerland
Brazil	Ghana	Netherlands	Syria
Byelorussia	Guiana	Norway	Turkey
Czechoslovakia	Guinea	Paraguay	Ukraine
Egypt	Hungary	Poland	United Kingdom
Ecuador	Irak	Spain	USSR

• *France - Switzerland*

CONVENTION CONCERNING THE EXTENSION ONTO FRENCH TERRITORY OF THE ESTATE OF THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

On 13th September 1965, a Convention was concluded between the Government of the French Republic and the Federal Council of the Swiss Confederation concerning the extension onto French territory of the estate of the European Organization for Nuclear Research (CERN)

Following the CERN Council's decision of 19th February 1971 to carry out its 300 Gev programme, France and Switzerland were called upon to make available to CERN the additional land required and to amend application of the above Convention by an exchange of letters. This French-Swiss exchange of letters of 18th June and 16th July 1973 was published by Decree No. 1070 of 22nd November 1973 (Official Gazette of the French Republic of 2nd December 1973).

• *Netherlands*

RATIFICATION OF THE BRUSSELS CONVENTION OF 1962 ON THE LIABILITY OF OPERATORS OF NUCLEAR SHIPS

The Netherlands Parliament has approved ratification of the Brussels Convention of 25th May 1962 on the Liability of Operators of Nuclear Ships. The Ratification Act is dated 24th October 1973 (No 535) and was published in the Official Gazette on 27th November 1973.

The instruments of ratification were deposited on 20th March 1974 with the Belgian Ministry for Foreign Affairs. This new ratification has no effect on the entry into force of the Convention, as in accordance with its Article XXIV, the Convention can only become operative after two States have deposited their instruments of ratification, one of which States at least having authorised operation of a nuclear ship. This requirement has not yet been met.

To date, this Convention has been signed by the following countries:

Belgium	Ireland	Panama
The Republic of China (Taiwan)	Liberia	The Philippines
The Republic of Korea	Malaysia	Portugal
India	Monaco	The United Arab Republic
Indonesia	The Netherlands	Yugoslavia

The Convention has been ratified by

Portugal	31st July 1968
The Netherlands	20th March 1974

The present status of accessions is the following:

The Republic of Malagasy	13th July 1965
Zaire	17th July 1967

• *Sweden*

BRUSSELS CONVENTION OF 17TH DECEMBER 1971

The Swedish Government recently deposited before Parliament a Bill amending the Nuclear Liability Act of 8th March 1968, to enable ratification of the Brussels Convention of 1971 relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material.

• *NEA - Euratom*

EXTENSION OF THE AGREEMENT BETWEEN EURATOM AND OECD ON THE COMPUTER PROGRAM LIBRARY

The Agreement concluded on 17th June 1964 between the European Atomic Energy Community and the Organisation for Economic Co-operation and Development on the Establishment at Ispra of the NEA Computer Program Library has just been extended to 31st December 1976. This Agreement which had already been extended in 1967 for an interim period, pending the adoption by Euratom of a new activity programme, was again extended by an exchange of letters between OECD and the Commission of the European Communities, dated 10th December 1973 and 3rd January 1974 respectively.

The NEA Computer Program Library (CPL) is located at the Ispra (Italy) Establishment of the Euratom Joint Research Centre, within the buildings of the European Scientific Data Processing Centre (CETIS). The main purpose of the CPL is to improve communications between program authors and their users to make more economic and efficient use of the large computers available in Europe for atomic energy. To this end, the Library collects and disseminates computer program abstracts and descriptions and also tests them. On request, the Library also provides advice on programs suitable for given computer calculations.

• *International Conventions*

CONVENTION ON THE PROTECTION OF THE ENVIRONMENT BETWEEN DENMARK, FINLAND, NORWAY AND SWEDEN

This Convention, also called the Nordic Environmental Protection Convention was elaborated on the initiative of the Nordic Council and signed on 19th February 1974 in Stockholm. The main purpose of the Convention is to ensure that the environmental protection interests of the Nordic countries are given equal status in the national legislation of each country and by the national authorities concerned.

The Convention covers all activities undertaken in industrial installations which are potentially harmful to the environment in the territory of Contracting States and the corresponding continental shelf area. The nuisances referred to in the Convention also include ionizing radiations. The Convention provides, however, that it does not apply to transfrontier nuisances which are, or will be regulated by special agreement. This is primarily relevant in the case of nuclear installations situated on borders, for which guidelines were established in 1973 between the Nordic countries.

Under the Convention, any national of a Contracting State who is affected by an environmentally harmful activity originating in another Contracting State is entitled to institute administrative or legal proceedings in that State to end such nuisance or to obtain compensation therefor without any form of discrimination.

Each State shall appoint a special supervisory authority for the purpose of protection environmental interests in the country in conjunction with an environmentally harmful activity carried out in another Contracting State. This authority will be responsible for conducting mutual consultations between the countries concerned by the problem of pollution.

The Signatories to the Convention, which was deposited with the Swedish Ministry for Foreign Affairs, also adopted a Protocol concerning the interpretation of certain provisions of the Convention. The latter is a remarkable example of the high degree of co-operation achieved by the Nordic countries in the field of environmental protection, and also provides a novel solution to the increasingly preoccupying problem today of transfrontier pollution, especially that from nuclear activities.

CONVENTION FOR THE PREVENTION OF MARINE POLLUTION FROM LAND-BASED SOURCES

This Convention which was adopted recently in Paris will be opened for signature in June 1974 by all Western European Countries. The Convention, whose geographical scope is limited, covers marine pollution from waterways, coastal discharges and marine platforms. (For further details see the Note in Chapter V of this issue).

CONVENTION ON THE PROTECTION OF THE MARINE ENVIRONMENT OF THE BALTIC SEA AREA

This Convention, which was opened for signature in Helsinki on 22nd March 1974 by all the coastal countries of the Baltic Sea, covers various sources of pollution of the Baltic Sea. Radioactive materials are included among the noxious substances likely to create pollution within the meaning of the Convention. (For further details, also see the Note in Chapter V of the present issue).

• *Italy*

RATIFICATION OF THE PARIS CONVENTION AND OF THE BRUSSELS SUPPLEMENTARY CONVENTION

Act No. 109 of 12th February 1974 which was published on 27th April 1974, approves ratification by the Italian Government of the Paris Convention on Third Party Liability in the Field of Nuclear Energy of 29th July 1960 and its Additional Protocol, as well as of the Brussels Convention of 31st January 1963 Supplementary to the Paris Convention, together with its Additional Protocol.

When the respective instruments of ratification have been deposited, Italy will become the tenth Contracting Party to the Paris Convention, and the sixth Contracting Party to the Brussels Supplementary Convention. Thus, in accordance with the provisions of Article 20(c), the latter Convention will enter into force three months after the instrument of ratification has been deposited.

TEXTS

• *Norway*

REGULATIONS OF 9TH FEBRUARY 1973 CONCERNING THE ORGANISATION AND FUNCTIONS OF THE NUCLEAR ENERGY SAFETY AUTHORITY*

Section 1

Administratively the Nuclear Energy Safety Authority is subject to the Ministry of Industry.

Section 2

The Nuclear Energy Safety Authority shall be directed by an Executive Board. The Board shall consist of a Chairman, Deputy Chairman and five Board Members appointed by the King for a term of four years. For one or more Members of the Board personal deputies may likewise be appointed.

The King may also appoint Board Members with specialist qualifications. They shall serve on the Board when matters pertaining to their specialist field are being dealt with.

Section 3

Board meetings shall be held at the discretion of the Chairman, or if so requested by two Members. Normally five days' notice shall be given when Board meetings are summoned.

The Board shall have a quorum when the Chairman or the Deputy Chairman and three other Board Members mentioned in Section 2, first paragraph are present. Minutes shall be kept of the Board meetings. The Minutes shall be signed by all the Members present.

* Unofficial translation prepared by the Norwegian Authorities

Section 4

The Nuclear Energy Safety Authority shall have a Secretariat charged with the day-to-day conduct of business. The Secretariat shall have an Administrator with full responsibility and the necessary staff.

Section 5

The Board of the Nuclear Energy Safety Authority shall

- (1) perform those functions enjoined upon the Nuclear Energy Safety Authority in pursuance of Act No. 28 of 12th May 1972 concerning Nuclear Energy Activities;
- (2) participate in the preparatory work concerning choice of location for nuclear installations,
- (3) submit a recommendation concerning the appointment of the Secretariat's Administrator and other personnel as well as drawing up instructions for the Secretariat,
- (4) submit recommendations for engaging national and foreign consulting specialists; and
- (5) prepare proposals for annual budgets and submit annual reports and statements of account to the Ministry of Industry.

Section 6

The Secretariat shall

- (1) conduct the day-to-day operations of the Nuclear Energy Safety Authority, including the keeping of accounts and the preparation of the budget,
- (2) prepare the business of the Board meetings, where the Secretariat's Administrator shall act as the Board's Secretary; and
- (3) carry out such other duties as follow from the instructions for the Secretariat or as the Board may direct.

Section 7

Members of the Board of the Nuclear Energy Safety Authority, officials of the Secretariat and anyone else who, in the course of their professional duties, obtain knowledge of technical or business secrets or of other circumstances which are not public knowledge, are subject to the pledge of secrecy.

Section 8

The auditing of the accounts of the Nuclear Energy Safety Authority shall be performed by the Auditor General.

STUDIES AND ARTICLES

STUDIES

NOTE ON INTERNATIONAL CONVENTIONS RELATING TO RADIOACTIVE MARINE POLLUTION

The notion that the sea is no longer simply there for purposes of communication and should also be considered as a vast reservoir of natural resources, the preservation of which is the joint responsibility of the whole world is not in actual fact new - as far back as 1926, a Conference on marine pollution from oil was held in Washington - but this notion was only recently acknowledged by public opinion as well as governments.

The Torrey-Canyon Case in 1967 together with a number of other oil slick incidents these past years have suddenly made world public opinion realize the amplitude of the phenomenon of marine pollution, particularly from oil, and the irreversible nature of damage which pollution might bring to the marine environment. This has resulted in governments changing their traditional attitude in this field and adopting a policy of active prevention against the various causes of pollution to preserve the biological balance of the sea. This reaction is not only limited to the problem of oil but also seeks to remedy marine pollution from different sources, especially radioactive materials.

