**BOEING
ENGINEERING &
CONSTRUCTION**
THE BOEING ENERGY
AND ENVIRONMENT DIVISION

MASTER

Power System Programs

Global Spent Fuel Logistics Systems Study (GSFLS)

Contract No. EN-77-C-03-1583

Volume 2A: GSFLS Visit Findings (Appendix)

**Interim Report
January 31, 1978**

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ABSTRACT

This appendix is a part of the interim report documentation for the Global Spent Fuel Logistics System (GSFLS) Study. This appendix provides the legal/regulatory reference material, supportive of Volume 2 - GSFLS Visit Finding & Evaluations; and certain background material on British Nuclear Fuel Limited (BNFL).

KEY WORDS

European Basin	Policies/Plans/Programs
Institutional	Spent Fuel
Legal/Regulatory	Strategies
Nuclear Power	Technical
Pacific Basin	U. S. Spent Fuel Objectives

Appendix of Legal/Regulatory Reference Materials

This section presents reference material for the text on legal and regulatory matters contained in Sections 3

Volume 2 Each section contains the following parts:

1. A short introduction to documents,
2. List of relevant laws and regulations,
3. Text of principal laws and treaties.

The countries or areas are arranged alphabetically, and include:

Austria
Republic of China
Denmark
France
Germany
Italy
Japan
Korea
Luxembourg
Netherlands
Philippines
Spain
Sweden
Switzerland
United Kingdom

Austria

1. Short introduction.

The basic legislation is the Radiation Protection Act of 1969 (Appendix O-1). It is an outline Act defining the competencies of the Government and contains most of the regulatory regime affecting spent fuel. More detailed rules will be laid down in Ordinances under the Act. Thus far, only the Ordinance on Radiation Protection (Appendix O-2) has been published.

2. List of the relevant laws and regulations.

- O-1 Radiation Protection Act of June 11, 1969, BGBl 1969, No. 227.
- O-2 Ordinance on Radiation Protection of January 12, 1972, BGBl 1972, No. 47.
- O-3 Security Control Act of October 25, 1972, BGBl 1972 .
- O-4 Atomic Liability Act of April 29, 1964, BGBl 1964, No. 117, as amended BGBl 1976, No. 91.

3. Text of principal laws and treaties.

(none)

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Republic of China

1. Short introduction.

The keystone of nuclear legislation in the Republic of China is the Atomic Energy Law of 1968 (Appendix CH-6). It authorizes other legislation, including general enforcement regulations (Appendix CH-9) which are in the process of translation by CAEC. An English draft of the transport section is enclosed. (Appendix CH-10). A separate act covers third-party liability (Appendix CH-7). Other acts, in Chinese only but following international guidelines, cover transport (Appendix CH-8) and health and safety (Appendix CH-14). Primary treaties include Non-Proliferation, the latest Agreement for Cooperation with the U.S. plus an amendment (Appendix CH-11, CH-12), and a standard agreement with IAEA and the U.S. applying safeguards (Appendix CH-4).

2. A list of the relevant laws and regulations.

CH-1 to CH-5 (reserved)

CH-6 Atomic Energy Law of the Republic of China
May 9, 1968.

CH-7 The Law on Compensation for Nuclear Damage of
the Republic of China, July 26, 1971.

CH-8 Regulation on Radioactive Material Safe
Transport, Nov. 5, 1971.

CH-9 Enforcement Rules of the Atomic Energy Act
(regulations), Dec. 6, 1976 revision.

- CH-10 Enforcement Rules, of the Atomic Energy Act,
draft English translation of Articles 5, 22-32.
- CH-11 Agreement for Cooperation between China (R.O.)
and U.S., April 4, 1972.
- CH-12 Amendment to Agreement for Cooperation between
U.S. and China (R.O.), March 15, 1974.
- CH-13 Agreement between IAEA, China (R.O.) and U.S.
for the Application of Safeguards, Dec. 6, 1971,
22 U.S.T. 1837, T.I.A.S. 7228.
- CH-14 Regulations on Health and Safety, July 29, 1970.
In Chinese.

3. The text of principal laws and treaties.

- a. CH-6 Basic atomic energy law of 1968.
- b. CH-10 Enforcement rules, 1976 rev., Arts. 5, 22-32.

Atomic Energy Law
of
The Republic of China
(English Text)

The English Text of Atomic Energy Law of The Republic of China.

CHAPTER I

General provisions

Article 1

In order to promote the development of nuclear science and technological research, the development of resources and their peaceful application, this law is specifically enacted.

Article 2

The technical terms used in this law shall be defined as the follows:

(1) The term 'Atomic Energy' means all forms of energy released in the course of nuclear transformation.

(2) The term 'Nuclear source material' means uranium ore, thorium ore and any other material which is designated by the Executive Yuan as source material.

(3) The term 'Nuclear Fuel' means fissionable material capable of sustaining chain reaction with the release of energy and any other material to be determined by the Executive Yuan as nuclear fuel.

(4) The term 'ionizing radiation' means any electromagnetic radiation or particle radiation that directly or indirectly causes ionization of any material substance.

(5) The term 'nuclear reactor' means any facility with proper arrangement of nuclear fuel capable of sustained chain reaction as a result of nuclear fission,

(6) The term 'radioactive material' means any material emitting one or several kinds of ionizing radiation by spontaneous nuclear transformation.

CHAPTER II

Atomic Energy Authority

Article 3

The administrative authority of atomic energy is the Atomic Energy Council directly under the Executive Yuan, the organization of which shall be determined by law.

Article 4

For the purpose of promoting research and development of nuclear science and technology, developing nuclear energy resources and expanding

— (1) —

its application to agriculture, industry and medicine, the Atomic Energy Council may establish research organizations.

Article 5

For the purpose of promoting peaceful uses of atomic energy, the Atomic Energy Council may request an executive order of the Executive Yuan urging related ministries and councils to establish departments for handling atomic energy matters. Prior approval by the Atomic Energy Council is required for any private individual to establish any research organ or business in atomic energy.

Article 6

The Atomic Energy Council may represent the Government on matters in connection with international cooperation in atomic energy.

CHAPTER III

Research and Development of Nuclear Science and Technology

Article 7

In connection with research and development of nuclear science and technology, the Atomic Energy Council is authorized to raise special funds, invite technical experts, formulate plans, and integrate their administration.

Article 8

The Atomic Energy Council shall assist national universities and research institutions to establish additional departments in nuclear science, to aid in procuring equipment and to develop nuclear science education.

Article 9

The Atomic Energy Council shall, in Cooperation with education authorities and science research institutions, make selection jointly of gifted scientists for pursuing advanced studies abroad in nuclear science.

Article 10

The Atomic Energy Council may request the approval of the Executive Yuan to establish departments of research and development for nuclear science and technology at relevant science research institutions.

Article 11

As to the research of nuclear science and its practical application all

— (2) —

national scientific research institutions shall cooperate in compliance with the plan set forth in article 7 of this law concerning the effective use of research personnel and facilities.

Article 12

All universities and nuclear science research institutions working in the atomic energy field that may have to make cooperative agreements with friendly nations and international organizations for research, shall get the consent of the Atomic Energy Council.

Article 13

Atomic energy scientific research institutions shall increase their radiation detecting analyzing and experimental facilities and strengthen research in radiation protection. The Atomic Energy Council shall designate the above-mentioned research institutes to carry out training courses in radiation protection.

Article 14

All scientific research institutions shall report to the Atomic Energy Council to request special funds, or to invite experts to assist the development of nuclear science and technical research.

CHAPTER IV

Article 15

Mining and leasing rights of nuclear materials shall be granted according to the mining law; mining, storage, purchase, supervision etc, shall be determined by the Executive Yuan.

Article 16

For the production of nuclear material and nuclear fuel the Atomic Energy Council shall request approval of the Executive Yuan to establish special organizations.

Article 17

For the purpose of doing research in nuclear science and producing radioisotopes for peaceful uses, besides improving the existing research reactor, the Atomic Energy Council, in light of practical needs, shall request the Executive Yuan to allocate special funds to set-up additional nuclear

reactors and other facilities.

Article 18

The production of any fissionable material from nuclear reactors shall be reported to the Atomic Energy Council and be kept on Council's inventory.

Article 19

As to the utilization of atomic energy in agriculture, industry and medicine, any promotion of and cooperation with related institutions shall be under the supervision and guidance of the Atomic Energy Council.

Article 20

All nuclear research, mining, production and safeguarding facilities, as well as facilities related to atomic power which have to be imported shall, upon decision of the Executive Yuan, be exempted from duties.

CHAPTER V

Control of nuclear material, nuclear fuel and reactors

Article 21

Control of nuclear material shall be regulated as follows:

Item I:

Any person applying for the right of production of nuclear material shall present a filled-out application to the Atomic Energy Council and when approved a license will be granted.

Item II:

The commencing, alternation, stopping or resuming of production of nuclear material shall require the approval of the Atomic Energy Council.

Item III:

Complete report of the production of nuclear material shall periodically be submitted to the Atomic Energy Council and the Council in turn shall from time to time send inspectors for checking.

Item IV:

Importing and exporting of nuclear material, shall not be allowed without the approval of the Atomic Energy Council, and if not in compliance

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with the related laws.

Item V:

Transportation and storage of nuclear materials shall be carried out in compliance with the regulations of the Atomic Energy Council who in turn shall send inspector for inspection.

Item VI:

After the completion of the installations for the production of nuclear materials reports shall be submitted to the Atomic Energy Council, upon which the Council and appropriate authorities shall inspect the premises. This shall also apply to the change of establishment.

Item VII:

Utilization, abandonment or transfer of nuclear materials shall be reported to the Atomic Energy Council for approval, who in turn shall send inspector for inspection.

Article 22

Control of nuclear fuel materials shall be regulated as follows:

Item I:

Any person applying for the production of nuclear fuel materials shall fill out an application form and request the Atomic Energy Council for approval who then may grant a licence.

Item II:

If the production of nuclear fuel materials, as stated in the application form, is changed, another approval shall be requested.

Item III:

Any commencement, stoppage or resumption of the production of nuclear fuel materials shall require another approval of the Atomic Energy Council.

Item IV:

Complete reports on the production of nuclear fuel materials shall periodically be submitted to the Atomic Energy Council, who in turn shall send inspector for inspection.

Item V:

No nuclear fuel materials shall be imported or exported unless approved by the Atomic Energy Council and found to be in compliance with the regulations of the law concerned.

Item VI:

Transportation and storage of nuclear fuel materials shall be handled in compliance with the regulations of the Atomic Energy Council, who in turn shall send inspector for inspection.

Item VII:

After the completion of the establishment of the production of nuclear fuel materials reports shall be submitted to the Atomic Energy Council who in turn shall send inspector for inspection. This shall also apply to any change of establishment.

Item VIII:

Utilization, abandonment and transfer of nuclear fuel materials shall be reported to the Atomic Energy Council for approval; who in turn shall send inspector for inspection.

Article 23

Control of nuclear reactors shall be regulated as follows:

Item I:

Any person applying for permission to set up a nuclear reactor shall fill out an application form and request the Atomic Energy Council for approval who then may grant an operating licence

Item II:

After completion of the construction of the nuclear reactor the Atomic Energy Council shall be requested to send inspector for inspection.

Item III:

As to the operation of nuclear reactors, the nature of all safety means for realizing the establishment of before-mentioned nuclear reactors, shall be summed up in a report to be submitted to the Atomic Energy Council for examination and approval, who in turn shall grant an operating licence.

Item IV:

Operation of nuclear reactors shall be in compliance with the regulations of the Atomic Energy Council who in turn shall send inspector for inspection.

Item V:

Any change as to the design during construction of the nuclear reactor or change of facilities due to the former shall be reported to the Atomic

Energy Council and an approval requested.

Item VI:

Unless the licence-holder for nuclear reactors has obtained the approval of the Atomic Energy Council he cannot transfer or exchange his granted licence or the rights of the obtained licence to another person.

Item VII:

Nuclear reactors cannot be transferred or removed unless approval has been obtained by the Atomic Energy Council.

Item VIII:

As to the operation of nuclear reactors, the utilization of nuclear fuel materials and the production of radioactive materials periodical reports shall be submitted to the Atomic Energy Council who in turn shall send inspector for inspection.

CHAPTER VI

Safeguards against radiation hazards

Article 24

For the purpose of safeguarding against radiation hazards in order to ensure the health and security of human beings, the Atomic Energy Council shall set up radiation safeguard standards and request the Executive Yuan to put them into effect by public proclamation.

Article 25

As to radioactive fall-out, the Atomic Energy Council, the Ministries of the Interior and Defense shall make investigations, purchase facilities and distribute them to the authorities concerned.

The inspection report shall be examined by the Atomic Energy Council and made public.

Article 26

Safeguards of radioisotope shall be regulated as follows:

Item I:

Any person in possession of radioisotopes and radioactive facilities, shall request the Atomic Energy Council for granting a licence.

Item II:

Any person installing or reinstalling facilities that could produce radiation.

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shall apply for safeguard examination by the Atomic Energy Council.

Item III:

Manual laborers at radioisotopes or radioactive facilities shall receive radioactive protection training and obtain a licence from the Atomic Energy Council.

Item IV:

Radioactive facilities shall, before their use, be subject to radiation safeguards inspection. Inspection reports shall be kept for further investigation.

Item V:

The Atomic Energy Council shall designate the safety regulations for radioactive facilities and send inspector for inspection.

Item VI:

Production, commencement, stoppage or resumption of radioisotopes and radioactive facilities shall require approval of the Atomic Energy Council.

Item VII:

Production records of radioisotopes and radioactive facilities should be reported periodically to the Atomic Energy Council who in turn shall send inspector for inspection.

Item VIII:

Radioisotopes and radioactive facilities shall not be imported or exported unless a certificate has been obtained by the Atomic Energy Council and in compliance with the regulations of the law concerned.

Item IX:

Transportation and storage of radioisotopes shall be carried out in accordance with the regulations of the Atomic Energy Council, who in turn shall send inspector for inspection.

Item X:

Any transfer, abandonment of radioisotopes and radioactive facilities as well as the disposal of radioactive fall-out shall require the approval of the Atomic Energy Council, who in turn shall send inspector for inspection.

Item XI:

Certain quantities of radioisotopes shall be exempt from control, which, however, shall be determined by the Atomic Energy Council.

CHAPTER VII

Renumeration, patent and compensation

Article 27

Inventions and research in nuclear science and technology shall be remunerated. The method of remuneration shall be determined by the Executive Yuan.

Article 28

In the fields of nuclear science and technology new inventions shall be in compliance with the regulations of the patent law. The ceding of patent rights or the signing of contracts concerning nuclear science and technology with foreigners, shall require the approval of the Atomic Energy Council.

Article 29

As to the occurrence of any nuclear accident causing damage of property or injury to health, compensation shall be given which shall be determined by law.

CHAPTER VIII

Penal regulations

Article 30

Any person who violates article 23 of this law in establishing or transferring nuclears, reactors, shall be subject to three years maximum of penal servitude and/or subject to a fine of \$ 1,000 maximum.

Article 31

Any person who violates article 28 of this law in transferring patent rights without approval or signing contracts concerning nuclear science and technology with foreigners, shall be subject to three years maximum of penal servitude and/or hard labor or subject to a fine of \$ 5,000 maximum.

Article 32

Any person who violates one of the following regulations shall be subject to; one year of penal servitude and/or \$ 3,000 maximum and confiscation of his nuclear materials, nuclear fuel materials or radioisotopes.

Item I:

Any person who violates the regulations of article 21 of this law by producing, importing, exporting, transporting, storing, utilizing, abandoning or transferring nuclear materials.

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Item II:

Any person who violates the regulations of article 22 of this law by producing, importing, exporting, transporting, storing, utilizing, abandoning or transferring nuclear fuel materials.

Item III:

Any person who violates the regulations of article 23 of this law by utilizing nuclear reactors.

Item IV:

Any person who violates the regulations of article 26 of this law.

CHAPTER IX

Supplementary provisions

Article 33

Details as to the effect of this law shall be determined by the Executive Yuan.

Article 34

This law shall come into force upon proclamation.

CHINA

Enforcement Rules of the Atomic Energy Act (CH-9) are being translated into English by CAEC. All that was available at the time of the Team's visit in October 1977 was a handwritten draft of Articles 5, and 22-32, on transport of spent fuel (CH-10). Our typewritten version of CH-10 follows:

"Enforcement Rules of the Atomic Energy Act

Article 5

Special nuclear materials as used in these regulations indicates one of the following materials up to or in excess of 5000 grams:

- (1) U-235 (Uranium enriched to 20% or more in the U-235 isotope)
- (2) U-233
- (3) Plutonium
- (4) Mixture of U-235, U-233 and plutonium.

Any combination of these materials which is 5000 grams or more is computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium)

Nuclear fuel that contains U-235 (the enrichment is less than 20%), U-233, and plutonium, must be computed by the preceding formula. If the total weight is 5000 grams or more, the regulations in the first paragraph must be observed."

* * *

"Article 22

Private or public corporations or individuals who legally possess or use special nuclear materials must follow Article 23 to Article 32 in importing, exporting, transporting and storing them. Matters not covered by these regulations are subject to the Safety Rules for Transport of Radioactive Materials and other relevant enactments."

* * *

"Article 23

Parties involved in the import or export of special nuclear materials must submit a plan for transport and a plan for physical protection of the materials. Only when these two plans have been approved by the Atomic Energy Council can permission to import or export be granted."

* * *

"Article 24

Anyone transporting special nuclear materials by road must submit his transport scheme according to the approved transport plan to the military and police officials of the area covered. The following regulations must also be observed:

- (1) Vehicles must not exceed the average local speed limit and must stop in a deserted area or along the roadside under surveillance every two hours to rest, and change drivers every three hours.

- (2) The convoy must be preceded by an advance vehicle which will lead the way. The convoy must also be followed by an escort vehicle which will bring up the rear. If two or more vehicles are used for transport, the road on both sides of the convoy must also be patrolled by supporting vehicles. The advance vehicle and escort vehicle and each of the transport vehicles and supporting vehicles must carry an armed policeman and an escort and armed policeman must be equipped with a radiotelephone.
- (3) Those regulations about carrying dangerous goods by car and driving, as stipulated in the Road Transport Safety Regulation, must be observed.
- (4) Coordinate military and police organization in advance to enforce traffic control along the transport route and preclude road barriers.
- (5) A shipment of nuclear material weighing five hundred pounds or less shall not be transported in an open truck."

* * *

"Article 25

Transport of special nuclear material by rail should be avoided whenever possible. When unavoidable, it must

conform to the following regulations:

- (1) Transport must be made by special train; or a special car attached to a cargo train.
- (2) No less than one escort shall be assigned and whenever the train pulls up at a station, such assigned escort must leave the train to perform supervision and contact the military and police personnel of the station.
- (3) The information concerning transport should be provided to the Railroad Authority and Taiwan Garrison Command in advance in order to have it passed on to the military and police units along the railroad and to have military and police personnel assigned at each station to heighten their vigilance and keep in touch with the escort personnel.
- (4) When the carrier has reached the station of destination, the material should immediately be delivered under the supervision of the watchman and should not be kept in storage."

* * *

"Article 26

Anyone transporting special nuclear materials by sea must submit his transport scheme according to the approved transport plan to the authorities of loading and

discharge and the military and police officials of the transport. The following regulations must be observed:

- (1) Packages must be consigned to ship compartments that can be separated from the rest of the cargo, sealed and locked. A watchman should also be appointed to keep the material under surveillance.
- (2) When the carrier has reached the port of destination the material should immediately be delivered under the supervision of the watchman and should not be kept in storage."

* * *

"Article 27

Anyone transporting special nuclear materials by air must submit his transport scheme according to the approved transport plan to the civil air station and the military and police officials of the area concerned. Shipments should be made only by cargo plane and a watchman should also be appointed to keep the material under surveillance."

* * *

"Article 28

Whether transport is by land, sea or air, care should be taken that the shipment follow the most direct route possible. If, due to unforeseen circumstances, some transfer of cargo becomes necessary it should be carried out

under the supervision of the escort or watchman."

* * *

"Article 29

The storage area of the special nuclear materials must be divided by the proprietor into three sections according to relative importance. These three sections must be approved by the Atomic Energy Council and put under control.

- (1) "Control area" should be surrounded by a barrier and sentry-boxes at regular intervals, manned by armed police guards. Persons engaged in the management and maintenance of the nuclear material and facility must carry an identity card containing a photograph. Visitors accompanied by assigner must present a visitor's pass and register in order to be admitted.
- (2) "Material area" means an area containing special nuclear material and located within a "control area". No one can enter the area without special permits.
- (3) "Vital area" means an area containing vital equipment and located within a "control area". No one can enter the area without special permits.

The buildings of the material area and vital area should be reinforced to twice normal strength and shielded

by fireproof material, provided with an automatic, fire-detecting alarm system, a burglar alarm and a fire-extinguishing system. All entrances and exits should normally be kept locked and under the surveillance of supervisory personnel. The vital area should be supplied with equipment for nocturnal illumination and radiotelephone facilities."

* * *

"Article 30

Persons must be searched on entering and leaving the vital area or the material area and must not carry any dangerous material, cameras, handbags or briefcases.

Keys must be changed when any on the supervisory personnel gives up his position."

* * *

"Article 31

The proprietor of the installation must keep the following records to be inspected by the Atomic Energy Council:

- (1) Names and addresses of police guards, watchmen and supervisory personnel.
- (2) The names, addresses and identity (or visitor's) card numbers of all persons admitted to the vital or material areas.
- (3) Register of visitors. This should contain the time and place of entry, the purpose of the visit and its duration.

- (4) Proceedings in key control.
- (5) The inventory of special nuclear material must be checked at regular intervals and a report submitted.
- (6) The alarm systems, fire extinguishing systems, illumination facilities and emergency installations must be inspected at regular intervals and the results must be recorded."

* * *

"Article 32

If special nuclear material is damaged or stolen or if any other irregularity occurs, the proprietor of the installation should inform the Atomic Energy Council immediately by telegraph or telephone. He should also submit a detailed written report within fifteen days."

* * *

Denmark

1. Short introduction.

The Law of May 4, 1976, on Measures of Safety and Environmental Protection relating to Nuclear Installations (D-1) will be the keystone of the Danish legal/regulatory structure for nuclear activities. Thus far, however, only Sections 11 and 12 have entered into force; the effectiveness of the remainder of the legislation must await the passage of the so-called "Initiation Law."

2. List of the relevant laws and regulations.

- D-1 Law of May 4, 1976, on Measures of Safety and Environmental Protection Relating to Nuclear Installations
- D-2 Act No. 170 of May 16, 1962
- D-3 Act No. 278 of June 27, 1963, as amended October 1, 1974
- D-4 Order No. 192 of June 15, 1965
- D-5 Act No. 332 of June 19, 1974
- D-6 Act No. 315 of June 27, 1972

3. Text of principal laws and treaties

- D-5 Act No. 332 of June 19, 1974

• Denmark

ACT ON COMPENSATION FOR NUCLEAR DAMAGE

NO. 332. OF 19TH JUNE 1974*

CHAPTER I

DEFINITIONS, ETC.

Section 1

For the purposes of this Act:

- "Nuclear fuel" means fissionable material in the form of uranium metal, alloy, or chemical compound, and such other fissionable material as the Minister of Education may determine;
- (b) "radioactive products" means any radioactive material including waste, produced in, or made radioactive by exposure to the radiation incidental to, the process of producing or utilizing nuclear fuel, but does not include material mentioned in paragraph (a) of this Section;
- (c) "nuclear substances" means -
- (i) nuclear fuel other than natural uranium and other than depleted uranium;
 - (ii) radioactive products other than radioisotopes produced for and having reached the final stage of fabrication so as to be usable for any industrial, commercial, agricultural, medical or scientific purpose;
- (d) "nuclear reactor" means any structure containing nuclear fuel in such an arrangement that a self-sustaining chain process of nuclear fission can occur therein without an additional source of neutrons;
- (e) "nuclear installation" or "installation" means -
- (i) any nuclear reactor;
 - (ii) any factory for the production or processing of nuclear substances;

official translation prepared by the Danish authorities.

