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Contents

Nuclear Energy Agency

Organisation for Economic Co-operation and Development

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LEGISLATIVE AND REGULATORY ACTIVITIES

• *Austria*

REGIME OF RADIOACTIVE MATERIALS

Order of 9th December 1975 concerning the designation of commodities subject to export licences /Federal Gazette, 1975, No 629/

The Order is based on Article II, Section 4 of the Security Control Act, Federal Gazette 1972, No 408 (see Nuclear Law Bulletin No 11) This Section authorises the Federal Chancellor, in agreement with the Federal Ministers concerned, to designate those commodities the export of which is subject to a licence pursuant to Article II, Section 4, paragraph 3 of the Security Control Act. This paragraph provides as follows

> "To the extent that it is necessary for the fulfilment of the obligations undertaken in connection with the Treaty on the Non-Proliferation of Nuclear Weapons, the export of source or special fissionable material and of equipment or material especially designed or prepared for the processing, use or production of special fissionable material requires a licence from the Federal Chancellor. Such licence is to be granted if it is ensured that the source or special fissionable material is subject, in the recipient country to the safeguards required by Article III of the Treaty on the Non-Proliferation of Nuclear Weapons. If necessary, such licences may be subject to conditions and restrictions."

The Order of 9th December 1975 makes the export of the following commodities subject to a licence in accordance with the paragraph quoted above:

- nuclear reactors, except zero energy reactors, whose production rate of plutonium does not exceed 100 grammes per year;
- equipment for nuclear reactors, such as pressure vessels, loading and unloading machines for reactor fuel, reactor control rods, reactor pressure pipes, zirconium pipes and circulation pumps for the primary coolant;
- deuterium and deuterium compounds if the total quantity exported to the recipient State exceeds 200 kilogrammes within 12 months;

- nuclear graphite, if the quantity exported to the recipient State exceeds 30 tonnes within 12 months,
- installations and equipment for the reprocessing of irradiated fuel elements,
- installations for the production of fuel elements,
- equipment specially designed or prepared for the separation of uranium isotopes, except analytical instruments,
- source material (such as natural and depleted uranium, thorium) in quantities exceeding 0.5kg,
- special fissionable material (such as plutonium 239, uranium 233, enriched uranium) in quantities exceeding 0.5g.

• *Belgium*

RADIATION PROTECTION

Amendment of the General Military Regulations governing Protection against the Hazards of Ionizing Radiations

The Royal Order of 11th May 1971 concerning general military regulations governing protection against the hazards of ionizing radiations (see Nuclear Law Bulletin Nos 8 and 9) was amended by a Royal Order dated 5th December 1975 (published in the Moniteur Belge of 27th January 1976). The amendment brings the Order into line with the content of the Royal Order of 23rd December 1970, amending the General Regulations for Protection of the Population and of Workers against the Hazards of Ionizing Radiations (see Nuclear Law Bulletin No 7), subject to certain adaptations specific to military activities.

• *Denmark*

ORGANISATION AND STRUCTURE

Reorganisation of Nuclear Activities

On 1st February 1976 the first stage of the reorganisation of nuclear activities was implemented in Denmark. The Inspectorate of Nuclear Installations, established in September 1973 under the Atomic Energy

Commission, was transferred to the Ministry of the Environment. In parallel, the AEC was transferred from the Ministry of Education to the Ministry for Trade, which is also responsible for industry and energy.

Following transfer of the AEC, and in accordance with a proposal by the now competent minister, namely the Minister of Trade, the Parliament (Folketing) adopted on 23rd April 1976 the Act on Energy Policy Measures. This Act, which came into force on 29th April 1976, the day of its publication in the Official Gazette (Lovtidende), has the objective of reducing Denmark's dependency on oil and making use of other energy resources. The Ministry for Trade is responsible for making energy policy statements to Parliament and is advised by an Energy Council. The Act establishes a Danish Energy Agency and repeals Act No 312 of 21st December 1955 establishing the Danish Atomic Energy Commission which therefore ceased to exist with the entry into force of the new Act.

A considerable number of tasks which had previously been the responsibility of the Atomic Energy Commission, such as collaboration with the European Communities, the International Atomic Energy Agency and the OECD Nuclear Energy Agency, etc., will in future be handled by the Danish Energy Agency (DEA). This new Agency will assist the Minister of Trade as well as other authorities in matters within the energy field. In addition, the Agency will follow and assess Danish and international developments in the production, supply, consumption, as well as R and D in the energy field.

The Research Establishment at Risø will continue to be a centre for R and D on the peaceful uses of atomic energy. Insofar as the necessary expertise, equipment and organisation are not otherwise available in Denmark, the Research Establishment will also continue energy R and D outside the nuclear field. The Research Establishment will have the status of a national laboratory under the responsibility of the Ministry for Trade.

A translation of the present Act is given in the "Texts" Chapter of this issue.

RADIATION PROTECTION

Order of 20th November 1975 on the Safe Use of Radioactive Substances

The survey of Danish legislation on radiation protection published in Nuclear Law Bulletin No 9, mentioned that the National Health Service had submitted to the Minister of Environmental Protection a proposal for a revision of the legal system governing radioactive substances. According to this proposal, the appropriate Minister, in pursuance of the 1953 Nuclear Substances Act, should lay down only the general provisions and otherwise authorise the National Health Service which is presently responsible for implementing these laws (licensing and control of users) to issue the technical regulations to enable the necessary adjustments to be made without delay: a similar suggestion was subsequently put before the Minister of the Interior with regard to X-ray legislation.

This new system was adopted by Order No 574 of 20th November 1975 of the Minister of Environmental Protection. The Order concerns safety measures to be taken in connection with import, production, use, storage, transport, and disposal of radioactive materials used for medical, industrial, agricultural, scientific, and other purposes. The provisions of the Order specify that the protection measures must comply with the recommendations of the International Commission on Radiological Protection (ICRP) whose maximum permissible doses must not be exceeded, in practice, radiation doses should be kept as low as possible and as few persons as possible should be exposed.

The National Health Service is authorised to issue further general regulations as well as to set up special rules for each case of licensing with regard to storage, warning signs, qualifications of the responsible user, premises, transport, treatment of waste, and reporting of incidents.

This Order does not affect the licensing system, as amended in 1974, relating to the use of radioactive substances for medical purposes. These amendments were made by the regulations issued in August 1974 by the National Health Service which is responsible for the licensing system since the adoption in 1953 of the Nuclear Substances Act, these amendments have simplified administrative procedures, in particular by reducing the number of licences to be obtained by users. The licences issued to hospitals using radioactive substances for diagnostic purposes are granted on the basis of a list containing so-called authorised radioactive materials and which are available to users. These licences must also take into account the maximum level of activity authorised in the hospital department concerned; and which depends on the type of treatment being applied and on the laboratory's facilities.

According to this system, the licence is issued to the person responsible provided that he possesses the qualifications required, it remains valid so long as this person retains his post and until the authorities decide otherwise. The licence authorises its holder to perform laboratory experiments, to use the radioactive substances in proven diagnostic methods and also for tracer element research in accordance with the above-mentioned list of radioactive substances for medical purposes. The holder of the licence may also use these substances in new diagnostic and research methods, provided, however, that prior notification of such use is sent to the National Health Service.

Apart from the standard licence, it is possible to obtain a special licence permitting the use of radioactive drugs which are on the list.

• *Finland*

ORGANISATION AND STRUCTURE

Act of 20th June 1974 on the Institute for Radiological Safety

Act No 536 of 20th June 1974 setting up an Institute for Radiological Safety was published in the Official Gazette No 536-540 of 1974 and came into force on 1st March 1975. The overall purpose of this

Institute is to prevent injuries caused by ionizing radiations. The Institute is headed by a Steering Committee whose duties must be fixed by an Order. In addition to its own resources, the Institute may call upon specialists and conclude agreements with other scientific institutes to carry out or have work carried out in this field (in particular, joint research programmes).

Order of 14th February 1975 relating to the Institute for Radiological Safety

Order No 103 was signed by the President of the Republic on the proposal of the Ministry of Social Affairs and Health, it came into force on 1st March 1975.

The main assignment of the Institute for Radiological Safety is to ensure compliance with legislation on radiation protection and with the Atomic Energy Act and to prepare appropriate implementing regulations. It must also supervise the safety of nuclear reactors and lay down directives in this field, as well as conduct research and development work on the safety of reactors and radiation protection Furthermore, it must control the level of radioactivity in the entire country and the radiation doses received by workers and the population as a whole. Finally, it acts in an advisory capacity in the radiation protection field. The Institute includes a radiation protection inspectorate, a reactor safety section and a research section and may also set up centres for research and monitoring of radioactivity.

The Institute's Steering Committee is composed of a Chairman and six members appointed for three years by the appropriate Secretary of State. A Director General is responsible for the administration of the Institute; he is appointed by the President of the Republic on proposal by the Secretary of State after consultation with the Steering Committee.

The entry into force of the present Order has repealed the Order of 27th October 1961 on the Institute of Radiation Physics.

• *France*

ENVIRONMENTAL PROTECTION

Bill on the protection of nature

A Bill on the protection of nature is presently being considered by Parliament. This Bill, which deals with the protection of natural spaces and landscapes, preservation of animal and vegetable species, maintenance of biological balance and protection of natural resources, provides in particular that studies prior to the creation of large projects must include an impact statement enabling an assessment of their consequences on the environment.

The study should describe the initial condition of the site and its environment, an evaluation of what changes would be brought about by the project and the measures planned to reduce the possibly negative consequences in view of environmental preoccupations. The impact study will furthermore be made public, and if an application were to be put before the administrative courts regarding the decision approving such project, further action on this decision would be stayed if the application is based on the absence of an impact statement.

FOOD IRRADIATION

Order of 17th October 1975 on Trade in Compound Irradiated Foodstuffs

This Order published in the Official Gazette of 2nd December 1975 authorises for an experimental period of 3 years the possession and trade in compound foodstuffs, which have been preserved by gamma radiation, for animal laboratories. The Order fixes the "absorbed dose" limits for these foodstuffs and lays down that the establishments concerned must record the operations to irradiate the foodstuffs, and the names of consignees. The irradiation operations and the laboratories using the foodstuffs are placed under the surveillance of the Service for repression of fraudulent practices and quality control. The labels on the irradiated foodstuffs must give the appropriate indications.

• *Germany*

REGIME OF NUCLEAR INSTALLATIONS

The Federal Government has transmitted to Parliament the draft of a 4th Act amending the Atomic Energy Act. The draft contains the modifications of the Atomic Energy Act necessary for establishing federal competence in the field of safe management and final storage of radioactive wastes. Furthermore, the draft contains enabling provisions aiming at protection of the population, improvement of the licensing and control procedure, as well as penal provisions.

As regards the Federal competence for the safe management and final storage of radioactive wastes, a number of new provisions are proposed for insertion in the Act.

A new Section 9(a) provides that:

- Any person who utilises nuclear energy or handles radioactive substances has to see to it that residual radioactive substances or dismantled radioactive components are used innocuously in order to reduce the production of radioactive waste to the largest extent possible. If this is not possible for technical reasons, or economically not feasible, or inconsistent with radiation protection requirements, such substances and components have to be disposed of as wastes in an orderly manner.

- The holder is required to deliver radioactive wastes to a governmental agency.

- Radioactive wastes which are not dangerous may be made subject to the (general) Federal Waste Disposal Law (Abfallbeseitigungsgesetz).

- The Länder have to collect nuclear wastes for intermediate storage while the Bund has to establish installations for the final safe disposal and storage of radioactive wastes.

New Section 9(b) makes the construction and operation of the Bund's installations for the final disposal and storage of radioactive wastes as well as any important alteration of such installations subject to a land use planning procedure based on the Federal Waste Disposal Law. The purpose of this procedure is to integrate the installation into the environment taking account of all public and private interests. The authorising decree may be made subject to conditions and issued only if the requirements of Section 7, sub-section 2, Nos 1, 2, 4 and 5 of the Atomic Energy Act (see Supplement to NLB No 15) have been met.

The draft provides further that a statutory ordinance may set forth the details concerning the delivery of radioactive wastes to the installations of the Länder and of the Bund (Section 12).

For the use of the installations mentioned in new Section 9(a), fees shall be levied in accordance with a statutory ordinance to be issued (Section 21).

The Federal Institute of Physics and Technology (Physikalisch-Technische Bundesanstalt) is to be competent to discharge the functions of the Bund under the above-mentioned provisions, under the supervision of the Federal Minister competent for nuclear safety and radiation protection (Section 23).

As regards the other amendments proposed in the draft, the following are to be mentioned. Section 11 is modified to allow a general licence for parts, systems and components of installations; the details are to be fixed by statutory ordinance. Sub-section 1 No 4 of Section 7 is enlarged so as to permit prohibiting by national law the use of radioactive substances causing avoidable radiation exposure of the population. A statutory ordinance may regulate the personal and professional requirements for experts acting in the licensing procedure, as well as the conditions for the personnel and the technical equipment of experts' organisations (Section 12).

THIRD PARTY LIABILITY

The Act Amending the Third Act Amending the Atomic Energy Act was published in the Federal Gazette (BGBl) 1975, Part I, page 3162 and entered into force on 1st October 1975 (see Nuclear Law Bulletin No 16). Sub-section (1), No 1 of Section 25a of the revised Atomic Energy Act reads now as follows:

"The provisions of the Paris Convention shall be replaced by the corresponding provisions of the Brussels Convention on the Liability of Operators of Nuclear Ships (BGBl 1975 II, page 977). The latter shall apply as domestic law to the Federal Republic of Germany irrespective of its binding force under international law, unless such application is conditional upon reciprocity effected by its entry into force."

Annex 2 of the Act is amended to read as follows

"Exemption Limits for Liability and Financial Security

Sub-section 2a*of Section 4, sub-section 2 of Section 4b and sub-section 6 of Section 25 shall comprise nuclear fuel or nuclear substances, the activity or quantity of which

(1) in a single consignment or package; or

(2) within a single installation or an independent subsidiary thereof or, in the case of a person who does not carry out a business, at the place where the applicant carries out his activities

do not exceed by a factor of 10^5 the exemption limit and which in the case of enriched uranium do not contain more than 350 grammes of uranium 235. Exemption limit shall mean the activity or quantity for the handling of which a licence or notification is not required under this Act or a statutory ordinance issued thereunder."