With the fast development of nuclear energy today, the question of the treatment, storage and disposal of radioactive wastes is becoming increasingly important, particularly as regards the control of radioactive waste disposal operations into the deep sea and liquid waste disposal operations from coastal installations. In addition, the expansion of maritime transport of nuclear substances and the more favourable prospects for nuclear powered navigation at present have also highlighted risks of accidental releases of radioactive materials into the marine environment. Nevertheless, the need for in-depth studies on the possible effects of deliberate or accidental discharges of radioactive products into the sea was acknowledged fairly early on, since several countries undertook radioactive dumping operations at the close of the second world war and the fallout from nuclear weapons tests in the atmosphere introduced a not inconsiderable quantity of radioactive materials into the marine environment.

As the sea is above all an international domain, several international organisations and especially those qualified in the field of the peaceful uses of nuclear energy have concentrated on studying these problems thoroughly during the past years to protect the marine environment, and for reasons of public safety (1).

Hazards to man may arise either from external irradiation by contact with sea water made radioactive through dilution of the products involved or with certain contaminated products or environments, or by absorption of radioactive products through contamination of the food chain.

The causes may of course be accidental or deliberate. The risk of accidental radioactive marine pollution arises mainly from radioactive materials transported by sea, from fuels used by nuclear-powered ships and from materials likely to be discharged by nuclear installations bordering on the sea. Isotopic generators for use in territorial waters or on the high seas (2) (in particular, the so-called ODAS Ocean Data Acquisition System), as well as various other radioisotopic applications may also be a source of accidental release. Deliberate causes have until now been military experiments and radioactive waste disposal operations into the sea.

The novel and special nature of the dangers of radioactive marine pollution as well as the need for prior in-depth study of its impact on the health of man and the integrity of the marine environment, together with the fact that scientific and technical means to remedy such pollution have had to be sought, explain why the rules of international law and domestic legislation were not adapted from the start to this particular problem and why it was necessary to elaborate new instruments to meet it (3).

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- (1) Disposal of Radioactive Waste, NEA Information Meeting, OECD, Paris 1972.
 - (2) Guide to the the Safe Design, Construction and Use of Radioisotopic Power Generators for Certain Land and Sea Applications. Report prepared by a Joint IAEA/NEA Working Party, Safety Series No 33
 - (3) As regards legal problems raised by the dumping of radioactive wastes at sea reference should be made to:
 - "Le rejet à la mer des déchets radioactifs" by Mr. J.P. Queneudec, *Annuaire français de Droit International*, 1965, p. 750 and seq.
 - "Le caractère admissible au regard du droit international du déversement en mer des déchets radioactifs", by Dr. N. Pelzer, *Cahiers du Droit de l'Energie Atomique* No 2, 1969.

Applicable Provisions in International Law

According to international law, the general principle of the freedom of the high seas (Mare Liberum), which was put forward as long ago as the 17th Century by the Dutchman Hugo Grotius and subsequently acknowledged universally was not seriously challenged by the Geneva Convention on the High Seas of 29th April 1958. Article 2 of that Convention sanctions the principle of the freedom of the seas while mitigating it: "these freedoms, and others which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the Freedom of the high seas". In actual fact, since the end of the second world war, international agreements to regulate the international use of the seas have multiplied and the high seas have become "res communis usus" rather than "res nullius". The creation of a specialized organisation, the Inter-Governmental Maritime Consultative Organization (IMCO) and the adoption of recent Conventions for the protection of the marine environment are an example of this tendency. This evolution towards a steadily developing international co-ordination is all the more necessary since the phenomenon of marine pollution, like most types of pollution, disregards frontiers and consequently defeats the traditional principle of the sole spatial powers of bordering States be they creators, or victims of pollution.

The only international provisions applicable to the special problem of radioactive pollution were, until recently, those of the above-mentioned Geneva Convention which provides (Article 25) that States, in collaboration with the competent international organisations, should take measures to prevent pollution of the sea by radioactive wastes (4). Given the lack of sufficient scientific knowledge on the subject, the Convention did not prohibit the discharge of radioactive waste explicitly and did not define the notion of pollution. Therefore, the Geneva Conference adopted a Resolution recommending that the International Atomic Energy Agency (IAEA) should study and promote the adoption of regulations on the dumping of radioactive materials into the sea to avoid this form of pollution. On the initiative of IAEA, this Resolution resulted in the creation of an Expert Panel which in February 1960 presented the so-called Brynielsson Report, named after the Chairman of the Panel, which formulated technical criteria applicable to radioactive waste disposal into the sea (5). At the legal level, the Study Group chaired by Professor Charles Rousseau and also set up under IAEA sponsorship, pre-

(4) "Every State shall take measures to prevent pollution of the seas from the dumping of radioactive waste, taking into account any standards and regulations which may be formulated by the competent international organizations. All States shall co-operate with competent international organizations in taking measures for the prevention of pollution of the seas or air space above, resulting from any activities with radioactive materials or other harmful agents".

(5) Radioactive Waste Disposal into the Sea, IAEA Safety Series No. 5, 1961

pared a report in 1963 on the legal aspects of radioactive waste disposal into the sea (6). However, there was no follow up of this report at diplomatic level.

It should also be recalled that there are several agreements such as the Antarctic Treaty (7) which prohibits (Article 5) the discharge of radioactive wastes as well as military experiments. However, the geographical scope of the treaty does not cover the high seas and consequently, is of no direct interest for this study.

For its part, the Euratom Treaty provides that Member States must communicate to each other through the Commission any measures they intend to take for the disposal of radioactive effluents, in order to determine whether such operations are likely to involve radioactive contamination of the water, soil or air space of another Member State (8). The Commission gives its opinion on these plans. In addition, the provisions of the Euratom Treaty were supplemented by a Recommendation of the Commission adopted on 16th November 1960, specifying the nature of the information to be supplied by Member States, particularly in respect of sea disposal.

On the other hand, the Moscow Treaty (9) of 5th August 1963 banning nuclear weapon tests, as well as the Treaty of 11th February 1971 (10) on the prohibition of the emplacement of nuclear weapons on the sea bed and the ocean floor contain no specific provisions on radioactive marine pollution, although the Preamble of the Moscow Treaty refers to the wish of Contracting Parties to put an end to the contamination of man's environment by radioactive substances.

In international case-law, and in particular since the arbitral judgment pronounced in 1941 between Canada and the United States concerning the Trail Smelter Case (Reports of International Arbitral Awards 111, p. 1905), the tendency has grown to consider that no State has the right to use its territory in a manner likely to cause damage on the territory of another State. It may be that the principles in this judgment concerning atmospheric pollution could be extended to radioactive pollution of territorial waters, and also of the high seas.

Finally, the United Nations Conference on the Human Environment held in Stockholm in June 1972 on the recommendation of the Joint Group of Experts on the scientific aspects of marine pollution (GESAMP), adopted

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- (6) Document DG/WDS/L.9.
 - (7) Antarctic Treaty signed in Washington on 1st December 1959
 - (8) Treaty establishing the European Atomic Energy Community (EURATOM) Chapter III, Article 37.
 - (9) Treaty banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water.
 - (10) Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof.

a Recommendation (11) in favour of establishing controls over marine pollution, discharges and in particular, radioactive pollution from nuclear ships and thermal marine pollution from land-based nuclear power stations, as well as elaborating appropriate international Conventions. It should also be pointed out that subsequently, the United Nations General Assembly adopted a Resolution (12) stressing the need for international action to preserve living resources in the marine environment.

In short, it was possible to deplore a relative legal vacuum in the field of limitation and international control of marine pollution by radioactive materials, until the adoption of several international conventions these past years and in fact these past months, has led to a practical reversal of the situation insofar as it is not always very easy to determine with accuracy to what degree these new Conventions apply to radioactive marine pollution and where such conventions tend to overlap. In general, these texts apply to all polluting agents without necessarily dealing with radioactive pollution specifically.

The Conventions covering radioactive marine pollution will now be considered by first taking the more general Conventions which mainly refer to pollution caused by ships and their cargo, Conventions relating to waste disposal operations from ships will then be reviewed, and finally, Conventions relating to marine pollution from other sources, and in particular from land-based sources. In addition, after the preventive aspects of the conventional system applying to radioactive pollution have been dealt with, a brief mention will be made of Conventions applying to compensation for damage caused by such pollution.

II

This Part deals with the hazards of marine pollution from radioactive substances transported by ships or resulting from the operation of nuclear ships.

Although the International Convention on the Safety of Life at Sea (SOLAS) (13) does not directly refer to protection of the marine environment, it should be mentioned, as subsequent Conventions on marine pollution, such as the one adopted in 1973 for example, have to some extent been based on its provisions on the carriage of dangerous goods. The Solas Convention also contains special provisions on the safety of nuclear ships.

Solas Convention

Chapter VII of the Solas Convention contains regulations on the carriage of dangerous goods which are divided into a number of classes, radioactive materials being found in Class 7. Chapter VII

(11) Recommendation No. 86.

(12) Resolution No. 3133 (XXVIII) of 17th January 1974.

(13) The Solas Convention was elaborated at an International Conference convened in London on the invitation of IMCO, and signed on 17th June 1960. It is in force in more than 85 countries.

comprises regulations on packing, labelling and stowage of these materials. Furthermore, in accordance with Recommendation No. 56 on the provisions of the Convention concerning the carriage of dangerous goods, the IMCO Maritime Safety Committee prepared an International Maritime Dangerous Goods Code which contains detailed provisions in Class 7 on the maritime transport of radioactive substances. The Code itself is based on the safety standards in the IAEA Transport Regulations.

Chapter VIII of the Convention which relates to nuclear ships, is supplemented by Annex C which contains recommendations on the safety of nuclear ships. These recommendations provide, in particular, that the nuclear power plant should be designed to prevent release of hazardous amounts of radioactive materials into the ship's environment in the event of collision or grounding. Annex C also sets out that special arrangements should be provided for the safe disposal of radioactive wastes from the ship and that the maximum permissible levels of radiation caused by disposal of such wastes on the high seas should be in accordance with the international standards in force. The ship's operating manual and safety assessment must contain respectively detailed operating procedures and information on radioactive waste disposal. These recommendations, however, are of a fairly general nature since the Conference believed that, in view of the technical progress to be foreseen in this field, it would have been premature to lay down very detailed regulations.