- (iii) any factory for the separation of isotopes of nuclear fuel;
 - iv any factory for the reprocessing of irradiated nuclear fuel;
 - v any facility for the storage of nuclear substances other than storage incidental to the carriage of such substances; and
 - (vi) such other installations in which there are nuclear fuel or radioactive products, as the Minister of Education may determine;
- (f) "Installation State", in relation to a nuclear installation, means the Contracting Party within whose territory that installation is situated or, if it is not situated within the territory of any State, the Contracting Party by which or under the authority of which the installation is operated;
- (g) "operator", in relation to a nuclear installation, means -
- (i) as concerns installations in this country, the person recognised by the Minister of Education as the operator of that installation or, in the absence of such recognition, the person who operates the installation;
 - (ii) as concerns installations outside this country, the person responsible for the installation under the legislation of the Installation State;
- (h) "nuclear damage" means -
- (i) any damage which arises out of or results from radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties of nuclear fuel or radioactive products in a nuclear installation, or of nuclear substances coming from, originating in, or sent to, a nuclear installation;
 - (ii) any damage arising out of or resulting from any other ionizing radiation emitted by any source of radiation inside a nuclear installation;
- (i) "nuclear incident" or "incident" means any occurrence or series of occurrences having the same origin which causes nuclear damage;
- (j) "the Paris Convention" means the Convention on Third Party Liability in the Field of Nuclear Energy concluded in Paris on 29th July 1960, as amended by the Additional Protocol of 28th January 1964;
- (k) "the Supplementary Convention" means the Convention Supplementary to the Paris Convention concluded in Brussels on 31st January 1963, as amended by the Additional Protocol of 28th January 1964;
- (l) "Contracting Party" means a State which is a Party to the Paris Convention;
- (m) "units of account" means units of account in accordance with the European Monetary Agreement of 5th August 1955 as defined on 29th July 1960.

Section 2

The Minister of Education may, if in his view the small extent of the risks involved so warrants, exclude, wholly or partly, any nuclear installation, nuclear fuel or radioactive products from the provisions of this Act.

Section 3

The Minister of Education may direct that several of the installations set out in Section 1(e) of this Act which are located at the same site and belong to the same undertaking shall be regarded as a single nuclear installation.

CHAPTER II

COMPENSATION AND INSURANCE

Scope

Section 4

provisions of this Chapter shall not cover liability for any reactor which is used as a source of power in a vessel or any other means of transport.

Section 5

- (1) No person shall be able to claim compensation from the operator of a nuclear installation in this country under the provisions of this Chapter or corresponding provisions of any other Contracting Party for nuclear damage suffered in a State which is not a Party to the Paris Convention, unless such damage was caused by an incident which occurred in this country.
- (2) Any injured person shall only be able to claim compensation for nuclear damage caused by an incident that occurred in a State, which is not a Party to the Paris Convention, from the operator of a nuclear installation in this country under the provisions of this Chapter, if -
 - (i) the damage arose either in a Contracting Party or on the high seas on board a vessel registered in such State, and
 - (ii) the incident occurred either during carriage of nuclear substances to a consignee in a State which is not a Party to the Paris Convention before the material was unloaded from the means of transport by which it arrived in the territory of that State, or during carriage of nuclear substances from a consignor in such State after

the material was loaded on the means of transport by which it was to have been carried from the State in question.

- (3) As concerns the liability of the operator of an installation situated in the territory of any other Contracting Party, the provisions laid down in that State on the territorial extent of his liability shall apply.
- (4) Where the legal provisions of a State which is not a Party to the Paris Convention provide for no compensation, or less compensation than under Danish law, for nuclear damage suffered in this country, the Minister of Justice may direct that corresponding rules shall apply to compensation for nuclear damage suffered in that State.

Section 6

The Minister of Justice may direct that, for the purposes of this Chapter a State which is not a Party to the Paris Convention shall be assimilated to a Contracting Party.

Operator's liability for any incident occurring in an installation

Section 7

Any nuclear damage caused by an incident occurring in an installation shall be compensated by the operator of that installation: [provided that this shall not apply if the damage is solely due to nuclear substances stored in the installation incidental to their carriage to or from a nuclear installation situated in the territory of a Contracting Party.]

Incidents occurring in the course of carriage

Section 8

- (1) Subject to the provisions of Section 5 of this Act, any nuclear damage caused by an incident occurring in the course of carriage of nuclear substances from an installation situated in this country or in the territory of any other Contracting Party shall be compensated by the operator of that installation.
- (2) Where the carriage takes place to an installation situated in this country or in the territory of any other Contracting State, the liability shall attach to the receiving operator
 - a where he has assumed liability by contract in writing and the incident occurs after the time stipulated for transfer of liability;
 - b in other cases, where the incident occurs after he has taken charge of the substances.

- (3) In the course of carriage of nuclear substances intended to be used in a nuclear reactor that is used as a source of power in a vessel or any other means of transport, the liability of the sending operator shall end when the person who is duly authorised to operate the reactor comprised in the means of transport has taken charge of the substances.
- (4) The Minister of Justice may direct in which cases and under which conditions operators of installations in this country shall or may make such an agreement about the liability as referred to in sub-section (2) of this Section.

Section 9

- (1) Where nuclear substances are sent from a State which is not a Party to the Paris Convention to an installation situated in this country or in the territory of any other Contracting Party with the written consent of the operator of that installation, the latter shall, subject to the provisions of Section 5 of this Act, compensate any nuclear damage caused by an incident in the course of carriage.
- (2) Where nuclear substances are sent from the operator of a nuclear reactor that is used as a source of power in a vessel or any other means of transport to an installation situated in this country or in the territory of any other Contracting Party, the receiving operator shall be liable as provided in sub-section (1) of this Section from the time when he took charge of the substances.
- (3) Any nuclear damage caused by an incident occurring in the course of carriage of nuclear substances through Denmark that is not covered by the provisions of Section 8 of this Act or sub-sections (1) and (2) of this Section shall be compensated by the person who has obtained a licence for the carriage under the Use of Radioactive Substances Act. For the purposes of this Chapter, the licensee shall be regarded as the operator of a nuclear installation in this country.

Section 10

The provisions of Sections 8 and 9 on liability for nuclear damage caused by an incident occurring in the course of carriage of nuclear substances shall apply also to any incident occurring during storage of the substances incidental to their carriage.

Other incidents occurring outside an installation

Section 11

" re in cases other than those referred to in Sections 7 to 10 of this

Act nuclear damage has been caused by nuclear substances coming from or originating in an installation situated in this country or in the territory of any other Contracting Party, or which prior to the incident had been in the course of carriage as referred to in Section 9 of this Act, the liability shall attach to the operator who at the time of the incident had the substances in his charge or, if the substances at that time were not in the charge of any operator, the operator who last had them in his charge before the incident; provided that, where the substances had been in the course of carriage before the incident and not been taken charge of by another operator after the interruption of the carriage, the liability shall attach to the operator who at the time of interruption of the carriage was liable under the provisions of Sections 8 and 9 of this Act for nuclear damage caused by an incident occurring during carriage.

Assumption of operator's liability

Section 12

At the request of a carrier who performs carriage as referred to in Sections 8 and 9 of this Act, the Minister of Justice may permit that, in place of the operator of an installation in this country, the carrier shall be liable for any nuclear damage caused by an incident that may occur in the course of such carriage. Such permission may be granted only with the consent of the operator and if the applicant has shown that insurance has been taken out in accordance with Section 26 or other financial security has been furnished in pursuance of Section 29 of this Act. Where permission has been granted, the provisions on the liability of the operator shall apply to the carrier. This shall apply also where the liability of an operator under corresponding legislation of any other Contracting Party has been transferred to a person other than the operator.

Basis of liability

Section 13

- (1) The operator of a nuclear installation shall be liable under the provisions of this Chapter, even if the damage is fortuitous.
- (2) No operator of an installation in this country shall be liable under those provisions if the nuclear incident is directly due to an act of armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional character. As concerns operators of installations situated in the territory of any other Contracting Party, the rules laid down by the Installation State shall apply. The provision of the first sentence of this sub-section shall equally apply to the extent indicated in the Paris Convention, where the legislation of any other Contracting Party is to apply to the liability of a Danish operator.

Excented damage

Section 14

- (1) The liability of an operator under this Chapter shall not cover any nuclear damage caused to the installation itself or to any property on its site which is used or intended to be used in connection with that installation.
- (2) The liability of operators of installations in this country shall, in the cases referred to in Sections 8 and 9 of this Act, ~~include~~ also any nuclear damage that is caused to the means of transport upon which the nuclear substances involved were at the time of the incident. [11, as a result of the limits of liability under Section 21 of this Act, the claims for compensation cannot be fully met, compensation for damage to the means of transport shall be paid only insofar as this may be done without reducing the aggregate of compensation for other damage below a sum equal to five million units of account.] Where the liability attaches to the operator of an installation situated in the territory of any other Contracting Party, the legislation of the Installation State shall determine whether damage to the means of transport shall be covered by the liability of the operator. The provisions of the first and second sentences of this sub-section shall equally apply where the legislation of any other Contracting Party applies to the liability of a Danish operator under the Paris Convention.

Contributory fault on the part of the injured person

Section 15

If the injured person has contributed to the damage intentionally or through negligence, compensation may be reduced or refused, unless he has shown only slight negligence.

Claims against persons other than the operator

Section 16

- (1) No person other than the operator concerned shall be liable to pay compensation for any nuclear damage covered by the rules of liability of this Chapter or corresponding provisions of any other Contracting Party. Where, after the death of the operator or the discontinuation of the undertaking, the claim cannot be brought against the operator or his estate, it may be brought against the insurer or the person who has furnished other financial security. Such claim shall not be affected by a preclusion period fixed in any advertisement for creditors of the operator.
- (2) Where the operator is not liable for compensation under the said rules pursuant to the provisions of Section 13(2) or Section 14

of this Act or corresponding provisions of any other Contracting Party, only the individual who has caused the damage intentionally may be required to compensate the damage: Provided that the operator shall be liable under the law of torts for such damage to any means of transport which, according to the legislation of the installation State, is not covered by the liability rules of this Chapter (cf. Section 14(2), third sentence of this Act).

Section 17

- (1) No other person than the operator of a nuclear installation shall be liable to pay compensation for any nuclear damage caused by an incident during maritime transport of nuclear substances which is not covered by the liability rules of this Chapter or corresponding provisions of any other Contracting Party, if the operator is liable for the damage under the Vienna Convention of 21st May 1963 on Civil Liability for Nuclear Damage or by virtue of a foreign national law governing the liability for such damage which in all respects is as favourable to persons who may suffer damage as either the Paris or the Vienna Convention.
- (2) Compensation cannot be claimed for damage as referred to in sub-section (1) to the nuclear installation itself or to any property on the site of that installation which is used or to be used in connection with that installation, or to the vessel upon which the nuclear substances involved were at the time of the incident, if the operator of the nuclear installation is not liable for the damage according to Article IV.5 of the Vienna Convention or a corresponding provision of a foreign national law.
- (3) The provision of sub-section (2) shall not apply to any individual who has caused the damage intentionally.

Section 18

The provisions of Sections 16 and 17 shall not apply as far as they are contrary to international agreements concerning damage during transport, which has been accepted by Denmark.

Subrogation of claims of the injured person against the operator etc.

Section 19

- (1) Any person who has to pay compensation for nuclear damage pursuant to an agreement referred to in Section 18 of this Act or under the legislation of a foreign State shall acquire by subrogation the claims of the injured person against the operator liable for the damage under the provisions of this Chapter.
- (2) Where by reason of the provisions of Section 5 of this Act the operator is not liable to the injured person for any nuclear damage under the provisions of this Chapter, the person who has to pay compensation for the damage and has his principal place of

business within the territory of a Contracting Party or is the servant of a person who satisfies that condition shall acquire the same right against the operator as the injured person would have had but for Section 5: Provided that such right shall not be acquired in the event of carriage of nuclear substances to a consignee in a State which is not Party to the Paris Convention if the incident occurs after the material has been unloaded from the means of transport by which it has arrived in the territory of that State. In the case of carriage of nuclear substances from a consignor in a State which is not a Party to the Paris Convention, such right shall not be acquired if the incident occurs before the material has been loaded on the means of transport by which it was to be carried from the foreign State.

- (3) Any claim against the operator under sub-sections (1) and (2) of this Section shall be extinguished insofar as the claimant is himself liable to the operator under Section 24 of this Act.

Nuclear damage in connection with other damage

Section 20

- (1) Where nuclear damage covered by the provisions of this Chapter is caused jointly with any other damage and where the nuclear damage and the other damage are not reasonably separable, the provisions on nuclear damage of this Chapter shall apply to the whole of the damage.
- (2) Where, however, nuclear damage and damage caused by an emission of ionizing radiation not covered by the rules of liability of this Chapter have been caused jointly, the provision of sub-section (1) of this Section shall not affect the liability of any person who under the law of torts is liable for damage caused by such ionizing radiation.

Limits of operator's liability

Section 21

- (1) The aggregate liability under the provisions of this Chapter or corresponding provisions of any other Contracting Party for nuclear damage caused by one and the same incident shall for the operator of an installation in this country be limited to 75 million kr.: Provided that in special cases, having regard to the size and type of the installation, the extent of carriage covered by the liability, and any other relevant circumstances, the Minister of Justice may determine some other maximum amount but not less than a sum equal to five million units of account. As concerns installations situated in the territory of any other Contracting Party, the limits of liability laid down in the legislation of that State shall apply.

- (2) The limits provided for in sub-section (1) of this Section shall not include any interest or costs.

Section 22

- (1) Where the operators of several installations are liable for the same nuclear damage under the provisions of this Chapter or the legislation of any other Contracting Party, the operators shall be jointly and severally liable to the injured person, but each operator only within the highest amount applicable with respect to him pursuant to Section 21 of this Act. Where the incident occurs in course of carriage of nuclear substances either in one and the same means of transport or, in the case of storage incidental to the carriage, in one and the same nuclear installation, the total liability of the operators shall not exceed the highest amount applicable with respect to any of them pursuant to Section 21 of this Act.
- (2) The liability of the operators shall be apportioned between them having regard to the share of each installation in the damage and any other relevant circumstances.

Section 23

- (1) Where the nuclear damage caused by a single incident exceeds the amounts provided in Sections 21 and 22 of this Act, the compensation and any interest accruing thereto shall, subject to Section 14(2) of this Act, be reduced proportionally.
- (2) Where a reduction under sub-section (1) of this Section is likely to be required, the Minister of Justice may direct that, for the time being, only a specified proportion of the compensation may be paid.

Recourse of the operator

Section 24

- (1) Where nuclear damage for which the operator of a nuclear installation is liable under the provisions of this Chapter or corresponding provisions of any other Contracting Party has been caused with intent to cause damage, the operator may claim to be held harmless by the person or persons who brought about the damage with such intent. Similarly, the operator may claim to be held harmless if so expressly provided by contract.
- (2) Apart from the claims provided for in Section 20(2) and Section 22(2) of this Act as well as sub-section (1) of this Section, the operator shall have no right of recourse against any third party in respect of any sums he has paid by way of compensation.

Limitation

Section 25

- (1) Any claim for compensation against the operator of a nuclear installation pursuant to Sections 7 to 11 and Section 19 of this Act shall be barred under the provisions of the Statute of Limitation of 22nd December 1908, except that the period of limitation shall be three years. As concerns the claims referred to in Section 19 of this Act, the period shall be computed from the time when the person entitled, by exercising usual care, might have enforced his claim by taking legal proceedings against the operator.
- (2) A claim not barred pursuant to the provisions of sub-section (1) of this Section shall be extinguished at the expiry of ten years from the date of the nuclear incident that caused the damage, unless before that time it has been recognized by the operator, or the injured person has taken legal proceedings to enforce it: Provided that, if the damage was caused by nuclear substances that have been stolen, lost or abandoned and have not been recovered at the time of the incident, the limitation shall take effect not later than 20 years after the date of the theft, loss or abandonment.
- (3) Where the question as to whether an action shall be brought in this country is to be decided by the Tribunal referred to in Article 17 of the Paris Convention, limitation under sub-sections (1) and (2) of this Section shall not take effect if, before limitation has become effective under the legislation of the Contracting Party concerned, a request has been made to the competent public authority of that State to initiate a decision by the Tribunal or, provided no such decision has been taken, an action is brought in any of the States where this may be done pursuant to that Convention. In these cases, an action shall be brought in this country within such period as may be determined by the Tribunal.

Insurance and security

Section 26

- (1) The operator of a nuclear installation in this country shall take out and maintain insurance to cover the liability for nuclear damage which he may incur under this Chapter or under the legislation of any other Contracting Party, subject to the limits laid down in Section 21 of this Act.
- (2) The insurance shall be approved by the Minister of Justice. The latter may approve separate insurance to cover liability for nuclear damage as a result of incidents occurring in the course of carriage. The Minister may further approve insurances which do not completely meet the requirements of sub-section (1).

Section 27

In the case of termination of the insurance contract without any new insurance taking effect, the insurer shall continue to be liable for any nuclear damage due to an incident occurring within two months after the insurer has informed the Minister of Justice in writing about the termination of the contract: Provided that, where the insurance relates to damage caused during carriage, the liability of the insurer shall continue until the carriage has been completed.

Section 28

The Minister of Justice may make regulations concerning the types of insurance referred to in Section 26 of this Act.

Section 29

- (1) The obligation to insure shall not extend to installations for which the State is liable.
- (2) The Minister of Justice may relieve the operator of an installation of the obligation to insure if he provides such security as in the judgment of the Minister is equally adequate.
- (3) Where the security is furnished by a person other than the operator, the provisions on insurance of this Act shall apply accordingly.

Compensation payable by the State

Section 30

Subject to the limits laid down in Section 21 of this Act, the State shall pay any compensation for which the operator of a nuclear installation in this country is liable under the provisions of this Chapter or corresponding provisions of any other Contracting Party, if compensation cannot be met out of the funds provided by the operator's insurance or other financial security.

Section 31

- (1) Any claim for compensation which cannot be satisfied by reason of the limits of liability under Sections 21 and 22 of this Act shall be met by the State where -
 - (a) the incident did not occur exclusively in a State which is not a Party to the Supplementary Convention;
 - (b) an action for compensation may be brought in this country under Section 36 of this Act;

- (c) the liability attaches to the operator of a nuclear installation for peaceful purposes that is situated in this country or in any other State which is a Party to the Supplementary Convention and is included in the list referred to in Article 13 of that Convention and
 - (d) the damage was suffered -
 - (i) in this country or in any other State which is a Party to the Supplementary Convention; or
 - (ii) on or over the high seas on board a vessel or aircraft registered in this country or in any other State which is a Party to the Supplementary Convention; or
 - (iii) on or over the high seas by a State which is a Party to the Supplementary Convention, or by any of its nationals.
- (2) Compensation for any damage to a vessel or an aircraft shall, in the cases referred to in sub-section (1)(d)(ii) be payable only if the vessel or aircraft, at the time of the incident, was registered in a State which is a Party to the Supplementary Convention. A partnership, or any public or private body whether corporate or not, established in the territory of a State which is a Party to the Supplementary Convention and, if so determined by that State, any person domiciled therein shall in the mentioned case be assimilated to nationals of that State. Any person domiciled in Denmark shall be treated as a Danish national.

Section 32

- (1) The aggregate of compensation payable in consequence of one and the same nuclear incident partly by the operator concerned under the provisions of this Chapter and partly by the State under Section 31 of this Act shall not exceed a sum equal to 120 million units of account. If as a result of the incident compensation is to be paid also by virtue of an agreement which a State Party to the Supplementary Convention has concluded with some other State pursuant to Article 15 of that Convention, such compensation shall equally be included in the said maximum amount.
- (2) The limit provided for in sub-section (1) of this Section shall not include any interest or costs.
- (3) Where the claims cannot be satisfied out of the sums referred to in sub-section (1) of this Section, the provisions of Section 23 of this Act shall apply accordingly.

Section 33

Compensation pursuant to Sections 30 and 31 of this Act shall not be paid for any nuclear damage due to an incident that occurred under the circumstances referred to in Section 13(2) of this Act.

Section 34

- (1) Where a claim for compensation in respect of any nuclear damage caused in this country by an incident for which the operator of an installation in this country is liable has been extinguished pursuant to Section 25(2) of this Act or a corresponding provision of the legislation of any other Contracting Party, compensation shall be paid by the State. Such claim against the State may be brought only if it is excusable that no legal proceedings were taken against the operator prior to the termination of his liability under the said provisions. The claim shall be barred under the provisions of the Statute of Limitations of 22nd December 1908, except that the period of limitation shall be three years, and shall be extinguished not later than 30 years after the date of the nuclear incident that caused the damage. Where other similar claims have been reduced by virtue of Section 23(1) or Section 32(3) of this Act, or corresponding provisions of any other Contracting Party, the compensation referred to in this sub-section shall be reduced correspondingly.
- (2) The Minister of Justice may direct that compensation under the provisions of sub-section (1) of this Section shall be paid also for damage being caused outside this country.

Section 35

- (1) Any amount paid by the State pursuant to Sections 30, 31 or 34 of this Act, or otherwise paid under the provisions of the Supplementary Convention, to cover any nuclear damage for which the operator of an installation in this country is liable under the legislation of any other Contracting Party may be recovered from the person or persons who have caused the damage intentionally.
- (2) Any amount paid pursuant to Section 30 of this Act may further be recovered -
 - (a) from a person who as insurer or financial guarantor or by express agreement has assumed liability for the damage (cf. Section 24(1)(ii) of this Act);
 - (b) from an operator who pursuant to Section 22(1) of this Act is jointly liable for the damage to the extent to which liability under Section 22(2) of this Act attaches to him;
 - (c) from the operator himself if the expense is due to his failure to take out and maintain duly approved insurance or other financial security, or to the fact that the security has proved unsound.

Jurisdiction of Danish Courts

Section 36

- (1) Any action against the operator of a nuclear installation, or - in the case referred to in Section 16(1)(ii) of this Act - against an insurer or financial guarantor, for compensation for nuclear damage under Sections 7 to 11 or Section 19 of this Act may be brought in this country -
 - (a) if the nuclear incident that caused the damage occurred, wholly or partly, in this country; or
 - (b) if the claim brought against the operator of an installation in this country and the incident occurred entirely outside the territory of any Contracting Party, or the place of the incident cannot be established with certainty.
- (2) Where in a case referred to in sub-section (1) of this Section it is decided pursuant to Article 13 of the Paris Convention by the Tribunal referred to in Article 17 of that Convention that an action shall be brought in some other Contracting State, jurisdiction over actions shall no longer lie with the courts of this country.
- (3) Any petition for a case to be decided under the provision referred to in sub-section (2) of this Section shall be addressed to the Minister of Justice.

Enforcement of Foreign Judgments

Section 37

- (1) Any judgment relating to compensation for nuclear damage entered by a court of a Contracting Party in accordance with Article 13 of the Paris Convention and enforceable under the legislation of that State may, subject to the limits laid down in Section 21 of this Act, be enforced in this country.
- (2) The provision of sub-section (1) shall not apply to interim judgments.
- (3) Any petition for enforcement of a judgment referred to in sub-section (1) of this Section shall be accompanied by a certified copy of the judgment and a declaration on the part of the competent public authority of the State concerned to the effect that the judgment relates to claims for compensation in respect of damage covered by the Paris Convention and that it is enforceable under the legislation of that State. It may be required that the copy and the declaration be accompanied by a certified translation into Danish.
- (4) In case the bailiff does not feel capable, as matters stand, of rejecting an objection based on the Convention, he may refer the claimant to ordinary legal proceedings.

- (5) The provisions of sub-sections (1) to (4) of this Section shall apply correspondingly to any settlement effected or confirmed before the said courts.

Certificates

Section 38

- (1) Where nuclear substances are sent from or to an installation in this country to a consignee or from a consignor in some other State, and where such material is sent through the territory of this country from or to an installation in the territory of another Contracting Party, the operator liable shall provide the carrier with a certificate issued by the insurer or the person who has furnished other financial security to cover the liability. The carrier shall not be allowed to carry out the carriage in this country before he has received the certificate, which on demand shall be shown to the competent public authority.
- (2) The certificate shall state the name and address of the operator liable, indicate the substances and the carriage to which the security applies, as well as the amount, type and duration of the security. The certificate shall also include a statement by the Atomic Energy Commission or, as far as foreign operators are concerned, from the foreign competent public authority that the operator named in the certificate is an operator of a nuclear installation within the meaning of the Paris Convention.
- (3) The person issuing the certificate shall be responsible for the correctness of its data concerning the name and address of the operator, as well as the amount, type and duration of the security.
- (4) The provisions of sub-sections (1) to (3) of this Section shall equally apply to the carriage of nuclear substances referred to in Section 9(3) of this Act. Regulations may be made by the Minister of Justice on the subject.
- (5) The Minister of Justice may make regulations concerning the form of the certificate.

Nuclear-propelled means of transport

Section 39

The Minister of Justice may make regulations on the rules governing compensation for nuclear damage involving nuclear-propelled means of transport.

CHAPTER III

RELATIONS TO OTHER LEGISLATION; PENALTY PROVISIONS; FINAL PROVISIONS

Section 40

Any person who is employed at a nuclear installation and covered by an industrial injuries insurance taken out by the responsible operator under the Industrial Injuries Act shall be entitled to compensation under this Act only insofar as his loss is not covered by such insurance. Notwithstanding the provision of Section 4 of the Industrial Injuries Act, the insurance company shall have no right of recourse against the operator for any benefit paid by the company to such persons.