• *Iran*

ORGANISATION AND STRUCTURE

Act of 1974 on the Atomic Energy Organisation of Iran

A Royal Decree (Firman) of 11th July 1974 has brought into force the Act on the Atomic Energy Organisation of Iran.

The Act of 1974 gives the Atomic Energy Organisation of Iran legal personality and financial independence to enable it to develop the uses of atomic energy and radiation and to act as a co-ordinator for all atomic energy matters at national level.

* In the version of the Atomic Energy Act reproduced in the Supplement to Nuclear Law Bulletin No 15, sub-section 2a has been re-numbered sub-section 3, in anticipation of an official revised text, which has not yet been published (Note by the Secretariat).

The main duties of the Organisation are the following

- To develop atomic science and technology and to conduct the necessary studies in this field.

- To encourage efficient application of atomic science and technology in industry and agriculture, as well as in other fields.

- To inventory the country's requirements for technical assistance in the field of atomic science.

- To conduct investigations and prospecting operations for ores required in the atomic industry and to encourage extracting and processing of these ores, as well as their use in industry and nuclear installations.

- To set up atomic power plants and desalination plants.

- To manufacture and supply radioisotopes and other equipment for the application of atomic techniques at national level.

- To co-ordinate and supervise activities in the field of atomic science and technology conducted in the country by public or private bodies.

- To formulate appropriate standards, procedures and regulations for approval by the competent bodies.

- To establish contacts in the nuclear field on behalf of the Government of Iran with international centres and other countries.

- To carry out investigations on unemployed energy sources and to endeavour to benefit from other countries' experience in this field.

The Organisation is authorised to invite foreign governments or centres to participate in these activities, subject to approval by the Council of Ministers.

The exploitation of nuclear fuel resources and radioactive materials as well as the importation and distribution at national level is the monopoly of the Organisation. However, the Organisation may ask public or private bodies to carry out this work.

The directing bodies of the Organisation are the Atomic Energy Council, the Atomic Energy Committee and the President of the Organisation. The Atomic Energy Council is made up of 15 members appointed by the Act and includes, in particular, the interested Ministers. The Prime Minister, who is President of the Council, appoints a Vice-Chairman from among its members; the Vice-Chairman replaces him in his absence. The Atomic Energy Council approves the overall national policy and nuclear programmes, as well as the regulations and issues directives to ensure the smooth functioning of such activities. The Council also issues licences for the setting up of atomic installations Finally, it determines the communications policy and the exchange of scientific, technical and industrial information as well as commercial co-operation with foreign countries.

The three members of the Atomic Energy Committee are the Minister of Water and Power, who is President, the Minister of Finance and the Minister of State - President of the Plan Organisation and Budget. The duty of the Committee is to supervise directly the Organisations's activities, as well as its administrative and financial management.

The President of the Organisation is appointed by recommendation of the Prime Minister; he is responsible for the management of the affairs of the Organisation and its affiliated agencies, under the authority of the Atomic Energy Council and the Atomic Energy Committee.

• *Italy*

RADIATION PROTECTION

Decree of the President of the Republic of 9th June 1975

Decree No 482 of the President of the Republic (DPR) (Official Gazette of the Italian Republic No 269 of 9th October 1975) amends the list of occupational diseases in industry and agriculture requiring compulsory insurance, the previous list having been laid down by DPR No 1124 of 30th June 1965. Furthermore, as regards injury or disease due to ionizing radiation, the Decree extends the time-limit for compensation from 10 to 30 years after the person concerned has ceased work.

THIRD PARTY LIABILITY

Decree of 16th February 1976 on the model certificate of financial security for the transport of nuclear materials

This Decree of the Minister of Industry, Commerce and Crafts, countersigned by the Minister of Transport (published in the Official Gazette of 24th March 1976), approves the model certificate of financial security for the transport of nuclear materials. The model, reproduced in Annex to the Decree, corresponds to the model certificate recommended by the Steering Committee of the OECD Nuclear Energy Agency at its meeting on 8th June 1967. This certificate must be supplied in accordance with Article 4(c) of the Paris Convention on third party liability in the field of nuclear energy (see Nuclear Law Bulletin 1, page 30 and Nuclear Law Bulletin 2, page 65).

Such certificate of financial security became mandatory since Italy ratified the Paris Convention and the Brussels Supplementary Convention, and the Act of 1962 on the peaceful uses of nuclear energy was amended to this effect by DPR No 519 of 10th May 1975. In connection with the Act, which was reproduced in the Supplement to Nuclear Law Bulletin No 16, an error should be noted on page 21 of the Supplement t..e "Single Section" concerns the provisions of Sections 3,4 and 5 of the Act of 1962.

• *Japan*

ORGANISATION AND STRUCTURE

1975 Act on the Reorganisation of the Science and Technology Agency

A Bill was passed by the Diet on 22nd December 1975 reorganising the Science and Technology Agency (STA) into two main branches. This reorganisation took place in the context of the reform of the nuclear safety administration planned by the Advisory Council on Nuclear Administration. According to this plan, the Ministry of Trade and Industry will be responsible for regulating land-based nuclear power stations, the Ministry of Transport for marine reactors, and the Science and Technology Agency will deal with regulations covering research reactors. As in the past, each particular Ministry will remain in charge of the licensing procedures, from design to operation, for the reactors in its respective area of responsibility.

Under the new legislation, a Nuclear Safety Bureau has been created within the STA, in addition to the four presently existing bureaux for Planning, Research Co-ordination, Promotion and Atomic Energy. The Nuclear Safety Bureau will be in charge of prevention of radiation hazards, as well as regulation of nuclear fuel materials and reactors. There have also been changes in the STA's Atomic Energy Bureau and a number of its staff has been transferred to the Nuclear Safety Bureau, thus emphasising the importance accorded to development of a nuclear safety policy in step with nuclear power growth.

• *Netherlands*

RADIATION PROTECTION

Radioluminous Timepieces

By Decree of 11th August 1973 (Bulletin of Acts, Orders and Decrees, No 504), the Nuclear Energy Act (Radioactive Materials) Decree (Bulletin of Acts, Orders and Decrees, No 404 of 1969) was amended in order to insert special regulations for the use of radioactive luminous paint on timepieces.

The amendment which forms Part 4a and an Annex of the Radioactive Materials Decree, incorporates in Netherlands legislation the Radiation Protection Standards for Radioluminous Timepieces. These

Standards were recommended for adoption by the OECD Council on 19th July 1966 and by the IAEA Board of Governors on 19th September 1966. They were published in the IAEA Safety Series No 23.

THIRD PARTY LIABILITY

Order of 26th January 1976 on financial security

The Act of 27th October 1965 (Bulletin of Acts, Orders and Decrees, No 546) containing regulations governing third party liability in the field of nuclear energy (see Nuclear Law Bulletin Nos 3 and 5) provides in Section 10 that the operator of a nuclear installation has to maintain insurance or other financial security, which so far had been fixed at 50 million guilders.

By Order of 26th January 1976 (Bulletin of Acts, Orders and Decrees, No 35), this financial security has been raised to 100 million guilders.

• *Norway*

ORGANISATION AND STRUCTURE

Royal Decree of 6th February 1976 creating a Committee for appraisal of the safety of nuclear power stations

By Royal Decree of 6th February 1976 a Committee was appointed whose terms of reference are to make a broad analysis of the safety conditions in connection with the operation of land-based nuclear power stations and the transport, storage and processing, if any, of radioactive material. The purpose of the analysis is to establish an appropriate basis for assessment of the situation in regard to the safety of nuclear power stations, in order to decide whether it is a safe and sound policy to operate such plants in Norway in the 1980s.

The analysis will provide a survey and appraisal of:

- discharges and other undesirable effects ensuing from the normal operation of nuclear power stations,
- likelihood and the extent and consequences of a reactor accident,
- protection of the plants against war and sabotage;
- conditions required for siting plants in the mountains;
- transport and storage of radioactive materials;

- international supervision of fissionable materials,

- safety considerations in connection with any extraction and processing of uranium in Norway in the long-term.

The analysis will mainly be concentrated on nuclear power. However, if it so wishes, the Committee may make safety-related and environment-related comparisons with other forms of thermal generation.

The Committee was appointed at the request of the "Storting" (Parliament). In connection with the proceedings on the question of future energy supplies in Norway, the majority of the Storting's Standing Committee on Industry concluded that it would be necessary in the immediate future to arrange for a thorough enquiry into and assessment of which primary energy inputs Norway should invest in for future energy supplies. In particular, the majority pointed out that the various advantages and disadvantages would have to be weighed in terms of environment and resources, safety, economic considerations and costs, and the importance of energy supplies for the further development of society. Furthermore, the majority of the Standing Committee on Industry drew attention to the fact that there was disagreement among research scientists on the safety questions connected with the development of nuclear power. This uncertainty was primarily related to such aspects as the safety during transport of radioactive substances and waste and the consequences for future generations where the storage of highly active substances is concerned. The majority of the Standing Committee considered therefore, that it would be necessary to study the safety problems in more detail, and requested the Government to appoint a broadly-based committee composed of specialists in the field and of non-experts with community interests to propose and lead an enquiry of this nature. The Committee is composed of 21 members. It includes representatives from the Institute of Atomic Energy, the State Institute of Radiation Hygiene and the Norwegian Water Resources and Electricity Board. The Chairman is a County Governor (formerly a Member of Parliament).

It is stipulated that the Committee is to complete its work within approximately 2 years. It is expected that the ensuing report will provide important guidance when it is decided whether or not nuclear power stations are to be built in Norway.

• *South Africa*

NUCLEAR-POWERED SHIPS

Nuclear Installations (Licensing and Security) Amendment Act of 1974

Act No 38 of 23rd September 1974 (Government Gazette of 9th October 1974, No 4424) amends the Nuclear Installations (Licensing and Security) Act of 1963, as amended (see Nuclear Law Bulletin No 15) It lays down provisions regarding the licensing of nuclear-powered ships, ships with nuclear reactors on board and related questions. The Act also provides for certain exemptions from the licensing system prescribed by Section 2(2) of the Act of 1963.

• *Turkey*

RADIATION PROTECTION

1974 Decree on radiation protection and safety

Decree No 7/9038 of 30th November 1974 on radiation protection and safety was published by the Turkish authorities. This Decree, which lays down the standards applicable for radiation protection, replaces Decree No 6/7946 of 24th April 1967.

Decree of 30th September 1975 on radiation protection and safety

Decree No 15372 published on 30th September 1975 in the Official Turkish Gazette contains new technical standards for safety and health protection against radiation. The Decree was made under above-mentioned Decree No 7/9038. It is intended to facilitate application by the public authorities of the preceding regulations in this field.

This Decree contains provisions concerning registration and licensing of radioactive materials, radiation protection standards, radiation safety requirements for operators handling radiographic equipment in industry, requirements regarding the use of X-rays and radioactive sealed sources for medical purposes, as well as the conditions to be met for X-ray equipment for diagnostic purposes and particle accelerators.

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• *United States*

THIRD PARTY LIABILITY

Amendment of the Price-Anderson Act

The amendment of the Price-Anderson Act (see Nuclear Law Bulletin Nos 15 and 16) was approved by Congress and signed by the President on 31st December 1975 (Public Law 94-197). The text of the Act as amended is reproduced in the Supplement to the present issue of the Bulletin.

The amendments are substantially identical to the ones described in Nuclear Law Bulletin No 16. Public Law 94-197 provides for a ten-year extension of the Price-Anderson Act until 1st August 1987, and for three major changes:

(1) phase-out of Government indemnity;

(2) increase in limit of liability, and

(3) extension of indemnity coverage outside the territorial limits of the United States for certain limited activities.

In particular, the amendments to the Act are as follows:

Sub-section 11(q), which defines the term "nuclear incident", is extended to provide indemnity to off-shore nuclear power plants and to shipments between licensees in the United States which are routed beyond territorial waters.

Sub-section 11(t) is amended by broadening the definition of "person indemnified" in order to bring it into line with the enlarged territorial scope of sub-section 11(q) and the new sub-section 170(b).

Sub-section 170(a) is modified to emphasise the public purpose of the Price-Anderson provisions as stated in sub-section 2(i) of the Act and to provide consistency with sub-section 170(c) as amended.

Sub-section 170(b) contains the most important amendment concerning phase-out of government indemnity and increase in the limit of liability. It directs the Nuclear Regulatory Commission (NRC) to require licensees who must maintain the maximum amount of financial protection available from private sources to participate in an industry retrospective rating plan (see Nuclear Law Bulletin No 14). The NRC must establish, before 31st December 1976, a retrospective premium charge between $ 2 million and $ 5 million applicable to licensed facilities. The present $ 560 million limit on aggregate liability for a single nuclear incident will be retained until the combined amount of insurance available from private sources and retrospective premiums reaches the $ 560 million level and thus phases out government indemnity, after which, the limit of liability will rise in step with increases in insurance cover and retrospective premiums.

Sub-sections 170(c), (d) and (k) are modified by changing the date to 1st August 1987.

Sub-sections 170(c), (d), (h), (k) and (l) are modified to exclude the costs of investigating and settling claims and defending suits for damage, such costs will therefore no longer be deducted from indemnity funds paid to claimants.

Sub-section 170(e) now provides that, except for incidents occurring outside the United States to which agreements of indemnification entered into under the provisions of sub-section 170(d) are applicable, the limit on aggregate liability arising from a nuclear incident shall be either:

- $ 500 million plus the amount of financial protection required of the licensee, if the financial protection required is less than $ 60 million; or

- $ 560 million or the amount of financial protection required by the licensee, whichever is greater, in cases where the financial protection required is $ 60 million or more.

Furthermore, a new clause is inserted providing for Congressional review and action in the event of a nuclear incident involving damages in excess of the amount of aggregate liability.