International Convention for the Prevention of Pollution from Ships, 1973

This Convention was adopted at the International Conference on Marine Pollution, held in London from 8th October to 2nd November 1973, on the invitation of IMCO. The Convention was opened for signature on 15th January 1974 and will remain open until 31st December 1974, it will come into force twelve months after the date on which not less than 15 States representing not less than 50% of the gross tonnage of the world's merchant shipping have become parties to it. When it enters into force, the Convention will replace the International Convention for the Prevention of Pollution of the Sea by Oil, 1954.

The new Convention applies to all ships, which are defined fairly extensively, with the exception of warships and those operated by a State on non-commercial service; it covers all aspects of deliberate pollution and certain aspects of accidental pollution by ships but does not deal with dumping operations within the meaning of the London Convention, 1972 or with the release of harmful substances directly arising from exploitation of sea-bed resources (Article 2 of the Convention). The Convention urges the Contracting Parties to prevent pollution of the sea from harmful substances prohibited by the Convention. A certificate of compliance with the provisions of the Convention will have to be delivered by Contracting Parties to ships flying their flag, for inspection by the authorities of the countries they visit (Article 5). The Contracting Parties undertake to detect, and mutually inform each other on violations of the obligations laid down by the Convention. As regards sanctions, similarly to the other instruments mentioned here, there are no exceptions to the principle of the sole competence of the flag State which is alone empowered to prosecute directly for violations noted outside territorial waters.

If Annexes I and II which deal respectively with pollution from oil and from noxious liquid substances in bulk do not specifically refer to radioactive substances, the situation is far from being as clear

in Annex III which deals with regulations for the prevention of pollution from harmful substances carried by sea in packaged forms, in freight containers or portable tanks. In fact, neither Article 2 of the Convention which defines harmful substances as "any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life... or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present Convention", nor the Regulations in Annex III, which are fairly general, explicitly refer to radioactive substances, nevertheless these cannot be definitely excluded. The Convention's ambiguity on this point is further stressed by the fact that although Resolution No. 19 adopted during the Conference and concerning the prevention of pollution from harmful substances carried by sea in packaged form, in freight containers or portable tanks does not explicitly refer to radioactive substances, it mentions the need to amend the provisions of Chapter VII of the Solas Convention (carriage of dangerous goods) as well as those of the International Maritime Dangerous Goods Code to include appropriate regulations for protection of the marine environment against harmful substances. Now, both Chapter VII of the Solas Convention and the International Maritime Dangerous Goods Code cover dangerous substances (Class 7). Pending the results of the revision of the IMCO Code along these new lines, it is therefore not possible now to indicate with certainty whether the new Convention for the Prevention of Pollution from Ships, 1973, will, or will not include radioactive substances which are harmful to the marine environment.

Furthermore, it could be concluded from the very wide definition of the term "ship" in the Convention that it does cover nuclear-powered ships. However, the provisions of the 1973 Convention clearly do not apply to the very special problems raised by nuclear-powered ships.

It may be interesting to point out that the drafters of the new Convention have provided for the possibility of amending the technical provisions set out in the Annexes and Appendices far more rapidly than is usual for existing Conventions (Article 16). This accelerated amendment procedure, so-called "tacit acceptance", will enable the enforcement of amendments to the technical part of the Convention on expiry of a period which has been set in advance. This procedure is intended to facilitate the up-dating of the Convention in parallel with technical progress. The proposed amendments will be considered by an appropriate body of IMCO and will be deemed to be accepted by Contracting States on expiry of a period fixed by that body, unless objections from more than a third of the Contracting States are communicated to the Organisation during that period. This body was set up as the Marine Environment Protection Committee by a Resolution of the IMCO General Assembly, at its session in November 1973. It is also planned to insert a fairly similar amendment procedure in the Solas Convention whose partial revision should be considered during the course of the year.

Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil

The International Conference on Marine Pollution, 1973, also adopted a Protocol extending to substances other than oil the scope of the International Convention of 1969 relating to Intervention on the

High Seas in Cases of Oil Pollution Casualties (14). However, the Conference was unable to draw up a complete list of substances other than oil which should be governed by the provisions of the Protocol, and it was therefore decided under Articles I and III of the Protocol that this list would be prepared and kept up-to-date by the appropriate body designated by the Organisation (IMCO), namely, the above-mentioned Marine Environment Protection Committee. The Conference also adopted Resolution No. 26 inviting that body to establish the list not later than 30th November 1974. Consequently, it is also impossible to tell at present whether the Protocol extending the scope of the 1969 Convention will include radioactive substances within the scope of that Convention, under whose provisions Contracting Parties may take the necessary measures on the high seas to prevent or eliminate the grave hazards of pollution or a threat of pollution of the seas following an incident.

Convention on the Protection of the Marine Environment of the Baltic Sea Area

This very recent Convention extends somewhat beyond the frame of this Part insofar as it applies both to pollution from land-based installations or from sea disposal operations as well as to pollution from normal marine navigation. The need for this Convention is justified by the very special characteristics of the Baltic Sea, in particular by its great vulnerability to pollution due to its shallowness, its low exchange rate and the high density of the population in its coastal States. The Convention was opened for signature at Helsinki on 22nd March 1974 by all the coastal States of the Baltic Sea having participated in the Diplomatic Conference (15). It is yet another example of the tendency prevailing these past few years to regionalize the law of the sea.

Under this Convention, Contracting Parties, individually or jointly, will take all appropriate legislative or administrative measures to prevent and abate pollution and to protect the marine environment of the Baltic Sea area (Article 3). Such action, however, should not cause an increase in the pollution of other sea areas, thus diverting pollution

- The Contracting Parties undertake to counteract the introduction, whether airborne (atmospheric pollution), waterborne or otherwise of hazardous substances as specified in Annex I of the Convention (Article 5).
- In addition, Contracting Parties undertake to take all appropriate measures to strictly limit land-based pollution by noxious materials covered by Annex II. Such substances and materials cannot be introduced into the marine environment of the Baltic Sea without a prior special permit, based on common criteria, which may be periodically reviewed by the appropriate national authority (Article 6 and Annex III)

(14) Convention signed in Brussels on 29th November 1969.

(15) Denmark, Finland, Federal Republic of Germany, German Democratic Republic, Poland, Sweden and the Soviet Union.

- As regards prevention of pollution from ships, Contracting Parties must take measures as set out in Annex IV to prevent pollution from ships by deliberate or accidental release of harmful substances (Article 7).
- Dumping of wastes or other materials is prohibited by appropriate national authorities, except in the case of "force majeure" and of dredged spoils, the latter being subject to a prior special dumping permit in accordance with the provisions in Annex V (Article 9).
- Finally, Contracting Parties must take all appropriate measures to prevent pollution of the marine environment of the Baltic Sea area likely to result from exploration or exploitation of resources on the sea-bed and its subsoil (Article 10).

Although the Convention on the protection of the Baltic Sea has a strictly delimited scope of territorial application, it nevertheless covers all possible causes of pollution of the marine environment.

A Baltic Marine Environment Protection Commission, made up of representatives of all the Contracting Parties has been set up to keep implementation of the Convention under constant observation and to assume such other functions as appropriate under the Convention, namely the definition of objectives for reducing pollution, the updating of technical annexes and the dissemination of information provided by Contracting Parties.

The Convention is supplemented by a number of above-mentioned Annexes which are an integral part of the Convention. Annex I contains a list of hazardous substances within the meaning of the Convention; Annex II enumerates the noxious substances and materials which may be introduced into the sea from coastal territories; Annex III gives the goals, criteria and measures to be attained by Contracting Parties to control and minimize land-based pollution of the Baltic Sea; Annex IV provides detailed regulations to be observed by Contracting Parties to prevent pollution from ships and is in fact a "convention" within the Convention; Annex V gives the exceptions to the principle of generally prohibiting dumping of waste and other matter in the Baltic Sea; and finally, Annex VI deals with the co-operation between Contracting Parties in combatting marine pollution, in particular, by communication of reports on incidents involving noxious substances, that is both hazardous and harmful substances within the meaning of the Convention.

Radioactive materials for their part are covered by this Convention. Although they are not included in the list of hazardous substances in Annex I, they are set out in the noxious substances and materials enumerated in Annex II, and concerning which Contracting Parties must take all appropriate measures to prevent them from being introduced into the Baltic Sea from coastal discharges. In addition, Annex III which lays down the principles to be followed to prevent land-based pollution provides in particular that the discharge of cooling water from nuclear power plants must be effected in a way to minimize the hazard of pollution of the marine environment. It seems that radioactive materials are also covered by the general prohibition to dump waste and other matter in the Baltic Sea area, insofar as Annex V of the Convention only authorises exceptions to this principle for dredged spoils which do not contain significant quantities or concentrations of the substances listed in Annexes I and II.

On the other hand, it does not seem that radioactive materials are covered by the provisions of the Convention relating to prevention of pollution from ships, which mainly refer to the release of oil and noxious liquid substances carried in bulk.

A Convention of the same type as the Convention of the Baltic Sea, relating to the marine environment of the Mediterranean Sea should also be adopted this year, following a Conference to be held in Rome

III

This new Part concern international Conventions whose particular purpose is to control, and where necessary, to prohibit the dumping of wastes at sea. They are the Oslo Convention of February 1972 and the London Convention of December 1972.

Oslo Convention

The first Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft was signed in Oslo on 15th February 1972 by 12 European countries (16) and came into force on 7th April 1974. This Convention which is therefore, of a regional nature and concerns the North Atlantic coastal countries, is intended to fight against marine pollution from substances that are liable to create hazards to human health, to harm living resources and marine life, and to interfere with other legitimate uses of the sea; these terms were also used by the London Convention, 1972 and subsequently by the Convention of 1973.