Section 41

- (1) Infringement of Sections 26 and 38(1) and (4) shall be punishable by fine or simple detention.
- (2) Regulations made under this Act may prescribe the penalties of a fine or simple detention for any infringement of the regulations.
- (3) A fine may be imposed on the operator of an installation, even if the offence cannot be imputed to him as intentional or negligent. As concerns offences committed by a joint-stock company, a co-operative society or the like, a fine may be imposed on the company or society as such. There shall be no alternative penalty for the imposition of fines under the provision of this sub-section.

Section 42

- (1) The entry into force of this Act shall be determined by the Minister of Justice.*
- (2) The Nuclear Installations (Atomic Plants) Act, No. 170 of 16th May 1962, except Section 1(d), Sections 2, 4 to 8, 9 (part 1), and 37 to 39, is hereby repealed.

Section 43

This Act shall not extend to the Farøe Islands but may by Royal Order be put into force for the Islands, subject to the modifications required by the special conditions prevailing in that territory.

* The present Act came into force on 18th September 1974, with the exception of Clauses 31 and 32, which came into force on 4th December 1974.

France

1. Short introduction.

Unlike most nations visited during this survey, France has no one basic act governing nuclear activities. The legal regime for the establishment of a centralized spent fuel storage facility primarily is governed by the Decree of December 11, 1963, as amended (Appendix F-3), but other decrees would also apply.

2. List of the relevant laws and regulations.

F-1 Decree of March 15, 1967.

F-2 Interministerial Order of June 24, 1974.

F-3 Decree No. 63-1223 of December 11, 1963, as amended by Decree No. 73-405 of March 27, 1973.

F-4 Decree No. 68-943 of October 30, 1968.

F-5 de Laubadère, Traité de Droit administratif 6th ed., Paris, 1973.

F-6 Decree of August 2, 1961.

F-7 Decree of December 16, 1964.

3. Text of principal laws and treaties.

(none)

Germany

1. Short introduction.

The basic nuclear law in Germany is the Atomic Energy Act (Appendix G-2), amended several times. Under the basic law, there are several important ordinances including one on health and safety (Appendix G-4), on financial security (Appendix G-3), on carriage of dangerous goods (Appendix G-6) and on nuisances (Appendix G-8).

Primary international agreements include the Paris Convention (Appendix G-10), the Brussels Supplementary Convention (Appendix G-11) and the Brussels Convention of 1971 (Appendix G-12).

2. List of relevant laws and regulations.

- G-1 Ordinance of Feb. 1, 1977, Concerning the Procedure for Licensing Installation Pursuant to Sec. 7 of the Atomic Energy Act (Nuclear Installations Ordinance), BGBl. I 280.
(Bundesgesetzblatt, Sec. I at page 280).
Supersedes Nuclear Installations Ordinance of Oct. 29, 1970.
- G-2 Revised act of Oct. 31, 1976, On the Peaceful Uses of Atomic Energy and Protection Against Its Hazards (Atomic Energy Act), BGBl. I 3053.
Includes to Oct. 31, 1976 all amendments to Atomic Energy Act.

- G-3 Ordinance of Jan. 25, 1977, Concerning the Financial Security Pursuant to the Atomic Energy Act (Nuclear Financial Security Ordinance) BGBI. I 220 (Feb. 3, 1977).
- G-4 Ordinance of Oct. 13, 1976, On the Protection Against Damage Caused by Ionizing Radiation (Radiation Protection Ordinance), BGBI. I 2905 (Oct. 20, 1976). Amended Jan. 21, 1977 BGBI. I 184. Supersedes First Radiation Ordinance of July 24, 1960, BGBI. I 430 in version published on July 15, 1965 BGBI. I 1654, Second Radiation Protection Ordinance of July 18, 1964, BGBI. I 500 in version published on Aug. 13, 1965. BGBI. I 759.
- G-5 Gottinger Atomrechtskatalog, University of Gottingen Institute of Public International Law. Begun 1960. Latest volume is No. 28 (1976). Covers atomic energy law of individual nations.
- G-6 Act of Aug. 6, 1975, Concerning the Carriage of Dangerous Goods, BGBI. I 2121.
- G-7 Technical Exchange and Cooperative Arrangement in the Field of Management of Radioactive Wastes Between U.S. and FRG, Dec. 20, 1974
- G-8 Act of Mar. 15, 1974, On Protection Against Nuisances BGBI. I 721.

- *G-9 OECD/NEA, Nuclear Third Party Liability,
Nuclear Legislation Analytical Study Series,
1976 pp. 75-93.
- G-10 The Convention on Third Party Liability in
the Field of Nuclear Energy (Paris Convention)
July 29, 1960 ratified by G-13.
- G-11 The Convention Supplementary to the Paris
Convention of 29 July 1960 on third party liability
in the field of nuclear energy (Brussels supple-
mentary convention) Jan. 31, 1963.
- G-12 The Convention Relating to Civil Liability in
the Field Maritime Carriage of Nuclear Material.
Dec. 17, 1971, ratified by FRG Oct. 1, 1975.
See 16 NLB 14, 42 (1975). See also G-9 at p. 15.
- G-13 Act of July 8, 1975, Concerning the Paris and
Brussels Nuclear Third Party Liability Conventions
BGBI. II 957.
- G-14 Ordinance of March 24, 1971, Concerning Costs
Under the Atomic Energy Act. BGBI. I 266.
- G-15 Ordinance of Nov. 23, 1971, Concerning the Trans-
portation of Dangerous Goods on the Rhine river.
BGBI. I 1851.
- G-16 Convention No. 115 June 17, 1962, Concerning the
Protection of Workers Against Ionizing Radiation.
Ratified by FRG Dec. 26, 1973.

3. Text of principal laws and treaties.

- G-2 Revised act of Oct. 31, 1976, On the
Peaceful Uses of Atomic Energy and
Protection Against Its Hazards (Atomic
Energy Act), BGBI. I 3043.
Includes to Oct. 31, 1976 all amendments
to Atomic Energy Act. (two parts)
- G-3 Ordinance of Jan. 25, 1977, Concerning
the Financial Security Pursuant to
the Atomic Energy Act (Nuclear Financial
Security Ordinance) BGBI. I 220
(Feb. 3, 1977).

N O T E

The draft text of the Revised Atomic Energy Act which was published as a Supplement to Nuclear Law Bulletin No. 15 took account of all amendments up to 1st October 1975. Thereafter, the Act was further amended by an Act of 19th December 1975 and by the Fourth Act Amending the Atomic Energy Act of 30th August 1976. The Federal Minister of the Interior has now published the Revised Atomic Energy Act which incorporates these amendments as well. The first part of this Supplement is intended to update the abovementioned draft text and to bring it into line with the official text of the Revised Atomic Energy Act. All new and amended Sections, unofficially translated by the Secretariat of the OECD Nuclear Energy Agency, are reproduced in full; the changes in relation to the text published in the Supplement to Nuclear Law Bulletin No. 15 are printed in italics. The footnotes refer to notes by the Secretariat.

C O R R I G E N D U M

The text published in the Supplement to Nuclear Law Bulletin No. 15 should be corrected as follows:

1. Section 31

The words "50 million units of account" in the last sentence of sub-section 1 should be replaced by the words "15 million units of account".

2. The reference to repealed Sections preceding Section 45 should read: "Sections 41 to 44 - Repealed".

3. Annex 1

No. 4 of sub-section 1 should be set out as follows:

"4. 'Radioactive products or waste': Any radioactive material produced in or made radioactive by exposure to the radiation incidental to the process of producing or utilising nuclear fuel, but does not include

(a) nuclear fuel

(b) radioisotopes outside a nuclear installation which are used or intended to be used for any industrial, commercial, agricultural, medical or scientific purpose;"

FEDERAL REPUBLIC OF GERMANY

REVISED ACT ON THE PEACEFUL USES OF ATOMIC ENERGY
AND PROTECTION AGAINST ITS HAZARDS

(ATOMIC ENERGY ACT)

of 31st October 1976

(Bundesgesetzblatt I, p. 3053)

CHAPTER I

GENERAL

.....

Section 2 - Definitions

(1) "Radioactive substances" within the meaning of this Act mean:

1. special fissionable material (nuclear fuel) in the form of
 - (a) plutonium 239 and plutonium 241;
 - (b) uranium 233;
 - (c) uranium enriched in the isotopes 235 or 233;
 - (d) any substance containing one or more of the aforesaid substances;
 - (e) uranium and substances containing uranium of the natural isotopic mixture of such purity as to enable a continuous self-sustaining chain reaction to be maintained in a suitable installation (reactor).

The term "uranium enriched in the isotopes 235 or 233" means uranium containing the isotopes 235 or 233 or both in such

quantity that the ratio of the sum of these two isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature.

2. Substances which, without being nuclear fuel, emit ionizing radiation spontaneously (other radioactive substances).
- (2) *Such radioactive wastes that are not to be transferred to installations pursuant to sub-section 3 of Section 9a and for which, because of their low activity, no special disposal has been required, ordered or licensed pursuant to the second sentence of sub-section 2 of Section 9a for the purpose of protecting life, health and property from the hazards of nuclear energy and from the harmful effects of ionizing radiation, shall not be considered as radioactive substances within the meaning of this Act .*
- (3) For the application of the provisions on liability and financial security, the terms "nuclear incident", "nuclear installation", "operator of a nuclear installation", "nuclear substances" and "units of account" shall have the meaning given to them in Annex 1 of this Act.
- (4) "Paris Convention" means the Convention of 29th July 1960 on Third Party Liability in the Field of Nuclear Energy in the version published on 5th February 1976 /17 (Bundesgesetzblatt /27 II, p.p. 310, 311).
- (5) "Brussels Supplementary Convention" means the Convention of 31st January 1963 Supplementary to the Paris Convention in the version published on 5th February 1976 /17 (BGBl. II, p.p. 310, 318).

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Section 5 - Custody, possession and surrender of nuclear fuel

- (1) Nuclear fuel shall be kept in Government custody. Such precautions as are necessary in the light of existing scientific knowledge and technology shall be taken to prevent damage resulting from such keeping in custody, and the necessary protection shall be provided against disturbance or other interference by third persons.
- (2) No person shall be permitted to have nuclear fuel in his immediate possession outside Government custody, unless he

/17 These versions incorporate the provisions of the respective Additional Protocols signed on 28th January 1964.

/27 Bundesgesetzblatt (BGBl.): Federal Gazette.

1. stores nuclear fuel by virtue of a licence granted under Section 6,
 2. treats, processes or otherwise uses nuclear fuel in an installation licensed under Section 7 or by virtue of a licence granted under Section 9,
 3. is entitled to carry nuclear fuel by virtue of Section 4.
- (3) Any person who is in immediate possession of nuclear fuel, without being authorised under sub-section 2, shall surrender it to the custodial authority without delay.
- (4) The obligation to surrender nuclear fuel shall cease to apply if the fuel is transferred to a carrier licensed under Section 4,
1. for the purpose of export licensed under Section 3, or
 2. for the purpose of delivery to a consignee licensed under no. 1 or 2 of sub-section 2.
- (5) Nuclear fuel in Government custody under sub-section 1, or in licensed storage under Section 6 shall be delivered only if
1. the consignee is authorised to have nuclear fuel in his possession under no. 1 or 2 of sub-section 2,
 2. nuclear fuel is to be carried, for the purpose of export, under a licence pursuant to Section 4.
- (6) *Sub-sections 1 to 5 shall not apply to nuclear fuel contained in radioactive wastes.*

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Section 7 - Licences for installations

- (1) Any person who constructs, operates or otherwise holds a stationary installation for the production, treatment, processing or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who materially alters such installation, or its operation, shall require a licence.
- (2) A licence may be granted only if
 1. there are no known facts giving rise to any doubts as to the reliability of the applicant and of the persons responsible for the construction and management of the installation and the control of its operation and such latter persons possess the requisite competence,
 2. it is ensured that the persons who are otherwise engaged in the operation of the installation possess the necessary knowledge concerning the safe operation of the installation, the possible hazards and the safety measures to be applied,

3. every necessary precaution has been taken in the light of existing scientific knowledge and technology to prevent damage resulting from construction and operation of the installation,
 4. the necessary financial security has been provided to cover all legal liability to pay compensation for damage,
 5. all necessary protection is provided against disturbance or other interference by third persons,
 6. the choice of the site of the installation, in particular with respect to non-contamination of water, air and soil, is not contrary to overriding public interests.
- (3) *The decommissioning of an installation within the meaning of sub-section 1, as well as the safe enclosure of a finally decommissioned installation or the dismantling of the installation or parts thereof, are subject to a licence. Sub-section 2 shall apply accordingly. A licence under the first sentence shall not be required to the extent that the measures planned have been subject to a licence under sub-section 1 hereof or an order under sub-section 3 of Section 19.*
- (4) All authorities of the Bund ^{/17/}, the Länder ^{/17/}, the communities and other regional authorities whose jurisdiction is involved, shall take part in the licensing procedure. In case of a difference of opinion between the licensing authority and any federal authority concerned, the licensing authority shall obtain instructions from the Federal Minister competent for nuclear safety and radiation protection. In all other respects, the licensing procedure shall be governed by statutory ordinance in accordance with the principles laid down in Section 8, sub-sections 1 to 4 and 6 to 8 of Section 10, and Section 18 of the Federal Act on Protection Against Nuisances of 15th March 1974 (BGBl. I, page 721) ^{/27/}.
- (5) Sub-sections 1, 2 and 4 shall apply analogously to non-stationary installations. However, the statutory ordinance referred to in the third sentence of sub-section 4 may provide that the project shall not be publicly announced and the documents shall not be laid open for public inspection and that in such case objections shall not be heard orally.
- (6) Section 14 of the Federal Act on the Protection Against Nuisances shall apply analogously if other premises are affected by a licensed installation.

^{/17/} "Bund": The Federal State. "Länder" (singular "Land"): States forming the Federal Republic of Germany.

^{/27/} Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge (Bundes-Immissionsschutzgesetz).

Section 7a - Provisional decision

The reference to sub-sections 3 and 4 of Section 7 is replaced by a reference to sub-sections 4 and 5 in sub-section (2) of this Section.

Section 7b - Interventions by third parties in case of a partial licence and provisional decision

To the extent that a decision rendered in a procedure covering a partial licence or a provisional decision pursuant to Section 7 or Section 7a has become final, third parties shall be precluded, in any further licensing procedure, from intervening on the basis of facts which had already been presented or which such parties could have presented in view of the document or the decision laid open for public inspection.

Section 8 - Relation to the Federal Act on Protection Against Nuisances and the Trading and Industrial Code /1/

Sub-sections 1(a) and 2 of this Section are renumbered 2 and 3 respectively.

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Section 9a - Utilisation of radioactive residues and disposal of radioactive wastes

- (1) Any person who constructs, operates, holds, materially modifies, decommissions or disposes of installations in which nuclear fuel is handled, or who handles radioactive substances outside such installations, or who operates installations for the production of ionizing radiations, has to ensure that residual radioactive substances as well as radioactive parts of plant and equipment which are removed or dismantled
1. are utilised without harmful effects in accordance with the purposes laid down in nos 2 to 4 of Section 1, or
 2. are disposed of as radioactive wastes in an orderly manner to the extent that the foregoing, in the light of existing scientific knowledge and technology, is not possible, economically not feasible or inconsistent with the purposes laid down in nos 2 to 4 of Section 1.
- (2) Any person who holds radioactive substances shall transfer them to an installation pursuant to sub-section 3. This shall not apply if it is otherwise provided by an ordinance issued hereunder, or has been ordered or licensed by virtue of this Act or such an ordinance.

/1/ Gewerbeordnung .

- (3) The Länder shall establish collecting agencies /17 for the interim storage of radioactive wastes originating in their territories; the Bund shall establish installations for the safekeeping and final storage of radioactive wastes. The Bund and the Länder may, for the purpose of fulfilling their obligations, avail themselves of the services of third persons.

Section 9b - Land use planning procedure

- (1) The construction and operation of the federal installations referred to in sub-section 3 of Section 9a, as well as any material modification of such installations or of their operation are subject to land use planning .
- (2) In order to achieve the purpose laid down in Section 1, the land use planning decree may be made subject to restrictions and conditions. Insofar as it is necessary to achieve the purposes laid down in nos 2 to 4 in Section 1, conditions may be imposed subsequently.
- (3) The land use planning decree may be granted only if the requirements specified in nos 1 to 3, 5 and 6 of sub-section 2 of Section 7 have been met. It shall be denied if
1. it is to be expected that the construction or operation of the planned installation will impair the common welfare, and such impairment cannot be prevented by restrictions and conditions, or
 2. other provisions of public law are contrary to the construction or operation of the installation.
- (4) If the rights of another person are adversely affected as a consequence of such land use planning decree, and it is not possible to prevent or compensate such effects by restrictions and conditions, such other person shall be compensated in money for the material damage caused by such effects.
- (5) Sections 21 to 29 of the Waste Disposal Act /27 shall apply to the land use planning procedure with the following modifications:
1. The publication of the project and of the date of the hearing, the public inspection of the plan, the filing of interventions, the conduct of the hearing and the service of the decisions shall be made in accordance with the ordinance issued pursuant to the third sentence of sub-section 4 of Section 7.

/17 Landessammelstellen.

/27 Abfallbeseitigungsgesetz .

2. Prior to rendering a decision the right to which has been reserved, the publication and public inspection of documents subsequently submitted may be dispensed with if such publication and public inspection does not reveal further circumstances which may be relevant to the interests of third persons.
3. The land use planning shall not extend to the admissibility of the project under the legal provisions relating to mining and deep storage. This question shall be decided by the authority competent in this respect.

Section 9c

The construction and operation of the collecting agencies of the Länder referred to in sub-section 3 of Section 9a, as well as any material modification of such installations or of their operation, are subject to a licence by the competent authority under Section 9 of this Act or Section 3 of the Radiation Protection Ordinance.

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Section 11 - Enabling provisions (licences, notifications, general permits)

- (1) Unless special provision for nuclear fuel and installations within the meaning of Section 7 has been made under this Act, it may be provided by statutory ordinance with a view to achieving the purposes specified in Section 1
 1. that prospecting for or handling of radioactive substances (extraction, production, storage, treatment, processing or any other use or disposal), transactions in radioactive substances (acquisition, or delivery to others), the carriage and import or export of such substances shall require a licence or notification,
 2. that the construction or operation of an installation for the production of ionizing radiation shall require a licence or notification,
 3. that a general permit may be issued for installations, apparatus and equipment containing radioactive substances or producing ionizing radiation after their design and construction have been examined by an authority to be specified in such statutory ordinance, which shall also specify the notifications to be made by the operators of such installation, apparatus and equipment,
 4. that components of plant and equipment which are significant from the standpoint of safety technology, and which are to be manufactured before a licence is applied for or granted, may be built into installations pursuant to sub-section 1 of Section 7 only if the importance of prior manufacture can be justified and it has been proven by tests that the materials used, the design, construction and manufacture

meet the requirements laid down in no.3 of sub-section 2 of Section 7; which authority shall be competent for the test procedure; what documents have to be submitted and which legal effects shall be accorded to such permit for prior manufacture,

5. *that radioactive substances shall not be used in certain ways or for certain purposes to the extent that such prohibition is required for the protection of life and health of the population against the hazards of radioactive substances or for the enforcement of decisions by international organisations of which the Federal Republic of Germany is a member.*

- (2) The statutory ordinance may make the granting of licences and general permits subject to personal and objective requirements within the purposes of this Act, and may regulate the procedure for such licences and general permits.

Section 12 - Enabling provisions (safety measures)

- (1) To achieve the purposes specified in Section 1, the following may be provided by statutory ordinance
 1. the precautionary and control measures to be taken for the protection of individuals and of the general public in regard to the handling of and transactions in radioactive substances, the construction, operation and possession of installations as specified in Section 7 and no.2 of sub-section 1 of Section 11, the handling of and transactions in installations, apparatus and equipment as specified in no.3 of sub-section 1 of Section 11,
 2. the precautions to be taken in order to ensure that specified radiation doses and concentrations of radioactive substances in air and water are not exceeded,
 3. that no person shall be employed in areas exposed to radiation hazards unless he produces a certificate issued by a specially authorised medical practitioner, and that if any objections be raised to such employment for reasons of health, the supervisory authority shall decide after consulting medical experts,
 4. that persons who stay or have been staying in areas exposed to radiation hazards shall be under obligation, the extent to be specified, to have the radiation doses at their bodies measured, to undergo medical examination and, insofar as the protection of other individuals or the general public so requires, to undergo medical treatment, such examination or treatment being applied by specially authorised medical practitioners,
 5. that, as to be specified, records shall be kept and reports submitted on the production, extraction, acquisition, possession, delivery and location of radioactive substances, as well as on the measurement of doses and dose rates of ionizing radiation,

6. that, the manner and extent to be specified, the operator of an installation in which radioactive substances are, or are to be, handled, is required to inform the supervisory authority whether changes have occurred in relation to the statements and documents concerning his application for a licence or in relation to the licence itself,
7. that deviations from the designated operation which are significant from the standpoint of safety technology, in particular accidents and other harmful occurrences in the course of handling radioactive substances, of constructing and operating installations in which radioactive substances are handled, as well as of handling installations, equipment and apparatus specified in no.3 of sub-section 1 of Section 11, are to be notified to the supervisory authority; and under what conditions and in which manner the experience thus gained, except individual data concerning personal and factual circumstances, may be published by agencies to be determined in such ordinance for the purpose of improving the safety measures,
8. which radioactive substances are to be transferred to the collecting agencies of the Länder and the federal installations pursuant to Section 9a and that, considering the extent of the danger connected therewith, another method of interim storage or further exceptions from the obligation to transfer are permissible or may be ordered or licensed under certain conditions,
9. how the transfer shall be carried out; which requirements shall be met for the radioactive wastes at the time of transfer; how the radioactive wastes shall be safely kept and stored in the collecting agencies of the Länder and the federal installations; under what conditions and in which manner radioactive wastes shall be delivered from the collecting agencies of the Länder to the federal installations, and how the installations under sub-section 3 of Section 9a are to be supervised,
10. the manner in which radioactive substances and installations within the meaning of Section 7 and no.2 of sub-section 1 of Section 11, shall be protected against disturbance or other interference by third persons,
11. which requirements are to be established as regards the training, the professional knowledge and competence and the reliability and impartiality of the experts referred to in Section 20, and which conditions have to be met by organisations which may be called as experts pursuant to Section 20 concerning their technical equipment and the co-operation between members working in different fields,
12. which requirements are to be established regarding the requisite competence of persons responsible for the construction of installations under Section 7 and the management and control of their operation, as well as regarding the necessary knowledge of persons otherwise engaged in the operation of installations under Section 7; which certificates shall be submitted concerning such requirements and in which manner the licensing and supervisory authorities competent under Section 24 shall examine the existence of the requisite competence or necessary knowledge,

13. that the supervisory authority may issue directions for the implementation of any provisions made under nos 1 to 10.

Nos 1 and 7 of the first sentence shall apply analogously to the carriage of radioactive substances to the extent that the purposes stated in Section 1 nos 1, 3 and 4 are to be achieved and regulations on financial security are concerned.

- (2) The fundamental right to physical inviolability (first sentence of Section (2) of Article 2 of the Basic Law /17/) shall be restricted under the terms of no.4 of sub-section 1.

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Section 21 - Costs

- (1) Costs (fees and expenses) shall be charged for licences under Sections 4, 6, 7 and 9, for the provisional decision under Section 7a and for Government custody of nuclear fuel (sub-section 1 of Section 5).

- (2) The following fees shall be charged:

1. for the licence to construct and operate an installation within the meaning of Section 7, 1.5 per thousand of the costs of the construction;
2. for any other licence under Section 7 or a provisional decision under Section 7a, DM 100 to 20,000;
3. for licences under Sections 4, 6 and 9, as well as for licences implementing statutory ordinances issued under Sections 10 to 12 of this Act, DM 10 to 10,000;
4. for Government custody of nuclear fuel, 0.2 per thousand of the value of the nuclear fuel for each begun month of custody; in the case of irradiated nuclear fuel, 0.2 per thousand up to 10 per thousand of the value which the nuclear fuel had before irradiation.

If the construction costs of the installation exceed DM 10 million, the fees under no.1 above shall be reduced to one fifth for the amount exceeding DM 10 million and to one tenth for the amount exceeding DM 100 million.

- (3) For the use of installations under sub-section 3 of Section 9a, costs (fees and expenses), or an equivalent compensation, shall be levied from the persons under obligation to transfer, in accordance with an ordinance pursuant to sub-section 6. The fees shall be fixed such as to cover the costs. Advance payments on such costs may be required from persons who are granted a licence for the handling of nuclear substances pursuant to Sections 7 or 9 or the provisions of an ordinance issued hereunder, if at the moment of granting the licence it is to be expected that the obligation to transfer will arise.

/17/ Grundgesetz (Constitution of the Federal Republic of Germany).

In fixing the costs or compensation which are charged in case of transfer to a collecting agency of : Land, those expenses shall be added that will arise on the occasion of the subsequent delivery to federal installations. The collecting agencies of the Länder shall levy this part of the costs and pay it over to the Bund .