Sub-section 170(f) is amended to authorise the Nuclear Regulatory Commission to reduce the indemnity fee for persons with whom agreements of indemnification have been executed, in reasonable relation to increases in financial protection above the level of $ 60 million.

Sub-section 170(i) as amended requires a report by the NRC to the Congress on any nuclear incident which will probably result in public liability claims in excess of $ 560 million.

Sub-section 170(n)(1)(iii) extends the absolute extinction period for claims to 20 years.

Sub-section 170(o)(3) now provides that the distribution plan shall also include the "establishment of priorities between claimants and classes of claims, as necessary to ensure the most equitable allocation of available funds". A new paragraph 4 requires the Commission to provide the Congress with the information it will need to determine what financial action is necessary in the event of an incident causing losses beyond the limit of liability.

A new sub-section (p) is added to Section 170 which provides that the Commission shall submit to the Congress, by August 1st 1983, a report and detailed recommendations concerning the need for continuation or modification of Section 170.

Meanwhile, the NRC has invited advice and recommendations from interested persons with regard to the implementation of public law 94-197 (Federal Register, Volume 41, No 54 of 18th March 1976). The Commission has stated its interest in receiving views on the following points, among others.

(1) The amount of the deferred retrospective premium, the time by which government indemnity will be phased out depends on the amount of that premium, and the rate at which large nuclear power reactors are licensed. Based on the Commission's estimates as to the number of power reactors for which operating licences will be granted, retrospective premium levels of $ 2, 3, 4 and 5 million will permit termination of government indemnity in 1987, 1984, 1982 and 1980, respectively. Congress has expressed its desire to phase out government indemnity as soon as it is reasonably feasible and directed the Commission to consider 1985 as a guideline. Other factors to be considered in this context are the concern that a high retrospective premium might hamper the efforts of the smaller utilities to raise capital, and the possibility to establish a lesser amount for individual facilities on the basis of the facility's size and location and other factors pertaining to the hazard.

(2) The Commission has not yet exercised its discretionary authority to require persons holding licenses to possess and use nuclear material, including persons who operate plutonium processing and fuel fabrication plants, to maintain financial protection and enter into indemnity agreements. The Commission requests views on whether licensees of plutonium processing and fuel fabrication plants should be required to maintain

financial protection and, if so, whether the financial protection level should be established at the maximum amount available from private sources or at some lesser amount.

(3) Under the present Price-Anderson system, no separate insurance contracts or indemnity agreements are issued to cover transportation of nuclear materials. Carriers are, however, covered under the "omnibus" *feature of licensee financial protection and indemnity.* It has been suggested that transportation be separately covered. The Commission invites comments with respect to any advantage to the public and/or the carrier that would result from such coverage by the Price-Anderson Act, as contrasted with present coverage under the omnibus features of the Price-Anderson Act. In this respect, deficiencies, if any, in public protection under present coverage should be identified.

• *Zambia*

RADIATION PROTECTION

Entry into force of the Ionizing Radiation Act 1972

By Order dated 3rd April 1975, the Ionizing Radiation Act 1972 was brought into force as from 1st May 1975 (Republic of Zambia Government Gazette, Statutory Instruments Supplement, 11th April 1975, text No 67).

It is recalled that the Ionizing Radiation Act 1972 lays down provisions intended to protect the public and workers from hazards arising from the use of devices or materials capable of producing ionizing radiation and also provides for all related matters (see Nuclear Law Bulletin No 10).

CASE LAW AND ADMINISTRATIVE DECISIONS

CASE LAW

• *Italy*

POSSESSION OF RADIOACTIVE MATERIALS BY MILITARY ESTABLISHMENTS

Decree No 185 of the President of the Republic (DPR) of 13th February 1964 on the safety of installations and the health protection of workers and the population against the hazards of ionizing radiation arising from the peaceful uses of nuclear energy lays down in Section 92 that, any person in possession of radioactive substances or of equipment producing ionizing radiations must inform the Medical Officers of Health for the Province accordingly within ten days, indicating the protection measures adopted.

The Director of a military establishment, the Aeronautic and Spatial Medecine Research Centre, was sentenced by the court of first instance several years ago for non-compliance with this requirement. This decision raised the question of such research establishments for military purposes being submitted to general radiation protection regulations. According to the judge, the military secret covering these establishments extended only to the nature of the research and experiments performed, and not to the fact that materials, and in this instance, fissile materials were held therein.

The criminal bench of the Supreme Court (Cour de Cassation) which disagreed with this opinion, annulled the decision in October 1974. The judges of the Supreme Court considered that the requirement laid down by Section 92 of DPR No 185 was applicable only to strictly peaceful uses of radioactive materials, which was not the case here since the materials were under military control. This judgment therefore confirms that military nuclear activities fully retain their autonomy with respect to general regulations and remain under secrecy.

INTERNATIONAL ORGANISATIONS AND AGREEMENTS

INTERNATIONAL ORGANISATIONS

• *The OECD Nuclear Energy Agency*

PARTICIPATION BY FINLAND IN NEA

In December 1975, Finland made known its intention of becoming a full Member of the OECD Nuclear Energy Agency and of also participating in the work of NEA's Neutron Data Compilation Centre and Computer Program Library.

The OECD Council accordingly decided on 22nd January 1976 that the Statute of the Agency would apply to Finland with effect from 1st January 1976. It is recalled that the Agency, which was established by Council Decision dated 20th December 1957, now has 23 out of 24 OECD Countries actively taking part in its work.

TERMINATION OF THE OECD DRAGON REACTOR PROJECT

The Agreement for the Further Extension of the Revised Agreement concerning the High-Temperature Gas-Cooled Reactor Project (Dragon), which came into force on 1st April 1973, expired on 31st March 1976. The Signatories, namely the United Kingdom Atomic Energy Authority, Austria, the European Atomic Energy Community (Euratom), AB Atomenergi of Sweden and Switzerland, could not agree on a further extension, and it was therefore decided that the Project should come to an end with the expiry of the last Extension Agreement.

Since 1959, the Signatories collaborated in a joint programme on research and development in the field of high temperature reactor technology. The first agreement, concluded on 23rd March 1959, was replaced by a Revised Agreement in 1962 which covered the period up to 31st March 1967. The experimental Dragon high temperature reactor was built and is owned by the United Kingdom Atomic Energy Authority. It achieved criticality in August 1964 and became fully operative in 1965.

Agreements for the further extension of the Revised Agreement were signed in 1966, 1968, 1969 and 1972. During the life of the Project, from 1st April 1959 to 31st March 1976, the Signatories contributed £47.335 million towards the carrying out of the joint programme. In view of the outstanding experience acquired from the design, construction and operation of the Dragon Reactor, the Agency's Steering Committee decided, at its meeting on 29th April 1976, that a history of the Project should be commissioned for publication. (For details of the earlier Agreements, see Nuclear Law Bulletin Nos 2, 4 and 11.)

PUBLICATION OF THE AGENCY'S ANNUAL REPORT

The OECD Nuclear Energy Agency's Fourth Activity Report will be published very shortly. It covers the Agency's work for the year ending 31st December 1975, this work is described under the following headings: Nuclear power, present and future; regulatory aspects; technical development, nuclear science. The Report also contains technical annexes concerning the work of the Agency's Joint Undertakings. The heading "Regulatory aspects" includes a chapter on nuclear law which deals more particularly with developments regarding the nuclear third party liability conventions and the Secretariat's activities in the legal information sector. The NEA Report is distributed free of charge on request.

• *International Atomic Energy Agency*

NUCLEAR POWER PROJECT TRAINING COURSES

The first Interregional Training Course on Nuclear Power Project Planning and Implementation, held by the IAEA at Karlsruhe in the Federal Republic of Germany from September to December 1975, was attended by 36 participants from 20 Member States. A second course was organised at the Argonne Center for Educational Affairs, Argonne National Laboratory, USA, from 6th January to 16th April 1976 with the participation of 37 trainees coming from atomic energy authorities, other governmental agencies and public utilities in 19 countries.

These courses focussed on the management, administrative, technical and economic aspects of preconstruction planning and post-planning implementation stages, including the regulatory steps that ought to be taken during the planning process. The syllabus of the Argonne course comprised 17 major subject headings: nuclear radiation and its control, economic principles and nuclear fuel costs, nuclear technology, characteristics of major nuclear power systems and components, reactor steam supply systems, alternatives in energy system planning, legislative framework and regulatory planning, project planning, public understanding, contracting for a reactor, contracting for fuel services, costing and finances, siting and environmental considerations, safety analysis, safeguards, project management, and preview of construction, start-up and operation.

On 30th March 1976 a third course was started at the Institut National des sciences et Techniques Nucléaires, Saclay, France, that will last until 7th July 1976 and in which 28 participants from 14 countries took part. Similar courses of fifteen-week duration will again be held by the IAEA at Argonne and Karlsruhe next September with a view to assisting developing countries about to undertake their first nuclear power programmes.

In this connection it may be mentioned that the United Nations General Assembly, by Resolution 3386(XXX) adopted on 12th November 1975 in relation to the Report presented by the Director General of the IAEA for the year 1974-1975, inter alia noted "with appreciation the increased and continuing emphasis which the IAEA places in its technical assistance programme on the introduction of nuclear power and its technology in developing countries for the peaceful needs of these countries, in particular the series of training courses on nuclear power project planning and implementation."

PEACEFUL NUCLEAR EXPLOSIONS

A Consultants' Meeting on the Legal Aspects of Peaceful Nuclear Explosions (PNE) was held in Vienna from 2nd to 6th February 1976 under the chairmanship of Professor Iain MacGibbon, Director of the IAEA Legal Division. The meeting was attended by three experts from Member States participating in the Ad Hoc Advisory Group on PNE established by the Board of Governors in June 1975, and by 37 other participants from 25 countries. On the basis of the terms of reference drawn up by the Ad Hoc Advisory Group at its meeting in October 1975, the IAEA Secretariat had prepared a draft working paper for consideration by the Consultants' Meeting. This meeting provided many useful inputs for the Legal Study on PNE to be carried on in the months ahead and which will help identify the problems on which agreement is needed in order to establish a meaningful PNE regime under the Treaty on the Non-Proliferation of Nuclear Weapons.

Two other Consultants' Meetings were convened in the second half of March 1976 to discuss the economic aspects and the health, safety and environmental aspects of PNE as had been recommended by the Ad Hoc Advisory Group which will hold its second series of meetings next June.

ADVISORY SERVICES ON NUCLEAR SAFETY AND REGULATORY MATTERS

In implementing the Agreement (INFCIRC/203) concluded in 197- between the IAEA and the Government of Mexico relating to the establishment of a first nuclear power station at Laguna Verde in the State of Veracruz, the IAEA provided in January 1976 the services of an expert from its staff to assist the Mexican authorities in evaluating the quality assurance programme for the project and to advise them on management aspects, including regulatory matters connected with the limited construction permit that was issued in December 1975. These advisory services were provided under the IAEA Technical Assistance Programme as was the case of an earlier mission composed of two staff members that had been sent to Mexico in July-August 1975, at the request of the Mexican authorities, to help in the assessment of the preliminary safety analysis report (PSAR) for the first stage of the project.

Under a similar agreement of 1974 (INFCIRC/213) concerning the Yugoslav first nuclear power plant at Krsko, Slovenia, the IAEA also provided the services of an expert from its staff to assist the Yugoslav authorities in April-May 1976 in a review of the PSAR for the project.

In response to a request by the Government of Kuwait for assistance in the initiation of a nuclear power programme, the IAEA last year sent an advisory mission to Kuwait to help in the elaboration of such a programme from both the technical and economic viewpoints. A preliminary site survey mission was subsequently provided to the Government in December 1975 to advise on the suitability of a possible location for the installation of a nuclear power plant. The Government has also requested the IAEA advisory services with regard to the establishment of a legislative and regulatory framework for nuclear energy applications; the requested assistance will be provided to Kuwait in the first half of this year. In the meantime, a draft Radiation Protection Act prepared by the Health authorities in Kuwait has been reviewed and revised by the IAEA Secretariat for consideration by the Government.

As a result of the advisory services provided to the Government of Malaysia in 1974 and subsequent consultations between the IAEA Secretariat and the Malaysian National Advisory Committee on Nuclear Energy in the course of last year, a draft Atomic Energy Control Act was completed early this year for submission to the Government. The draft act provides for the establishment of a National Atomic Control Board with a limited composition, statutorily independent and vested with broad regulatory powers for the discharge of its control and supervision functions over the production, application and use of atomic energy for peaceful purposes. Principles and conditions to govern activities that may be authorised by the Board are set forth in the draft act, on the basis of which the Board may issue such regulations and prescribe such measures as the need arises to ensure that authorised activities are carried out in a safe manner, without undue risk to the public health and safety, with proper regard to protecting the environment, and to the general advantage of the country.

IAEA SAFETY STANDARDS AND MEASURES

The IAEA Safety Standards and Measures as revised in 1975 were approved by the Board of Governors on 25th February 1976 for application to the Agency's own operations and to operations carried out by Member States that make use of the Agency's assistance in one way or another. The concept of safety missions, whose primary objective is to provide practical guidance and effective help to Member States in the safe use of atomic energy for peaceful purposes, has been embodied in the revised document (to be published as INFCIRC/18/Rev.1). The Agency's right of inspection to the extent relevant to an activity carried out by a Member State or group of Member States with the Agency's assistance as provided for under the Agency's Statute is not, however, affected by the provision of safety missions for advisory purposes that is expected to be increasingly relied upon by developing countries in conjunction with the implementation of nuclear power projects.

SAFEGUARDS AGREEMENTS

The Agreement between the IAEA and the Governments of Brazil and the Federal Republic of Germany for the application of safeguards in relation to the Agreement for Co-operation between these Governments

in the peaceful uses of nuclear energy was signed in Vienna on 26th February 1976. Another Agreement between the IAEA and the Governments of the French Republic and Pakistan for the application of safeguards in relation to an Agreement between France and Pakistan for the construction of an irradiated fuel reprocessing plant in Pakistan was signed on 18th March 1976. Both Agreements, which had been approved by the Board of Governors on 24th February 1976, entered into force on the respective dates of signature.