The dumping of substances listed in Annex I is prohibited in waters within the geographical area determined thereby (Article 5). No significant quantities of wastes containing the substances listed in Annex II of the Convention (Article 6) can be dumped without a specific permit in each case from the appropriate national authority. Moreover, the permits and approvals granted by the national authorities for the dumping of all other wastes at sea must comply with the provisions laid down by Annex III (Article 7). The above requirements may be waived in the case of "force majeure".

A special body named "Commission" is provided by the Convention. The duty of the Commission will be to exercise overall supervision over implementation of the Convention and over the seas within the area to which the Convention applies, as well as to give an opinion on the dumping permits issued by the national authorities. This Commission is made up of representatives of each of the Contracting Parties and will meet at regular intervals.

If it is clear that the list of substances referred to in Annex I (dumping prohibited) does not refer to radioactive materials, on the other hand, the provisions in Annex II (prior authorisation for dumping) do not indicate with certainty whether radioactive materials are also excluded. Although Annex II does not refer specifically to radioactive materials, it includes "substances which though of a non-

(16) Belgium, Denmark, Finland, France, Federal Republic of Germany, Iceland, Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom.

toxic nature may become harmful due to the quantities in which they are dumped, or which are liable to seriously reduce amenities". Over and above the structure of regulations for dumping of wastes, the Convention provides that Contracting Parties pledge themselves to promote, within the frame of competent international bodies, measures concerning the protection of the marine environment against pollution caused by oil and other hazardous cargoes as well as by radioactive materials (Article 14). Information in hand on the intention of the drafters, however, lead to the conclusion that for the present, radioactive materials are excluded from the scope of the Oslo Convention.

1972 London Convention

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was opened for signature on 29th December 1972 in London. The London Convention, as opposed to the Oslo Convention, has a universal vocation. Its purpose is to promote the effective control of all sources of pollution of the marine environment and especially to prevent the pollution of the seas by dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and human life and to interfere with other legitimate uses of the sea (Article I). For the purposes of the Convention "dumping" means any deliberate disposal at sea of wastes or other matter from vessels, aircraft or man-made structures at sea, or any disposal at sea of vessels. It may be noted that while the Geneva Convention on the high seas condemned marine pollution by radioactive wastes without precisely defining the notion of pollution, the London Convention specifies this concept more clearly, though indirectly, by linking it with the dumping of a number of substances which are declared noxious. The same terms were used for the 1973 Convention on marine pollution.

However, the Convention does not refer to the dumping of wastes at sea arising from the normal operation of ships, aircraft or man-made structures at sea, or deposits of materials for purposes other than elimination. These expressions are in the main patterned on those of the Oslo Convention. Also, the Convention does not apply to disposal of wastes or other matter arising from exploration, exploitation and treatment at sea of resources from the sea-bed and its subsoil.

In accordance with the provisions of the London Convention (Article IV) each Contracting Party must take measures to:

- (a) prohibit the dumping of wastes or other matter listed in Annex I of the Convention;
- (b) subject the dumping of wastes or other matter listed in Annex II to the issue of a prior special permit;
- (c) subject the dumping of wastes or other matter to the issue of a prior general permit.

The provisions in Annex III of the Convention must be taken into account before a permit is issued. Similarly to the Oslo Convention, the above provisions of this Convention do not apply in case of "force majeure" and if dumping is necessary to secure the safety of human life or of vessels, if such dumping is conducted in a way which minimizes the likelihood of pollution and other hazards (Article V).

Furthermore, the Contracting Parties, apart from their actions at national level, are invited to enter into regional agreements consistent with this Convention for the prevention of pollution, especially by dumping. This should help to harmonize the procedures adopted by the Contracting Parties. Special attention will be given to developing co-operation in the field of monitoring and scientific research (Article VIII).

Under the Convention, the appropriate national authorities designated to issue dumping permits must also keep records of the nature and quantities of matter permitted to be dumped, and the location, time and method of dumping; they must also monitor individually or in collaboration with several other countries and competent international bodies, the condition of the seas for the purposes of this Convention (Article VI).

The Contracting Parties also pledge themselves to promote, within competent specialized agencies and other international bodies, measures to protect the marine environment against pollution from hydrocarbons, other noxious or hazardous matter transported by vessels for purposes other than dumping, radioactive pollutants from all sources, including vessels, wastes generated in the course of operation of vessels or other man-made structures at sea, as well as from the exploitation of sea-bed mineral resources (Article XII). It may be noted, that the provisions of this Article are to a certain extent similar to those of the 1973 Convention on pollution and that the mention of radioactive pollutants from vessels may be taken as applying to discharges from nuclear-powered ships. Once again IMCO has been entrusted with the various administrative duties for the Convention.

As regards the special case of radioactive wastes, the materials defined in Annex I (dumping prohibited) include "high-level radioactive wastes or other high-level radioactive matter, defined on public health, biological or other grounds, by the competent international body in this field, at present the International Atomic Energy Agency (IAEA), as unsuitable for dumping at sea". The substances mentioned in Annex II (issue of a prior special permit for dumping) include "radioactive wastes or other radioactive matter not included in Annex I. In the issue of permits for the dumping of this matter, the Contracting Parties should take full account of the recommendations of the competent international body in this field, at present the IAEA". This Organisation is therefore directly vested with specific responsibility for such types of materials. It should also be pointed out that as a result of these provisions of the Convention, radioactive wastes may not be given a standing dumping permit and it is therefore impossible for such materials to be disposed of at sea in the frame of routine operations.

This is why IAEA convened an Expert Panel in June 1973 to study the measures to be taken by that Agency under the London Convention to enable the latter's implementation in this field, when it comes into force (15 ratifications or accessions are required). This Panel, in which NEA representatives were invited to participate, agreed on a number of recommendations which must now be submitted to the Agency's Board of Governors.

The Panel worked in particular on the preparation of a definition of highly radioactive wastes and other highly radioactive materials referred to in Annex I of the Convention. As regards materials whose dumping is subject to prior authorisation under certain conditions (Annexes II and III) the Panel considered their classification without having reached final conclusions to date; it also made an environmental evaluation and studied operational control procedures. It should be

noted in this respect that national authorities will be responsible for decisions on this matter. The Panel also discussed application to the special case of radioactive materials of the general provisions set out in Annex III of the Convention, as well as the recommendations to be made on operational control procedures which, under the Convention, must be prescribed by the competent national authorities to the holders of special dumping permits. Experts, especially those from several European countries, were in favour of establishing a certain form of international control or even international co-operation which could take the form of joint disposal operations of the type already organised several times under the sponsorship of NEA (17). Such operations could give rise to the conclusion of regional co-operative agreements in accordance with the provisions of the London Convention.

IV

This Part concern causes of marine pollution other than those dealt with previously. The only specialized international Convention in this field is the Convention for the Prevention of Marine Pollution from Land-Based Sources. It should be recalled however that the Baltic Sea Convention also covers such types of pollution.

Convention for the Prevention of Marine Pollution from Land-Based Sources

This Convention which has just been adopted in Paris (February 1974), will be opened for signature from 4th June 1974. The Governments having participated in the Diplomatic Conference during which the Convention was elaborated are all from Western European countries (18), thus giving this Agreement a regional character. Choice of a regional, and hence limited, type of agreement is clearly justified in this field as well as in that of dumping of wastes, by the fact that such instruments are based on the co-operation of bordering countries faced by a common problem which cannot be solved simply on a national basis.

The conditions under which the Convention was elaborated, as well as its provisions, are fairly close to those of the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, and the two may therefore be considered as "twin" Conventions of a sort.

Similarly to the previous Convention, the Convention on land-based pollution, that is, pollution of the marine environment from waterways, coastal discharges and marine platforms has a geographical scope defined in advance by the Contracting Parties. The specialized

(17) "Radioactive Waste Disposal Operation into the Atlantic", 1967, OECD Nuclear Energy Agency, Paris 1968.

(18) Austria, Belgium, Denmark, France, Federal Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the Commission of the European Communities. Finland and Italy were represented by Observers.

and regional character of this Convention however, does not stop Contracting Parties from taking measures to prevent the increase of pollution in waters situated outside the fixed territorial limits or resulting from other than land-based sources. In this connection, pollution of the sea is defined as the introduction by man, directly or indirectly, of substances or energy into the marine environment resulting in such deleterious effects as hazards to human health, harm to living resources and to marine eco-systems, damage to amenities or interference with other legitimate use of the sea (Article 1). This is the first direct and complete definition of marine pollution noted in these recent Conventions; in essence, the drafters of the Convention on the protection of the Baltic Sea have used the same definition. The Contracting Parties undertake to eliminate, where necessary by stages, pollution of the maritime area from land-based sources listed in Annex A (Part I) of the Convention; they also undertake to limit strictly pollution from substances listed in Part II of the same Annex (Article 4). Provision is also made for consultations, co-operation agreements and joint scientific and technical research programmes in this field, especially when the interests of a Contracting Party are likely to be prejudiced by pollution (Articles 9 and 10).

The Governments party to the Convention will set up a permanent monitoring system to assess the level of pollution of the waters referred to in the Convention as well as the effectiveness of measures to reduce such pollution. A Commission made up of representatives of each of the countries is responsible for exercising overall supervision over the implementation of the Convention and to promote such implementation by making recommendations to Contracting Parties concerning, inter alia, control measures, discharge levels and nomenclatures of substances covered by the Convention. Resolution No. II, adopted by the Conference, recommends that the two Commissions created by this Convention and by the Oslo Convention respectively should set up a common Secretariat, be made up of the same representatives, and that their meetings be combined.

Despite the similarities just stressed between the two Conventions, there is a considerable difference in the list of substances covered by Annex A of the Convention on marine pollution from land-based sources as compared with the Oslo Convention, Part III of Annex A (controlled discharges) refers explicitly to radioactive substances, including wastes. Annex A specifies that these substances are not included in Part I (dumping prohibited) because they are already the object of research and recommendations under the auspices of competent international organisations, although they display characteristics similar to the substances listed in Part I and should be subject to stringent controls. Furthermore, it is provided that Contracting Parties should co-ordinate their monitoring and study of radioactive substances, and when elaborating national policies to combat land-based radioactive pollution, should closely follow recommendations made by international organisations and agencies competent in the field (Article 5). It seems therefore that the International Commission which will administer this Convention will not be called upon to take measures completely autonomously in respect of land-based pollution from radioactive materials and wastes.