- (4) In case of Government supervision those expenses shall be reimbursed which are due to the consultation of experts pursuant to Section 20 or to extraordinary measures taken by the supervisory authority if the person concerned has caused such measures to be taken.
- (5) Expert's fees shall be reimbursed if limited to amounts constituting appropriate consideration for the expert's activity, taking into account his requisite expert knowledge and any particular complexity of his opinion.
- (6) Details shall be determined by statutory ordinance in accordance with the principles of the Act on Administrative Costs /17/ of 23rd June 1970 (BGBl. I, page 821). Such statutory ordinance may provide that certain expenditures shall not be considered as construction costs of the installation (no.1 of sub-section 2).
- (7) To the extent that the authorities of the Länder carry out statutory ordinances issued under Sections 10 to 12 of this Act, the regulations concerning costs of the Länder shall apply, subject to sub-sections 1 and 5.
- (8) Expenditures for safety measures and medical examinations carried out pursuant to this Act or a statutory ordinance issued thereunder, shall be borne by the person requiring a licence or notification under this Act or a statutory ordinance issued thereunder for the activity which makes such safety measure or medical examination necessary.

C H A P T E R I I I

PUBLIC AUTHORITIES

Section 22 - Competence for import and export licences, import and export control

- (1) The Federal Office for Trade and Industry /27/ shall decide on applications for licences under Section 3, and on the withdrawal or revocation of licences already issued. The same shall apply where statutory ordinances under Section 11 provide for import and export licences.

/17/ Verwaltungskostengesetz.

/27/ Bundesamt für gewerbliche Wirtschaft.

- (2) The Federal Minister of Finance /1/, or the customs authorities designated by him, and in the free port of Hamburg the Free Port Authority of the Free and Hanseatic City of Hamburg /2/, shall be responsible for import and export control.
- (3) Insofar as the Federal Office for Trade and Industry makes any decisions by virtue of sub-section 1, it shall be bound by the technical instructions issued by the Federal Minister competent for nuclear safety and radiation protection, notwithstanding its subordination to the Federal Minister of Economics /3/ and his powers to issue instructions based on other legal provisions.

Section 23 - Competence of the Federal Institute of Physics and Technology /4/

- (1) The Federal Institute of Physics and Technology shall be competent for
1. the government custody of nuclear fuel,
 2. the construction and operation of federal installations for the safekeeping and final storage of radioactive wastes,
 3. the licensing of carriage of nuclear fuel and large sources,
 4. the licensing of the storage of nuclear fuel outside government custody, to the extent that such storage is not preliminary to or does not form part of an activity requiring a licence pursuant to Sections 7 or 9, and
 5. the withdrawal or revocation of licences pursuant to nos 3 and 4 above.

In carrying out these functions, the Institute shall act in accordance with the technical instructions of the Federal Minister competent for nuclear safety and radiation protection who, in cases falling under no.2 above, shall act in agreement with the Federal Minister competent for nuclear technology, insofar as questions are involved which relate to research and technology in the field of safekeeping and final storage of radioactive wastes.

- (2) Large sources within the meaning of no.3 of sub-section 1 shall mean radioactive substances whose activity per consignment or package exceeds the values set forth in marginal 2450(5) of Annex A to the European Agreement of 30th September 1957 concerning the International Carriage of Dangerous Goods by Road - ADR - (BGBl. 1969 II, page 1491).

/1/ Bundesminister der Finanzen.

/2/ Freihafenamt der Freien und Hansestadt Hamburg.

/3/ Bundesminister für Wirtschaft.

/4/ Physikalisch-Technische Bundesanstalt.

Section 24 - Competence of the authorities of the Länder

- (1) All other administrative functions under Chapter II and any statutory ordinances made thereunder shall be discharged by the Länder on behalf of the Bund. Control of any carriage of radioactive substances by rail and by ship which is effected by the German Federal Railways shall, however, be exercised by such bodies of the German Federal Railways as have been designated by the Federal Minister of Transport /17/.
- (2) The supreme authorities of the Länder designated by their governments shall be competent for the granting, withdrawal and revocation of licences under Sections 7, 7a and 9, *as well as for the land use planning pursuant to Section 9b and the cancellation of the land use planning decree*. These authorities shall exercise control over installations coming under Section 7, and over the use of nuclear fuel outside such installations. In particular cases, they may delegate their functions to subordinate authorities. Any complaints against their orders shall be decided upon by the supreme Länder authorities. Insofar as provisions other than those laid down in this Act confer supervisory powers on any other authorities, their competence shall not be affected.
- (3) In matters related to the service of the Federal Armed Forces /27/, the Federal Minister of Defence /37/, or the office designated by him, shall discharge the functions referred to in sub-sections 1 and 2, in agreement with the Federal Minister competent for nuclear safety and radiation protection.

C H A P T E R I V

LIABILITY

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Section 25a - Liability for nuclear ships

- (1) The provisions of this Chapter shall apply to the liability of an operator of a nuclear ship with the following modifications:

/17/ Bundesminister für Verkehr.

/27/ Bundeswehr.

/37/ Bundesminister für Verteidigung.

1. *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.*
2. If the damage is suffered in another State, the first sentence of sub-section 1 of Section 31 shall be applicable as regards the amount exceeding the maximum amount of liability under the Brussels Convention on the Liability of Operators of Nuclear Ships, only to the extent that the legislation of that State provides, at the time of the nuclear incident, for a third party liability regime for operators of nuclear ships which is applicable in relation to the Federal Republic of Germany and is equivalent as to its nature, extent and amount. The second and third sentences of sub-section 1 of Section 31, Section 36 and sub-section 1 of Section 38 and Section 40 shall not be applied.
3. Section 34 shall apply only to nuclear ships authorised to sail under the flag of the Federal Republic of Germany. If, within the realm of this Act, a nuclear ship is built or equipped with a reactor for another State, or persons of another State, Section 34 shall apply until the nuclear ship is registered in the other State or acquires the right to sail under the flag of another State. 75 per cent of the indemnification pursuant to Section 34 shall be borne by the Bund and the remainder by the Land competent for the licensing of the nuclear ship under Section 7.
4. In the case of nuclear ships which are not entitled to sail under the flag of the Federal Republic, this Chapter shall apply only if the nuclear damage caused by the nuclear ship has been suffered within the realm of this Act.
5. The courts of the State under whose flag the nuclear ship is entitled to sail shall have jurisdiction over actions for compensation; in the case referred to in no. 4, the court of the place within the realm of this Act where the nuclear damage was suffered shall equally have jurisdiction.

- (2) To the extent that international agreements on the liability for nuclear ships contain mandatory provisions derogating from this Act, such provisions shall take precedence over the provisions of this Act.

Section 26 - Liability in other cases

- (1) Where, in cases other than those specified by the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, loss of life, personal injury, or deterioration of health was caused to any person or damage was caused to property through the effects of any nuclear fission process or radiation from radioactive substances or the effects originating from an accelerator, the holder of the substances affected by the

nuclear fission, of the radioactive substances or of the accelerator shall be liable to pay compensation for damage in accordance with Sections 27 to 30, sub-section 2 of Section 31, sub-sections 1, 4 and 5 of Section 32 and Section 33. There shall be no liability to pay compensation if the damage was caused by an event which the holder and such persons as are acting for him in connection with such possession could not avoid, even by taking every reasonable precaution, and which is due neither to a defective condition of the safety devices nor to any failure in their performance.

- (2) Sub-section 1 shall apply correspondingly where damage of the nature specified in sub-section 1 was caused by the effects of nuclear fusion.
- (3) Any person who has lost possession of the substances, without having transferred them to a person entitled to such possession in accordance with this Act or any statutory ordinance made thereunder, shall be liable as if he were the holder.
- (4) The provisions of sub-sections 1 to 3 shall not apply
 1. where the radioactive substances or the accelerators have been applied to the injured person by a physician or a dentist, or under the supervision of a physician or a dentist, in the course of medical treatment, and the substances and accelerators used and the necessary measuring apparatus have complied with the current state of science and technology and the damage is not due to the fact that such substances, accelerators or measuring apparatus have not been sufficiently maintained,
 2. where a legal relationship exists between the holder and the injured person under which the latter has accepted the risk associated with the substances.
- (5) *The second sentence of sub-section 1 and no.2 of sub-section 4 shall not cover the application of radioactive substances to human beings in the course of medical research. If the holder of the radioactive substances denies the causal connection between the application of the radioactive substances and the damage suffered, he shall have the burden of proof that under existing scientific knowledge and technology there is no sufficient probability of such a causal connection.*
- (6) Whoever carries substances on behalf of a third party shall not be liable to pay compensation under the provisions of sub-sections 1 to 3. As long as the consignee has not taken charge of the substances, the consignor shall remain liable under the aforementioned provisions, regardless of whether or not he is the holder of such substances.
- (7) Within the scope of application of the first sentence of sub-section 1, no legal provisions shall be affected pursuant to which the holder referred to in sub-section 1 and any person regarded as

the holder under sub-section 3, and liable to a greater extent than under the provisions of this Act or pursuant to which another person is liable for the damage.

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C H A P T E R V

PENALTIES AND FINES

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Section 45 - Punishable handling of nuclear fuel and ionizing radiation

- (1) Any person who, without such licence as is required under this Act
1. imports, exports or otherwise conveys nuclear fuel into or out of the realm of this Act,
 2. carries nuclear fuel,
 3. stores nuclear fuel outside Government custody,
 4. constructs, operates or otherwise holds an installation for the production, *treatment, processing* or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or materially alters the installation or its operation,
 5. treats, processes or otherwise uses nuclear fuel outside an installation for the production, *treatment, processing* or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who materially deviates from the procedure laid down in a licence issued under sub-section 1 of Section 9 for the treatment, processing or other use or who materially alters the installation or its location as specified in the licence,
- shall be liable to imprisonment for a term of up to five years or a fine.
- (2) The same penalties shall be incurred by any person who
1. fails to surrender nuclear fuel without delay, in contravention of sub-sections 3 and 4 of Section 5,
 2. delivers nuclear fuel to unauthorised persons, in contravention of sub-section 5 of Section 5, or

3. *fails to transfer radioactive wastes, in contravention of sub-section 2 of Section 9a in conjunction with a statutory ordinance pursuant to no.8, first sentence of sub-section 1 of Section 12.*
- (3) Any person who, by an act specified in sub-section 1 or 2, knowingly endangers, through nuclear fission or ionizing radiation, the life or health of another person, or property of considerable value belonging to another person, shall be liable to imprisonment for a term running between three months and five years.
- (4) Any person who, through negligence, commits one of the acts specified in sub-sections 1 and 2 shall be liable to imprisonment for a term not exceeding two years or a fine.

Section 46 - Statutory offences

- (1) Any person shall be guilty of a statutory offence who wilfully or negligently
 1. carries nuclear substances without having procured the financial security required under sentences 1 or 2 of sub-section 1 of Section 4b,
 2. contravenes a determination under sub-section 1 of Section 13, an enforceable condition imposed under the *second* and third sentences of sub-section 1 of Section 17 or an enforceable order under sub-section 3 of Section 19,
 3. contravenes a statutory ordinance issued under sub-section 1 of Section 11 or *nos 1 to 7 and 9 to 12 of sub-section 1 of Section 12*, or an enforceable order under a statutory ordinance issued pursuant to no 13 of sub-section 1 of Section 12, provided that such statutory ordinance refers to this Section with respect to a defined act,
 4. does not carry the licence contrary to the first sentence of sub-section 5 of Section 4, or does not carry the certificate referred to in the second sentence of sub-section 5 of Section 4, or does not produce on request such licence or certificate contrary to the third sentence of sub-section 5 of Section 4.
- (2) The statutory offence shall be punishable with a fine of up to DM one hundred thousand in the cases given in nos 1, 2 and 3 of sub-section 1 and up to DM one thousand in the case given in no.4 of sub-section 1.
- (3) Administrative authority within the meaning of no.1 of sub-section 1 of Section 36 of the Act on Statutory Offences /17 shall be the Federal Office for Trade and Industry as concerns the failure to obtain a licence or to notify in the case of

/17 Gesetz über Ordnungswidrigkeiten.

import or export of other radioactive substances pursuant to no.1 of sub-section 1 of Section 11 or to comply with a condition imposed in connection therewith pursuant to sentences 2 and 3 of sub-section 1 of Section 17.

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Section 48 - Violation of obligations concerning production and supply

- (1) Any person who knowingly produces or supplies defective installations for the production, *treatment, processing* or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who produces or supplies defective objects intended for the construction or operation of such installation, and thereby knowingly endangers the life or health of another person, or property of considerable value belonging to another person, such danger being connected with the effects of a nuclear fission process or radiation from a radioactive substance, shall be liable to imprisonment for a term of not less than six months and up to five years.
- (2) The attempt shall be punishable.
- (3) In particularly grave cases the penalty shall be imprisonment for a term of one to ten years.

.....

Section 54 - Issue of statutory ordinances

In sub-section 1, the reference to sub-section 5 of Section 21 is replaced by a reference to sub-section 6 of Section 21.

.....

EXEMPTION LIMITS FOR LIABILITY AND FINANCIAL SECURITY

Sub-section 3 of Section 4, sub-section 2 of Section 4b and sub-section 6 of Section 25 shall apply to 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.

N O T E

Article 3 of the Third Act Amending the Atomic Energy Act, which will enter into force on 1st October 1975, authorises the Federal Minister of the Interior to publish a revised text of the Atomic Energy Act of 23rd December 1959 (Bundesgesetzblatt I, page 814). The draft of this revised text, unofficially translated by the Secretariat of the OECD Nuclear Energy Agency, incorporates all amendments to the Atomic Energy Act up to 1st October 1975, and notably those introduced by the Third Act Amending the Atomic Energy Act. The asterisks, unless otherwise indicated, refer to notes by the Secretariat.

G E R M A N Y

ACT ON THE PEACEFUL USES OF ATOMIC ENERGY
AND PROTECTION AGAINST ITS HAZARDS (ATOMIC ENERGY ACT)

Revised as of 1st October 1975

C H A P T E R I

GENERAL

Section 1 - Purpose of the Act

It is the purpose of this Act:

1. To further nuclear research and development and the use of nuclear energy for peaceful purposes;
2. To protect life, health, and property from the hazards of nuclear energy and from the harmful effects of ionizing radiation, and to provide compensation for damage caused by nuclear energy or ionizing radiation;
3. To prevent danger to the internal or external security of the Federal Republic arising from the use or the release of nuclear energy;
4. To enable the Federal Republic to meet its international obligations in the field of nuclear energy and protection against radiation.

Section 2 - Definitions

- (1) "Radioactive substances" within the meaning of this Act mean:
1. special fissionable material (nuclear fuel) in the form of
 - (a) plutonium 239 and plutonium 241;
 - (b) uranium 233;
 - (c) uranium enriched in the isotopes 235 or 233;
 - (d) any substance containing one or more of the aforesaid substances;
 - (e) uranium and substances containing uranium of the natural isotopic mixture of such purity as to enable a continuous self-sustaining chain reaction to be maintained in a suitable installation (reactor).

The term "uranium enriched in the isotopes 235 or 233" means uranium containing the isotopes 235 or 233 or both in such quantity that the ratio of the sum of these two isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature.

2. Substances which, without being nuclear fuel, emit ionizing radiation spontaneously (other radioactive substances).
- (2) For the application of the provisions on liability and financial security, the terms "nuclear incident", "nuclear installation", "operator of a nuclear installation", "nuclear substances" and "units of account" shall have the meaning given to them in Annex 1 of this Act.
- (3) "Paris Convention" means the Convention of 29th July 1960 on Third Party Liability in the Field of Nuclear Energy as amended by the Additional Protocol of 29th January 1964 (Bundesgesetzblatt* 1975 II, pages 957, 959, 1007).
- (4) "Brussels Supplementary Convention" means the Convention of 31st January 1963 Supplementary to the Paris Convention as amended by the Additional Protocol of 28th January 1964 (EGBI. 1975 II, pages 957, 992, 1021).

C H A P T E R I I

CONTROL

Section 3 - Import and export

- (1) Any person who imports or exports nuclear fuel shall require a licence.
- (2) An import licence shall be granted, provided that
1. there are no known facts giving rise to any doubts as to the reliability of the importer, and
 2. it is ensured that the nuclear fuel to be imported will be used in conformity with the provisions of this Act, the statutory ordinances made thereunder, and the international obligations of the Federal Republic in the field of nuclear energy.
- (3) An export licence shall be granted, provided that
1. there are no known facts giving rise to any doubts as to the reliability of the exporter, and
 2. it is ensured that the nuclear fuel to be exported will not be used in such a way as to jeopardise the international obligations of the Federal Republic in the field of nuclear energy, or the internal or external security of the Federal Republic.

* Bundesgesetzblatt (EGBI.): Federal Gazette.

- (4) Nothing herein contained shall affect any other legal provisions on import or export.
- (5) Any other conveyance into or out of the realm of this Act shall be deemed to be import or export within the meaning of this Act.

Section 4 - Carriage of nuclear fuel

- (1) The carriage of nuclear fuel outside an enclosed area where nuclear fuel is kept in Government custody or where activities licensed under Sections 6, 7 and 9 are being carried out, shall require a licence. Such licence shall be granted to the consignor or the person undertaking the consignment or carriage of the nuclear fuel.
- (2) A licence shall be granted, provided that
 - 1. there are no known facts giving rise to any doubts as to the reliability of the applicant, the carrier and the persons actually effecting the carriage,
 - 2. it is ensured that such carriage is effected by persons who, with respect to the planned carriage of nuclear fuel, possess the requisite knowledge of the possible radiation hazards and the safety measures to be applied,
 - 3. it is ensured that the nuclear fuel will be carried in conformity with such legal provisions on the carriage of dangerous goods as are applicable to the particular carrier concerned or, in the absence of such provisions, that otherwise every precaution which is necessary in the light of existing scientific knowledge and technology has been taken in order to prevent damage resulting from the carriage of nuclear fuel,
 - 4. the necessary financial security has been provided to cover all legal liability to pay compensation for damage (sub-section 5 of Section 13),
 - 5. all necessary protection is provided against disturbance or other interference by third persons,
 - 6. the choice of the mode, time and route of the carriage are not contrary to overriding public interests.
- (3) Financial security to cover all legal liability to pay compensation for damage required pursuant to sub-section 2, no. 4 shall not be necessary for carriage of the nuclear fuel specified in Annex 2 to this Act.
- (4) The licence shall be granted separately for each carriage: a general licence may be granted to an applicant for a period not exceeding three years, provided that this is not contrary to the purposes specified in nos. 2 to 4 of Section 1.

- (5) A duplicate or a certified copy of the licence shall be available during carriage. Furthermore, the carrier shall carry a certificate which meets the requirements of Article 4(c) of the Paris Convention unless, pursuant to sub-section 3, financial security is not required for the carriage in question. The licence and the certificate shall be produced, on request, to the competent control authority and its duly authorised agents.
- (6) The first sentence of sub-section 5 shall not apply to the carriage by rail by an operator of a railway. Otherwise nothing contained herein shall affect any legal provisions applicable to carriers and relating to the carriage of dangerous goods.

Section 4a - Financial security in cases of international carriage

- (1) Subject to sub-sections 3 and 4, the financial security required pursuant to no. 4 of sub-section 2 of Section 4 shall be considered as provided in the case of international carriage, if the certificate required under Article 4(c) of the Paris Convention relates to an operator of a nuclear installation situated in a Contracting State to the Paris Convention.
- (2) "Insurer" within the meaning of Article 4(c) of the Paris Convention means:
1. an insurer licensed to carry out his business within the realm of this Act;
 2. an insurer licensed outside the realm of this Act, provided that an insurer licensed within the realm of this Act or an association of such insurers undertakes jointly to assume the obligations of a third party liability insurer.

Some other form of financial security may be permitted in lieu of insurance if it is guaranteed that the person required to provide security is in a position to meet his legal obligation to pay compensation for damage within the determined amount of security for as long as it is to be expected that claims may be raised against him.

- (3) If the Brussels Supplementary Convention is not yet in force for a Contracting State to the Paris Convention, the granting of a licence pursuant to Section 4 for the transit of nuclear fuel may be made subject to the condition that the maximum amount of liability of the operator of a nuclear installation provided for in such Contracting State may be increased to DM 50 million with respect to nuclear incidents occurring during carriage within the realm of this Act, if this is necessary in view of the amount and nature of the nuclear fuel and the safety measures applied. The operator of the nuclear installation shall be required to furnish proof of the financial security thus increased by producing a certificate issued by the competent authority of such Contracting State.

- (4) In case of import or export of nuclear fuel into or from another Contracting State to the Paris Convention for which the Brussels Supplementary Convention is not in force, the licence pursuant to Section 4 may be made subject to the condition that the operator of the nuclear installation situated in the realm of this Act to whom or from whom the nuclear fuel is to be carried undertakes to assume liability, in accordance with the provisions of this Act, for nuclear incidents occurring during carriage within the realm of this Act, if the maximum amount of liability provided in the other Contracting State to the Paris Convention is not adequate in view of the amount and nature of the nuclear fuel and the safety measures applied.

Section 4b - Transport of nuclear substances in special cases

- (1) Any person who carries nuclear substances without requiring a licence pursuant to Section 4, shall furnish proof to the competent authority, before commencement of the carriage, that the financial security required to cover legal liability to pay compensation has been obtained. If such financial security offered is insufficient, the authority shall determine the necessary amount according to the principles laid down in no. 1 of sub-section 2 of Section 13. The second and third sentences of sub-section 5 of Section 4, and Section 4a shall apply.
- (2) Sub-section 1 shall not be applied in the case of carriage of nuclear substances which are specified in Annex 2 to this Act.

Section 5 - Custody, possession and surrender of nuclear fuel

- (1) Nuclear fuel shall be kept in Government custody. Such precautions as are necessary in the light of existing scientific knowledge and technology shall be taken to prevent damage resulting from such keeping in custody, and the necessary protection shall be provided against disturbance or other interference by third persons.
- (2) No persons shall be permitted to have nuclear fuel in his immediate possession outside Government custody, unless he
1. stores nuclear fuel by virtue of a licence granted under Section 6,
 2. treats, processes or otherwise uses nuclear fuel in an installation licensed under Section 7 or by virtue of a licence granted under Section 9,
 3. is entitled to carry nuclear fuel by virtue of Section 4.

- (3) Any person who is in immediate possession of nuclear fuel, without being authorised under sub-section 2, shall surrender it to the custodial authority without delay.
- (4) The obligation to surrender nuclear fuel shall cease to apply if the fuel is transferred to a carrier licensed under Section 4,
 - 1. for the purpose of export licensed under Section 3, or
 - 2. for the purpose of delivery to a consignee licensed under no. 1 or 2 of sub-section 2.
- (5) Nuclear fuel in Government custody under sub-section 1, or in licensed storage under Section 6 shall be delivered only if
 - 1. the consignee is authorised to have nuclear fuel in his possession under no. 1 or 2 of sub-section 2,
 - 2. nuclear fuel is to be carried, for the purpose of export, under a licence pursuant to Section 4.

Section 6 - Licences for the storage of nuclear fuel

- (1) Any person who stores nuclear fuel outside Government custody shall require a licence.
- (2) A licence shall be granted if there is need for such storage, provided
 - 1. there are no known facts giving rise to any doubts as to the reliability of the applicant or of the persons responsible for administration and control of the storage, and such latter persons possess the requisite competence,
 - 2. every necessary precaution has been taken in the light of existing scientific knowledge and technology to prevent damage resulting from such storage,
 - 3. the necessary financial security has been provided to cover all legal liability to pay compensation for damage,
 - 4. all necessary protection is provided against disturbance or other interference by third persons.

Section 7 - Licences for installations

- (1) Any person who constructs, operates or otherwise holds a stationary installation for the production, treatment, processing or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who materially alters such installation, or its operation, shall require a licence.

(2) A licence may be granted only if

1. there are no known facts giving rise to any doubts as to the reliability of the applicant and of the persons responsible for the construction and management of the installation and the control of its operation and such latter persons possess the requisite competence,
- 1a. it is ensured that the persons who are otherwise engaged in the operation of the installation possess the necessary knowledge concerning the safe operation of the installation, the possible hazards and the safety measures to be applied,
2. every necessary precaution has been taken in the light of existing scientific knowledge and technology to prevent damage resulting from construction and operation of the installation,
3. the necessary financial security has been provided to cover all legal liability to pay compensation for damage,
4. all necessary protection is provided against disturbance or other interference by third persons,
5. the choice of the site of the installation, in particular with respect to non-contamination of water, air and soil, is not contrary to overriding public interests.