The Agreement of 27th June 1975 for Co-operation between Brazil and the Federal Republic of Germany (see Nuclear Law Bulletin No 16, page 43), which entered into force on 18th November 1975, provides for co-operation in fields such as prospecting, mining and processing of uranium ores, manufacture of nuclear reactors and other nuclear energy facilities, uranium enrichment and enrichment services, fabrication of fuel elements, reprocessing of irradiated fuels and the transfer of relevant technological information. The delivery or transfer of any relevant material, facilities or technological information is subject to the prior conclusion of a safeguards agreement with the IAEA. The latter agreement as is now effective is based on the Agency's Safeguards System (INFCIRC/66/Rev.2) but also takes into account the latest developments in the field of safeguards and their application, including the principles embodied in the agreements recently approved by the Board of Governors The Safeguards Agreement of 26th February 1976 covers not only the transfer of equipment and materials but also of technological information - whether directly in the form of documents or indirectly in the form of equipment. The duration of the Agreement is related to the period of actual use of the items transferred and the corresponding obligation to notify the IAEA will remain in force as long as the Agreement is in force. The principle that all items derived from transferred technological information are subject to the Agreement applies without time limit.

Since the Co-operation Agreement between Brazil and the Federal Republic of Germany extends to the enrichment of uranium, the Safeguards Agreement concluded by them with the IAEA also provides for the application of such extensions of the Agency's Safeguards System as may be approved by the Board of Governors with respect to special safeguards procedures for isotope separation plants. Another novel feature of this Agreement is the undertaking by each Government to keep the Agency informed of the measures it will adopt to ensure the physical protection of nuclear material, nuclear facilities and specified equipment.

As regards the Co-operation Agreement between France and Pakistan, the negotiation of which was concluded in January 1976, its scope is limited to the construction of a single reprocessing plant in Pakistan, planned for operation by 1980. The transfer of technological information under that Agreement is confined to information concerning the installation and operation of the plant. The Safeguards Agreement of 18th March 1976 between the IAEA and both Governments takes into account these elements and follows in substance the Safeguards Agreement of 22nd September 1975 between the Agency, France and the Republic of Korea (INFCIRC/233).

It will be noted that both the IAEA/Brazil/Federal Republic of Germany and IAEA/France/Pakistan Safeguards Agreements contain provisions for the application of safeguards with regard to the re-export of technology to third parties.

ANNUAL REPORT TO THE UNITED NATIONS AND RELATED MATTERS

On 12th November 1975 the Director General of the IAEA presented to the United Nations General Assembly, at its thirtieth regular session, the Agency's annual report for 1974-1975. Twenty-one delegations took part in the debate that followed, the General Assembly subsequently adopted Resolution 3386 (XXX) in which, inter alia, it commends the Agency for implementing General Assembly Resolutions 2829(XXVI) and 3213(XXIX) regarding nuclear explosions for peaceful purposes (PNE) and for establishing the Ad Hoc Advisory Group on PNE in that connection. In Resolution 3484(XXX) on general and complete disarmament, the General Assembly noted with appreciation the Agency's report concerning its studies on PNE and requests the Agency to continue the study and to report on progress to the Assembly at its thirty-first session. In Resolution 3478(XXX) the General Assembly also reaffirms that the potential benefits of any peaceful application of nuclear explosions should be made available to nuclear-weapon as well as non-nuclear-weapon States, in conformity with the Non-Proliferation Treaty.

A definition of the concept of a nuclear-weapon-free zone and another on the principal obligations of the nuclear-weapon States towards nuclear-weapon-free zones and towards the States included therein were adopted on 11th December 1975 by the General Assembly in Resolution 3472(XXX), part B. A reference to the IAEA is made in Resolution 3399(XXX) on the question of Namibia, adopted by the General Assembly on 26th November 1975, and which calls upon the Agency to take all possible measures to discourage the exploitation of uranium in Namibia.

• *Euratom*

The European Atomic Energy Community provided the following information on its activities.

On 17th December 1974, the Council decided on a 4-year research programme, as from 1st January 1975, on plutonium recycling in light-water reactors (Official Journal of the European Communities No L/349 of 28.12.1974).

On 26th June 1975, the Council decided on a 5-year radioactive waste management and storage programme as from 1st January 1975 (Official Journal No L/178 of 9.7.1975).

On 25th August 1975, the Council furthermore decided on a research programme on refractory materials for a period of 2 years as from 1st January 1975 (Official Journal No L/231 of 2.9.1975).

By contract signed on 11th December 1975, the Commission of the European Communities entrusted Belgium (the Secretariat for Economic Affairs) with the management of Euratom's nuclear documentation.

AGREEMENTS

• *Italy*

RATIFICATION OF THE BRUSSELS SUPPLEMENTARY CONVENTION

On 3rd February 1976, the Government of Italy ratified the Brussels Convention Supplementary to the Paris Convention on Third Party Liability in the Field of Nuclear Energy, and its Additional Protocol. It is recalled that by Decree No 519 of 10th May 1975, provisions have been enacted for the purpose of aligning Italian third party liability legislation with the Paris and Brussels Supplementary Conventions (see Nuclear Law Bulletin No 16 and Supplement).

In accordance with its Article 20(d), the Brussels Supplementary Convention and its Additional Protocol will come into force for Italy three months after deposit of the instrument of ratification, namely on 3rd May 1976.

• *Japan-United States*

REACTOR SAFETY RESEARCH AGREEMENTS

The United States Nuclear Regulatory Commission (NRC) and the Japan Atomic Energy Research Institute (JAERI), signed two agreements on 23rd February and 9th March 1976, respectively concerning Japanese participation in the NRC's Loss of Fluid Test Programme (LOFT) and the Power Burst Facility Programme (PBF). Both Agreements were concluded in the frame of the International Energy Agency's (co-operative) energy research programme.

The LOFT four-year agreement is similar to the one signed between the United States and Germany (see Nuclear Law Bulletin No 16), and provides that Japan will contribute $ 1 million a year and will take part in the future planning and conduct of the programme, receiving all the research results from LOFT. JAERI scientists will be stationed at the test site and in addition, a JAERI consultant will co-operate in the present and future programme review.

The agreement on the PBF research programme was also concluded for four years, and provides for technical exchange of information between the United States and Japan. Under this reciprocal agreement, the United States will participate in the JAERI research programme, and JAERI will take part in a series of tests at the Power Burst Facility which are designed to provide experimental data for a better understanding of the behaviour of power reactor fuel rods under postulated accidents. Similar

fuel rod behaviour tests will also be conducted in JAERI's nuclear safety research reactor in the Tokai Research Establishment. Scientists from both countries will work in each others' facilities, engaging in tests and analyses of results as well as programme reviews.

• *Euratom - IAEA*

CO-OPERATION AGREEMENT

The International Atomic Energy Agency and the European Atomic Energy Community concluded a Co-operation Agreement on 1st December 1975 in Vienna. Under the Agreement, the Contracting Parties have decided that in order to facilitate achievement of their respective aims, they would act in close co-operation and consult each other regularly on matters of common interest so as to harmonise their efforts insofar as possible. The IAEA and Euratom will furthermore take the necessary measures to ascertain reciprocal representation at the meetings convened under their respective auspices. The Co-operation Agreement also provides for a wide exchange of information and documents. The Agreement came into force on 1st January 1976.

• *IMCO*

CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY THE DUMPING OF WASTES AND OTHER MATTER

This Convention was adopted at the close of the International Conference held in London from 30th October to 10th November 1972. The Convention was opened for signature by any State from 29th December 1972 until 31st December 1973, following which it was open to accession by any State.

The 1972 London Convention is at present the major international agreement aiming to regulate marine pollution by wastes, and in particular, by radioactive wastes. Its provisions classify wastes into three categories the first comprises wastes totally prohibited from dumping; the second, the wastes requiring a special permit prior to dumping, and the third wastes requiring a prior general permit.

The Convention entrusted the IAEA with the task of defining which radioactive wastes belonged to the different above-mentioned categories. Accordingly, at the end of 1974, the IAEA Board of Governors submitted provisional recommendations to the United Kingdom, the depositary country of the Convention, which was responsible for its Secretariat pending its entry into force (see Nuclear Law Bulletin Nos 14 and 16).

As the Convention came into force on 30th August 1975, a meeting of the Contracting Parties was held in London from 17th to 19th December 1975, during which the Inter-Governmental Maritime Consultative Organisation (IMCO) was designated as the competent organisation for ensuring the Secretariat of the Convention. In addition, the first consultative meeting was planned for September 1976 to consider administrative and procedural matters raised by application of the Convention The United Nations Environment Programme was also requested to provide assistance to IMCO as appropriate regarding implementation of the Convention.

In April 1976, the following countries had ratified or acceded to the Convention:

Afghanistan	2nd April	1975
Canada	13th November	1975
Cuba	1st December	1975
Denmark	23rd October	1974
Dominican Republic	7th December	1973
Guatemala	14th July	1975
Haiti	28th August	1975
Hungarian People's Republic	5th February	1976
Iceland	24th May	1973
Jordan	11th November	1973
Kenya	17th December	1975
Mexico	7th April	1975
New Zealand	30th April	1975
Nigeria	19th March	1976
Norway	4th April	1974
Panama	31st July	1975
Philippines	10th August	1973
Spain	31st July	1974
Sweden	21st February	1974
Tunisia	26th April	1976
United Arab Emirates	9th August	1974
United Kingdom	17th November	1975
Union of Soviet Socialist Republics	15th December	1975
United States of America	29th April	1974
Zaire	16th September	1975

• *Denmark*

ACT OF 23RD APRIL 1976 ON ENERGY POLICY MEASURES*

Chapter I

PLANNING OF ENERGY POLICY

Section 1

1) In order to create a basis for reducing the nation's dependency upon imported oil, by improved utilisation and application of energy and by accelerated utilisation of other energy sources, the Minister of Trade shall prepare statements on energy policy which shall include:

i) assessments of energy requirement and the possibilities of energy supply;

ii) objectives and programmes for a rational supply and utilisation of different forms of energy, and

iii) programmes for energy research and development.

2) The Minister of Trade shall submit the reports mentioned in sub-section 1 to the Parliament.

Section 2

1) The Minister of Trade shall be advised by a Council for Energy Planning and Research (energirådet) in the preparation of the reports mentioned in Section 1.

2) The Council for Energy Planning and Research consists of a Chairman and eleven other Members who are appointed by the Minister of Trade. The Council shall be composed of four scientists competent in

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* Unofficial translation prepared by the Secretariat.

the field of energy and seven Members following their respective nominations by the Economic Board of the Danish Labour Movement, the Industrial Council, the Consumers Council, the Association of Danish Electricity Producers, the Joint Representation of the Oil Industry, the Association of Danish Gas Producers and the Danish Association for District Heating

3) The Minister can assign to the Council representatives from other ministries concerned.

4) The Minister of Trade lays down the working procedure of the Council and decides upon the organisation of its Secretariat.

Chapter II

THE ENERGY AGENCY (ENERGISTYRELSEN)

Section 3

1) The Energy Agency assists the Minister of Trade and other authorities in matters within the energy field.

2) The Agency shall follow and assess Danish as well as international development and production, supply, consumption and research in the energy field.

3) The Minister may delegate tasks to the Agency including executive functions within the energy field, which, under this Act, are the responsibility of the Minister.

Chapter III

THE RESEARCH ESTABLISHMENT RISØ

Section 4

1) The Research Establishment Risø has as its objective to carry out research, development work and consultancy activities of importance to the application and control of atomic energy for peaceful purposes.

2) The Research Establishment may also carry out corresponding activities in respect of energy in general.

3) The Research Establishment may take on, for public and private requestors, the solution of tasks within the above-mentioned fields. Such activities may be made subject to financial compensation and special conditions may be laid down in contracts relating thereto.

Section 5

1) The Research Establishment is directed by a Board composed of up to ten Members. The Chairman and the other Members are appointed by the Minister of Trade for periods of three years. The Members shall, inter alia, represent scientific and technical research, the Ministry of the Environment and also industrial and economic interests. Two Members are appointed following a recommendation by the staff of the Research Establishment.

2) The Minister of Trade lays down the guiding principles for the work of the Research Establishment following the Board's recommendation. The Board shall approve annual and pluri-annual programmes of work on major projects as well as participation in international projects.

Section 6

1) The Management conducts the day to day management of the Research Establishment.

2) The Management is appointed by the Minister of Trade for periods of six years following a recommendation by the Board.

Section 7

The Board shall submit a yearly report on the activity of the Research Establishment to the Minister of Trade who shall forward it to Parliament.

Section 8

Detailed instructions for the Board of Management of the Risø Establishment shall be laid down by the Minister of Trade.

Chapter IV

ENTRY INTO FORCE, ETC.

Section 9

1) This Act enters into force upon publication in the official journal (Lovtidende).*

2) Act No 312 of 21st December 1955 on an Atomic Energy Commission is repealed.

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* This Act came into force on 29th April 1976.

3) In paragraph 5, sub-section 1, of Act No 199 of 24th May 1972 on a Research Council and the Planning Council for Research, the term "Atomic Energy Commission" is substituted by "The Board of the Research Establishment Risø".

Section 10

1) The Act does not apply to the Faroe Isles and Greenland.

2) By Royal Decree the Act may be made applicable to Greenland with the adjustments indicated in view of the special conditions for Greenland.

STUDIES AND ARTICLES

ARTICLES

PHILOSOPHICAL GOALS OF NUCLEAR REGULATION*

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The idea that government should exercise a major control over the development of nuclear power has been the cornerstone of the American nuclear programme for the past several decades. Legislation was first passed in 1954 authorizing the licensing of private companies for peace-time nuclear purposes and establishing a governmental regulatory programme to oversee these endeavours.

The philosophical basis for these government controls is that the benefits of nuclear power should be made available to the general public but government must make certain there is a reasonable assurance the associated risks are acceptable. In the United States the Federal government, through the Nuclear Regulatory Commission (NRC), has been given the authority to make this determination on behalf of the nation.