This last Part concerns international Conventions relating to third party liability for damage caused by radioactive marine pollution. Undoubtedly, damage from radioactive marine pollution is likely to involve its author's liability, although it may often be rather difficult to provide material proof of such type of damage and to establish a link of causality. The fact the nuclear damage may only become apparent long after the date of the incident (delayed damage) means that it is all the more likely to remain anonymous. This is one of the reasons why it was decided to apply to all nuclear activities, the principle of liability for the hazard created (absolute liability) rather than liability for fault.

In the case of radioactive pollution caused by substances carried on a ship or from a land-based installation, the Conventions likely to apply are the Paris and Vienna Conventions (19).

It is widely acknowledged that, although not stated in express provisions but gathered from the Contracting Parties' interpretation, both these Conventions apply to nuclear damage suffered on the high seas or caused by nuclear incidents having occurred on the high seas, when the operator liable is governed by the Conventions' regime. Furthermore, the two Conventions provide that in the case of damage caused by a nuclear incident involving nuclear fuel or radioactive products or waste which have been jettisoned and not recovered, the right of compensation is extinguished if an action is not brought within a period of not more than 20 years from the date such materials have been jettisoned (20).

In the case of damage resulting in radioactive marine pollution caused by a nuclear ship, the Convention on the Liability of Operators of Nuclear Ships, adopted in Brussels on 25th May 1962 will apply when it comes into force.

It should also be pointed out that, in parallel with the International Convention of 1969 relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, which was extended in 1973 by a Protocol, an International Convention on Civil Liability for Oil Pollution Damage was also adopted on 29th November 1969. There is some talk of also extending the scope of this Convention to noxious and harmful substances other than oils, and preparatory studies in this connection have already been undertaken within IMCO. As it is the case for the Convention on intervention, there is some question here of taking this opportunity to include radioactive substances among the substances to be covered by extension of the Convention. In this particular case,

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- (19) - Convention on Third Party Liability in the Field of Nuclear Energy, signed in Paris on 29th July 1960 which came into force on 1st April 1968.
- Convention on Civil Liability for Nuclear Damage, opened for signature in Vienna in May 1963; not yet in force.
- (20) - Paris Convention, Article 8(b).
- Vienna Convention, Article VI.2.

however, an objection in principle may be made to extension of the scope of the Convention to this type of material. Following adoption in November 1971 of the Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, the purpose of which is to sanction the priority of nuclear law over maritime law in the case of nuclear incidents, extension of the Convention of 1969 to radioactive materials would lead to a conflict of application between maritime law and nuclear law - this is precisely what the Brussels Convention of 1971 wishes to set aside. Consequently, any extension in this particular field should be avoided.

Closing comments

This recent proliferation of international Conventions created by the phenomenon of marine pollution has resulted in a passage from the relative legal vacuum mentioned early in this study to a situation which could be qualified as excessive. The multiplication of Conventions having a very similar purpose and scope will inevitably lead to some overlapping in their application. This may even apply to national policies to combat marine pollution, which from now onwards will have to comply with the requirements laid down by a great number of conventions and with directives from an increasing number of international organisations. In this connection, radioactive pollution is no different from marine pollution from other sources, quite the contrary in fact, since it appears that it is not always possible to determine clearly to what extent the new international Conventions apply to this particular form of pollution. However, the next United Nations Conference on the Law of the Sea, to be held in Caracas in summer 1974, may, as did the Geneva Conference in its day, enable some measure of harmonization to be achieved between the conventional system and regulations and international law applicable to this new problem of marine pollution. Such expectations are supported by the fact that the Conference which was held in London in 1973 on Marine Pollution adopted a Resolution (No. 25) for the purpose of transmitting the new Convention on Prevention of Pollution from Ships to the United Nations Conference on the Law of the Sea, convened for summer 1974 in Caracas in accordance with Resolution 27500 (XXV) of the General Assembly of the United Nations, in order that it may be placed and examined in a wider context which embraces all aspects of the Law of the Sea. The London Convention of 1972 contains a similar provision (Article XIII).

It may also be wondered whether the inclusion, in most cases, within the same legal instruments of the regulations to combat radioactive pollution and those against other sources of pollution is entirely justified if account is taken of the very specific nature of nuclear hazards brought to light by the existence of the Vienna and Paris Conventions and of the special, not fully known, effects of radioactive products on the marine environment. In fact, the principle of "speciality" has prevailed as regards third party liability for nuclear damage.

Moreover the success of these different Conventions will be based mainly on the goodwill of countries wishing to observe and enforce the obligations therein, insofar as the international bodies responsible for application of these Conventions are not generally vested with powers directly binding on Contracting Parties. Nonetheless, the principle of prohibiting marine pollution especially that from radioactivity, and of condemning States refusing to comply, which was defined at the Geneva Conference of 1958 is strengthened considerably by the series of Conventions as indicated by the London Convention of 1972, the Preamble of

which says that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction".

It would well seem that in this field, the ancient principle of the freedom of the seas, though not entirely extinct, has receded considerably before ecological requirements.

ARTICLES

IN THE USA: ATOMIC ENERGY ON TRIAL*

E. Abel

Scientific Advisor's Office, Embassy of the Federal
Republic of Germany, Washington DC, USA

The opponents of atomic energy achieved their first spectacular success on July 23rd, 1971 when in the fundamental Calvert Cliffs decision (1) the US Circuit Court of Appeals for the District of Columbia placed upon the US Atomic Energy Commission additional strict responsibilities for the observation of environmental requirements. At the same time the decision was regarded as constituting a considerable handicap for the further development of atomic energy. Taking the principles laid down in the Calvert Cliffs case a step further, the same Court recently dealt the Atomic Energy Commission another blow: in an action brought against the AEC by the Scientists' Institute for Public Information, Inc. (SIPI) the AEC were ordered on June 12th, 1973 (reversing the lower court's decision) to produce, in accordance with the requirements of the National Environmental Policy Act (NEPA) (2), a "Detailed Environmental Impact Statement (DEIS)" on the whole of the development programme for fast breeder reactors. The well-organised environmental protection societies, adept in using the various media to publicise their cause, have lost no time in mounting a new attack on the AEC. At the end of May, R. Nader and the environment protection association "Friends of the Earth" (FOE) filed an

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- (1) Calvert Cliffs Coordinating Committee v. USAEC, 146 US App. DC 33, 449 F. 2d. 1109.
- (2) National Environmental Policy Act, Public Law 91-190, 91 Congress S. 1075, January 1st, 1970.

application to the US District Court for the District of Columbia to close down 20 atomic power stations; in their opinion the emergency cooling system used at these plants constituted an intolerable safety risk.

Environmental protection groups are turning increasingly to the courts to reinforce their objections to the construction and use of atomic power stations, as these and less well-known examples show. The action brought by Nader and FOE threatens two thirds of all atomic power stations currently in operation in the USA. In his recent "energy message" of April 18th, 1973 President Nixon stated that it was "disheartening" to learn that new atomic power stations with a combined output of approximately 27,000 MW could not be put into operation by the end of 1972, as originally planned (3). In the light of the forecasts given by President Nixon in his energy message regarding the future development of atomic energy in the coming decades, according to which in 1985 more than a quarter and in the year 2000 more than half of all the electricity produced in the USA will come from nuclear sources, it may be wondered what view is taken of the growing number of public controversies and legal conflicts over the source of atomic energy in the USA that have arisen in the last few years.

THE CALVERT CLIFFS DECISION

As the most recent decision of the US Circuit Court of Appeals is based on the principles laid down in the Calvert Cliffs case concerning the requirements of the National Environmental Policy Act, a glance at the essential features of the earlier decision and their effects would seem necessary.

The relevant provisions of the NEPA are

Section 102

The Congress authorizes and directs that to the fullest extent possible...(2) all agencies of the Federal government shall ... (c) include in every... proposal for legislation and other major Federal action a detailed statement on

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(3) see also "Staff Report on Delay in Scheduled Commercial Operation of Electric Generating Units", Federal Power Commission, 1972.

- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Accordingly, the AEC, as an "agency of the Federal government" is not only entitled but also obliged to examine environmental impacts before granting a construction permit or operating licence for atomic power plants - irrespective of whether the question of these impacts has been raised by participants in the hearings or not. It is not enough for the AEC merely to use the individual reports from agencies responsible for seeing that certain standards are observed as to water quality, thermal pollution, etc.

Two statements made by the Court should prove to be particularly important: first, the Court directed that, if need be, the Commission should consider a temporary ban on construction during the impact analysis since nothing, not even the threat that the commissioning date may have to be postponed, should be allowed to detract from the task of keeping adverse environmental impacts as few as possible. Even more significant is the statement: "Whether or not the spectre of a national power crisis is as real as the Commission apparently believes, it must not be used to create a blackout of environmental considerations in the agency review process."

The result of the decision, as Nuclear Industry (4) stated in an analysis of it, was that roles were to a certain extent reversed. The environmental protection groups were suddenly no longer on the defensive, trying to get at least a "foot in the door" at the hearings - it was now the electricity supply undertakings which had to see to it that the decision was not pushed to extremes and interpreted too broadly.

The AEC took full account of the decision by completely revising annex D to paragraph 50 of the AEC regulations. It adapted to the new situation by restructuring and strengthening the regulatory section within the AEC. It was not merely a question of dealing with the rapidly increasing number of new applications being filed with the AEC, the licensing procedure also had to be recommenced from the start in cases where a construction permit had been granted before January 1st, 1970 (the effective date of the NEPA) but not an operating licence. Licensing procedures started by the AEC after January 1st, 1970 were similarly affected. As AEC Commissioner Doub stated in November 1972 at the annual convention of the Atomic Industrial Forum in his "reflections after 15 months" the entire restructuring process was carried out in an atmosphere of crisis, though the decision merely triggered off a series of changes which were needed anyway. It is not surprising, therefore, to find that the Calvert Cliffs decision, described two years ago in Nucleonics Week (5) as a "stunning body blow" is now considered by Doub to be "a blessing for the AEC, the industry and the public."