(3) All authorities of the Bund,* the Länder,* the communities and other regional authorities whose jurisdiction is involved, shall take part in the licensing procedure. In case of a difference of opinion between the licensing authority and any federal authority concerned, the licensing authority shall obtain instructions from the Federal Minister competent for nuclear safety and radiation protection. In all other respects, the licensing procedure shall be governed by statutory ordinance in accordance with the principles laid down in Section 8, sub-sections 1 to 4 and 6 to 8 of Section 10, and Section 18 of the Federal Act on Protection Against Nuisances of 15th March 1974 (BGBl. I, page 721).**

(4) Sub-sections 1 to 3 shall apply analogously to non-stationary installations. However, the statutory ordinance referred to in the third sentence of sub-section 3 may provide that the project shall not be publicly announced and the documents shall not be laid open for public inspection and that in such case objections shall not be heard orally.

* "Bund": The federal State: "Länder" (singular "Land"): States forming the Federal Republic of Germany.

** Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge (Bundes-Immissionsschutzgesetz).

- (5) Section 14 of the Federal Act on the Protection Against Nuisances shall apply analogously if other premises are affected by a licensed installation.

Section 7a - Provisional decision

- (1) Upon application, a provisional decision may be rendered with respect to separate questions which are conditional for the granting of a licence for an installation pursuant to Section 7, in particular with respect to the choice of the site. The provisional decision shall become invalid if the applicant does not apply for the licence within two years from the date at which such decision has become final; upon application, this period may be extended for up to a further two years.
- (2) Sub-sections 3 and 4 of Section 7 and Sections 17 and 18 shall apply accordingly.

Section 7b - Public announcement: interventions by third parties

- (1) After a procedure pursuant to Section 7 or Section 7a, including public announcement of the project and public inspection of documents, has been completed, a certified copy of the decision rendered, together with an instruction as to the right of appeal, shall be laid open for public inspection during a period of two weeks; the period and place of public inspection shall be announced in the same way as the project itself. With the expiry of this period, the decision shall be considered as having been served on third parties who have not intervened in the procedure; this shall equally be announced.
- (2) To the extent that a decision rendered in a procedure covering a partial licence or a provisional decision pursuant to Section 7 or Section 7a has become final, third parties shall be precluded, in any further licensing procedure, from intervening on the basis of facts which had already been presented or which such parties could have presented in view of the document or the decision laid open for public inspection.

Section 8 - Relation to the Federal Act on Protection Against Nuisances and the Trading and Industrial Code*

- (1) The provisions of the Federal Act on the Protection Against Nuisances concerning installations requiring a licence and the prohibition of the further operation of such installations, shall not apply to installations requiring a licence pursuant to Section 7 as regards protection against the hazards of nuclear energy and the harmful effects of ionizing radiation.

* Gewerbeordnung.

- (1a) If an installation requires a licence pursuant to Section 4 of the Federal Act on the Protection Against Nuisances as well as pursuant to Section 7 of this Act, the latter licence shall include the former. The nuclear licensing authority shall take its decision in accordance with the authority of the Land competent for protection against nuisances and in compliance with the provisions of the Federal Act on the Protection Against Nuisances and the statutory ordinances issued thereunder.
- (2) With respect to installations subject to control under Section 24 of the Trading and Industrial Code which are used in installations requiring a licence under Section 7, the licensing authority may grant exemption, on a case-by-case basis, from the legal provisions issued under Section 24 of the Trading and Industrial Code, if such exemption is warranted by the special technical character of the installation subject to Section 7.

Section 9 - Treatment, processing and other uses of nuclear fuel outside of installations requiring a licence

- (1) Any person who treats, processes or otherwise uses nuclear fuel outside of installations specified in Section 7 shall require a licence. Furthermore, a licence shall be required by any person who applies a method of treating, processing or otherwise using nuclear fuel in a way materially different from that specified in the licence, or who materially alters the installation or its location as specified in the licence.
- (2) A licence may be granted only if
1. there are no known facts giving rise to any doubts as to the reliability of the applicant or of the persons responsible for the administration and control of the use of nuclear fuel, and such latter persons possess the requisite competence,
 2. it is ensured that the persons otherwise engaged in the intended use of nuclear fuel dispose of the requisite knowledge of the possible hazards and the safety measures to be applied,
 3. every necessary precaution has been taken in the light of existing scientific knowledge and technology to prevent damage resulting from the use of nuclear energy,
 4. the necessary financial security has been provided to cover all legal liability to pay compensation for damage,
 5. all necessary protection is provided against disturbance or other interference by third persons,
 6. the choice of the place where the nuclear fuel is to be used is not contrary to overriding public interests, in particular with respect to non-contamination of water, air and soil.

Section 10

Exemptions from the provisions of Sections 3 to 7 and 9 may be granted by statutory ordinance, provided that only such quantities or types of nuclear fuel are involved or that such protective measures or equipment are applied which make it unlikely that damage will be caused by a self-sustaining chain reaction or the effects of ionizing radiation, and provided further that such exemptions are not contrary to the purposes stated in nos. 3 and 4 of Section 1.

Section 11 - Enabling provisions (licences, notifications, general permits)

- (1) Unless special provision for nuclear fuel and installations within the meaning of Section 7 has been made under this Act, it may be provided by statutory ordinance with a view to achieving the purposes specified in Section 1
 1. that prospecting for or handling of radioactive substances (extraction, production, storage, treatment, processing or any other use or disposal), transactions in radioactive substances (acquisition, or delivery to others), the carriage and import or export of such substances shall require a licence or notification,
 2. that the construction or operation of an installation for the production of ionizing radiation shall require a licence or notification,
 3. that a general permit may be issued for installations, apparatus and equipment containing radioactive substances or producing ionizing radiation after their design and construction have been examined by an authority to be specified in such statutory ordinance, which shall also specify the notifications to be made by the operators of such installation, apparatus and equipment,
 4. that radioactive substances shall not be used in certain ways, to the extent that such prohibition is required for the enforcement of decisions by international organisations of which the Federal Republic of Germany is a member.
- (2) The statutory ordinance may make the granting of licences and general permits subject to personal and objective requirements within the purposes of this Act, and may regulate the procedure for such licences and general permits.

Section 12 - Enabling provisions (safety measures)

- (1) To achieve the purposes specified in Section 1, the following may be provided by statutory ordinance
 1. the precautionary and control measures to be taken for the protection of individuals and of the general public in regard to the handling of and transactions in radioactive substances, the construction, operation and possession of

installations as specified in Section 7 and no. 2 of sub-section 1 of Section 11, the handling of and transactions in installations, apparatus and equipment as specified in no. 3 of sub-section 1 of Section 11,

2. the precautions to be taken in order to ensure that specified radiation doses and concentrations of radioactive substances in air and water are not exceeded,
3. that no person shall be employed in areas exposed to radiation hazards unless he produces a certificate issued by a specially authorised medical practitioner, and that if any objections be raised to such employment for reasons of health, the supervisory authority shall decide after consulting medical experts,
4. that persons who stay or have been staying in areas exposed to radiation hazards shall be under obligation, the extent to be specified, to have the radiation doses at their bodies measured, to undergo medical examination and, insofar as the protection of other individuals or the environment is concerned, to be subject to such measures as may be necessary.
6. that reports shall be submitted to the supervisory authority on any accident or harmful occurrence during the handling of radioactive substances, during the operation of an installation as specified in Section 7 and no. 2 of sub-section 1 of Section 11, during the handling of installations, apparatus and equipment as specified in no. 3 of sub-section 1 of Section 11,
7. that, as to be specified, radioactive substances which are no longer in use shall be stored, surrendered, disposed of or be secured by the appropriate authority,
8. the manner in which radioactive substances and installations within the meaning of Section 7 and no. 2 of sub-section 1 of Section 11, shall be protected against disturbance or other interference by third persons,
9. that the supervisory authority may issue directions for the implementation of any provisions made under nos. 1 to 8.

Nos. 1 and 6 of the first sentence shall apply analogously to the carriage of radioactive substances to the extent that the purposes stated in Section 1 nos. 1, 3 and 4 are to be achieved.

- (2) The fundamental right to physical inviolability (first sentence of Section (2) of Article 2 of the Basic Law*) shall be restricted under the terms of no. 4 of sub-section 1.

* Grundgesetz (Constitution of the Federal Republic of Germany).

Section 12a - Enabling provision (Decision of the Steering Committee)

The Federal Government is authorized, with the consent of the Federal Council, to put into force by statutory ordinance decisions of the Steering Committee of the European Nuclear Energy Agency, or its successor, pursuant to Article 1(a)(ii) and (iii) and Article 1(b) of the Paris Convention, as well as to amend or repeal nos 2 and 3 of sub-section 1 of Annex 1, and Annex 2 of this Act, if this is necessary to fulfill the purposes stated in Section 1 of this Act.

Section 13 - Financial security to cover legal liability to pay compensation for damage

- (1) In the licensing procedure, the public authority shall determine the type, terms and amount of financial security to be provided by the applicant to cover his legal liability to pay compensation for damage. Such determination shall be renewed every two years and in the event of any material change in circumstances: the public authority shall prescribe an appropriate time-limit within which the person under obligation to provide financial security must furnish proof that he has done so.
- (2) The financial security to be provided pursuant to sub-section 1 shall
 1. in the case of installations and activities involving liability under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, under Section 25a or under an international agreement referred to in sub-section 2 of Section 25a, be in due proportion to the hazards of the installation or activities: as a general rule it shall not fall short of the maximum insurance cover obtainable on the insurance market at reasonable conditions but may not exceed the amount of DM 500 million: in case of carriage of nuclear substances, the financial security may not be fixed above DM 50 million,
 2. in case of other activities requiring a licence pursuant to this Act or a statutory ordinance issued thereunder, ensure fulfillment of the legal liability to pay compensation for damage to the extent appropriate to the circumstances.
- (3) Within the limits laid down by sub-section 2, and in order to achieve the purposes specified in Section 1, more detailed provisions may be made by statutory ordinance concerning financial security to cover legal liability to pay compensation for damage.
- (4) The Bund (with the exception of the Federal German Railways* in the case of carriage in public transport) and the Länder shall not be required to provide financial security. Insofar as a Land may be held liable under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, under Section 25a or under an international agreement referred to in sub-section 2 of Section 25a, the licensing authority, in analogously applying

* Deutsche Bundesbahn.

sub-sections 1 and 2 and the statutory ordinance issued under sub-section 3, shall determine to what extent and amount the Land shall guarantee, by means of indemnification pursuant to Section 34, to compensate damage not covered by financial security. In applying this Act, such guarantee shall be equal to financial security.

- (5) For the purposes of this Act legal liability to pay compensation shall mean the liability to pay compensation for damage as laid down in private law. This term shall not include obligations of the nature specified in Sections 640, 641 of the Insurance Code*, and shall include obligations to hold harmless pursuant to sub-section 5 of Section 7 of this Act in conjunction with Section 14 of the Federal Act on Protection Against Nuisances, as well as similar obligations to pay indemnities or compensation only insofar as the damage or impairment has been caused by an accident.

Section 14 - Third party liability insurance and other forms of financial security

- (1) Where, in the case of installations and activities involving liability under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, under Section 25a or under an international agreement referred to in sub-section 2 of Section 25a, financial security is provided by third party liability insurance, Sections 158c to 158h of the Insurance Contracts Act** shall apply as appropriate provided that the period of sub-section 2 of Section 158c of the latter Act shall be two months and its expiry shall be delayed, in case of liability for the carriage of nuclear substances, for the duration of the carriage; if sub-section 4 of Section 158c of the Insurance Contracts Act is applied, indemnification by the Bund pursuant to Section 34 shall not be taken into account. Sub-section 3 of Section 156 of the Insurance Contracts Act shall not be applicable.
- (2) Where financial security is not provided in the form of third party liability insurance, but by indemnification or guarantee of a third person, sub-section 1 shall apply analogously.

Section 15 - Rank of satisfaction of claims through financial security

- (1) If the operator of a nuclear installation obliged to provide financial security and a person suffering damage are, at the time of the nuclear incident, combined enterprises within the meaning of Section 18 of the Stock Corporation Act***, the operator's financial security may be used to satisfy legal claims for compensation of that person only on condition that the satisfaction of claims of other victims is not thereby prejudiced. Nuclear installations within the meaning of the foregoing sentence shall include reactors comprised in a means of transport.

* Reichsversicherungsordnung.

** Gesetz über den Versicherungsvertrag.

*** Aktiengesetz.

- (2) If damage was caused to an industrial installation in the vicinity of the nuclear installation, the first sentence of sub-section 1 shall apply accordingly if the site of the industrial installation serves to utilise energy originating from the nuclear installation for production processes.
- (3) Claims having a lower rank under sub-sections 1 and 2 shall rank equally amongst each other.

Section 16 - Repealed

Section 17 - Restrictions, conditions, revocation, designation as operator of a nuclear installation

- (1) Licences and general permits granted under this Act or under a statutory ordinance made thereunder shall be issued in writing. They may contain restrictions, and may be subject to certain conditions, with a view to achieving the purposes specified in Section 1. Conditions may subsequently be imposed so far as may be necessary to achieve the purposes specified in nos. 2 and 3 of Section 1. Licences, other than those issued under Section 7, and general permits may be granted for a fixed period of time.
- (2) Licences and general permits may be withdrawn if one of their conditions had not been complied with at the time of granting.
- (3) Licences and general permits may be revoked if
 - 1. they have not been used within a period of two years, unless otherwise provided in the licence or general permit,
 - 2. one of their conditions has subsequently ceased to exist, and no remedial action has been taken within a reasonable period, or
 - 3. the provisions of this Act or statutory ordinances made thereunder, orders or directions issued by the supervisory authorities, or the terms and conditions contained in the licence or general permit, have been seriously or repeatedly violated, or a condition subsequently imposed has not been complied with and no remedial action has been taken within a reasonable period.
- (4) Licences shall be revoked if the financial security provided does not comply with the determination made under sub-section 1 of Section 15, and the person liable for financial security fails to furnish proof, within a reasonable period to be fixed by the public authority, that he has complied with such determination.

- (5) Licences or general permits shall also be revoked whenever such revocation is necessary to avoid substantial risks to employees, third persons or the general public, and conditions subsequently imposed cannot provide a remedy within a reasonable period.
- (6) When activities are licensed which authorise the operation of a nuclear installation, the licensee shall be expressly designated as operator of a nuclear installation in the licence.

Section 18 - Reparation

- (1) If a licence or general permit granted under this Act or a statutory ordinance issued thereunder is withdrawn or revoked, appropriate reparation shall be paid to the licensee. If the withdrawal or revocation is effected by a federal authority, the Bund shall be liable for the reparation; if effected by an authority of a Land, the Land concerned shall be liable. The amount of reparation shall be determined with due regard to the public interest and that of the persons concerned, and shall take into account the reasons which have led to such withdrawal or revocation. The reparation shall be limited to the expense incurred by the person concerned and in the case of an installation to its current value. In the event of dispute as to the amount of reparation, recourse may be had to the civil courts.
- (2) There shall be no liability to pay reparation if
 - 1. the holder of the licence or general permit has obtained such licence or general permit by making substantially incorrect or incomplete statements,
 - 2. the holder of the licence or general permit, or persons carrying out activities in his interest thereunder, have by their conduct given cause for revocation of the licence or general permit, in particular by serious and repeated violation of the provisions of this Act, or of statutory ordinances made thereunder, or of orders and directions issued by the supervisory authority, or of the terms and conditions of the licence or general permit, or by non-compliance with conditions subsequently imposed,
 - 3. the revocation had to be ordered because employees, third persons or the general public were subsequently exposed to serious hazards arising from the licenced installation or activity.
- (3) Sub-sections 1 and 2 shall apply correspondingly to conditions subsequently imposed under the third sentence of sub-section 1 of Section 17.

- (4) If a Land is liable for reparation, the Bund or another Land shall be obliged to contribute thereto, according to their overall interests in the withdrawal or revocation. The same shall apply if the Bund is liable for reparation.

Section 19 - Government supervision

- (1) Any handling of or transactions in radioactive substances, the construction, operation and possession of installations of the type specified in Section 7 and no. 2 of sub-section 1 of Section 11, any handling of or transactions in installations, apparatus and equipment of the type specified in no. 3 of sub-section 1 of Section 11; as well as the carriage of such substances, installations, apparatus and equipment, shall be subject to Government supervision. In particular, the supervisory authorities shall ensure compliance with the provisions of this Act and of statutory ordinances made thereunder, with such orders and directions as are issued by the supervisory authorities pursuant thereto, and with the terms and conditions of the licence or general permit, as well as with any conditions subsequently imposed. The provisions of Section 139b of the Trading and Industrial Code shall apply correspondingly to the powers and duties of the supervisory authorities.
- (2) Any person commissioned by the supervisory authority, and any expert called in by the said authority pursuant to Section 20, or any person commissioned by other authorities called in, shall at all times have access to places where there are radioactive substances, installations of the type specified in Section 7 and no. 2 of sub-section 1 of Section 11, or installations, apparatus or equipment of the type specified in no. 3 of sub-section 1 of Section 11, or to places where there is radiation originating therefrom, and to places where there is reason to believe that such conditions exist; and such persons shall have authority to carry out at such places all examinations necessary for the performance of their duties. They may request the persons in charge, or employees of such places, to provide them with any information that they may require in the course of such examination. Otherwise, Section 24b of the Trading and Industrial Code shall apply correspondingly. The fundamental right to inviolability of domicile as laid down in Article 13 of the Basic Law, shall be restricted so far as may be necessary for the exercise of these powers.
- (3) The supervisory authority may order that a situation be discontinued which is contrary to the provisions of this Act or to statutory ordinances issued thereunder, to the terms and conditions of the licence or general permit, or to any condition subsequently imposed, or which might endanger life, health or property through the effects of ionizing radiation. In particular, the supervisory authority may order that
1. safety measures shall be taken, and may specify such measures,

2. radioactive substances shall be stored, or kept in custody, in a place designated by it,
 3. the handling of radioactive substances, the construction or operation of installations of the type specified in Section 7 and no. 2 of sub-section 1 of Section 11, or the handling of installations, apparatus or equipment of the type specified in no. 3 of sub-section 1 of Section 11 shall be suspended temporarily, or permanently, if the requisite licence has not been granted or finally been revoked.
- (4) Nothing herein contained shall affect the supervisory powers conferred by other legal provisions, or such general powers as result from the legislation of the Länder.

Section 20 - Experts

Experts may be consulted by the competent authorities in the licensing and control procedure under this Act and any statutory ordinances issued thereunder. Section 24b of the Trading and Industrial Code shall apply correspondingly.

Section 21 - Costs

- (1) Costs (fees and expenses) shall be charged for licences under Sections 4, 6, 7 and 9, for the provisional decision under Section 7a and for Government custody of nuclear fuel (sub-section 1 of Section 5).
- (2) The following fees shall be charged:
 1. for the licence to construct and operate an installation within the meaning of Section 7, 1.5 per thousand of the costs of the construction;
 2. for any other licence under Section 7 or a provisional decision under Section 7a, DM 100 to 20,000;
 3. for licences under Sections 4, 6 and 9, as well as for licences implementing statutory ordinances issued under Sections 10 to 12 of this Act, DM 10 to 10,000;
 4. for Government custody of nuclear fuel, 0.2 per thousand of the value of the nuclear fuel for each begun month of custody; in the case of irradiated nuclear fuel, 0.2 per thousand up to 10 per thousand of the value which the nuclear fuel had before irradiation.

If the construction costs of the installation exceed DM 10 million, the fees under no. 1 above shall be reduced to one fifth for the amount exceeding DM 10 million and to one tenth for the amount exceeding DM 100 million.

- (3) In case of Government supervision those expenses shall be reimbursed which are due to the consultation of experts pursuant to Section 20 or to extraordinary measures taken by the supervisory authority if the person concerned has caused such measures to be taken.
- (4) Experts' fees shall be reimbursed if limited to amounts constituting appropriate consideration for the experts' activity, taking into account his requisite expert knowledge and any particular complexity of his opinion.
- (5) Details shall be determined by statutory ordinance in accordance with the principles of the Act on Administrative Costs* of 23rd June 1970 (BGBl. I, page 121). Such statutory ordinance may provide that certain expenditures shall not be considered as construction costs of the installation (no. 1 of sub-section 2).
- (6) To the extent that the authorities of the Länder carry out statutory ordinances issued under Sections 10 to 12 of this Act, the regulations concerning costs of the Länder shall apply, subject to sub-sections 3 and 4.
- (7) Expenditures for safety measures and medical examinations carried out pursuant to this Act or a statutory ordinance issued thereunder, shall be borne by the person requiring a licence under this Act or a statutory ordinance issued thereunder for the activity which makes such safety measure or medical examination necessary.

C H A P T E R III

PUBLIC AUTHORITIES

Section 22 - Competence for import and export licences, import and export control

- (1) The Federal Office for Trade and Industry** shall decide on applications for licences under Section 3, and on the revocation of licences already issued. The same shall apply where statutory ordinances issued under Section 11 provide for import and export licences.

* Verwaltungskostengesetz.

** Bundesamt für gewerbliche Wirtschaft.

- (2) The Federal Minister of Finance*, or the customs authorities designated by him, and in the free port of Hamburg the Free Port Authority of the Free and Hanseatic City of Hamburg**, shall be responsible for import and export control.
- (3) Insofar as the Federal Office for Trade and Industry makes any decisions by virtue of sub-section 1, it shall be bound by the technical instructions issued by the Federal Minister competent for nuclear safety and radiation protection, notwithstanding its subordination to the Federal Minister of Economics*** and his powers to issue instructions based on other legal provisions.

Section 23 - Competence for custody and for carriage and storage licences

The Federal Institute of Physics and Technology**** shall be competent for Government custody of nuclear fuel, for the issue of licences for the carriage of nuclear fuel and large sources, for the issue of licences for storage of nuclear fuel other than in Government custody, and for the revocation of such licences; large sources shall mean radioactive substances whose activity per consignment or package exceeds the values set forth in marginal 2450(5) of Annex A to the European Agreement of 30th September 1957 concerning the International Carriage of Dangerous Goods by Road (ADR), BGBl. 1959 II, page 149¹. In carrying out these functions, the Institute shall act in accordance with the technical instructions of the Federal Minister competent for nuclear safety and radiation protection.

Section 24 - Competence of the authorities of the Länder

- (1) All other administrative functions under Chapter II and any statutory ordinances made thereunder shall be discharged by the Länder on behalf of the Bund. Control of any carriage of radioactive substances by rail and by ship which is effected by the German Federal Railways shall, however, be exercised by such bodies of the German Federal Railways as have been designated by the Federal Minister of Transport*****.
- (2) The supreme authorities of the Länder designated by their governments shall be competent to grant, withdraw and revoke licences under Sections 7, 7a and 9. These authorities shall exercise control over installations coming under Section 7, and over the use of nuclear fuel outside such installations. In particular cases, they may delegate their functions to subordinate authorities. Any complaints against their orders shall be decided upon by the supreme Länder authorities. Insofar as provisions other than those laid down in this Act confer supervisory powers on any other authorities, their competence shall not be affected.

* Bundesminister der Finanzen.
 ** Freihafenamt der Freien und Hansestadt Hamburg.
 *** Bundesminister für Wirtschaft.
 **** Physikalisch-Technische Bundesanstalt.
 ***** Bundesminister für Verkehr.

- (3) In matters related to the service of the Federal Armed Forces*, the Federal Minister of Defence**, or the offices designated by him, shall discharge the functions referred to in sub-sections 1 and 2, in agreement with the Federal Minister competent for nuclear safety and radiation protection.

C H A P T E R I V

LIABILITY

Section 25 - Liability for installations

- (1) If damage is caused by a nuclear incident originating from a nuclear installation, the liability of the operator of a nuclear installation shall be governed by the provisions of the Paris Convention as supplemented by the provisions of this Act. The same shall apply if damage arises out of or results from ionizing radiations emitted by any other source of radiation inside the nuclear installation.
- (2) Where in case of carriage of nuclear substances, including storage incidental thereto, the carrier has assumed liability by contract in place of the operator of a nuclear installation situated in the realm of this Act, such carrier shall be considered as operator of a nuclear installation from the moment at which he has assumed liability. The contract shall be made in writing. Such assumption of liability shall be valid only if it has been authorised, upon application of the carrier, by the authority competent under Section 4 before commencement of the carriage of nuclear substances or any storage incidental thereto. Such authorisation may be granted only if the carrier has been licensed as such or has his main place of business within the realm of this Act and the operator of the nuclear installation has declared his consent to the authority.
- (3) The provisions of Article 3(a)(ii)2 of the Paris Convention concerning the exoneration of the operator for damage to the means of transport shall not apply.
- (4) The provisions of Article 9 of the Paris Convention concerning the exoneration for damage caused by nuclear incidents directly due to an act of armed conflict, hostilities, civil war, insurrection, or a grave natural disaster of an exceptional character, shall not be applicable. If the damage is suffered in another State, the first sentence shall apply only to the extent that the other State, at the time of the nuclear incident, has provided a system of compensation in relation to the Federal Republic of Germany which is equivalent as to its nature, extent and amount.

* Bundeswehr.