The regulatory responsibility to protect the public interest

The philosophy of Federal nuclear regulation emerges from a very intricate social process through which public opinion, industry's objectives, law and government policy interact. The goal is that regulatory agencies "protect the public interest".

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* This article is reproduced by kind permission of the author. The ideas expressed and the facts given are under his sole responsibility. It was originally presented to the IAEA Nuclear Power Project Planning Course, held at the Argonne National Laboratory, 19th February 1976.

Few people in the United States really like the way regulation works. Seldom does anyone say anything positive about regulatory practices. Those in industry accuse regulators of either over-regulation or foot-dragging; public opinion often casts them as "harlots" in the service of industry, and, other branches of the government criticize them for either doing too little or too much. Why are regulators exposed to such broadsides? One explanation stems from the fact that no one can say, without challenge from some sector, "there lies the public interest".

We talk a lot about "the public interest". The problem is that no one knows exactly what it is. Reflecting on how decisions are made in the public interest, Joseph Alsop, a noted American columnist, recently could only conclude that it happens "somehow or other". But he did add, "The main point is that somehow or other America does work ... the right choices have been made again and again." Walter Lippmann, another brilliant observer of the American scene, was somewhat bolder. He once defined the public interest as "what men would choose if they saw clearly, thought rationally, and acted disinterestedly and benevolently". That is an awesome challenge, but I think Mr. Lippmann was right on target. And, Mr. Alsop was right, too. For more often than not, the challenge is met.

From time to time others have tried to further define the elusive concept of regulation in the public interest. From their conclusions comes an appreciation for the many pitfalls that await any regulator. First there seems to be agreement that the predominant norms for regulatory policy are that the industry involved be so regulated that it serves the public in an efficient and economic manner, while at the same time taking advantage of any technological progress that might provide less expensive and improved quality of service to consumers. Other norms imply that regulators, in an equitable manner, assure the stability and uninterrupted continuity of the regulated service. And, for more specific charters, such as those once assigned to the Atomic Energy Commission (AEC), and now to the Nuclear Regulatory Commission, there are provisions for guaranteeing public health and safety, protecting environmental quality, safeguarding national interests, and enforcing antitrust laws.

The Nuclear Regulatory Commission has been freed from the albatross of apparent compromise that hindered the AEC. Unlike its predecessor, NRC does not have to both develop and regulate nuclear power. As set forth in the Energy Reorganization Act, Congress felt it was "in the public interest" to separate these functions. However, the motivation for the reorganization had broader implications. In short, "to (help) make the nation self-sufficient in energy, to advance the goals of restoring, protecting and enhancing environmental quality, and to assure public health and safety". Essentially, these goals vary little from those the AEC sought in recent years, but unfortunately the AEC was slow to acknowledge what regulation in the public interest really implies.

In the 1950s and 1960s the AEC vigorously pursued the development of nuclear power and neglected its regulatory role. The national importance of developing an economical, efficient and safe nuclear power technology motivated the agency's commitment to the development role. However, the AEC was slow to shift its emphasis. As each additional nuclear unit came on line, questions of public interest did shift from Is nuclear power possible, to is nuclear power safe, is it compatible with the environment; can the AEC regulate it? The AEC, however, was not prepared to deal with all of these issues, it had interpreted its regulatory role in a narrow sense - radiological safety. It was left to the courts to explain that the protection of the "public interest" demanded more.

The Calvert Cliffs decision of July 1971 opened the AEC's eyes to the fact that the nuclear industry was viable and already an important factor in the nation's energy picture, that the regulation of nuclear power encompasses more than an assessment of radiological safety, and that the AEC had a regulatory, as well as developmental, responsibility.

This change in outlook came at an opportune moment. In 1971 there were only 19 licensed nuclear power plants in this country. As of January 1976 there were 56 licensed plants that together represent 39,000 megawatts or 8-9% of the nation's total installed electrical generating capacity. In addition, 87 nuclear plants were under construction and 93 were planned. In short, nuclear power has become an integral part of the nation's energy economy. Thus, the problems that beset the industry or the agency that regulates it inevitably affect the public interest. This makes it imperative that NRC anticipate emerging problems and changing values in its approach to the regulation of nuclear power. To do otherwise will detract from the fundamental goal of regulation. No regulatory body can operate in a vacuum and still hope to have its decisions reflect the public interest.

As I have said, the establishment of the Nuclear Regulatory Commission has freed nuclear regulation in this country from allegations of legislative bias or promotionalism. However, a legislative mandate is not enough to assure that the Commission will be accepted as protector of the public interest. This can only result from the performance of the Commission.

A design basis for regulation in the United States

For those of us who were given the goal of restructuring the United States nuclear regulatory system in 1971, certain criteria guided our decisions and actions:

1. Timeliness and Efficiency
2. Conservatism and Effectiveness
3. Openness and Independence.

These guidelines were meant to assure that the goal of seeking the public interest was achieved in the process of regulating the nuclear industry.

Timeliness and efficiency

Timeliness and efficiency became priority goals of the United States nuclear regulation not only because they represent obvious obligations of an effective regulatory programme, but also because of the urgent national need to reduce nuclear project times. This need was accentuated by worsening United States energy problems. A national goal was announced to reduce from ten years to six the average time required to bring nuclear plants from conception to commercial operation. Thus, to assure that regulation would provide safety with a minimum economic disruption and in a timely fashion, a series of initiatives were instituted·

- Issuance of Limited Work Authorisations permitting site work and minor construction to begin prior to granting construction permits upon completion of environmental and site suitability reviews,

- Establishment of a senior staff committee to review and control proposed mid-project imposition of additional regulatory requirements, a sometimes too frequently practiced and unnecessary regulatory process;

- Reorganisation of the regulatory staff to permit project reviews to proceed simultaneously along different technical paths supplemented by the introduction of a project scheduling system using management logic (critical path) networks,

- Development of standard format and content guides to assist in the preparation of applications and increased frequency of pre-application contacts with applicants. Regulatory rules restructured to control practices leading to delays, and, applications screened for completeness before docketing for technical review;

- Generic rulemaking hearings held to resolve on a one-time basis issues common to many proposed plants, such as those associated with the adequacy of Emergency Core Cooling System criteria.

As a result of these changes, the time required from docketing to start of construction was reduced from 40 months in 1970 to under a year today, and, overall project times from 10 years to 7-8 years. Further, while in 1971 and 1972 some completed plants stood idle awaiting completion of the licensing process, this no longer occurs.

This result is largely attributable to getting a handle on the regulatory process - not allowing the machinery to become self-serving. Regulation for the regulator's sake is counter-productive. The aim of regulation must be clearly identified - and the regulatory machinery geared to achieving that end - in this case, nuclear safety and security in an efficient framework.

The essence of the plan was to invest the regulatory process with as much standardization as possible - both in procedural and design forms. For example, in 1971, the development of nuclear standards was dormant. Since that time a significant body of standards has been developed at an increasing pace. The existence of this comprehensive body of standards is a key to strengthening quality assurance in the design, construction and operation of nuclear plants. Such a body of standards, taken together with a general levelling off in the design evolution curve, also makes much brighter the prospects for standardization throughout the nuclear industry, which in turn helps expedite licensing while underwriting a higher degree of confidence in safety designs.

Despite the fact that the licensing logjam has been broken and significant progress made toward standardized approaches and generic rather than ad hoc resolutions of regulatory questions, consistent and critical review of the overall regulatory picture is still needed to ensure that maximum effectiveness and efficiency are maintained. Certain problems and challenges must receive increasing attention.

The time required from conception to operation of nuclear plants can still be improved. Various regulatory changes, including use of limited work authorizations, should cut about two years from the ten years which has typically been required for designing, reviewing and building nuclear plants. However, legislation now pending before the United States Congress is needed to achieve a target of six years. What the proposed legislation would accomplish basically is to provide for hearings at earlier and more meaningful stages, to encourage greater use of nuclear plant standardization, and to make possible the use of predesignated sites for nuclear power facilities. The use of predesignated sites can be particularly important in helping to resolve environmental issues before resources are irretrievably committed and in assuring better advance planning of land and water use.

The siting of nuclear facilities involves some particularly difficult issues. In a number of cases in the past few years, siting problems have led to major changes in plant designs and in some cases to complete rejection of sites. These situations have had significant adverse effects on schedules and costs - results that better guidance and criteria could mitigate and predesignated sites could assure. That is why high on the list of siting priorities is the development of regulatory guidelines for nuclear energy centres which may house several reactors as well as supporting fuel cycle facilities. This is one of the specific legislative goals identified in the U.S. Energy Reorganization Act of 1974.

The United States' experience with achieving timely decisions shows a marked improvement. It also serves as a warning that these regulatory goals cannot be assumed but must be aggressively pursued at all times to avoid retrogression.

Conservatism and effectiveness

Balancing the effort to maximize efficiency is the principle of conservatism which guides the United States approach to health and safety in nuclear regulation. Absolute safety is of course unattainable. But, regulation should require that the probability of any occurrence adversely affecting the health and safety of any member of the public be extremely low. This is reflected, for example, in regulations which require that the radioactivity in routine liquid and gaseous effluents of nuclear power plants be kept "as low as practicable". Each person's exposure to gaseous and liquid reactor effluents must be limited to a small fraction of the exposure that a person receives from natural background radiation. Also indicative of the "conservatism" philosophy is the "defense-in-depth" design requirements for reactors in the United States.

Industry spokesmen have complained that the degree of health and safety assurance required is excessive in that it exceeds what is required of comparable industrial undertakings, even considering the magnitude of the possible consequences should something go wrong. This may turn out in hindsight to have been a valid complaint. We cannot be sure at this stage because, at least on the nuclear side of all such comparisons, we are dealing with a relatively new technology and are still faced with some uncertainties as to the probabilities and consequences of a serious accident. It became a principal point in the approach to regulatory tasks in the United States that such uncertainties be resolved in favour of extra conservatism and additional margins of safety. There will be time enough later, when more is known about probabilities and consequences, to relax these extra margins if what is learnt

trends that way.

While efforts to provide timely decisions form a principal objective, an equal and even overriding goal has been that those decisions should be of consistent quality. In addition to the programme to develop standards and standardization, other important efforts were made to achieve the goal of consistent quality·

- Standard review plans in approximately 200 discrete areas of licensing review have been developed and published. These review plans establish the criteria against which licensing decisions will be made by the regulatory organisation. They constitute a mammoth effort to stabilize the process so that consistency and quality will permeate the regulatory decisions. They reduce the possibility that important items will be overlooked or given insufficient attention and they decrease the possibility of arbitrary or inconsistent decisions;

- An intensive effort has been made to recruit and train the best qualified people in the multiple disciplines required to review licensing applicants. In addition, support outside of the agency has been retained in order that the technical expertise and competence of the regulatory programme is as good or better than any to be found in the country.

While conservatism and effectiveness must compete with efforts for timeliness and efficiency, in the final analysis concervative and effective or quality decisions must prevail over the other goals.

Openness and independence

In the American social and political tradition, acceptance and confidence concerning government regulation is largely a product of two conditions - one, how well regulation serves the public interest, and, two, how credible is the objectivity of the regulators. Given as diverse a constituency that regulators must serve in the United States, it comes as no surprise, that regulators as a rule are constantly exposed to broadsides of criticism. Those who regulate the nuclear industry, irrespective of the fact that their responsibility is to protect the public health and safety, share in this kind of castigation. Nonetheless, their responsibility demands that they rise above suspicion, and, despite the heat of often unfounded and unfair criticism, independently reach decisions and take actions that are dictated by the weight of evidence and professional judgement to be in the public interest. However, regulators in the United States must always remain cognizant of the fact that they are conducting the public's business and that the final test of their decisions is public acceptance. That is why the criteria of openness and independence loom so very large in the ultimate effectiveness of nuclear regulation in the United States.

A regulatory body can possess the wisdom of Solomon and be motivated by the highest of altruism, but unless the people have confidence, unless the public perceives the regulators as fair and objective, unless the people know they can affect the decision-making process, the regulators are, to put it bluntly, spinning their wheels. Sensitivity to this fact, in 1971, led the then USAEC Chairman James Schlesinger to pronounce that in matters pertaining to the regulation of nuclear power, the USAEC would act as "a referee in the public interest". Then USAEC Commissioner William O. Doub further stipulated that public participation

was to become the "cornerstone" of nuclear regulation and that the public's right to know what was happening in nuclear regulation was "non-negotiable". Former USAEC Chairman Dixy Lee Ray stated just last year, "There has been an unprecedented effort by the AEC, especially during the last two years, to provide the public with full documentation on all questions of nuclear power plant safety".

Measures to achieve greater openness and candor included:

- Expanded public disclosure of virtually all official documents, including those of the Advisory Committee on Reactor Safeguards;
- Publicizing of abnormal occurrences at nuclear power plants,
- Public rulemaking hearings on nuclear issues;
- Informal meetings of staff with potential and actual intervenors in all stages of individual licensing reviews.

The NRC Public Document Room now bulges with hundreds of thousands of pages relating to reactor safety, environmental impact, economics and other matters. Withheld are only documents related to such matters as the safeguarding of materials and facilities and documents declared by their originators to have competitive commercial value.

The Regulatory Staff also tries at every opportunity to work with intervenors based on the belief that intervenors acting in a responsible manner, asking penetrating questions, alerting people to difficult problems, and insisting on adequate technical justifications can bring about earlier resolution of some problems than might otherwise have been reached and add to the certainty with which problems are resolved.

Another action that should increase public confidence is the Reactor Safety Study led by Professor Norman Rasmussen. Although some recalcitrant critics have tried to subvert that study's finding, it still seems evident that Professor Rasmussen has nullified many of the bogus scare charges against nuclear power and put nuclear accidents into proper perspective to other societal risks.

In addition to these changes, the regulatory process continues to emphasize rigorous review and public participation. Both the safety and environmental aspects of the construction permit application involve the preparation of formidable documents requiring thousands of man-hours of work by technical specialists. In addition to review by the staff, safety aspects are reviewed by an independent Advisory Committee on Reactor Safeguards and public hearings are conducted by a three-man Atomic Safety and Licensing Board before issuance of a construction permit and when requested, before granting an operating license.