(4) Nuclear Industry, Vol.18 No.8, August 1971.

(5) Nucleonics Week, Vol.12, No.30, July 29th, 1971.

THE FAST BREEDER REACTOR DECISION

The main question in this decision (6) was whether the Detailed Environmental Impact Statement (DEIS) provided for in Section 102 (c) of the NEPA has to be produced only for each individual fast breeder reactor installation, or for the overall research and development programme as such and, if the latter is the case, when the DEIS is to be presented. As a preliminary point the Court questioned whether the plaintiffs (SIPI) were entitled to sue, and whether the matters, which were the subject of the action, were proper ones for a court to adjudicate upon.

On the question of the right to sue, the Court based its considerations on the aims set out in the charter of the Scientists' Institute for Public Information, according to which it is the intention of the SIPI to supply the public with scientific information of social relevance and to stimulate public discussion on the scientific aspects of political decisions. The Court considered that the activities of the SIPI would be handicapped if the AEC did not present a DEIS and consequently recognised their right to appear as plaintiffs.

On the second preliminary question, the Appeals Court argued that although programme plans and decisions were of a political nature they ceased to remain outside the jurisdiction of the courts when converted into concrete action.

By interpreting the NEPA to require a DEIS not only on a given installation (i.e., the interpretation of the AEC which presented a DEIS on the Fast Flux Test Facility (FFTF) at Hanford and also one, albeit provisional, on the 300 MW demonstration plant at Clinch River) but also, with certain conditions, on a complete research and development programme, the US Appeals Court decision has given rise to very far-reaching consequences. The significance of this conclusion is likely to extend far beyond the programme itself and possibly beyond the field of atomic energy. Ultimately, as long as there is no Supreme Court ruling to the contrary, every research and development programme that complies with the criteria named in the SIPI judgment will be assessed by this standard.

In considering whether a DEIS was necessary for the plant or the programme, the Appeals Court was able to refer to the "Memorandum to Federal Agencies on Procedures for Improvement of Environmental Impact Statements" published in May 1972 by the Council on Environmental Quality (CEQ), the White House agency responsible for environmental affairs, in which it advocates assessing the environmental compatibility of the particular programme since this (as opposed to analyzing mere individual actions) enables a comprehensive assessment to be made of the environmental impacts, the possible alternatives and, in particular, the overall effect. As for the liquid metal fast breeder reactor (LMFBR) development programme the Environmental

(6) Scientists' Institute for Public Information Inc. v. USAEC, US App. DC No.72 - 1331.

Protection Agency, founded in 1970, called for an early analysis of all the environmental aspects of this far-ranging national programme as far back as early 1972, in its comments on the AEC provisional environmental impact statement on the demonstration power plant.

Because of their significance the relevant arguments of the Appeals Court in favour of programme analysis are quoted here in their original wording:

"To wait until a technology attains the stage of complete commercial feasibility before considering the possible adverse environmental effect attendant upon ultimate application of the technology will undoubtedly frustrate meaningful consideration and balancing of environmental costs against economic and other benefits. Once there has been, in the terms of NEPA, "an irretrievable commitment of resources" in the technology development stage, the balance of environmental costs and other benefits shifts in favour of ultimate application of the technology."

The Court had indeed no lack of proof to suggest that the IMFBR programme constituted an "irretrievable commitment of resources" on the basis of its size and the large amount of capital involved which severely prejudiced possible alternative solutions (not only other types of fast breeder reactors, such as the gas breeder, but also other available energy sources). In his energy message in 1971 President Nixon had already designated the fast breeder programme as the highest priority item" in the production of "clean energy" and a short time later he gave the go-ahead for a second demonstration plant. At the Congress hearing on the 1972 budget the AEC estimated total government expenditure on the fast breeder programme at over \$2 billion and the AEC is basing its latest atomic energy development forecast from now to the turn of the century (7) on the assumption that approximately 400 GW will be produced by fast breeder reactors in the year 2000, this being roughly equivalent to present US total capacity. From 1995 to 2000 half of all electricity generating capacity to be installed is to come from fast breeder reactors.

Once the fast breeder reactor research and development programme has progressed to an advanced stage and achieved a certain technical maturity it is virtually certain that the technical and commercial aspects of the construction of individual power plants will far outweigh the environmental impact. The Appeal Court's ruling that the overall programme should be analysed at an early stage is therefore hardly surprising.

The Court lists the following as the factors to be taken into account when considering whether and, in particular, when a DEIS must be made on a research and development programme.

- What is the likelihood that the specific technology will attain

(7) Nuclear Power 1973 - 2000, AEC Doc. Wash - 1139(72) of December 1st, 1972.

commercial feasibility and when will this occur?

- On what scale are irretrievable commitments of resources made?
- How much relevant information on the environmental impact of these or possible alternative technologies is available?
- What impact will the commercial application of the technology have on the environment?

In accordance with the interpretation of the environmental impact statement provided for in the NEPA, the Court decreed that the statement may not be deferred until the commercial feasibility of the technology is conclusively proved since by this time all other alternatives would long have been rendered inoperative because of the high cost involved in the changeover. As the Council on Environmental Quality argued in its latest annual report, the environmental impact statement must not be reduced to a mere ex post facto defence of a programme which had been decided on other grounds. Since the purpose of the DEIS is to give those not participating in the programme decision-making process, and in particular the general public, an insight into the possible adverse environmental effects of a technology it must be provided at an early stage before irrevocable decisions are made and alternatives rejected.

In the light of the data contained in various AEC publications (e.g. on the amount of highly radioactive nuclear waste likely to be produced by the commercial application of fast breeder reactors between now and the year 2000) the Court was satisfied that there was enough information available on environmental impacts to be analysed in impact statements. In the opinion of the Court such waste will constitute a "unique and unprecedented environmental hazard" for hundreds of years. It has therefore insisted that all sectors, from reprocessing to transporting and storing the waste, be subjected to an extremely thorough examination.

There are two particularly remarkable aspects of the decision: first, it focuses solely in each case, on the commercial feasibility; technical feasibility is not even mentioned. Did the Court overlook this distinction or did it consider that the commercial realisation of the IMFBR project was assured with the completion of the first demonstration power plants because of its broad industrial basis (Westinghouse, the main contractor, responsible for 60% of the work, 20% each to General Electric and Atomics International in subcontracts?) (If this is the case, why does the industry not take over the development programme itself?) these questions remain unanswered.

Second, the Court made it expressly clear that it is not sitting in judgment on the soundness and practicality of the IMFBR programme. If it were, it would undoubtedly find itself treading a far more difficult and dangerous path. In the cost/benefit analysis called for by the Galvert Cliffs decision, how are the environmental requirements to be quantified as between economic and technical factors on the one side and the environment on the other? To what extent must the techniques for minimising or preventing damage to the environment be considered as safe as regards the various individual elements of a large-scale programme (e.g. production of fuel elements, storage of atomic waste etc.?) It is therefore necessary to develop each

individual sector of a large-scale programme at the same rate and with the same priority? How extensive should the analysis of the technical and commercial feasibility of alternatives be? Question follows question.

The "great hope", as President Nixon called the IMFBR programme not too long ago, for meeting the nation's growing demand for clean energy has been held back only slightly, if at all, by the Court ruling. The IMFBR programme should not be too badly affected in the short term, apart from the additional workload imposed on the AEC of preparing an environmental impact statement. The decision taken in the meantime by the Joint Committee on Atomic Energy (JCAE) to authorize the AEC to commit an additional \$2 million in the 1974 budget for the IMFBR development programme to enable detailed plans for a second demonstration power plant to get under way as soon as possible shows that the project has lost none of its priority. And the fact that fast breeder reactor development is included in the US-Soviet ten-year co-operation agreement on the peaceful use of atomic energy, signed by President Nixon and Party Leader Brezhnev on June 19th, 1973, is hardly indicative of a lack of confidence in the future of the programme.

In the meantime the AEC has signed contracts with the Tennessee Valley Authority, Commonwealth Edison, Project Management Corporation and Breeder Reactor Corporation. In view of the limited scope of the measures to be taken before the DEIS is presented (in approximately 8 months) the AEC does not consider that any great damage will be done to the environment or that possible alternatives will be prejudiced. On the other hand the adverse effects on the community, in the form of a considerable increase in the cost of the project and subsequent electricity prices, would be far more serious (\$2 billion per year from 1990). The plaintiff environmental protection group nevertheless tried to prevent these contracts being signed, by a motion for a preliminary injunction, but on July 20th, 1973 the US Appeals Court, like the US District Court before it, rejected this application.

The long-term significance of the decision is that the AEC - and the same applies to every other government body with a large research and development programme - is now obliged to examine all the environmental aspects of the IMFBR programme and other projects at a relatively early stage, to specify programme planning as far as possible, and, last but not least, to reveal the details of an earlier stage for discussion. This is where the success of the environment protectors really lies.

THE MORATORIUM CASE

The action recently brought against the AEC by R. Nader and the Friends of the Earth (FOE) is up to now the most far-reaching in its consequences and involves the most serious problems. In the US District Court for the District of Columbia which had held in favour of the AEC in the Calvert Cliffs and the Fast Breeder Reactor cases, the plaintiffs sought to close down no fewer than two-thirds of all the nuclear power stations in operation at that time in the USA. A case of: "All neutrons motionless must stand at mighty Nader's sole command"?

The proceedings related to 12 FWRs and 8 BWRs; Westinghouse (9) operated one more of these reactors than General Electric (8), and Combustion Engineering and Babcock & Wilcox were concerned with the remainder. No fewer than 19 electricity supply undertakings and one reactor construction firm (General Electric) had joined in the proceedings in support of the AEC.

The object of the complaint was to have the operating licences for the 20 power stations concerned permanently revoked and, in addition, to bring about a temporary stoppage by means of a preliminary injunction. The plaintiffs' argument was that the hearings on the Emergency Core Cooling System (ECCS) had proved that if the reactors continued in operation unjustifiable safety risks would result.

On June 28th, 1973, during the court proceedings the AEC, backed by numerous experts, furnished evidence that on all the essential issues the ECCS hearings had confirmed the reliability of the emergency cooling system. There was no clear violation of a legal duty which would confer jurisdiction on the District Court.