** Bundesminister für Verteidigung.

- (5) The operator of a nuclear installation shall be liable without the territorial restrictions provided for in Article 2 of the Paris Convention.
- (6) The operator of a nuclear installation shall not be liable under the Paris Convention if the damage has been caused by a nuclear incident involving nuclear substances specified in Annex 2 to this Act.

Section 25a - Liability for nuclear ships

- (1) The provisions of this Chapter shall apply to the liability of an operator of a nuclear ship with the following modifications:
1. 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.
 2. If the damage is suffered in another State, the first sentence of sub-section 1 of Section 31 shall be applicable as regards the amount exceeding the maximum amount of liability under the Brussels Convention on the Liability of Operators of Nuclear Ships, only to the extent that the legislation of that State provides, at the time of the nuclear incident, for a third party liability regime for operators of nuclear ships which is applicable in relation to the Federal Republic of Germany and is equivalent as to its nature, extent and amount. The second and third sentences of sub-section 1 of Section 31, Section 36, sub-section 1 of Section 38 and Section 40 shall not be applied.
 3. Section 34 shall apply only to nuclear ships authorised to sail under the flag of the Federal Republic of Germany. If, within the realm of this Act, a nuclear ship is built or equipped with a reactor for another State, or persons of another State, Section 34 shall apply until the nuclear ship is registered in the other State or acquires the right to sail under the flag of another State. 75 per cent of the indemnification pursuant to Section 34 shall be borne by the Bund and the remainder by the Land competent for the licensing of the nuclear ship under Section 7.
 4. In the case of nuclear ships which are not entitled to sail under the flag of the Federal Republic, this Chapter shall apply only if the nuclear damage caused by the nuclear ship has been suffered within the realm of this Act.
 5. The courts of the State under whose flag the nuclear ship is entitled to sail shall have jurisdiction over actions for compensation; in the case referred to in no. 4, the court of the place within the realm of this Act where the nuclear damage was suffered shall equally have jurisdiction.

- (2) To the extent that international agreements on the liability for nuclear ships contain mandatory provisions derogating from this Act, such provisions shall take precedence over the provisions of this Act.

Section 26 - Liability in other cases

- (1) Where, in cases other than those specified by the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, loss of life, personal injury, or deterioration of health was caused to any person or damage was caused to property through the effects of any nuclear fission process or radiation from radioactive substances or the effects originating from an accelerator, the holder of the substances affected by the nuclear fission, of the radioactive substances or of the accelerator shall be liable to pay compensation for damage in accordance with Sections 27 to 30, sub-section 2 of Section 31, sub-sections 1, 4 and 5 of Section 32 and Section 34. There shall be no liability to pay compensation if the damage was caused by an event which the holder and such persons as are acting for him in connection with such possession could not avoid, even by taking every reasonable precaution, and which is due neither to a defective condition of the safety devices nor to any failure in their performance.
- (2) Sub-section 1 shall apply correspondingly where damage of the nature specified in sub-section 1 was caused by the effects of nuclear fusion.
- (3) Any person who has lost possession of the substances, without having transferred them to a person entitled to such possession in accordance with this Act or any statutory ordinance made thereunder, shall be liable as if he were the holder.
- (4) The provisions of sub-sections 1 to 3 shall not apply
1. where the radioactive substances or the accelerators have been applied to the injured person by a physician or a dentist, or under the supervision of a physician or a dentist, in the course of medical treatment, and the substances and accelerators used and the necessary measuring apparatus have complied with the current state of science and technology and the damage is not due to the fact that such substances, accelerators or measuring apparatus have not been sufficiently maintained,
 2. where a legal relationship exists between the holder and the injured person under which the latter has accepted the risk associated with the substances.
- (5) Whoever carries substances on behalf of a third party shall not be liable to pay compensation under the provisions of sub-sections 1 to 3. As long as the consignee has not taken charge of the substances, the consignor shall remain liable under the aforementioned provisions, regardless of whether or not he is the holder of such substances.

- (6) Within the scope of application of the first sentence of sub-section 1, no legal provisions shall be affected pursuant to which the holder referred to in sub-section 1 and any person regarded as the holder under sub-section 3, are liable to a greater extent than under the provisions of this Act or pursuant to which another person is liable for the damage.

Section 27 - Contributory fault of the injured person

Where a fault of the injured person has contributed to the injury sustained, Section 254 of the Civil Code* shall apply: in the event of damage to property, the fault of the person in actual control thereof shall be deemed to be that of the injured person.

Section 28 - Extent of compensation in case of death

- (1) In the event of death, compensation shall be provided for the costs of any attempted cure as well as for the pecuniary loss sustained by the deceased during his illness by reason of loss or reduction of his earning capacity, increase of his needs or handicap in regard to his career. In addition, the person liable shall refund funeral costs to the person who is under obligation to bear such costs.
- (2) If, at the time of the injury, the deceased was, or might have been, under legal obligation to provide maintenance for a third person who loses such maintenance as a result of the decease, the person liable shall pay compensation to such third person, to the extent of the maintenance for which the deceased would have been liable during his expected life. Such liability shall also exist where, at the time of the injury, the third person was conceived but not yet born.

Section 29 - Extent of compensation in case of personal injury

- (1) In the event of personal injury or damage to health, compensation shall comprise the costs of the cure and the pecuniary loss sustained by the injured person by reason of temporary or permanent loss or reduction of his earning capacity, increase of his needs or handicap in regard to his career as a result of the injury.
- (2) In case of personal injury or damage to health, the injured person may claim adequate compensation also for pain and suffering, if the damage has been caused wilfully or by negligence. Such claims shall not be transferable and inheritable except if acknowledged by contract or subject to an action pending.

* Bürgerliches Gesetzbuch.

Section 30 - Annuity

- (1) Compensation for any loss or reduction of earning capacity, any increase of needs or any handicap in regard to the career of the injured person, and any compensation due to a third person under sub-section 2 of Section 28, shall be provided by means of an annuity.
- (2) The provisions of sub-sections 2 to 4 of Section 843 of the Civil Code, and of no. 6 of Section 708 of the Code of Civil Procedure* shall apply correspondingly.
- (3) Where the court awarding an annuity has not required a security from the defendant, the plaintiff shall nevertheless be entitled to demand security, if the financial situation of the person liable has considerably deteriorated; accordingly, the plaintiff shall also be entitled to demand an increase in the amount of any security fixed by the judgment.

Section 31 - Maximum amount of liability

- (1) The liability of an operator of a nuclear installation under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25 shall be limited to DM one thousand million per nuclear incident. If the damage is suffered in a Contracting State to the Paris Convention for which the Brussels Supplementary Convention is in force, the first sentence shall apply as regards the maximum amount exceeding 120 million units of account only to the extent that such Contracting State has, at the time of the nuclear incident, provided for a system of compensation in relation to the Federal Republic of Germany which is equivalent as to its nature, extent and amount. If the damage is suffered in any other State, the second sentence shall apply accordingly, provided that the amount of 120 million units of account is replaced by ~~50~~ million units of account.
15 - see 18 NLS Supp., p. 2.
- (2) The person liable under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, or under Section 26, shall be liable in case of damage to property only up to the ordinary value of the damaged property, plus the cost of protection against radiation hazards originating therefrom. In case of liability under the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, compensation for damage to the means of transport upon which the nuclear substances involved were at the time of the nuclear incident shall be paid only if satisfaction of other claims out of the maximum amount of liability has been secured.

Section 32 - Periods of limitation

- (1) Claims for compensation under this Chapter shall become barred by limitation after three years from the date at which the person entitled to compensation had knowledge or from the date

* Zivilprozessordnung.

at which he ought reasonably to have known of both the damage and the person liable, and irrespective thereof after 30 years from the date of the event which caused the damage.

- (2) In the cases specified in Article 8(b) of the Paris Convention, the period of limitation of 30 years established under sub-section 1 shall be replaced by a period of limitation of 20 years from the date of theft, loss, jettison or abandonment.
- (3) Actions for death and personal injury under the Paris Convention which are brought before the court against the operator of a nuclear installation within 10 years after the nuclear incident, shall have precedence over actions instituted after expiry of this period.
- (4) Where negotiations concerning compensation are pending between the person liable and the person entitled to compensation, the lapse of the limitation period shall be suspended until such time as either party refuses to continue such negotiations.
- (5) In all other respects, the provisions of the Civil Code concerning periods of limitation shall apply.

Section 33 - Several persons liable

- (1) If several persons are legally liable to pay compensation for damage caused by a nuclear incident or otherwise by the effects of nuclear fission, or radiation emitted by radioactive substances, or the effects of ionizing radiation emitted by an accelerator, they shall be jointly and severally liable, except as otherwise provided in Article 5(d) of the Paris Convention.
- (2) In the case of sub-section 1, the amount of compensation due from each of the persons liable shall be apportioned between them according to the circumstances and the extent to which the damage was caused by one or the other, except as otherwise provided in Article 5(d) of the Paris Convention. However, the operator of a nuclear installation shall not be required to pay compensation exceeding the maximum amounts established pursuant to sub-section 1 of Section 31.

Section 34 - Indemnification

- (1) Where the operator of a nuclear installation situated in the realm of this Act is legally liable to pay compensation for damage caused by a nuclear incident under the provisions of the Paris Convention in conjunction with sub-sections 1 to 5 of Section 25, or under a foreign law applicable to the incident, the operator shall be indemnified against liability to pay compensation to the extent that such liability is not covered by or cannot be satisfied out of his financial security. The

obligation to indemnify the operator shall be restricted to the amounts referred to in sub-section 1 of Section 31, less the amount which is covered and can be met by the financial security.

- (2) If, after a nuclear incident has occurred, it is to be expected that indemnification will be necessary, the operator of the nuclear installation shall be required
 1. to notify this without delay to the Federal Minister designated by the Federal Government and to the authorities of the Länder designated by their Governments,
 2. to inform without delay the competent Federal Minister and the competent authorities of the Länder of any claims for compensation raised or of any enquiry instituted against him, as well as to provide on request all information which is necessary to examine the circumstances of the case and their legal appreciation,
 3. to comply, in the case of negotiations for the settlement of claims for compensation inside or outside of court, with the instructions of the competent authorities of the Länder,
 4. to refrain from acknowledging or satisfying any claim for compensation without the consent of the competent authorities of the Länder except if such acknowledgement or satisfaction cannot be refused without obvious inequity.
- (3) In all other respects Sections 62 and 67 as well as the provisions of Title 6 of Chapter 2 of the Insurance Contracts Act, except Section 152, shall apply analogously to the obligation to indemnify.

Section 35 - Apportionment

- (1) Where legal liability to pay compensation for damage caused by an incident is expected to exceed the amounts referred to in sub-section 1 of Section 31, the apportionment of the sums available as compensation for damage and the procedure to be observed shall be governed by an Act and, pending enactment, by statutory ordinance.
- (2) The statutory ordinance referred to in sub-section 1 may only make such stipulations regarding apportionment of the sums available as compensation for damage as are required to avert hardship. Such statutory ordinance shall ensure that satisfaction of the claims of all injured persons will not be unduly prejudiced by the satisfaction of individual claims.

Section 36 - Distribution of the indemnification between
the Bund and the Länder

The Bund shall bear 75 per cent of the amount of the indemnification pursuant to Section 34. The remainder shall be borne by the Land where the nuclear installation at the origin of the nuclear incident is situated.

Section 37 - Recourse in the case of indemnification

If the operator of a nuclear installation has been indemnified in accordance with Section 34, recourse may be had against him to the extent that compensation has been paid, if

1. the operator has violated his obligations under sub-sections 2 or 3 of Section 34: however, recourse shall be excluded to the extent that such violations have not influenced the determination of the damage nor the extent of the compensation paid,
2. the operator or, if he is a legal person, his legal representative has, in the discharge of his functions, caused the damage wilfully or by gross negligence,
3. compensation has been paid because the extent and amount of the financial security available have not corresponded to the determination by the competent authority.

Section 38 - Compensation from the Bund

- (1) If a person having suffered nuclear damage within the realm of this Act cannot obtain compensation pursuant to the law of another Contracting State to the Paris Convention applicable to the incident because
 1. the nuclear incident occurred in the territory of a non-Contracting State to the Paris Convention,
 2. the damage was caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional character,
 3. the applicable law excludes liability for damage to the means of transport upon which the nuclear substances involved were at the time of the nuclear incident,
 4. the applicable law does not provide for the operator's liability for damage caused by ionizing radiation emitted by another source of radiation inside the nuclear installation,
 5. the applicable law provides for a shorter period of limitation or extinction than this Act, or

6. the total sum available for compensation falls short of the amount under the first sentence of sub-section 1 of Section 31 of this Act,

the Bund shall grant compensation up to the amount referred to in the first sentence of sub-section 1 of Section 31.

- (2) The Bund shall further grant compensation up to the amount referred to in the first sentence of sub-section 1 of Section 31, if the foreign law or the provisions of an international agreement applicable to damage suffered within the realm of this Act provide for compensation to the injured person which as to its nature, extent and amount, falls considerably short of the compensation which the injured person would have obtained had this Act been applied.
- (3) Sub-sections 1 and 2 shall not apply to injured persons who are not Germans within the meaning of sub-section 1 of Article 116 of the Basic Law and who do not have their habitual residence within the realm of this Act unless their mother country has provided, at the time of the nuclear incident, a system of compensation which in relation to the Federal Republic of Germany is equivalent as to its nature, extent and amount.
- (4) Actions under sub-sections 1 and 2 shall be brought before the Federal Agency for Administration*. They shall be extinguished within three years of the date at which the decision on compensation rendered under foreign or international law has become final.

Section 39 - Exemptions of the Bund and the Länder from the obligation to indemnify

- (1) In the case of indemnification under Section 34 and compensation under Section 38, those claims for compensation shall not be taken into account which have been accorded a subsidiary rank under sub-sections 1 and 2 of Section 35.
- (2) Compensation under sub-section 2 of Section 29 shall be subject to indemnification under Section 34 and compensation under Section 38 only if the granting of such compensation is necessary to avoid serious inequity because of the particular gravity of the injury.

Section 40 - Actions against the operator of a nuclear installation situated in another Contracting State

- (1) If under the provisions of the Paris Convention, a court within the realm of this Act has jurisdiction over actions for compensation against the operator of a nuclear installation situated in another Contracting State to the Paris Convention,

* Bundesverwaltungsamt.

the liability of the operator shall be governed by the provisions of this Act.

(2) Contrary to sub-section 1, the following shall be governed by the law of the Contracting State in which the nuclear installation is situated:

1. who is to be considered as operator,
2. whether the operator's liability extends to damage suffered in a non-Contracting State to the Paris Convention,
3. whether the operator's liability extends to nuclear damage caused by ionizing radiation emitted by another source of radiation inside a nuclear installation,
4. whether and to what extent the operator's liability extends to damage to the means of transport upon which the nuclear substances involved were at the time of the nuclear incident,
5. up to what maximum amount the operator is liable,
6. after what period claims against the operator will become barred by limitation or be extinguished,
7. whether and to what extent nuclear damage is compensated in the cases enumerated in Article 9 of the Paris Convention.

C H A P T E R V

PENALTIES AND FINES

11-12 DEC 1967

Sections 40 to 44 - Repealed

Section 45 - Punishable handling of nuclear fuel and ionizing radiation

- (1) Any person who, without such licence as is required under this Act
1. imports, exports or otherwise conveys nuclear fuel into or out of the realm of this Act,
 2. carries nuclear fuel,
 3. stores nuclear fuel outside Government custody,
 4. constructs, operates or otherwise holds an installation for the production or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or materially

alters the installation or its operation,

5. treats, processes or otherwise uses nuclear fuel outside an installation for the production or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who materially deviates from the procedure laid down in a licence issued under sub-section 1 of Section 9 for the treatment, processing or other use, or who materially alters the installation or its location as specified in the licence,

shall be liable to imprisonment for a term of up to five years or a fine.

(2) Any person who, by an act specified in sub-section 1 or 2,

1. knowingly endangers, through nuclear fission or ionizing radiation, the life or health of another person, or property of considerable value belonging to another person, shall be liable to imprisonment for a term running between three months and five years.

2. delivers nuclear fuel to unauthorized persons, in contravention of sub-section 5 of Section 4,

(3) Any person who, by an act specified in sub-section 1 or 2, knowingly endangers, through nuclear fission or ionizing radiation, the life or health of another person, or property of considerable value belonging to another person, shall be liable to imprisonment for a term running between three months and five years.

(4) Any person who, through negligence, commits one of the acts specified in sub-sections 1 and 2 shall be liable to imprisonment for a term not exceeding two years or a fine.

Section 46 - Statutory offences

(1) Any person shall be guilty of a statutory offence who wilfully or negligently

1. carries nuclear substances without having procured the financial security required under sentences 1 or 2 of sub-section 1 of Section 4b,
2. contravenes a determination under sub-section 1 of Section 13, an enforceable condition imposed under the first and third sentences of sub-section 1 of Section 17 or an enforceable order under sub-section 3 of Section 19,
3. contravenes a statutory ordinance issued under sub-section 1 of Section 11 or sub-section 1 of Section 12, or an enforceable order under a statutory ordinance issued pursuant to no. 9 of sub-section 1 of Section 12, provided that such statutory ordinance refers to this Section with respect to a defined act,

4. does not carry the licence contrary to the first sentence of sub-section 5 of Section 4, or does not carry the certificate referred to in the second sentence of sub-section 5 of Section 4, or does not produce on request such licence or certificate contrary to the third sentence of sub-section 5 of Section 4.
- (2) The statutory offence shall be punishable with a fine of up to DM one hundred thousand in the cases given in nos. 1, 2 and 3 of sub-section 1 and up to DM one thousand in the case given in no. 4 of sub-section 1.
- (3) Administrative authority within the meaning of no. 1 of sub-section 1 of Section 36 of the Act on Statutory Offences* shall be the Federal Office for Trade and Industry as concerns failure to obtain a licence or to notify in the case of import or export of other radioactive substances pursuant to no. 1 of sub-section 11, or to comply with a condition imposed in connection therewith pursuant to sentences 2 and 3 of sub-section 1 of Section 17.

Section 47 - Punishable violation of safety regulations, conditions and orders

Any person who, by a wilful act as specified in nos. 1 to 3 of sub-section 1 of Section 46, wilfully or negligently endangers, through nuclear fission or ionizing radiation, the life or health of another person, or property of considerable value belonging to another person, shall be liable to imprisonment of up to five years or to a fine. Where the offender caused the danger knowingly, the penalty shall be imprisonment for a term of not less than three months and up to five years.

Section 48 - Violation of obligations concerning production and supply

- (1) Any person who knowingly produces or supplies defective installations for the production or fission of nuclear fuel, or for the reprocessing of irradiated nuclear fuel, or who produces or supplies defective objects intended for the construction or operation of such installation, and thereby knowingly endangers the life or health of another person, or property of considerable value belonging to another person, such danger being connected with the effects of a nuclear fission process or radiation from a radioactive substance, shall be liable to imprisonment for a term of not less than six months and up to five years.
- (2) The attempt shall be punishable.
- (3) In particularly grave cases the penalty shall be imprisonment for a term of one to ten years.

* Gesetz über Ordnungswidrigkeiten.

- (4) Any person who, not knowingly, but wilfully or negligently, causes danger in the cases specified in sub-section 1, shall be liable to imprisonment of up to five years or a fine.

Section 49 - Confiscation

Where an offence punishable under sub-sections 1 to 3 of Section 45, Section 47 or Section 48 has been committed,

1. any object produced by such act or which was used or intended for the commission of such act, and
2. any object relating to an offence

may be confiscated. Where a statutory offence under nos. 1 to 3 of sub-section 1 of Section 46 has been committed wilfully, the provisions of no. 2 of the first sentence hereof shall apply accordingly.

Sections 50 to 52 - Repealed

C H A P T E R VI

FINAL PROVISIONS

Section 53 - Registration of damage due to unknown causes

Damage which, in the light of existing scientific knowledge, has been caused by the effects of radiation from radioactive substances but cannot be traced to any particular person, shall be registered with and investigated by the Federal Minister competent for nuclear safety and radiation protection.

Section 54 - Issue of statutory ordinances

- (1) Statutory ordinances under Sections 11, 12, 13 and sub-section 3 of Section 21, shall be issued by the Federal Government. The same shall apply to statutory ordinances issued under Section 10, insofar as exemptions are granted from the requirement of a licence under Section 7. All other statutory ordinances provided for under this Act shall be issued by the Federal Minister competent for nuclear safety and radiation protection.
- (2) Such statutory ordinances shall require the consent of the Federal Council. This shall not apply to statutory ordinances limited to replacing physical, technical and radiation biology standards laid down in statutory ordinances pursuant to Sections 11 and 12.

- (3) The Federal Government may, by statutory ordinance, wholly or partly delegate its powers specified in Sections 11 and 12 to the Federal Minister competent for nuclear safety and radiation protection.

Section 55 - Repeal of legal provisions
(not newly published, as obsolete)

Section 56 - Licences issued under Land legislation

- (1) Any licences, exemptions or approvals granted under Land legislation for the construction and operation of installations within the meaning of Section 7, shall continue to have effect. They shall be deemed equivalent to licences granted under Section 7, and the conditions attaching to them shall be equivalent to such conditions as are imposed under sub-section 1 of Section 17. Insofar as a licence issued under Land legislation includes stipulations concerning the provisions of financial security by the operator of the installation to cover legal liability to pay compensation for damage, such stipulations shall, subject to the provisions of sub-section 3, be considered a determination within the meaning of sub-section 1 of Section 15.
- (2) Within three months after the coming into force of this Act, the public authority (sub-section 2 of Section 24) shall determine the amount which the operator of the installation must provide as financial security. The latter half of the second sentence of sub-section 1 of Section 15 shall apply correspondingly. Where a guarantee is determined pursuant to sub-section 4 of Section 15, such guarantee shall be retroactive as from the date of the coming into force of this Act.

Section 57 - Exclusion of certain legal provisions

Sections 1 to 4 of the Act on the Criminal Use of Explosives Constituting a Public Hazard of 9th June 1884* (Reichsgesetzblatt, page 61), as amended by the Ordinance of 8th August 1941 (Reichsgesetzblatt 1, page 551), and such legal provisions as are made under the said Act, as well as legal provisions of the Länder concerning explosives, shall not apply to any handling of nuclear fuel.

* Gesetz gegen den verbrecherischen und gemeingefährlichen Gebrauch von Sprengstoffen.

Section 58 - Application in Berlin

In accordance with sub-section 1 of Section 13 of the Third Transition Act* of 4th January 1952 (EGBl. I, page 1), this Act shall also be applied in the Land Berlin. Statutory Ordinances made under this Act shall apply to the Land Berlin in accordance with Section 14 of the Third Transition Act.

Section 59 - Entry into force**

This Act shall come into force on the day following its promulgation; Sections 40 to 52 shall not come into force in the Land Berlin, however, until the day after promulgation of the Application Act*** in the Official Gazette of Berlin.

* Drittes Überleitungsgesetz.

** Section 59 deals with the entry into force of the original Act. The dates of entry into force of the subsequent amendments are fixed by the Amending Acts (official note).

*** Übernahmegesetz.

A N N E X

Definitions pursuant to sub-section 2
of Section 2

(1) The terms set forth below shall have the following meaning:

1. "Nuclear incident": Any occurrence or succession of occurrences having the same origin which causes damage, provided that such occurrence or succession of occurrences, or any of the damage caused, arises out of or results from the radioactive properties, or a combination of radioactive properties with toxic, explosive, or other hazardous properties of nuclear fuel or radioactive products or waste or with any of them;
2. "Nuclear installation": Reactors other than those comprised in any means of transport; factories for the manufacture or processing of nuclear substances; factories for the separation of isotopes of nuclear fuel; factories for the reprocessing of irradiated nuclear fuel; facilities for the storage of nuclear substances other than storage incidental to the carriage of such substances; a nuclear installation may consist of several installations referred to above if these are operated by the same person or persons and are located at the same site;
3. "Nuclear fuel": Fissionable material in the form of uranium metal, alloy, or chemical compound (including natural uranium), plutonium metal, alloy, or chemical compound;
4. "Radioactive products or waste": Any radioactive material produced in or made radioactive by exposure to the radiation incidental to the process of producing or utilising nuclear fuel, but does not include
 - (a) nuclear fuel
 - (b) radioisotopesoutside a nuclear installation which are used or intended to be used for any industrial, commercial, agricultural, medical or scientific purpose;
5. "Nuclear substances": Nuclear fuel (other than natural uranium and other than depleted uranium) and radioactive products or waste;

6. "Operator of a nuclear installation": The person designated or recognised by the competent public authority as the operator of that installation.

(2) Units of account within the meaning of this Act shall mean units of account of the European Monetary Agreement of 5th August 1955 (BGBl. 1959 II, page 294) as defined at the date of signature of the Paris Convention.