Despite these intentions and efforts to make nuclear regulation the public's business, scepticism of the USAEC's motives remained, fed largely by the legacy of secrecy associated with nuclear weapons activities and by the apparent conflict of interest between the USAEC's promotional and regulatory roles. The course was clear and the Administration and Congress came forward with the logical solution - the creation of an independent Nuclear Regulatory Commission.

In a brief space of time in the United States, dramatic shifts have occurred that create an open nuclear regulatory programme providing information to all who want it and in a framework of an independent

regulatory authority having as its goal not the promotion of nuclear power but its regulation in the public interest.

Summary of U.S. regulatory concept

The situation is far from utopian in the United States, but the present outlook should be encouraging, for the regulatory structures are now largely in conformance with the principles of timeliness, efficiency, conservatism, effectiveness, openness and independence. The final test is now that of performance that reaches the goal of serving the public interest.

As we reflect on the achievements of nuclear regulation in the United States over the past few years, there should be confidence in the ability to move forward, particularly within the structure of an independent nuclear regulatory commission. However, the ultimate measure of the activities of all the entities involved in nuclear power is the fact that, despite all the dire prophecies of impending disaster, there is now a record of more than 200 United States reactor-years, and many more years worldwide, of operating experience, without injury to any member of the public. A prime reason for this extraordinary safety record has been the ability of the nuclear industry, the critics of nuclear power, and the regulatory framework to respond and evolve in step with the demands imposed by advances in technology and expanding requirements.

This raises yet another principle that nuclear regulators must enter into their credo. It is not new, it has been at work for some time, but it has usually been a silent partner. I refer, of course, to "adaptability". In the United States we are all too familiar with regulations that become cast in concrete-regulatory agencies that begin to perform out of habit rather than in step with the changing times, values, and needs. This is intolerable given the rapid changes that now affect the world. I am convinced that nuclear regulation cannot follow this path. The Nuclear Regulatory Commission, to succeed, must be finely attuned to changing circumstances throughout America and the world - changes that compel the upgrading of safeguards, that call for active participation in nuclear safety developments, and changes that require regulators to remain always cognizant of their impact on the energy and economic future of the nation.

Relating the United States experience to other countries with small nuclear power programmes

Many of the basic objectives of the United States governmental role are appropriate for use in any country. For instance, assurances by technically competent people that essential standards have been developed and are being implemented must be received by the government leaders of all nations. On the other hand, because of the different geographical, political, social and economic characteristics from one country to another, the United States approach can best be used if it is viewed as a guideline to be adapted to local requirements.

The siting of nuclear facilities is often one of the more difficult issues to be addressed. In the United States there are land areas available for power siting that are probably far more extensive than can be found in other countries with smaller land area, more limited water and higher population densities. Although the United States may

establish a certain guideline concerning population density for sites (such as 500 people per square mile out to 30 miles), other countries may not be able to meet this. The United States has been careful not to set any specific population density criteria which would eliminate a site but only to take the view that above a certain level careful evaluation must be made to see if better sites exist. This flexibility in the United States may not be possible in other countries.

Closely related to the criteria used for selecting sites are the standards imposed to protect the environment at the site selected. While the United States may use stringent requirements to protect the ambient temperature of the water or the local water ecology resulting in the use of cooling towers or other cooling methods, environmental objectives in other countries can lead to a different result. For instance, in a particular country the avoidance of potential fogging conditions from cooling towers because of the possible impact on nearby agricultural programmes may lead to a balancing of the interests in favour of fewer impacts on air quality than on water quality. While a cost-benefit balancing may be used to reach the decision, the outcome of that balance may be quite different from country to country.

In serving the public, regulators must recognize that the public has interests which may conflict. For example, the public has an interest in protection of the natural environment. On the other hand, the public has a need for reliable energy supplies.

The resolving key here is a cost-benefit analysis. The crucial determination made from a cost-benefit analysis is whether the applicant's proposed plant represents the most advantageous way of producing the power, taking into consideration alternatives which are less harmful to the environment. The question on a power plant then becomes whether an additional cost for power is justified in order to cut down on some impact on the environment.

It is obvious that the cost-benefit approach has limitations. It may be particularly hard for a technical community such as the electric utility industry to accept the lack of precision involved in the data it is asked to furnish. In some cases we are clearly pressing the frontiers of knowledge. In other cases there may have been insufficient time to gather meaningful data. Where this is the case, the state of knowledge for the future must be improved.

In the meantime, however, decisions cannot wait. We must do the best we can with our present knowledge. In the United States the conclusion is that the cost-benefit concept is a valid and disciplined means - at least it is the best means we know about - for organizing and synthesizing the information on available alternatives which the decision-maker must have.

In the United States one of the roles of regulation is to consider competitive forces among utilities. In most countries this is usually not a major issue since the normal pattern is to have one or at most only a few utilities within a country.

Another important question is whether safety standards established in the United States or other developed nuclear power nations should differ from country to country. The International Atomic Energy Agency has established a programme to develop safety codes of practice and safety guides for use by all countries throughout the world. This effort should provide a framework within which to make local decisions. It is my belief that a high degree of commonality with safety

standards is desirable. For instance, every country should have as strong an interest in quality assurance in the design, construction and operation of nuclear facilities as any other nation. It is possible, however, that the standards established for permissible routine releases and occupational exposures will vary from country to country. The International Commission on Radiological Protection (ICRP) serves a useful function to provide overall direction with the implementation expected to vary from country to country. With regard to approaches to accident risks, some variation may occur based upon evaluations of probabilities although these differences will normally not be too substantial.

As different nations assess their national interests, an evaluation of economics and nuclear risks can be expected to lead to varying results from country to country. In fact, it would indeed be surprising if there were a monolithic solution throughout the world. Rather, national interests will dictate different results.

It is important in order to judge the differences that are appropriate to have effective relationships between the supplier and buyer countries.

One starting point is the use of the International Atomic Energy Agency although at this time this support is limited. Another starting point is good working relationships between the regulatory bodies in the supplier and buyer countries. The United States has implemented a programme of information sharing between the United States and approximately ten other countries at this time. This programme was initiated in recognition that the relationships were not always good and that improvements should be made. Even now, the programme may produce information but often little analysis.

In light of the long lead times from conception to operation of nuclear power plants - from 7 to 10 years - new requirements in the midst of these projects can be disruptive, time-consuming and costly. Because commercial nuclear power technology is relatively new, new issues continue to arise and new pressure points and public controversies develop. Several issues which remain unresolved are·

1) the sources, price and lead times for enriched uranium,

2) the approach to high level radioactive waste management, and

3) the methods for safeguarding nuclear fuels and facilities against weapons proliferation and terrorism.

Nations that buy United States technology need to know what the emerging decisions in the United States about such matters will mean to them, which persons and groups are pivotal to these important decisions, and how purchasers of United States technology may communicate in the most appropriate and timely fashion with those who influence, formulate, publish and implement such decisions. A strong effort to keep current on crucial phases of nuclear power is essential to avoid pitfalls produced by lack of information.

Conclusion

The pressures in the United States all lead to greater participation by the government in the regulation of nuclear power. This encompasses more stringent requirements, greater in-depth evaluation of individual applications and tougher enforcement practices. The cost of this has already been significant and can be expected to continue. As usual, a major amount of this pressure will be exported to other countries. It is not necessary, nor even desirable, that every country have a nuclear approach identical to that of the United States. The important task will be to determine where differences should occur that can save valuable resources and still achieve nuclear power that protects the public in a reasonable manner.

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• *Germany*

Göttinger Atomrechtskatalog, Part B, Volume 26, Institut fur Völkerrecht der Universitat Göttingen, Göttingen, 1976, 460 pages

Since 1960, the Institute for Public International Law of the University of Göttingen issues the Göttinger Atomrechtskatalog (Nuclear Law Catalogue), which is divided into three parts: Part B, bibliography and sources; Part M, materials; Part L, laws, regulations and treaties (see NLB No 12).

The new Volume 26 comes under Part B; it provides a bibliography of domestic and foreign literature on nuclear law, to be followed up by Volumes 27, 28 and 29. It is divided into two parts, the first devoted to general questions and the second to special questions such as liability and insurance, radiation protection and reactor safety, licensing and control. Volume 27 will deal with comparative law, harmonisation of law, private and public international law and international co-operation Volume 28 will contain the bibliography concerning the atomic energy law of the States and Volume 29 the Register (Index).

The last Volumes of Part B were published in 1968, since then the quantity of bibliographical sources has considerably increased. As a result of this increase, it has unfortunately become necessary to reduce the number of reference and to no longer continue the chapter dealing with the extra-legal background of the uses of atomic energy (science

and technology, medecine, economic, political, philosophical, social and sociological questions). For the same reason, it was decided to no longer give a French Table of Contents and a French Index. The latter decision is particularly regrettable and it is to be hoped that at least a French Table of Contents will be re-established in the forthcoming Volumes.

The Gottinger Atomrechtskatalog is perhaps the most comprehensive documentation on nuclear law and in indispensable tool for anyone who wants to look across the borders and get information on the laws and regulations existing in other countries, as well as numerous books and articles that have been written on the subject of nuclear law in its widest sense.

• *Italy*

Il regime giuridico dell'impiego pacifico dell'energia nucleare, Volume I, published by the Comitato Nazionale per l'Energia Nucleare, Rome, 1976, 366 pages

This is the fourth edition (January 1976) of the collection of laws and regulations on nuclear energy published by the CNEN since 1969. The new texts (published in their original language) include the 1975 Decree amending the third party liability provisions of the Act of 1962 on the peaceful uses of nuclear energy, and the 1975 Act on the siting of nuclear power plants and the use of electrical energy.

• *United Kingdom*

Law of Atomic Energy and Radioactive Substances, Halsbury's Laws of England, Fourth Edition, Volume 16, Part 2, by Donald F. Sim, Butterworths, London, 1976

Halsbury's Laws of England is the only complete exposition of the Laws of England which is produced in narrative form. A new edition is now being published and Volume 16 comprising the title, "Electricity, Atomic Energy and Radioactive Substances", has just come out. Mr. Sim, the Legal Adviser to the United Kingdom Atomic Energy Authority is the author of Part 2 (paragraphs 224 to 500) of this title, which states the law as of 1st October 1975.

The first Chapter deals with international provisions and bodies and stresses the fact that much of English law relating to nuclear energy is derived, directly or indirectly, from the provisions of international treaties and conventions as well as certain regulations and recommendations made by international bodies, such as the Paris Convention, the Brussels Supplementary Convention and the IAEA Regulations for the Safe Transport of Radioactive Materials.

In Chapter 2, the author deals with the United Kingdom legislation and administration and analyses the principal Acts under which the production and use of atomic energy, radioactive substances and radioactive material are controlled, mentioning the Ministers responsible under that legislation. The United Kingdom Atomic Energy Authority, the Companies (British Nuclear Fuels Ltd., and the Radiochemical Centre Ltd.), as well as the National Radiological Protection Board are further dealt with in Chapter 2.

The three following Chapters are devoted to control. Chapter 3 describes control of minerals, prescribed substances (i.e. uranium, thorium, plutonium, neptunium and their compounds) and the rights and inventions in relation to atomic energy. Chapter 4 deals with control in relation to radioactive materials and waste and gives a comprehensive survey of the legal framework relating to control of supply, regulations concerning the keeping and use of radioactive materials, safety regulations (with particular emphasis on the transport of radioactive materials), and disposal of radioactive waste. Chapter 5 explains the licensing and control procedure for nuclear installations and the system of third party liability and compensation for nuclear damage.

Chapters 6 to 8 deal respectively with the Government's powers to obtain information (including entry and inspection), communication and disclosure of information, and offences and penalties.

The ninth and last Chapter surveys extensively the functions and tasks of Euratom in the field of promotion of research and dissemination of information, health and safety, investment, joint undertakings, supplies of nuclear materials, ownership and use of special fissile materials, safeguards, and the nuclear common market.

Two appendices reproduce the fields of research concerning nuclear energy referred to in the Euratom Treaty and list the goods and products subject to the provisions of that Treaty on the nuclear common market.

Mr Sim's treatise is a precious tool for anyone interested in the present English legislation in the nuclear field. It is of great interest not only to the English nuclear lawyer, scholar and administrator, but also to his non-English counterpart who, often confused by the complexity of the nuclear legislation in his own country, may even be further bewildered by the English legal and administrative system. This part of Halsbury's Laws of England, which is clearly and concisely written and contains numerous cross-references and an exhaustive index, will safely guide the reader around the cliffs of misunderstanding and misinterpretation. It is, in fact, an up-to-date and complete exposition of the laws of England on atomic energy and radioactive substances.

• *United States*

Arthur W. Murphy and D. Bruce La Pierre, Nuclear "Moratorium" Legislation in the States and The Supremacy Clause: A Case of Express Preemption, Atomic Industrial Forum, Inc., Washington 1975, 103 pages

During 1975, in about 20 State legislatures, some 40 widely varying bills were introduced which would, if enacted, substantially restrict or prohibit the development and use of nuclear power plants generating electricity for commercial distribution. Further proposals of this kind were made in 1976.

The present report, which was prepared under contract with the Atomic Industrial Forum as an independent study, examines the validity under federal law of these bills. Arthur W. Murphy is Professor of Law and D. Bruce La Pierre Associate of Law of the Columbia University Law School.

The purpose of this study is limited. It does not deal with the wisdom of proposed or existing state legislation on nuclear energy, nor of the federal atomic energy programme. It is only concerned with the constitutional validity of the various bills introduced in state legislatures to declare a "moratorium" on the construction and/or operation of nuclear power reactors within their states, in the light of Congressional power to regulate the field of nuclear energy, the exercise of that power by Congress and the constitutional principles which demarcate the lines of federal and state authority in the federal system of the United States.

The interest of this study, however, goes beyond this limited issue, as it demonstrates the constitutional problems of a federal system which do not exist in countries with a centralised government.