Under section 189(B) of the Atomic Energy Act, jurisdiction to review, upon completion, the as yet uncompleted rule-making procedures concerning the ECCS would lie exclusively in the Courts of Appeal. Thus the decision of the Court was that the plaintiffs had not exhausted the available review procedure and it denied the motion for a preliminary injunction and discussed the case on the merits as well. The AEC had won the first round in the District Court as it had done in the Calvert Cliffs and the IMFBR cases. Will things be different in the second round? We must wait and see.

As expected, the plaintiffs had no success in the appeal proceedings they filed in early July 1973, when they attempted to demonstrate that there was a direct threat which would justify the immediate temporary shutdown of the power plants. The US Appeals Court dismissed the motion for a preliminary injunction on July 12th, 1973, and also called for further particulars in the procedure on the merits, so that the long-term objective of the complaint may well become the main concern. As long as the AEC does not conclude the rule-making procedure it has the ability to take the wind out of the appellants' sails. It is, of course, conceivable that the plaintiffs want to force the AEC in this way to adopt a more conservative attitude in the rule-making procedure than it might otherwise have done and this would still be a certain partial success for the environmental protection groups.

Whatever the outcome of the case, the US Appeals Court will be faced for the first time with the problem not only of having to help in promoting the adoption of the practice of making certain assessments concerning environmental protection which has been shown to be justified, but also of being obliged to give a decision on the merits. Does a certain reactor constitute a risk or can it safely be operated? In its fast breeder decision the US Appeals Court quoted the author of a publication called "Technology Assessment and

the Law" (8), according to whom safety risks up to now had been assessed by a small closed circle of experts, each of whom had a "vested interest in the technology". But is it not also true that those who support the opposite viewpoint, (we assume here they have expert knowledge too), likewise have a "vested interest"?

Nuclear moratoria at the legislative level are almost a familiar occurrence in the USA. Often the anti-atomic energy propaganda machine tries to make use of the present wide-spread and frequently irrationally based scepticism of a large section of the public toward new technological achievements. Nuclear moratoria are sprouting up like mushrooms in Minnesota, Wisconsin, California - where they are already in their second generation. After all the unsuccessful clamouring for moratoria at the Primaries last summer fresh attempts are now under way to force a referendum.

There is also a similar initiative at the Federal level. In March Senator Gravel (Alaska) once more introduced a bill in Congress which he believes will enable all atomic power plants to be gradually prohibited without reducing the energy supply. At any rate he was more cautious than Nader and his fellow crusaders. His proposal provides for an "immediate moratorium on the operation, construction and export of all civilian nuclear fission power plants"; this moratorium tolerates exceptions but its ultimate aim is to have no atomic power plants in operation by January 1980.

The new feature here is the attempt by Nader and FOE to carry through a moratorium with the aid of the courts. If the action filed before the US District Court had been successful 20% of the electricity supply to Chicago, for example, would have been immediately threatened. Florida and the New England states would also have been hit more than most, so that the common argument that atomic energy constitutes only 4% of the US electricity supply (and only 1% of the total demand for energy) has little real significance.

THE CONSEQUENCES

In these conflicts much depends on whether the assessment is objective or not. The point is often made that the various government bodies lack the necessary neutrality when weighing up the advantages and risks of the technologies they sponsor. This is a criticism the AEC often has to face because it is responsible, both for sponsoring and for exercising control over a technology. Restructuring the whole regulatory sector last year and recently separating the reactor safety research unit from the Division of Reactor Development and Technology were without doubt important steps toward an effective division of these two aspects. Meanwhile, in late June 1973, President Nixon made known his intention to retain, as part of the reorganisation of the whole energy spectrum, the regulatory sector of the AEC in a renamed Nuclear Energy Commission headed by five commissioners. The rest of the AEC was to be combined with the

(8) Green: Technology Assessment and the Law, Introduction and Perspective 36 Geo. Wash. L. Rev. 1033, 1038 (1968).

research units of other bodies (such as the Office of Coal Research of the Department of the Interior, and the National Oceanic and Atmospheric Administration of the Department of Commerce) to form a new Energy Research and Development Administration (ERDA). Total separation of functions would thus be complete. However, this reorganisation still needs the approval of Congress.

In this respect the German Federal government was just ahead of the Americans with its decision to assign the development functions in the field of nuclear energy to the Federal Ministry for Research and Technology and to incorporate the reactor safety and radiation protection department into the Ministry of the Interior, a fact often recognized by Americans over here.

However, neither Calvert Cliffs nor the numerous moratoria attempts have been able to halt or even slow down the upward trend of atomic energy. 1972 was by far the most successful year for the US reactor manufacturers with 39 new contracts for atomic power plants, with a total output of approximately 42,000 MW. In case the US Appeals Court should follow its Calvert Cliffs decision in the moratorium case (safeguarding of the environment despite the energy crisis) and, contrary to expectations, try to call a halt to further development, the possibility of examining, if need be, the basic legislation involved is already being considered. After all, ex-AEC Chairman Schlesinger at the centenary meeting of the American Public Health Society last November stated. "I see no alternative to nuclear power as supplier of a substantial fraction of the Nation's rising demand for electricity."

INTERNATIONAL SAFEGUARDS ON
THE PEACEFUL USES OF NUCLEAR MATERIAL

R. Rometsch*

Inspector General

International Atomic Energy Agency, Vienna

I. THE ORIGINS OF INTERNATIONAL SAFEGUARDS

The recognition of the necessity to hold back and keep under control is at least as old as the discovery of the apparently unlimited technical capabilities to extract energy from atomic nuclei. Six months before the beginning of the second world war, a group of American physicists, also comprising a few Europeans who had fled from Europe, realised the possibility of a chain reaction based on uranium fission, discovered one year earlier in Europe. The new knowledge was not publicised, and contrary to the usual practice in the scientific world, all those who had taken part in it, decided among them to keep it secret, reasoning that national security might become involved. However, the same cognition was indeed gained at about the same time and independently in Paris and became the subject of a patent deposition. Two further years elapsed until any organised development work on nuclear weapons really started.

The need for secrecy in the development of the atomic bomb during the war logically led to a strict control on the material. Immediately after the second world war, the United States of America still had the monopoly of the A-Bomb technology; the knowledge of the theoretical and practical possibilities of application was however much more widespread. Confronted with these facts the USA had to decide whether to renounce any further nuclear development with the hope of limiting proliferation risks, or to follow the advice of some scientists and politicians to release all information on results obtained so far. A medium way was adopted, consisting in the further development of research on the peaceful uses of nuclear energy, as an ultimate but not immediate aim, i.e. development for weapons and for peaceful purposes continued in parallel.

Since then, the design and implementation of a safeguards system to prevent or detect diversion of nuclear material from peaceful purposes to military uses has always had a significant place in the American nuclear energy programme.

The first Resolution on atomic energy which was adopted by the 1946 General Assembly of the United Nations established a UN Atomic Energy Commission (UNAEC) which was expected to make proposals "for control of atomic energy to the extent necessary to ensure its use only for peaceful purposes; for effective safeguards by way of inspection and other means to protect complying States against the hazards of violations and evasions". This resolution was sponsored jointly by the United States, the Soviet Union, the United Kingdom, France and Canada and was adopted unanimously.

* The ideas expressed, and the facts given in this article are under the sole responsibility of the author.

In the same year a plan was presented, the so-called Baruch Plan, named after the US delegate to the UNAEC, providing for a complete international control of nuclear energy, thorough accounting of all nuclear material, and even international ownership of all major nuclear material for national military purposes, undeniably showed some aspects of "World Government", although limited to nuclear energy. The world was not ripe for it; the prevailing cold war conditions at that period and the consequential Soviet objections led to failure of the plan. One year later, the USSR brought forward a counter-proposal of a more limited scope, which also included the features of an effective international safeguards system. It was a scheme going far beyond the one finally adopted 20 years later in connection with the Non-Proliferation Treaty. With the cold war in full swing it had no chance either of being adopted.

1949 saw the first Soviet nuclear tests; parity with US regarding nuclear weapons technology was reached in 1953 with the explosion of the first thermonuclear bomb in USSR. The same year, President Eisenhower delivered to the UN General Assembly the since then famous "Atoms for Peace" message containing an international programme to help the world "... shake off the inertia imposed by fear and ... make positive progress towards peace". This would be made possible if "... the Governments principally involved begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials to an International Atomic Energy Agency". This proposal was at the same time committing the United States to permitting international distribution of fissionable material.

The implementation of this new policy made it necessary to introduce basic changes in the US law. The 1954 Atomic Energy Act empowered the Government to take part in an "international atomic pool" and to enter into co-operation agreements with other States on the peaceful uses of atomic energy.

The provisions of the Act therefore paved the way for membership of the USA in the future IAEA, and led to the conclusion of a great number of bilateral co-operation agreements. All such agreements contained the requirement that no exported equipment or material transferred would be used for nuclear weapons or any other military purpose, and foresaw inspections by a US authority to assure the fulfillment of this condition.

Early in 1954, following the Atoms for Peace proposal, secret contacts took place between the Soviet Union and the USA for the founding of the IAEA, but were unsuccessful. A draft Statute was then prepared amongst States principally involved in nuclear energy and, after consultations with the Soviet Union, was submitted on the last day of the first Atoms for Peace Conference in Geneva (1955) to the then 84 Member States of the UN.

II THE SAFEGUARDS SYSTEM OF THE IAEA

The Statute of the International Atomic Energy Agency was approved on 23rd October 1956 by a Conference which was held at the Headquarters of the United Nations, and came into force on 29th July 1957. One of the key provisions concerning safeguards is contained in Article III.A.5, which authorises the Agency "to establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities and information made available by the

Agency, or at its request or under its supervision or control are not used in such a way as to further any military purpose; and to apply safeguards, at the request of the parties to any bilateral or multilateral arrangement, or at the request of a State to any of that State's activities in the field of atomic energy." Also, Article XII.A of the Statute sets forth the rights and responsibilities that the Agency has - to the extent relevant - with respect to any Agency project or arrangement where the Agency is requested by the parties concerned to apply safeguards

The above quotations show that the scope of the IAEA safeguards activities has finally been confined to Agency-sponsored projects and to situations where a specific request is made by a State, thus veering far from the comprehensive concepts contained in the Baruch Plan there is no automaticity and Agency safeguards are applied only on the basis of specific agreements.