Exempted Substances

Nuclear substances within the meaning of sub-section 3 of Section 4, sub-section 2 of Section 4b and sub-section 6 of Section 25, shall mean nuclear substances the activity or quantity of which do not exceed by a factor of 10⁵ the exemption limits within a single installation or an independent subsidiary thereof or, in the case of person not carrying out a business, at the place where the applicant carries out his activities. Exemption limit shall mean the activity or quantity of nuclear substances for the handling of which a licence is not required under this Act or a statutory ordinance issued thereunder.

FEDERAL REPUBLIC OF GERMANY

ORDINANCE CONCERNING THE FINANCIAL SECURITY
PURSUANT TO THE ATOMIC ENERGY ACT
(NUCLEAR FINANCIAL SECURITY ORDINANCE)

By virtue of Section 13(3) and Section 54(1) and (2) of the Atomic Energy Act in the version published on 31st October 1976 (BGBl. I, p. 3053) the Federal Government, with the approval of the Federal Council, hereby orders as follows:

P A R T I

GENERAL PROVISIONS

Section 1 - Types of financial security

Financial security for installations and activities involving nuclear liability under international agreements or under the Atomic Energy Act, may be provided by

1. third party liability insurance, or
2. indemnity or guarantee by a third person.

The public authority may allow a combination of financial security measures of the same or of different types, provided that the effectiveness and clarity of the security is not thereby adversely affected.

Section 2 - Third party liability insurance

- (1) Financial security may be provided in the form of third party liability insurance only where it is taken out with
 1. an insurer licensed to carry on business within the realm of the Atomic Energy Act, or
 2. an insurer licensed to carry out business outside the realm of the Atomic Energy Act, in case of international carriage (Section 4a of the Atomic Energy Act), provided that an insurer licensed to carry on business within the realm of the Atomic Energy Act or an association of such insurers undertake jointly to assume the obligations of a third party liability insurer.
- (2) To the extent that the Bund and the Länder are under an obligation to indemnify the person required to provide financial security against claims for damages, or to guarantee the payment of such claims made against him, the insurance contract shall contain a clause in favour of the Federal Republic of Germany and the Land concerned, imposing a duty on the insurer to inform the public authority without delay of any alteration to the contract, any event causing damage, any claim for compensation for damage, and any payment of compensation, as soon as such circumstances come to the knowledge of the insurer.

Section 3 - Indemnity or guarantee

- (1) Financial security may be provided in the form of indemnity or guarantee by a third person only when it is ensured that such third person will be in a position, as long as it is to be expected that he may be resorted to, to fulfil his obligations under the financial security arrangements.
- (2) An indemnity or guarantee by a third person whose principal place of residence or principal place of business is situated outside the realm of the Atomic Energy Act shall only be accepted where such third person either has sufficient assets within the realm of the Atomic Energy Act to cover his obligations during their duration, or where it is ensured that any decision of a court situated within the realm of the Atomic Energy Act concerning his obligations is enforceable, by virtue of an international agreement, in the State where assets of such person are situated. Indemnity or guarantee by another State shall be accepted only where such State submits to the jurisdiction of the Federal Republic of Germany or otherwise guarantees that it will fulfil its obligation.
- (3) Section 2(2) shall apply accordingly.

Section 4 - Extent of the financial security

- (1) In the case of a nuclear installation the financial security shall cover the legal liability of the operator to pay compensation for damage as defined in Section 13(5) of the Atomic Energy Act, arising

1. as a result of a nuclear incident, and
 2. as a result of ionizing radiation emitted by a source of radiation within the meaning of the second sentence of Section 25(1) of the Atomic Energy Act.
- (2) In the case of activities or installations in respect of which liability may arise under Section 26 of the Atomic Energy Act, the financial security shall cover any legal liability to pay compensation for damage, as defined in Section 13(5) of the Act, which arises in connection with the activity or installation subject to a licence, as a result of effects of the kind mentioned in the first sentence of Section 26(1) and in Section 26(2) of the Act, and which is incurred by
1. the person required to provide financial security,
 2. persons engaged to carry out operations by the person required to provide financial security,
 3. in the case of carriage, also by persons who are or were involved in such carriage together with the person required to provide financial security or who are carrying out or have carried out authorised works or services in connection with the carriage or who are or were engaged to effect an operation for the purposes of such carriage.
- (3) The financial security shall cover events causing damage which occur or have effects outside the realm of the Atomic Energy Act and for which the person required to provide financial security is liable under international agreements or by virtue of liability provisions operative outside the realm of the Atomic Energy Act of the kind specified in Section 13(5) of the Act.
- (4) Financial security, up to the specified amount, shall not be allocated or used in respect of obligations other than those specified in sub-sections (1) to (3) above.
- (5) The public authority may allow exceptions to sub-sections (1) to (3) above, provided that
1. they are justified, having regard to the type of financial security, and
 2. the interests of all those who have suffered damage, and, in cases involving indemnification against liability to pay compensation for damage under Section 34 of the Atomic Energy Act, the interests of those liable to provide indemnification, are not thereby unreasonably prejudiced.
- (6) The financial security to be provided by the operator of a nuclear installation need not cover his liability to pay compensation for damage arising from the handling or carriage of radioactive substances outside the nuclear installation.
- (7) Sub-section (1) and sub-sections (3) to (6) shall apply correspondingly to the operator of a nuclear ship.

Section 5 - Proof of financial security; information and notification

- (1) The provisions of financial security shall not notified to the public authority in an appropriate manner.
- (2) The public authority shall inform the insurer or the third person having provided an indemnity or guarantee of the granting, withdrawal or revocation of a licence.
- (3) A person wishing to make a claim covered by the financial security shall be entitled to request from the public authority the name and address of the insurer or third person having undertaken to indemnify or guarantee.
- (4) The authority competent to receive notification of the non-existence or termination of the insurance contract or contract of indemnity or guarantee (Section 14 of the Atomic Energy Act in conjunction with Section 158c, sub-section (2) of the Insurance Contracts Act) shall be the licensing authority, or, where no licence is required, the public authority otherwise competent.

Section 6 - Conditions

When the financial security is being determined, the person under obligation to provide the security shall be required:

1. to alter the financial security only with the prior consent of the public authority;
2. to inform the public authority without delay of any alteration to the financial security not attributable to any act of his and, where the matter involves liability to pay compensation for damage covered by the financial security or by the indemnity under Section 34 of the Atomic Energy Act, of any event causing damage, any claim for compensation and any payment of compensation, as soon as such circumstances come to his knowledge;
3. to satisfy the public authority at its request that financial security exists in the amount and to the extent determined and that the conditions under which it was possible to provide financial security other than by third party liability insurance, continue to prevail, and
4. to make good the coverage, to the extent that it is not available in full for every event causing damage, where a reduction of more than 20% or, if such reduction amounts to at least DM 1 million, of more than 10%, has arisen or is to be expected due to the occurrence of one or more events causing damage.

P A R T I I

COVERAGE

Section 7 - Coverage and standard coverage

The amount of financial security (coverage) shall be determined on the basis of a coverage for the normal case (standard coverage), unless the coverage is directly determined in this Part of the Ordinance.

Section 8 - Handling and carriage

- (1) Except as otherwise stated in this Part of the Ordinance, the standard coverage shall be determined
 1. in accordance with Annex 1 as regards the handling of nuclear fuel,
 2. in accordance with Annex 2 as regards the handling of other radioactive substances,as applicable in each case having regard to the licensed type, mass, activity or characteristics of the radioactive substances.
- (2) Where the handling of other radioactive substances is directed towards their application in human medicine, or their handling involves their getting into air, water, soil or vegetation, without it being possible to prevent their further dispersion, the standard coverage shall be twice the figure given in Annex 2.
- (3) Where radioactive wastes are handled at a collecting agency of a Land or other installation licensed for the disposal of radioactive wastes, the standard coverage shall be DM 10 million. Where radioactive wastes originating in an installation referred to in Section 7 of the Atomic Energy Act are handled in such other installation licensed for the disposal of radioactive wastes, the standard coverage shall be DM 100 million.
- (4) Sub-section 1 shall apply accordingly to the carriage of radioactive substances; in the case of the carriage of other radioactive substances reference shall be made to the figures contained in column 2 of Annex 2. The coverage shall not exceed DM 50 million.

Section 9 - Reactors

- (1) For a reactor with a maximum capacity of 1 megawatt the standard coverage shall be DM 5 million; this figure shall be increased by DM 1 million for each additional megawatt up to a maximum of DM 500 million.

The standard coverage shall nevertheless be determined in accordance with Annex 1 if the calculation according to that Annex, having regard to the licensed type and mass of the nuclear fuel, results in a higher figure than the calculation of the standard coverage in accordance with the first sentence of this sub-section. Maximum capacity is deemed to be the thermal capacity under continuous operating conditions at which the reactor is permitted to be operated under the licence.

- (2) The standard coverage under sub-section 1 includes the standard coverage for installations for the storage of nuclear fuel or radioactive products and waste which are intended for the use of the installation itself or originate from the reactor and are temporarily stored pending further use or disposal, provided that such installations form a single nuclear installation as defined in Annex 1, sub-section 1, No. 2, last part of the sentence to the Atomic Energy Act.

Section 10 - Ship reactors

The standard coverage in the case of reactors used to propel ships shall be DM 1 million per megawatt of maximum capacity, subject to a limit of DM 400 million. The second and third sentences of Section 9(1) shall apply accordingly.

Section 11 - Other nuclear installations

- (1) In the case of installations for the production, treatment or processing of nuclear fuel, the standard coverage shall be determined on the basis of the type and mass of the nuclear fuel which the installation is licensed to handle, in accordance with Annex 1. In the case of installations for the fabrication of fuel elements and for uranium enrichment the maximum coverage, having regard to Sections 16 and 17, shall not exceed DM 200 million.
- (2) In the case of installations for the reprocessing of irradiated nuclear fuel the standard coverage for installations with a licensed annual reprocessing capacity shall be as follows:
1. up to 50 tonnes DM 100 million:
 2. over 50 tonnes DM 300 million:
 3. over 500 tonnes DM 500 million.
- (3) Section 9(2) shall apply accordingly.

Section 12 - Decommissioning of installations

Where an installation within the meaning of Section 7 of the Atomic Energy Act is decommissioned or otherwise stops operations, the standard coverage shall be determined in accordance with column 3 of Annex 2 on the basis of the residual activity within the installation, provided that the instal-

lation contains only radioactive and contaminated items of plant and equipment and radioactive substances for monitoring purposes. Where, due to the special circumstances of the case, the level of activity cannot be established or where this would entail unreasonable expense, the public authority may reduce the coverage to 5 per cent of the coverage last determined before the installation was decommissioned or otherwise stopped operations.

Section 13 - Installations for the production of ionizing radiations

- (1) In the case of installations for the production of ionizing radiations, the construction and operation of which require a licence, the standard coverage shall be DM 50 million.
- (2) Where only the operation of such an installation requires a licence, the standard coverage shall be
 1. DM 10 million where the installation is used for medical purposes,
 2. DM 3 million where more than 10^8 neutrons are produced per second or where the final energy of accelerated electrons exceeds 10 MeV or where the final energy accelerated ions exceeds 1 MeV per nucleon,
 3. DM 1 million in all other cases.

Section 14 - Carriage and storage of irradiated nuclear fuel

In the case of carriage and storage of irradiated nuclear fuel the standard coverage calculated on the basis of the licensed mass of the nuclear fuel in accordance with Annex 1 and the standard coverage calculated on the basis of the total licensed activity in accordance with Annex 2 shall be determined separately and aggregated to give a single figure for the standard coverage. The exemption limit under Annex 2 for the purpose of calculating the total activity is 0.1 microcurie.

Section 15 - Application of radioactive substances to human beings in medical research

Where radioactive substances are applied to human beings in medical research the coverage for every person to whom such radioactive substances are applied shall be DM 1 million.

Section 16 - Determination of the coverage in individual cases

- (1) Where the standard coverage is inappropriate to the circumstances of the individual case, the public authority may increase the coverage, subject to the maximum limits under Section 13(2) No. 1 of the Atomic Energy Act, to twice the standard coverage or may reduce it to one third of the standard coverage.

(2) In determining the coverage appropriate to the circumstances of the individual case special consideration shall be given to:

1. whether and to what extent the possibility exists or is to be excluded that persons other than the person required to provide financial security and his employees may suffer loss of life or bodily injury or damage to health or property;
2. the level of safety provided by protective measures and safety equipment;
3. whether and to what extent the possibility exists or is to be excluded, having regard to meteorological and hydrological conditions, that radioactive substances may be dispersed, particularly in the form of gases, aerosols or liquids;
4. the duration of the hazard, having particular regard to the half-life of the radioactive substances;
5. whether due to the type, mass or characteristics of the radioactive substances the possibility of damage due to nuclear incidents resulting from nuclear fission processes can be excluded even under the most unfavourable circumstances;
6. whether and to what extent there exists an especially high or low level of danger in the event of carriage, having regard to the means and route of transport employed, the packaging and the characteristics of the radioactive substances.

Section 17 - Reduction of the coverage in particular cases

The coverage required under this Part of the Ordinance for nuclear ships and for installations for the treatment or processing of nuclear fuel may be reduced to one half, provided that the objective stated in Section 1(1) of the Atomic Energy Act, having due regard also to the interests of those required to furnish indemnity or guarantee under the Act or by virtue of international agreements, calls for the provision of financial security to be made possible or facilitated by such measures. Such reduced coverage shall fall short of the maximum amount of insurance cover which can be obtained under reasonable conditions on the insurance market (Section 13(2), No. 1 of the Act) only where this serves to promote a project of particular significance for research, development or use of nuclear energy.

Section 18 - Coverage in case of multiple handling

- (1) Where the person required to provide financial security handles several substances or several batches of a substance under one or more licences, the relevant coverage shall be separately determined for every activity requiring the provision of financial security.
- (2) An overall coverage shall nevertheless be determined where the multiple handling takes place outside a nuclear installation and is so closely related as to place and time that the several substances or batches must be considered equally as dangerous as a single substance, the activity or mass of which would be equivalent to the total activity or total mass of the substances or batches.

- (3) In the case of sealed and unsealed other radioactive substances, the overall coverage shall be calculated on the basis of the total activity, expressed in multiples of the activity exemption limits. Where substances are handled which belong to both the groups mentioned in the first sentence of this sub-section, the coverage determined separately for each group shall be aggregated. However, the total coverage to be determined shall not exceed that which would result if all the substances were unsealed other radioactive substances.
- (4) As regards carriage sub-sections (1) to (3) shall apply accordingly.

Section 19 - Rounding off the coverage

- (1) The coverage shall be determined to the nearest DM 100,000.
- (2) Where the provisions concerning coverage result in an intermediate amount of less than DM 50,000, the figure shall be rounded down, otherwise it shall be rounded up.

P A R T III

FINAL PROVISIONS

Section 20 - Transitional provision

Where the financial security determined for an activity licensed before the entry into force of this Ordinance does not meet the requirements set out herein, the financial security shall be re-determined at the next review pursuant to the second sentence of Section 13(1) of the Atomic Energy Act, but in any event, in the case of installations referred to in Section 7 of the Act, within six months, and in other cases within one year of the entry into force of this Ordinance.

Section 21 - Berlin clause

This Ordinance shall also apply to the Land Berlin in accordance with Section 14 of the Third Transition Act of 4th January 1952 (BGBl. I, page 1) and the second sentence of Section 58 of the Atomic Energy Act.

Section 22 - Entry into force

This Ordinance shall come into force on the first day of the calendar month following publication. The Financial Security Ordinance in the version published on 10th November 1970 (BGBl. I, page 1523) shall cease to have effect as from the same day.

Standard coverage for nuclear fuels in millions of DM

1	2	3	4	5	6
Mass of nuclear fuel*	Plutonium	Uranium 235	Uranium enriched to more than 20% in the isotope 235	Uranium enriched to 20% or less in the isotope 235	Natural uranium being nuclear fuel
Up to 10g	1.0	0.5	-	-	<p>For any mass in excess of the exemption limits</p> <ol style="list-style-type: none"> up to 10 tonnes: 1.0 for every tonne or part thereof from 10 to 100 tonnes: 0.25 per additional tonne or part thereof over 100 tonnes: 0.025 per additional tonne or part thereof <p>up to a maximum of 100, and 50 in the case of carriage.</p>
Over 10g to 100g	2.0	1.0	-	-	
Over 100g to 200 g	3.0	2.0	-	-	
Over 200g to 1kg	10.01	10.0	5.0	1.0	
Over 1kg to 100 kg for every additional kg or part of a kg	1.0	1.0	0.3	0.1	
From 100 to 1,000kg for every further 10kg or part of 10kg	2.0	2.0	0.6	0.3	
Over 1,000kg for every further 100kg or part of 100kg	10.0	10.0	1.5	0.3	

* In calculating the mass of nuclear fuel only the mass of plutonium 239, plutonium 241, uranium 233 and uranium 235 shall be taken into account. For the calculating of the mass of natural uranium being nuclear fuel, the total mass of the uranium is to be taken into account.

ANNEX 2

Standard coverage in case of other radioactive substances in millions of DM

1	2	3
Activities in multiples of the exemption limits under Annex IV, Table IV.1 of the Radiation Protection Ordinance*	sealed radioactive substances	unsealed radioactive substances
from 10^5 times to 10^6 times	0.1	0.5 to 1
from 10^6 times to 10^7 times	0.1 to 0.5	1 to 2
from 10^7 times to 10^8 times	0.5 to 1	2 to 4
from 10^8 times to 10^9 times	1 to 2	4 to 8
from 10^9 times to 10^{10} times	2 to 4	8 to 12
from 10^{10} times to 10^{11} times	4 to 8	12 to 16
from 10^{11} times to 10^{12} times	8 to 12	16 to 20
from 10^{12} times to 10^{13} times	12 to 16	above 10^{12} times:
from 10^{13} times to 10^{14} times	16 to 20	20 to 30
from 10^{14} times to 10^{15} times	20 to 24	
above 10^{15} times	24 to 28	

* The standard coverage in case of natural uranium which is not nuclear fuel and in case of depleted uranium is determined according to column 6 of Annex 1.

Italy

1. Short introduction.

The basic act in Italy is Act. No. 1860 of December 31, 1972 (Appendix IT-1). The act provides for a Decree of the President of the Republic to set regulations regarding safety of nuclear installations and health protection measures, which, as passed (DPR No. 185 of February 13, 1964) (Appendix IT-4) conforms with basic EURATOM and IAEA standards.

2. A list of the relevant laws and regulations.

IT-1 Act No. 1860 of Dec. 31, 1962, on Peaceful Uses of Nuclear Energy.

IT-2 Ministerial Decree (M.D.) of July 19, 1967, amending the Decree of July 27, 1966.
Determining the Radioactive Materials Whose Use is Subject to Authorization and Declaration.

IT-3 Decree of the President of the Republic (D.P.R.) of Dec. 30, 1965. Amends IT-1.

IT-4 D.P.R. No. 185 of Feb. 13, 1964. Official Gazette (O.G.) May 16, 1964.

IT-5 D.P.R. No. 1450 of Dec. 30, 1970, on qualifications for nuclear operators.
Supplemented by IT-6.

- IT-6 Interministerial Decree of March 1, 1973.
Supplements IT-5.
- IT-7 Treaty Establishing the European Atomic Energy
Community (EURATOM) Mar. 25, 1957.
- IT-8 M.D. of June 6, 1968. On maximum doses for
workers.
- IT-9 M.D. of Feb. 2, 1971, supplementing § 111 of
IT-4.
- IT-10 OECD/NEA, Regulations Governing Nuclear
Installations and Radiation Protection.
Nuclear Legislation Analytical Study, 1972,
pp. 221-254.
- IT-11 The Convention on Third Party Liability in
the Field of Nuclear Energy (Paris Convention)
(PC) July 29, 1960.
- IT-12 The Convention Supplementary to the Paris
Convention of July 29, 1960, on third party
liability in the field of nuclear energy
(Brussels Supplementary Convention) (BSC)
Jan. 31, 1963.
- IT-13 Act No. 109 of Feb. 12, 1974, ratifying PC & BSC,
cited in OECD/NEA, Nuclear Third Party Liability,
Nuclear Legislation Analytical Study Series,
1976, pp. 75-93.

- IT-14 Act No. 1008 of Dec. 19, 1969. Amends IT-1.
- IT-15 Decree of May 6, 1976.
- IT-16 Decree of Feb. 16, 1976.
- IT-17 D.P.R. of Dec. 12, 1972, on radiation
protection experts.

3. The text of principal laws and treaties.

- IT-1 Act No. 1860 of Dec. 31, 1962, on Peaceful
Uses of Nuclear Energy.

I T A L Y

ACT NO 1860
OF 31ST DECEMBER 1962
ON THE PEACEFUL USES OF NUCLEAR ENERGY*

C H A P T E R 1

DEFINITIONS

Section 1

For the purposes of enforcement hereof, the definitions concerning special fissionable materials, enriched uranium, source materials as well as ores, as provided by Article 197 of the Treaty establishing the European Atomic Energy Community, ratified and brought into force by Act No 1203 of 14th October 1957 shall apply.

Also in implementation of this Act in connection with the provisions on third party liability, and in accordance with the Conventions on third party liability in the field of nuclear energy, ratified and brought into force together with their related instruments by Act No 109 of 12th February 1974, the following definitions shall apply:

- (a) "A nuclear incident" means any occurrence or succession of occurrences having the same origin which causes damage, provided that such occurrence or succession of occurrences, or any of the damage caused, arises out of or results from the radioactive properties or a combination of radioactive properties with toxic, explosive, or other hazardous properties of nuclear fuel or radioactive products or waste;

* Unofficial translation by the Secretariat. This text embodies the series of amendments made to the Act since its entry into force. The amendments prior to DPR No 519 of 10th May 1975 (amending Section 1 and Sections 15 to 24) are indicated in footnotes to the relevant provisions.

- (b) "Nuclear installation" means nuclear reactors other than those comprised in any means of transport: factories for the manufacture or processing of nuclear materials: factories for the separation of isotopes of nuclear fuel: factories for the reprocessing of irradiated nuclear fuel: facilities for the storage of nuclear materials other than storage incidental to the carriage of such materials: and such other installations in which there are nuclear fuel or radioactive products or waste which are defined as such by decision of the Steering Committee of the Nuclear Energy Agency set up within the Organisation for Economic Co-operation and Development (OECD) and as provided by the last paragraph of this Section. A nuclear installation may consist of a number of installations, provided that the operator is the same and that they form an organic whole, i.e. a geographical unit;
- (c) "Nuclear fuel" means fissionable material in the form of uranium metal, alloy, or chemical compound (including natural uranium), plutonium metal, alloy, or chemical compound, and such other fissionable materials which are defined as such by decision of the OECD Nuclear Energy Agency as provided by the last paragraph of this Section:
- (d) "Radioactive products or waste" means any radioactive material produced in or made radioactive by exposure to the radiation incidental to the process of producing or utilizing nuclear fuel, but does not include:
- (1) nuclear fuel, or
 - (2) radioisotopes outside a nuclear installation which are used or intended to be used for any industrial, commercial, agricultural, medical or scientific purpose;
- (e) "Nuclear materials" means nuclear fuel (other than natural uranium and other than depleted uranium) and radioactive products or waste;
- (f) "Operator" in relation to a nuclear installation means the holder of a licence issued by the Minister for Industry, Commerce and Crafts for the operation of the nuclear installation. In the phase preceding the issue of the operating licence, the holder of the licence or of the clearance certificate for the construction of the nuclear installation shall be considered as an "operator" for the purposes of this Act and in respect of third party liability for the performance of tests and operations with nuclear fuel and irradiated fuel.

The decisions of the Steering Committee of the OECD Nuclear Energy Agency concerning the exclusion of nuclear installations, nuclear fuels or nuclear materials from the scope of the International Conventions ratified by Act No 109 of 12th February 1974 shall be adopted in Italy

by Decree of the Minister for Industry, Commerce and Crafts after having obtained the opinion of the National Committee for Nuclear Energy (CNEN)*.

CHAPTER II

NUCLEAR MATERIALS AND PLANTS

Section 2

The concession for the ores defined in the fourth paragraph, Article 197 of the European Atomic Energy Community Treaty, approved by Act No 1203 of 14th October 1957, shall be granted in accordance with the provisions of Royal Decree No 1443 of 29th July 1927, having consulted with the Superior Council of Mines.

Among the members of the Superior Council of Mines there shall be a representative of the CNEN appointed by Decree of the President of the Republic, on the proposal of the Minister of Industry and Commerce**, having consulted with CNEN.

Section 3***

All those who possess special fissionable materials or other source materials in any quantity shall be required to report them to the Ministry of Industry and Commerce within sixty days from the entry into force hereof.

Anyone who, after the entry into force hereof, becomes the owner of the above materials shall report them to the Minister of Industry and Commerce within five days. CNEN shall exert the necessary controls over such materials.