The authors examine the validity of those bills in the light of the supremacy clause of the United States Constitution which provides in its Article VI, Clause 2, that the Constitution and the law of the United States shall be the supreme law of the land. The preemption doctrine based on this Article provides that where a state law stands as "an obstacle to the accomplishment and execution of the full purposes and objectives of an Act of Congress", the federal statute prevails and the state law is invalidated. In this general form, the doctrine is deceptively simple. It is relatively easy to apply where Congress has specified the precise extent to which state laws are to be superseded (express preemption). Where Congress has not spoken to the issue, the courts have to construe the purpose and meaning of the state statute, of the federal statute, and must determine the borders of federal and state authority under the Constitution (implied preemption).

Relying on this doctrine, the study first examines the statutory allocation of federal and state responsibility for the regulation of radiation hazards, especially in the light of the Atomic Energy Act of 1954 and its subsequent amendments. Particular emphasis is put on the history and wording of Section 274 of the Atomic Energy Act (Co-operation with States) which, in the authors' view, confirms the exclusive federal control over the radiological aspects of nuclear power and expressly preempts states from legislating in this field. The only restriction is contained in Section 274(k) which recognises the states'power to regulate activities licensed by the NRC "for purposes other than protection

against radiation hazards." The study then goes on to describe state efforts to establish a role in the regulation of the radiological aspects of nuclear power.

The different states' proposals are grouped in seven models

(1) to provide for comprehensive state regulation - the Oregon model;

(2) to prohibit after a period of years the construction of nuclear power plants and to derate existing plants unless certain conditions are met - the California model,

(3) to prohibit immediately all construction unless specified conditions are met - the Maine model;

(4) to impose a moratorium on the construction of nuclear power plants and to provide for resumption and development after a fixed number of years if certain conditions are fulfilled - the Minnesota model;

(5) to prohibit, without any specific conditions for resumption of the development of nuclear energy, any construction for either an indefinite period or a fixed term of years - the Montana and Wisconsin models;

(6) to require legislative approval of the construction of any power reactor - the Vermont model;

(7) to impose specific restrictions on the location of nuclear facilities - the New York model.

A list of state statutes, bills and initiatives prohibiting or restricting the development of nuclear power (as of 31st October 1975) is given in the Appendix.

The authors come to the result that, almost without exception, all the state bills and laws are based on a concern about the radiological safety of nuclear power plants. They give broad discretion to the legislature in determining whether or not the various safety conditions have been substantially met or in permitting the continued construction of nuclear power plants. They threaten to interfere directly with the development of nuclear energy and to conflict with the NRC's licensing and regulation functions. While states are free to regulate activities licensed by NRC "for purposes other than protection against radiation hazards", the various bills discussed provide very little guidance as to whether this is their intent. The authors content themselves therefore with specifying the possible range of valid "other" purposes and conclude that the validity of state public utility regulations will rest on a determination of whether their actual purpose is one other than a concern about radiation hazards and the degree of conflict which the state restrictions imposed on the national plan for the development of nuclear energy.

The authors conclude that there can be little doubt about the objective of the bills introduced in state legislatures. "The supporters do not like nuclear power and seek to stop (indeed roll back) its development. They would do so at the federal level, but failing that they seek to do so at the state level." Their reasons for opposing nuclear power programmes include principally the possibility of a catastrophic

reactor accident, the long-term hazards of storing nuclear wastes, and the possibility of diverting nuclear materials, especially plutonium, by terrorist groups. However, all of these matters are within the area of control expressly reserved to the federal government by the Atomic Energy Act. Although the proposed bills are sometimes justified as state regulations, they would put the states into an area extensively regulated by the federal government. "At best they would be redundant, at worst they would be in conflict with federal programmes. But whether redundant or conflicting, they are preempted by the Atomic Energy Act. If enacted, the bills almost certainly would ultimately be declared invalid."

• *IAEA*

Agreements Registered with the International Atomic Energy Agency, Sixth Edition, Legal Series No. 3, IAEA, Vienna, 1976, 217 pages

The present publication follows the Fifth Edition published in 1973 (see Nuclear Law Bulletin No 12) and lists all agreements registered with the Agency up to 31st December 1973 to which registration numbers have been allocated to correspond with the dates of their entry into force (Part I). Part II lists chronologically agreements registered between 1st January 1974 and 31st July 1975 to which so far no registration numbers have been allocated. Part III consists of a tabular presentation by the States of the material contained in Part I and provides a key to enable readers to identify all agreements which have been concluded with the Agency. Similar information concerning agreements concluded by the Agency with international organisations and other parties is given in an Annex to Part III.

The publication of these lists in the Legal Series is intended not only to comply with the Agency's statutory requirement (Article XXII.B) and the Agency's Regulations for the Registration of Agreements (INFCIRC/12), but also to be of assistance to institutions and scholars interested in the Agency's activities or in general problems of the law of treaties.

• *NEA*

Edward Pochin, Estimated Population Exposure, published by the OECD Nuclear Energy Agency, 1976, 48 pages

The full title of this report is "Estimated Population Exposure from Nuclear Power Production and other Radiation Sources". Radiation protection considerations are an important factor in the development of

nuclear energy power. In this respect it is essential to understand the relative significance of all potential sources of radiation exposure of the population.

With this in mind, the Nuclear Energy Agency of the OECD invited a consultant, Sir Edward Pochin, to prepare a report on this subject.

This report is based on scientific work and is aimed at providing selected background material to be used by representatives of national authorities having responsibilities in connection with power production and its environmental consequences as well as by other persons interested in this subject.

NUCLEAR LAW
Bulletin

S U P P L E M E N T T O No 17

U N I T E D S T A T E S

PRICE-ANDERSON ACT
(INDEMNIFICATION AND LIMITATION OF LIABILITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954) AS AMENDED

Revised as of 31st December 1975

April 1976

U N I T E D S T A T E S

PRICE-ANDERSON ACT
(INDEMNIFICATION AND LIMITATION OF LIABILITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954), AS AMENDED

CHAPTER 1

DECLARATION, FINDINGS, AND PURPOSE

.....

Section 2 - Findings

The Congress of the United States hereby makes the following findings concerning the development, use, and control of atomic energy:

.....

(i) In order to protect the public and to encourage the development of the atomic energy industry, in the interest of the general welfare and of the common defense and security, the United States may make funds available for a portion of the damages suffered by the public from nuclear incidents, and may limit the liability of those persons liable for such losses.

CHAPTER 2

DEFINITIONS

Section 11 - Definitions

The intent of Congress in the definitions as given in this Section should be construed from the words or phrases used in the definitions. As used in this Act:

.....

(c) The term "atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

.....

(e) The term "byproduct material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

(f) The term "Commission" means the Atomic Energy Commission.*

.....

(i) The term "design" means (1) specifications, plans, drawings, blueprints, and other items of like nature; (2) the information contained therein; or (3) the research and development data pertinent to the information contained therein.

(j) The term"extraordinary nuclear occurrence" means any event causing a discharge or dispersal of source, special nuclear, or byproduct material from its intended place of confinement in amounts offsite, or causing radiation levels offsite, which the Commission determines to be substantial, and which the

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* The Energy Reorganisation Act of 1974 (Public Law 93-438, 42 U.S.C. 5801) abolished the Atomic Energy Commission (Section 104) and established the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). All the licensing and related regulatory functions of the AEC were transferred to the NRC (Section 201), to which the term "Commission" now refers.

Commission determines has resulted or will probably result in substantial damages to persons offsite or property offsite. Any determination by the Commission that such an event has, or has not, occurred shall be final and conclusive, and no other official or any court shall have power or jurisdiction to review any such determination. The Commission shall establish criteria in writing setting forth the basis upon which such determination shall be made. As used in this sub-section, "offsite" means away from "the location" or "the contract location" as defined in the applicable Commission indemnity agreement, entered into pursuant to Section 170.

(k) The term "financial protection" means the ability to respond in damages or public liability and to meet the costs of investigating and defending claims and settling suits for such damages.

.....

(m) The term "indemnitor" means (1) any insurer with respect to his obligations under a policy of insurance furnished as proof of financial protection; (2) any licensee, contractor or other person who is obligated under any other form of financial protection, with respect to such obligations; and (3) the Commission with respect to any obligation undertaken by it in an indemnity agreement entered into pursuant to Section 170.

.....

(o) The term "Joint Committee" means the Joint Comittee on Atomic Energy.

(p) The term "licensed activity" means an activity licensed pursuant to this Act and covered by the provisions of Section 170(a).

(q) The term "nuclear incident" means any occurrence, including an extraordinary nuclear occurrence, within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material: Provided, however, That as the term is used in sub-section 170(1), it shall include any such occurrence outside the United States: And provided further, That as the term is used in sub-section 170(d), it shall include any such occurrence outside the United States if such occurrence involves source, special nuclear, or byproduct material owned by, and used by or under contract with, the United States: And provided further, That as the term is used in sub-section 170(c), it shall include any such occurrence outside both the United States and any other nation if such occurrence arises out of or results from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material licensed pursuant to

chapters 6, 7, 8, and 10* of this Act, which is used in connection with the operation of a licensed stationary production or utilization facility or which moves outside the territorial limits of the United States in transit from one person licensed by the Commission to another person licensed by the Commission.

(r) The term "operator" means any individual who manipulates the controls of a utilization or production facility.

(s) The term "person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

(t) The term "person indemnified" means (1) with respect to a nuclear incident occurring within the United States or outside the United States as the term is used in sub-section 170(c), and with respect to any nuclear incident in connection with the design, development, construction, operation, repair, maintenance, or use of the nuclear ship Savannah, the person with whom an indemnity agreement is executed or who is required to maintain financial protection, and any other person who may be liable for public liability or (2) with respect to any other nuclear incident occurring outside the United States, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability by reason of his activities under any contract with the Commission or any project to which indemnification under the provisions of sub-section 170(d) has been extended or under any subcontract, purchase order, or other agreement, of any tier, under any such contract or project.

(u) The term "produce" when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce new special nuclear material.

(v) The term "production facility" means (1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

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* The chapters referred to deal with the licences mentioned in the footnote to Section 170(a).

(w) The term "public liability" means any legal liability arising out of or resulting from a nuclear incident, except: (i) claims under State or Federal workmen's compensation acts of employees of persons indemnified who are employed at the site of and in connection with the activity where the nuclear incident occurs; (ii) claims arising out of an act of war; and (iii) whenever used in sub-sections 170(a), (c), and (k), claims for loss of, or damage to, or loss of use of property which is located at the site of and used in connection with the licensed activity where the nuclear incident occurs. "Public liability" also includes damage to property of persons indemnified: Provided, That such property is covered under the terms of the financial protection required, except property which is located at the site of and used in connection with the activity where the nuclear incident occurs.

(x) The term "research and development" means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials,and processes.

.....

(z) The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of Section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time.

(aa) The term "special nuclear material" means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of Section 51, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

(bb) The term "United States" when used in a geographical sense includes all Territories and possessions of the United States, the Canal Zone and Puerto Rico.

(cc) The term "utilization facility" means (1) any equipment or device, except an atomic weapon, determined by rule of the Commission to be capable of making use of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or

(2) any important component part especially designed for such equipment or device as determined by the Commission.

.....

CHAPTER 14

GENERAL AUTHORITY

.....

Section 170 - Indemnification and Limitation of Liability

(a) Each licence issued under Section 103 or 104 and each construction permit issued under Section 185 shall, and each licence issued under Section 53, 63, or 81* may, for the public purposes cited in sub-section 2(i) of the Atomic Energy Act of 1954, as amended, have as a condition of the licence a requirement that the licensee have and maintain financial protection of such type and in such amounts as the Commission in the exercise of its licensing and regulatory authority and responsibility shall require in accordance with sub-section 170(b) to cover public liability claims. Whenever such financial protection is required, it may be a further condition of the licence that the licensee execute and maintain an indemnification agreement in accordance with sub-section 170(c). The Commission may require, as a further condition of issuing a licence, that an applicant waive any immunity from public liability conferred by Federal or State law.

(b) The amount of financial protection required shall be the amount of liability insurance available from private sources, except that the Commission may establish a lesser amount on the basis of criteria set forth in writing, which it may revise from time to time, taking into consideration such factors as the following: (1) the cost and terms of private insurance,

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* The Sections referred to establish the requirements for various classes of licences as follows:

Section 103: Commercial licences for utilization or production facilities for industrial or commercial purposes.

Section 104: Licences for medical therapy and research & development.

Section 185: Construction permit issued prior to a licence for the operation or production of a utilization facility.

Section 53: Licences concerning special nuclear material.

Section 63: Licences concerning source material.

Section 81: Licences concerning byproduct material.

(2) the type, size, and location of the licensed activity and other factors pertaining to the hazard, and (3) the nature and purpose of the licensed activity: Provided, That for facilities designed for producing substantial amounts of electricity and having a rated capacity of 100,000 electrical kilowatts or more, the amount of financial protection required shall be the maximum amount available at reasonable cost and on reasonable terms from private sources. Such financial protection may include private insurance, private contractual indemnities, self-insurance, other proof of financial responsibility, or a combination of such measures and shall be subject to such terms and conditions as the Commission may, by rule, regulation, or order, prescribe. In prescribing such terms and conditions for licensees required to have and maintain financial protection equal to the maximum amount of liability insurance available from private sources, the Commission shall, by rule initially prescribed not later than twelve months from the date of enactment of this Act, include, in determining such maximum amount, private liability insurance available under an industry retrospective rating plan providing for premium charges deferred in whole or major part until public liability from a nuclear incident exceeds or appears likely to exceed the level of the primary financial protection required of the licensee involved in the nuclear incident: Provided, That such insurance is available to, and required of, all of the licensees of such facilities without regard to the manner in which they obtain other types or amounts of such financial protection: And provided further, That the standard deferred premium which may be charged following any nuclear incident under such a plan shall be not less than $2,000,000 ~~nor more~~ than $5,000,000 for each facility required to maintain the maximum amount of financial protection: And provided further, That the amount which may be charged a licensee following any nuclear incident shall not exceed the licensee's pro rata share of the aggregate public liability claims and costs arising out of the nuclear incident. Payment of any State premium taxes which may be applicable to any deferred premium provided for in this Act shall be the responsibility of the licensee and shall not be included in the retrospective premium established by the Commission. The Commission is authorised to establish a maximum amount which the aggregate deferred premiums charged for each facility within one calendar year may not exceed. The Commission may establish amounts less than the standard premium for individual facilities taking into account such factors as the facility's size, location, and other factors pertaining to the hazard. The Commission shall establish such requirements as are necessary to assure availability of funds to meet any assessment of deferred premiums within a reasonable time when due, and may provide reinsurance or shall otherwise guarantee the payment of such premiums in the event it appears that the amount of such premiums will not be available on a timely basis through the resources of private industry and insurance. Any agreement by the Commission with a licensee or indemnitor to guarantee the payment of deferred premiums may contain such terms as the Commission deems appropriate to carry out the purposes of this Section and to assure reimbursement to the Commission for its payments made due to the failure of such licensee or indemnitor to meet any of its obligations arising under or in connection with financial protection required under this sub-section including without limitation

terms creating liens upon the licensed facility and the revenues derived therefrom or any other property or revenues of such licensee to secure such reimbursement and consent to the automatic revocation of any licence.