Further, the question of sanctions in case of non-compliance with the undertaking has also been clarified; the only direct sanctions mentioned in the Agency's Statute consist in withdrawing IAEA sponsorship and requesting the return of the supplied material. All other actions are left to the UN; the Board of Governors of the Agency would report non-compliance to all Members, the Security Council and UN General Assembly.

Under the authority of its Statute, the IAEA set up its first safeguards system in 1961 and later a revised system in 1965, which was extended in 1966 and 1968. The principles of the system and relevant procedures are described in a document (INFCIRC/66/Rev.2). In addition, a set of provisions entitled "The Agency's Inspectorate" were given effect in 1961 [document GC(V)/INF/397]. The provisions of the above documents were meant to serve as guidance for the conclusion of safeguards agreements; they would only become legally binding upon entry into force of such an agreement and to the extent that they are incorporated therein

Safeguards were first applied by the IAEA under Project Agreements for the supply of materials, equipment and facilities made available by or through the Agency. The scope of safeguards under these agreements is naturally limited to the material and items supplied, and to material produced thereby.

From 1962 on, the United States began to transfer to the IAEA the safeguards responsibilities provided in their bilateral co-operation agreements. Such transfers are effected through trilateral agreements with the Agency, the so-called Safeguards Transfer Agreements which are optional, and may be limited to certain material or items identified in the co-operation agreement, or may apply to all future transfers of such material or items.

States may also conclude with the Agency another category of agreement, by which they unilaterally submit to Agency Safeguards either certain facilities or nuclear material, or (as was the case of Mexico in 1968 in connection with its obligations under the Tlatelolco Treaty) all their nuclear activities.

Many agreements of the three above-mentioned types have been and are being concluded, mainly in respect of Agency projects, and with States which are not party to the Non-Proliferation Treaty, they are always based upon the Agency's Safeguards System as presently laid down in the document INFCIRC/66/Rev.2.

As of 1st January 1974, there were 12 project agreements, 27 trilateral safeguards agreements, with the USA, the UK., Canada, France and Australia as supplier States, and 4 unilateral submission agreements, in force with the Agency.

III SAFEGUARDS AND THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

In parallel with the development of safeguards agreements with the Agency, long and difficult negotiations took place about the Non-Proliferation Treaty. They started with a Resolution by the Irish Delegation at the 1958 UN General Assembly, and ended successfully ten years later in the same Assembly, when the text of the Treaty, prepared by the Disarmament Committee, was adopted by a vote of 95 in favour, 4 opposed and 21 abstentions.

Clearly, the Treaty may be considered as a first successful effort to turn into concrete measures that part of the initial idea of a worldwide and thorough control of atomic energy which could still be retained as realistic. Nuclear weaponry of the two super powers had in the meantime resulted in the building up of such an overwhelming mutual destruction capacity, that a political compromise between all powers for limiting nuclear proliferation appeared possible. The main arguments of opponents and abstainers were based on the fact that the Treaty did not go far enough, that it did not prevent "vertical proliferation", i.e. the increase of the nuclear military potential of the nuclear weapon States. The promise of the Parties to the Treaty, in Article 6 "... to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race ...", has led to the SALT* negotiations, where some success has been registered.

It is important to mention at this point, that the basic undertaking of the Parties to NPT and hence the objectives of safeguards in connection with NPT are somewhat different from those specified in the IAEA Statute and embodied in earlier safeguards agreements. Under the latter, nuclear material, facilities, and equipment shall not be used to further any military purpose, while NPT only prohibits "nuclear weapons or other explosive devices". Thus, under certain conditions, nuclear material may be temporarily withdrawn from the scope of application of NPT safeguards for certain non-proscribed military applications.

The Treaty also contains an undertaking of all its Parties not to supply to any non-nuclear weapon State - whether or not it is a party to the Treaty - certain equipment or nuclear material for peaceful purposes, except if it becomes subject to IAEA safeguards. This may be achieved by means of an agreement concluded between the recipient State and the Agency. However, not being party to the NPT, the Agency has no responsibility for ensuring that such agreement is concluded. This is the duty of the supplying State.

The way in which international safeguards in connection with NPT were to be implemented was of particular concern to the non-nuclear weapon States party to the Treaty. In fact, the NPT does not establish a specific safeguards system, but requires all non-nuclear weapon States party to it to accept IAEA safeguards, by means of agreements to be

* Strategic Arms Limitation Talks.

negotiated with the Agency, either individually or collectively, within specified time-limits. Thus, the Treaty has assigned a significant role to the IAEA, although the latter, not being a party to the Treaty, has no power to enforce its provisions. All rights and obligations of the States and the Agency must be defined in the safeguards agreements.

At the time of the entry into force of NPT, in March 1970, most of the Governments concerned expressed the view that, given the importance and the "sensitivity" of the safeguards agreements to be concluded, the Agency's Safeguards System was insufficiently defined. All members of the Agency were therefore invited to take part in a specially convened "Safeguards Committee", where the decisive criteria for an international safeguards system were formulated, as regards in particular technical effectiveness, credibility, general political acceptance, cost, and a number of quantitative details. The result of this work was the Agency's document INFCIRC/153 entitled "The structure and content of Agreements between the Agency and States required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons", which has, without exception, served as a basis for every agreement concluded thus far in connection with NPT.

By 1st January 1974, 42 non-nuclear weapon States party to NPT had concluded such an agreement with the Agency, and 29 of these agreements had entered into force.

IV. FEATURES OF THE IAEA INTERNATIONAL SAFEGUARDS SYSTEM

The objective of safeguards is defined as the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and the deterrence of such diversion by the risk of early detection.

To achieve this, material accountancy should be used as "a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures". "Containment" relates to the use of physical barriers, building walls, vessels and tubes as well as locks, seals and other devices designed to establish that nuclear material enclosed could not have been removed between two checks of the integrity of the barrier. "Surveillance" includes instrumental and human observation of material flows, inventory locations and nuclear processing activities, to ensure correctness of material balance accounting.

An important and novel feature, is the formal requirement in the agreement of a national control as a basis of the international safeguards work. Each State must establish and maintain its own system of accounting for and control of all nuclear material. Safeguards are to be applied in such a way as to enable the Agency to verify, in ascertaining that there is no diversion, the findings of the State's system. Thereby unnecessary duplication of the State's accounting and control activities shall be avoided.

Thus one of the main functions of the national system is the collection or generation of information and its transmission to the safeguarding authority. The details of the co-operation between the State system and the international safeguards system are defined in the

"Subsidiary Arrangements" with the State concerned which describe how the procedures laid down in the Agreement are to be implemented to permit "the Agency to fulfil its responsibilities in an effective and efficient manner".

The safeguards system itself contains the four main procedural elements, as in the previous system and in any other safeguards system. Through INFCIRC/153 they are incorporated into the safeguards agreement via some 50 detailed articles and then quantified in the Subsidiary Arrangements. They are: examination of the design of nuclear facilities, records to be kept by the facility operator, reports to be sent to IAEA and inspections to be made by the Agency.

Design information must be provided, to supply the inspectorate with a defined and limited knowledge of the facilities in which nuclear material is produced, used, processed or stored. The design examination requirement implies verification of the information provided by the State to the IAEA to ensure that safeguards can be effectively applied at each facility. It will permit among other things the determination of "material balance areas" to be used for IAEA accounting purposes and to select the "strategic points" at which nuclear material flows and inventories will be measured or containment will be checked.

Operators of such facilities must keep records on material production, change and movement. These records, consisting of accounting records of all nuclear material subject to safeguards, and of operating records for facilities containing such material, should be made available for examination by the IAEA.

Based upon the above records, reports have to be provided, on material production, changes and movements to the safeguarding authority.

Independent verification by means of inspections is carried out on recorded and reported data by comparing them with the actual nuclear material flow and inventory. Statistical techniques are applied for determining location, identity, quantity and composition of nuclear material subject to safeguards, information is collected on the possible causes of Material Unaccounted For (MUF), i.e. the difference between the inventory as established by bookkeeping and the inventory determined by measurement of all material physically present.

The number, intensity and duration of routine inspections must be kept to the minimum consistent with the effective implementation of safeguards. Criteria for determining the actual inspection effort within the defined maximum stipulated in the safeguards agreement, include the form of nuclear material, the effectiveness of the national accounting and control system, including the extent to which it is functionally independent of the operators' control system, characteristics of the State's nuclear fuel cycle, the extent to which the State's nuclear activities are interrelated with those of other States, and technical development in the field of safeguards.

There are, of course, a number of boundaries to the scope of application of safeguards, such as exemptions for small quantities, non-nuclear use of the material, or termination of safeguards upon consumption or dilution of nuclear material, etc. The most significant limitation is contained in the definition of the "starting point" of safeguards, which is that point in the nuclear fuel cycle at which nuclear material becomes subject to safeguards for the first time. This

is given as the point where any nuclear material reaches a purity and composition suitable for fuel fabrication or enrichment. The IAEA also has the right to identify and verify the quantity and composition of nuclear material before and after international transfer. In addition, the Agency is kept informed of the quantity, composition and destination of nuclear material which has not reached the "starting point" of safeguards, when it is imported or exported by a non-nuclear weapon State, unless the material is destined for specifically non-nuclear purposes.

The conclusion of the IAEA's verification activities in a State is a statement in respect of each material balance area, of the amount of material unaccounted for over a specific period, giving also the limits of accuracy of the amounts stated.

From the practical point of view, safeguards agreements concluded between the IAEA and States party to NPT and the resulting implementation of the IAEA safeguards system and of national systems appear to provide efficient tools for achieving reasonable assurance of non-diversion.

The need for international safeguards to ensure that nuclear material will not be diverted from energy production or other peaceful purposes has been acknowledged at the early stage of the nuclear development. However, turning it into reality has taken over a quarter of a century and the future deployment of peaceful nuclear activities still depends on the political goodwill of nations to accept international safeguards as a limited but concrete step towards nuclear disarmament

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