(c) The Commission shall, with respect to licences issued between August 30, 1954, and August 1, 1987, for which it requires financial protection of less than $560,000,000, agree to indemnify and hold harmless the licensee and other persons indemnified, as their interest may appear, from public liability arising from nuclear incidents which is in excess of the level of financial protection required of the licensee. The aggregate indemnity for all persons indemnified in connection with each nuclear incident, shall not exceed $500,000,000 excluding costs of investigating and settling claims and defending suits for damage: Provided, however, That this amount of indemnity shall be reduced by the amount that the financial protection required shall exceed $60,000,000. Such a contract of indemnification shall cover public liability arising out of or in connection with the licensed activity. With respect to any production or utilization facility for which a construction permit is issued between August 30, 1954, and August 1, 1987, the requirements of this sub-section shall apply to any licence issued for such facility subsequent to August 1, 1987.

(d) In addition to any other authority the Commission may have, the Commission is authorised until August 1, 1987, to enter into agreements of indemnification with its contractors for the construction or operation of production or utilization facilities or other activities under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident. In such agreements of indemnification the Commission may require its contractor to provide and maintain financial protection of such a type and in such amounts as the Commission shall determine to be appropriate to cover public liability arising out of or in connection with the contractual activity, and shall indemnify the persons indemnified against such claims above the amount of the financial protection required, in the amount of $500,000,000, excluding costs of investigating and settling claims and defending suits for damage in the aggregate for all persons indemnified in connection with such contract and for each nuclear incident: Provided, That this amount of indemnity shall be reduced by the amount that the financial protection required shall exceed $60,000,000: Provided further, That in the case of nuclear incidents occurring outside the United States, the amount of the indemnity provided by the Commission shall not exceed $100,000,000. The provisions of this sub-section may be applicable to lump sum as well as cost type contracts and to contracts and projects financed in whole or in part by the Commission. A contractor with whom an agreement of indemnification has been executed and who is engaged in activities connected with the underground detonation of a nuclear explosive device shall be liable, to the extent so indemnified under this Section, for injuries or damage sustained as a result of such detonation in the same manner and to the same extent as would a private person acting as

principal, and no immunity or defense founded in the Federal, State, or municipal character of the contractor or of the work to be performed under the contract shall be effective to bar such liability.

(e) The aggregate liability for a single nuclear incident of persons indemnified, including the reasonable costs of investigating and settling claims and defending suits for damage, shall not exceed (1) the sum of $500,000,000 together with the amount of financial protection required of the licensee or contractor or (2) if the amount of financial protection required of the licensee exceeds $60,000,000, such aggregate liability shall not exceed the sum of $560,000,000 or the amount of financial protection required of the licensee, whichever amount is greater: Provided, That in the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude: And provided further, That with respect to any nuclear incident occurring outside of the United States to which an agreement of indemnification entered into under the provisions of sub-section 170(d) is applicable, such aggregate liability shall not exceed the amount of $100,000,000 together with the amount of financial protection required of the contractor.

(f) The Commission is authorised to collect a fee from all persons with whom an indemnification agreement is executed under this Section. This fee shall be $30 per year per thousand kilowatts of thermal energy capacity for facilities licensed under Section 103: Provided, That the Commission is authorised to reduce the fee for such facilities in reasonable relation to increases in financial protection required above a level of $60,000,000. For facilities licensed under Section 104, and for construction permits under Section 185, the Commission is authorised to reduce the fee set forth above. The Commission shall establish criteria in writing for determination of the fee for facilities licensed under Section 104, taking into consideration such factors as (1) the type, size, and location of facility involved, and other factors pertaining to the hazard and (2) the nature and purpose of the facility. For other licences, the Commission shall collect such nominal fees as it deems appropriate. No fee under this sub-section shall be less than $100 per year.

(g) In administering the provisions of this Section, the Commission shall use, to the maximum extent practicable, the facilities and services of private insurance organisations, and the Commission may contract to pay a reasonable compensation for such services. Any contract made under the provisions of this sub-section may be made without regard to the provisions of Section 3709 of the Revised Statutes, as amended, upon a showing by the Commission that advertising is not reasonably practicable and advance payments may be made.

(h) The agreement of indemnification may contain such terms as the Commission deems appropriate to carry out the purposes of

this Section. Such agreement shall provide that, when the Commission makes a determination that the United States will probably be required to make indemnity payments under this Section, the Commission shall collaborate with any person indemnified and may approve the payment of any claim under the agreement of indemnification, appear through the Attorney General on behalf of the person indemnified, take charge of such action, and settle or defend any such action. The Commission shall have final authority on behalf of the United States to settle or approve the settlement of any such claim on a fair and reasonable basis with due regard for the purposes of this Act. Such settlement shall not include expenses in connection with the claim incurred by the person indemnified.

(i) After any nuclear incident which will probably require payments by the United States under this Section or which will probably result in public liability claims in excess of $560,000,000, the Commission shall make a survey of the causes and extent of damage which shall forthwith be reported to the Joint Committee, to the Congressmen of the affected districts, and to the Senators of the affected States, and, except for information which would cause serious damage to the national defense of the United States, all final findings shall be made available to the public, to the parties involved and to the courts. The Commission shall report to the Joint Committee by April 1, 1958, and every year thereafter on the operations under this Section.

(j) In administering the provisions of this Section, the Commission may make contracts in advance of appropriations and incur obligations without regard to Section 3679 of the Revised Statutes, as amended.

(k) With respect to any licence issued pursuant to Section 53, 63, 81, 104(a), or 104(c) for the conduct of educational activities to a person found by the Commission to be a non-profit educational institution, the Commission shall exempt such licensee from the financial protection requirement of sub-section 170(a). With respect to licences issued between August 30, 1954, and August 1, 1987, for which the Commission grants such exemption:

(1) the Commission shall agree to indemnify and hold harmless the licensee and other persons indemnified, as their interests may appear, from public liability in excess of $250,000 arising from nuclear incidents. The aggregate indemnity for all persons indemnified in connection with each nuclear incident shall not exceed $500,000,000, excluding cost of investigating and settling claims and defending suits for damage;

(2) such contracts of indemnification shall cover public liability arising out of or in connection with the licensed activity; and shall include damage to property of persons indemnified, except property which is located at the site of and used in connection with the activity where the nuclear incident occurs; and

(3) such contracts of indemnification, when entered into with a licensee having immunity from public liability because it is a State agency, shall provide also that the Commission shall make payments under the contract on account of activities of the licensee in the same manner and to the same extent as the Commission would be required to do if the licensee were not such a State agency.

Any licensee may waive an exemption to which it is entitled under this sub-section. With respect to any production or utilization facility for which a construction permit is issued between August 30, 1954, and August 1, 1987, the requirements of this sub-section shall apply to any licence issued for such facility subsequent to August 1, 1987.

(l) The Commission is authorised until August 1, 1977, to enter into an agreement of indemnification with any person engaged in the design, development, construction, operation, repair and maintenance or use of the nuclear-powered ship authorised by Section 716 of the Merchant Marine Act, 1936, and designated the "nuclear ship Savannah". In any such agreement of indemnification the Commission may require such person to provide and maintain financial protection of such a type and in such amounts as the Commission shall determine to be appropriate to cover public liability arising from a nuclear incident in connection with such design,development, construction, operation, repair, maintenance or use and shall indemnify the person indemnified against such claims above the amount of the financial protection required, in the amount of $500,000,000, excluding costs of investigating and settling claims and defending suits for damage in the aggregate for all persons indemnified in connection with each nuclear incident: Provided, That this amount of indemnity shall be reduced by the amount that the financial protection required shall exceed $60,000,000.

(m) The Commission is authorised to enter into agreements with other indemnitors to establish co-ordinated procedures for the prompt handling, investigation, and settlement of claims for public liability. The Commission and other indemnitors may make payments to, or for the aid of, claimants for the purpose of providing immediate assistance following a nuclear incident. Any funds appropriated to the Commission shall be available for such payments. Such payments may be made without securing releases, shall not constitute an admission of the liability of any person indemnified or of any indemnitor, and shall operate as a satisfaction to the extent thereof of any final settlement or judgment.

(n) (1) With respect to any extraordinary nuclear occurrence to which an insurance policy or contract furnished as proof of financial protection or an indemnity agreement applies and which -

(a) arises out of or results from or occurs in the course of the construction, possession, or operation of a production or utilization facility, or

(b) arises out of or results from or occurs in the course of transportation of source material, byproduct material, or special nuclear material to or from a production or utilization facility, or

(c) during the course of the contract activity arises out of or results from the possession, operation, or use by a Commission contractor or subcontractor of a device utilizing special nuclear material or byproduct material,

the Commission may incorporate provisions in indemnity agreements with licensees and contractors under this Section, and may require provisions to be incorporated in insurance policies or contracts furnished as proof of financial protection, which waive (i) any issue or defense as to conduct of the claimant or fault of persons indemnified, (ii) any issue or defense as to charitable or governmental immunity, and (iii) any issue or defense based on any statute of limitations if suit is instituted within three years from the date on which the claimant first knew, or reasonably could have known, of his injury or damage and the cause thereof, but in no event more than twenty years after the date of the nuclear incident. The waiver of any such issue or defense shall be effective regardless of whether such issue or defense may otherwise be deemed jurisdictional or relating to an element in the cause of action. When so incorporated, such waivers shall be judicially enforcible in accordance with their terms by the claimant against the person indemnified. Such waivers shall not preclude a defense based upon a failure to take reasonable steps to mitigate damages, nor shall such waivers apply to injury or damage to a claimant or to a claimant's property which is intentionally sustained by the claimant or which results from a nuclear incident intentionally and wrongfully caused by the claimant. The waivers authorised in this sub-section shall, as to indemnitors, be effective only with respect to those obligations set forth in the insurance policies or the contracts furnished as proof of financial protection and in the indemnity agreements. Such waivers shall not apply to, or prejudice the prosecution or defense of, any claim or portion of claim which is not within the protection afforded under (i) the terms of insurance policies or contracts furnished as proof of financial protection, or indemnity agreements, and (ii) the limit of liability provisions of sub-section 170(e).

(2) With respect to any public liability action arising out of or resulting from an extraordinary nuclear occurrence, the United States district court in the district where the extraordinary nuclear occurrence takes place, or in the case of an extraordinary nuclear occurrence taking place outside the United States, the United States District Court for the District of Columbia, shall have original jurisdiction without regard to the citizenship of any party or the amount in controversy. Upon motion of the defendant or of the Commission, any such action pending in any State court or United States district court shall be removed or transferred to the United States district court having venue under this sub-section. Process of such district court shall be effective throughout the United States.

(o) Whenever the United States district court in the district where a nuclear incident occurs, or the United States District Court for the District of Columbia in case of a nuclear incident occurring outside the United States, determines upon the petition of any indemnitor or other interested person that public liability from a single nuclear incident may exceed the limit of liability under sub-section 170(e):

(1) Total payments made by or for all indemnitors as a result of such nuclear incident shall not exceed 15 per centum of such limit of liability without the prior approval of such court;

(2) The court shall not authorise payments in excess of 15 per centum of such limit of liability unless the court determines that such payments are or will be in accordance with a plan of distribution which has been approved by the court or such payments are not likely to prejudice the subsequent adoption and implementation by the court of a plan of distribution pursuant to subparagraph (3) of this sub-section (o); and

(3) The Commission shall, and any other indemnitor or other interested person may, submit to such district court a plan for the disposition of pending claims and for the distribution of remaining funds available. Such a plan shall include an allocation of appropriate amounts for personal injury claims, property damage claims, and possible latent injury claims which may not be discovered until a later time and shall include establishment of priorities between claimants and classes of claims, as necessary to insure the most equitable allocation of available funds. Such court shall have all power necessary to approve, disapprove, or modify plans proposed, or to adopt another plan; and to determine the proportionate share of funds available for each claimant. The Commission, any other indemnitor, and any person indemnified shall be entitled to such orders as may be appropriate to implement and enforce the provisions of this Section, including orders limiting the liability of persons indemnified, orders approving or modifying the plan, orders staying the payment of claims and the execution of court judgments, orders apportioning the payments to be made to claimants, and orders permitting partial payments to be made before final determination of the total claims. The orders of such court shall be effective throughout the United States;

(4) The Commission shall, within ninety days after a court shall have made such determination, deliver to the Joint Committee a supplement to the report prepared in accordance with sub-section 170(i) of this Act setting forth the estimated requirements for full compensation and relief of all claimants, and recommendations as to the relief to be provided.

(p) The Commission shall submit to the Congress by August 1, 1983, a detailed report concerning the need for continuation or modification of the provisions of this Section, taking into account the condition of the nuclear industry, availability of private insurance, and the state of knowledge concerning nuclear safety at that time, among other relevant factors, and shall include recommendations as to the repeal or modification of any of the provisions of this Section.