Reports shall be filed with the Ministry of Industry and Commerce within five days also by those who possess radioactive materials in such quantities that the total radioactivity, at the time of reporting, exceeds the value of the total quantity of radioactivity or mass determined within the meaning of Section 1 of Decree No 185 of 13th February 1964 of the President of the Republic (DPR) and fixed by Decree of the Minister of Industry and Commerce, as provided by Section 30 of the same Decree No 185 of 13th February 1964. When the said materials are in the possession of public institutions for exclusive purposes of teaching and scientific research, the director

* Comitato Nazionale per l'Energia Nucleare.

** At present, the Ministry for Industry, Commerce and Crafts.

*** As amended by Decree No 1704 of 30th December 1964 by the President of the Republic.

responsible shall be required to file the report also with the Ministry of Public Education.

The provisions on health protection of the population laid down in Chapter IX of DPR No 185 of 13th February 1964 shall apply.

The reports shall be brought up to date on 31st December of each year.

Section 4

The trading within the territory of the Republic in ores, source materials and radioactive materials, when the European Atomic Energy Community has not exercised the right of option under Article 57 of the Treaty, shall be subject - it remaining understood that regulations governing the supply of fissionable materials as set forth in the Euratom Treaty shall be complied with - to authorisation by the Ministry of Industry and Commerce.

The authorisation shall be considered granted on the expiry of 30 days from the date of filing of the application without the competent Administration having indicated its opinion within that period.

For the importation and exportation of the said minerals, source materials and radioactive materials, the authorisation, when required by the existing financial and currency control regulations, shall be issued by the Ministry of Foreign Trade, having consulted with the Ministry of Industry and Commerce.

The State shall have a right of option on source materials. Such right shall be exercised within 30 days from the submission of the request for authorisation.

Section 5*

The carriage of special fissionable materials in any quantity and of radioactive materials, the total quantity or mass of which exceed the value determined within the meaning of Section 1 of DPR No 185 of 13th February 1964 shall be undertaken by land, air and sea carriers authorised by Decree of the Minister of Industry and Commerce in agreement with the Minister of Transport and Civil Aviation and the Minister of the Merchant Navy.

Occasional individual shipments of radioactive materials may be undertaken without authorisation, when their total quantity of radioactivity does not exceed the values to be determined by Decree of the Minister of Industry and Commerce, enacted in accordance with Section 30 of DPR No 185 of 13th February 1964. In such case, before the carriage

* As amended by DPR No 1704 of 30th December 1965.

taken place, it must be notified by special report to the Prefect and the Medical Officer of the Provinces of origin and of destination of the shipment, at least forty-eight hours before such carriage is undertaken.

Individual shipments of special fissionable materials in any quantity and of radioactive materials the total quantity or mass of which exceed the limits fixed in accordance with the preceding paragraph shall be made by land, air and sea carriers authorized, where necessary, by Decree of the Minister of Industry and Commerce, in agreement with the Minister concerned.

The provisions in the preceding paragraphs shall not exempt the carrier from observing the transport regulations in force.

By Decree of the President of the Republic, having heard the Council of Ministers, on the proposal of the competent Ministers in agreement with the Minister of Industry and Commerce, having consulted with CNEA, regulations shall be enacted concerning the transport of special fissionable materials and radioactive materials, in conformity with the basic standards laid down by the European Atomic Energy Community.

Until the enactment of the regulations on the transport of special fissionable materials and radioactive materials as provided by the preceding paragraph, the carriage of such materials shall be undertaken in compliance with the provisions laid down by the Minister of Transport and Civil Aviation for transport by land and air, and by the Minister of the Merchant Navy for transport by sea, and in accordance with the provisions on health protection laid down by DFR No 185 of 13th February 1964.

Section 6

The operation of plants for the production and utilization of nuclear energy for industrial purposes as well as of plants for the processing and utilization of ores, source materials, special fissionable materials, enriched uranium and radioactive materials, excluding therefrom any plant whatsoever intended for the production of electrical power, shall be authorized by Decree of the Minister of Industry and Commerce, having consulted with CNEA.

The applicant shall show proof of adequate technical and financial capacity. He shall submit the plans for the plant, showing in particular the location selected, the arrangements for the dispersal and disposal of radioactive wastes, the expenditure and time required for construction, the arrangements for provision of the financial security referred to in Section 19 below.

The authorisation decree shall include the clauses of financial security covering third party liability, as well as the operating conditions considered necessary for the protection of public safety and any other provisions deemed appropriate for the operation of the plant.

Any alteration to the plants shall require the prior approval of the Minister of Industry and Commerce, having consulted with CHEN.

Section 7

The construction of industrial or scientific plants for the use of nuclear energy shall be subject to the supervision of CHEN, with a view to ascertaining that the technical standards correspond to those of the design for which the authorisation was granted.

Before being put into operation, the industrial or scientific plants for the utilization of nuclear energy shall be subject to inspection and testing by CHEN in compliance with provisions set forth in Section 2, No 3 of Act No 933 of 11th August 1960*.

Section 8

On completion of the inspection and testing, the operation of the nuclear plant shall be authorised by Decree of the Minister of Industry and Commerce, having consulted with CHEN.

The Decree may lay down particular conditions which the operator shall be required to comply with.

Section 9

The technical operation of nuclear plants shall be entrusted to persons recognised as qualified for this responsibility.

By Decree of the President of the Republic, on proposal of the Minister of Industry and Commerce, in agreement with the Minister of Public Education and with the Minister of Labour and Social Security, having consulted with CHEN, there shall be enacted the regulations concerning the qualifications required for certification of personnel as qualified to direct and operate nuclear plants, and concerning the issuance of the appropriate licences.

Also by Decree of the President of the Republic, on proposal of the Minister of the Merchant Navy, in agreement with the Ministers of Industry and Commerce, of Public Education, and of Labour and Social Security, having consulted with CHEN, the regulations shall be enacted concerning the certification and licensing of personnel to operate the nuclear plants to be installed on board ships.

* Act No 1240 of 15th December 1971 relates to the reorganisation of the CHEN and repeals the above Act with the exception of its Sections 12 to 16.

Section 10

The works required for the construction of authorised nuclear plants may, by Decree of the Minister of Industry and Commerce, be declared of public utility for all intents and purposes of Act No 2359 of 25th June 1944, as subsequently amended.

By the same procedure, the said works may be declared urgent and undelayable under Section 71 of the same Act.

Section 11

By Decree of the Minister of Industry and Commerce, in agreement with the Minister of Public Education having consulted with CNEN, special authorisations may be issued for nuclear plants exclusively intended for teaching purposes to scientific and scholastic institutions and universities.

The provisions of Sections 6, 7 and 8 shall apply to these plants.

Section 12

For nuclear plants installed on board ships, the provisions of the Minister of Industry and Commerce shall be adopted in agreement with the Minister of the Merchant Navy, having consulted with CNEN.

By Decree of the President of the Republic, to be enacted on the proposal of the Minister of the Merchant Navy, in agreement with the Ministers of Defence and of Industry and Commerce, having consulted with CNEN, technical and administrative regulations shall be adopted concerning navigation by nuclear ships.

Section 13*

In addition to the requirements laid down by Sections 91, 96 and 102 of DPR No 185 of 13th February 1964, the use of radioactive isotopes, when the quantity of radioactivity intended to be used, is equal to or exceeds the value of the total quantity of radioactivity or mass to be determined by Decree of the Minister of Industry and Commerce, as provided by Section 30 of DPR No 185 of 13th February 1964, such use is subject to ministerial authorisation by the Minister of Industry and Commerce in agreement with the Minister of Labour and Social Security for industrial purposes; by the same Minister for Industry and Commerce, in agreement with the Ministers of Labour and Social Security and of Agriculture and Forests for agricultural purposes, in agreement with the Ministers of Labour and Social Security and of Public Education for teaching purposes, and in agreement with the Ministers of Labour and Social Security and of Health for diagnostic, therapeutic and medical research purposes.

* As amended by DPR No 1704 of 30th December 1965.

No authorisation shall be required by universities and other public scientific institutions which use radioisotopes exclusively for purposes of scientific research.

By Decree of the Minister of Industry and Commerce, having consulted with the Ministers concerned, regulations shall be issued concerning the granting of authorisations for the use of radioisotopes.

Section 14

By Decree of the President of the Republic, on proposal of the Prime Minister, in agreement with the Ministers concerned and with the Minister of Industry and Commerce, having consulted with CISEN, there shall be enacted, within one year from the entry into effect hereof, regulations for the safety of plants and for the health protection of the workers and of the population against the hazards of ionizing radiations, due both to the operation of nuclear plants and to operations whatsoever connected with nuclear materials, and to the use of radioactive isotopes, in conformity with the basic standards adopted by the European Atomic Energy Community, with the technical rules contained in the IAEA Manual on Safe Handling of Radioisotopes, and with the principles adopted by the other competent international organisations, for the purpose of ensuring with the greatest effectiveness the protection of public and private safety.

The same Decree shall establish modes and periodicity of controls provided in the previous paragraph, as well as penalties to be imposed on those who violate the protective regulations, in relation to the various offences, for which there may be imposed, jointly or severally, fines not in excess of 10 million Lire and imprisonment not in excess of one year.

The said regulations shall indicate the appropriate bodies for their enforcement and their powers and authority, as well as establish an interministerial organisation for co-ordination and consultation with the Ministry of Industry and Commerce.

C H A P T E R I I I

THIRD PARTY LIABILITY ARISING FROM THE PEACEFUL USES OF NUCLEAR ENERGY

Section 15

The operator of a nuclear installation shall be liable in accordance with this Act for damage to any person or property caused by a nuclear incident occurring in such nuclear installation or in connection with the same.

Damage caused directly by nuclear fuel or by radioactive products or waste which have been stored, abandoned, stolen or lost, is considered connected with the nuclear installation.

The operator shall not be liable for damage to:

- (1) the nuclear installation itself and any property on the site of that installation which is used to or to be used in connection with that installation;
- (2) in the case provided by Section 16 hereof, the means of transport upon which the nuclear materials were at the time of the nuclear incident upon proof that such damage was caused by a nuclear incident involving either nuclear fuel or radioactive products or waste in the nuclear installation or nuclear materials coming from such installation except as otherwise provided for in Section 16.

Where damage is caused jointly by a nuclear incident and by an incident other than a nuclear incident, that part of the damage which is caused by such other incident shall, to the extent that it is not reasonably separable from the damage caused by the nuclear incident, be considered to be damage caused by the nuclear incident. Where the damage is caused jointly by a nuclear incident and by an emission of ionizing radiation, nothing in this Act shall limit or otherwise reduce the liability of any person in connection with that emission of ionizing radiation.

The operator of a nuclear installation shall also be liable for damage caused by ionizing radiation emitted by any radioactive source within such nuclear installation.

The operator shall not be liable for damage caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional character.

Section 16

In the case of carriage of nuclear materials including storage incidental thereto, the operator of a nuclear installation shall be liable in accordance with this Act for damage, upon proof that it was caused by a nuclear incident outside that installation and involving nuclear materials in the course of carriage therefrom, only if the incident occurs:

- (a) before liability with regard to the nuclear incident caused by the nuclear materials has been assumed pursuant to an agreement in writing with the operator of another nuclear installation or in the absence of such agreement, before the operator of another nuclear installation has taken charge of the nuclear materials;

- (b) where the nuclear materials are intended to be used in a reactor comprised in a means of transport, before the person duly authorized to operate the reactor has taken charge of the nuclear materials;
- (c) where the nuclear materials have, with the written consent of the operator, been sent to a person within the territory of a State which does not apply the Conventions on third party liability in the field of nuclear energy, ratified and brought into force by Act No 109 of 12th February 1974, before the materials have been unloaded from the means of transport by which they have arrived in the territory of that State.

The operator of a nuclear installation shall also be liable, in accordance with this Act, for damage upon proof that it was caused by a nuclear incident outside that installation and involving nuclear materials in the course of carriage thereto only if the incident occurs:

- (a) after liability with regard to the nuclear incident caused by the nuclear materials has been assumed by him pursuant to an agreement in writing with the operator of the other nuclear installation or in the absence thereof, after he has taken charge of the nuclear materials;
- (b) after he has taken charge of the nuclear materials from a person operating a reactor comprised in a means of transport;
- (c) where the nuclear materials have, with the written consent of the operator, been sent from a person within the territory of a State which does not apply the Conventions on third party liability in the field of nuclear energy, ratified and brought into force by Act No 109 of 12th February 1974, after they have been loaded on the means of transport by which they are to be carried from the territory of that State.

The operator liable in accordance with this Act shall provide the carrier with a certificate issued by or on behalf of the insurer or other financial guarantor furnishing the security required by Section 19 of this Act. The certificate shall comply with the model established by Decree of the Minister for Industry, Commerce and Crafts in consultation with the Minister for Transport and shall in each case state the name and address of that operator and the amount, type and duration of the security, and these statements may not be disputed by the person by whom or on behalf of whom the certificate was issued, and the obligations arising from such insurance or other financial security shall not be altered even if the damage is covered by other insurance or financial security. The certificate shall also indicate the nuclear materials and the itinerary covered by the security and shall include a statement by

the Minister for Industry, Commerce and Crafts that the person named in the certificate is an operator within the meaning of this Act.

The insurance or financial security provided for the transport of nuclear substances shall also cover damage from the nuclear incident to the carrier by rail, provided that the liability of the operator shall not be reduced in respect of other damage to an amount less than 5,150 million Lire.

A carrier may, with the consent of the operator of a nuclear installation situated on the national territory, be authorised by decision of the Minister for Industry, Commerce and Crafts to assume liability in place of that operator in accordance with this Act. In such case, for all the purposes of this Act, the carrier shall be considered, in respect of nuclear incidents occurring in the course of carriage of nuclear materials, as an operator of a nuclear installation on the national territory.

Section 17

If the nuclear fuel or the radioactive products or waste involved in a nuclear incident have been in more than one nuclear installation and are in a nuclear installation at the time damage is caused, no operator of any nuclear installation in which they have previously been shall be liable for the damage.

Where, however, damage is caused by a nuclear incident occurring in a nuclear installation and involving only nuclear materials stored therein incidentally to their carriage, the operator of the nuclear installation shall not be liable where another operator or person is liable pursuant to Section 16.

If the nuclear fuel or radioactive products or waste involved in a nuclear incident have been in more than one nuclear installation and are not in a nuclear installation at the time damage is caused, liability for such damage shall lie with the operator of the last nuclear installation in which they were before the damage was caused or with the operator who has subsequently taken them in charge.

If damage gives rise to liability of more than one operator, in accordance with this Act, these operators shall be jointly liable, provided that where such liability arises as a result of damage caused by a nuclear incident involving nuclear materials in the course of carriage in one and the same means of transport, or, in the case of storage incidental to the carriage, in one and the same nuclear installation, the maximum amount for which such operators shall be liable shall be the highest amount established with respect to any of them pursuant to Section 19; and provided that in no case shall any one operator of a nuclear installation be required, in respect of a nuclear incident, to pay more than the amount established with respect to him pursuant to Section 19.

Section 18

The right to compensation for damage caused by a nuclear incident may be exercised only against an operator liable for the damage in accordance with this Act or against the insurer or other financial guarantor furnishing the security required pursuant to Section 21.

Except as otherwise provided in this Section, no other person shall be liable for compensation for damage caused by a nuclear incident.

Nothing in this Act shall affect the liability:

- (1) of any individual who has wilfully caused damage due to a nuclear incident for which the operator, by virtue of Section 15, paragraphs 3 and 6 of this Act is not liable;
- (2) of a person duly authorised to operate a reactor comprised in a means of transport for damage caused by a nuclear incident when an operator is not liable for such damage pursuant to Section 16, paragraph 1(b) and Section 16, paragraph 2(b).

The operator shall have a right of recourse only:

- (a) against the individual having wilfully caused the damage;
- (b) if and to the extent such recourse is provided by contract.

The insurance companies specialised in workmen's compensation or in insurance against occupational diseases, as well as those specialised in optional insurance in respect of damage caused to a person or property as a result of nuclear incidents shall not be entitled to bring action against the operator of the nuclear installation or against any person jointly liable with him, pursuant to the first paragraph of this Section, for recovering the amount paid in respect of workmen's compensation or optional insurance in case of damage caused by a nuclear incident.

Section 19

The maximum amount of compensation due by the operator of a nuclear installation for damage caused by a nuclear incident shall be 7,500 million lire.

If, as a result of a nuclear incident, the financial security for third party liability may be deemed to have diminished, the operator

shall be compelled to re-establish such security in such amount and under such conditions as determined by the Minister for Industry, Commerce and Crafts: should the above not be complied with, the authorisation is automatically revoked.

Whenever a nuclear incident causes damage giving a right to compensation in accordance with this Act, and such compensation exceeds the amount of the financial security of the operator, then compensation for the portion in excess shall be borne by the State up to a ceiling of 43,750 million Lire.

When a nuclear incident causes damage giving a right to compensation in accordance with this Act, and such compensation exceeds the amount of the financial security of the operator and the amount to be borne by the State, as provided above, the difference up to a ceiling of 7,000 million Lire shall be borne by the Government in accordance with the Conventions on third party liability in the field of nuclear energy, ratified and brought into force by Act No 109 of 12th February 1974, in accordance with the terms and conditions laid down by these Conventions.

Section 20

Any interest and costs awarded by a court in actions for compensation under this Act shall not be included in the compensation due for the purposes of this Act and shall be payable in addition to the amount of the above compensation.

Where damage is due to the fault of the operator, the State may exercise a right of recourse against the operator up to the amount due for such compensation within the meaning of this Act.

Where a right of recourse is exercised, the claims of the State shall have priority over the claims of the insurers or any other person having furnished financial security.

Section 21

Transports in transit through the national territory shall not be authorised unless proof of a valid financial security is produced of an amount at least equal to that provided by Section 19.

Section 22

The operator of a nuclear installation shall be required to have and maintain insurance of an amount equal to that provided in Section 19, or other financial security of equal value.

The general conditions of the insurance policy must be approved by Decree of the Minister for Industry, Commerce and Crafts. If another

form of financial security is involved, such security must be deemed adequate by Decree of the Minister for Industry, Commerce and Crafts, in agreement with the Minister of the Treasury, after consulting the State Attorney General.

Insurance or financial security furnished for the carriage of nuclear substances shall in no circumstances be suspended or cancelled before such carriage is completed and the nuclear substances have been consigned to another person liable under this Act.

Insurance or financial security furnished for a nuclear installation shall in no circumstances be suspended or cancelled without giving at least three months' notice in writing, to be served by a Court Officer, to the Minister for Industry, Commerce and Crafts.

The sums due, in accordance with this Act, for compensation for damage resulting from a nuclear incident are not subject to attachment or distraint.

Section 23

Actions brought for compensation of damage to persons or property, resulting from nuclear incidents, shall be barred within a period of three years from the date at which the person suffering damage has knowledge or ought reasonably to have known of both the damage and the operator liable.

No action may be brought after the elapse of a ten-year period as from the date of the nuclear incident.

In the case of damage caused by a nuclear incident involving nuclear materials which have been stolen, lost or abandoned and have not been recovered, the above-mentioned period shall be computed from the date of that nuclear incident, but shall in no case exceed twenty years from the date of the theft, loss or abandonment.

Section 24

The Italian courts shall have exclusive jurisdiction to hear actions as provided by this Act in respect of a nuclear incident having occurred in Italy. They shall also have exclusive jurisdiction when a nuclear incident has occurred outside the territory of States applying the Conventions ratified by Act No 109 of 12th February 1974, or where the place of the incident cannot be determined with certainty and the nuclear installation of the operator liable in accordance with this Act is situated in Italian territory.

Section 25

An action in respect of compensation for damage caused by a nuclear incident must be brought before a Tribunal under whose jurisdiction the nuclear installation falls.

Notice of the summons shall be submitted also to the Ministry of the Treasury, which shall have in all cases authority to intervene in the proceedings.

In the event of many applications and whenever it may be expected that the amount of the compensation may exceed financial securities laid down by Sections 19 and 20 above, the President of the Court may provide for joint proceedings and appoint for this purpose a magistrate to handle such joint proceedings.

In the case of proven insufficiency of the above financial securities, the Court shall pass a judgment whereby the amount allowed to each damaged party shall be proportionally reduced.

C H A P T E R I V

PATENTS

Section 26

The Central Patents Bureau shall notify CNEN of any and all applications for invention patents or industrial trade models of a specifically nuclear nature or directly connected with or essential for the development of nuclear energy under Section 15 of Act No 933 of 11th August 1960.

Section 27

The Minister of Industry and Commerce, whenever public interest reasons exist in this connection, may grant CNEN licences on a non-exclusive basis for the use of invention patents or of utility models.

Upon hearing the opinion of CNEN, the Minister may also grant the said licences on a non-exclusive basis in favour of the operator of nuclear installations, whenever these are essential to the development of nuclear energy within the country.

Decrees shall be issued specifying if and in what amount the compensation for such utilization is due, taking into account possible public fund allocations granted to carry out pertinent research. A Court action by the interested party against the assessment of or failure to grant compensation is permitted within thirty days from notification of the relevant Decree.

Japan

1. Short introduction.

The primary nuclear law in Japan is the Atomic Energy Basic Law of 1955 (Appendix J-1). It is supplemented by the Regulation Law governing facilities and fuel material (Appendix J-2) and the Prevention Law governing radiation health and safety (Appendix J-3). Two separate acts regulate third-party liability (Appendix J-17, J-18). During the visit, the team obtained from industry officials an outline of laws and regulations governing transport of spent fuel (Appendix J-7). Japan also has subscribed to IAEA safeguards of spent fuel material.

2. List of relevant laws and regulations.

- J-1 The Atomic Energy Basic Law, Law No. 186, Dec. 19, 1955, as partially revised by Law No. 72, July 20, 1967.
- J-2 The Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors, Law No. 166, June 10, 1957, as last amended by Law No. 53, May 1, 1971 ("Regulation Law").
- J-3 The Law concerning Prevention of Radiation Hazards due to Radioactive Isotopes, etc., Law No. 167, June 10, 1957 ("Prevention Law").

- J-4 Agreement for Cooperation, July 2, 1959, Japan-Canada, 383 U.N.T.S. 262.
- J-5 Agreement for Application of IAEA Safeguards, June 20, 1966, IAEA-Canada-Japan, 732 U.N.T.S. 340.
- J-6 Agreement for Application of IAEA Safeguards, IAEA-United Kingdom-Japan, Oct. 15, 1968, 670 U.N.T.S. 218.
- J-7 Outline of Laws and Regulations of Transport of Nuclear Fuel Materials. Translated from material provided by Nuclear Transport Services Co. Ltd.
- J-8 Regulations on the Use of Nuclear Fuel Materials, 1957 Prime Minister's Office Ordinance 84.
- J-9 Regulations on the Use of Nuclear Materials (Source Materials), 1968 Prime Minister's Office Ordinance 46.
- J-10 Regulations on Vehicular Transport of Radioactive Materials, 1958 Ministry of Transport Ordinance 16.
- J-11 Regulations Relative to the Enforcement of the Law on Prevention of Radiation Hazards from Radioactive Isotopes, 1960 Prime Minister's Office Ordinance 56.
- J-12 Ships Safety Act, Law No. 11, 1933.
- J-13 Regulations on Marine Transport and Storage of Hazardous Materials, 1957 Ministry of Transport Ordinance 30.
- J-14 Harbor Act, Law No. 174, 1947.

- J-15 Regulations Relative to the Enforcement of the Harbor Act, 1948 Ministry of Transport Ordinance 29.
- J-16 Safety Standards for Transport of Radioactive Materials, Japan Atomic Energy Commission, 1975.
- J-17 Act on Compensation of Nuclear Damage, Law No. 147, June 17, 1961, as last amended by Law No. 53, May 1, 1971.
- J-18 Indemnity Agreement for Compensation of Nuclear Damage, Law No. 148, June 17, 1961, as last amended by Law No. 53, May 1, 1971.
- J-19 Cabinet Order No. 44, Mar. 6, 1962, as amended Sept. 30, 1971.
- J-20 Agreement for Application of IAEA Safeguards, IAEA-U.S.-Japan, Jul. 10, 1968.

3. The text of principal laws and treaties.

- J-1 (Basic Law).
- J-2 (Regulation Law) Arts. 52-61 on nuclear fuel material.
- J-7 (Outline of transport regulations).

原子力局調査国際協力課

第4編 原子力基本法

The Atomic Energy Basic Law

(Law No. 186, Dec. 19, 1955)

Partially revised by Law No. 72, July 20, 1967.

The Atomic Energy Basic Law

Contents

- Chapter 1 General Provisions (Arts. 1~3)
- Chapter 2 The Atomic Energy Commission (Arts. 4~6)
- Chapter 3 Atomic Energy Development Institutions (Art. 7)
- Chapter 4 Development and Acquisition of Minerals concerning Atomic Energy (Arts. 8~11)
- Chapter 5 Control over Nuclear Fuel Materials (Arts. 12 and 13)
- Chapter 6 Control over Reactors (Arts. 14~16)
- Chapter 7 Measures for Patented Inventions (Arts. 17~19)
- Chapter 8 Protection from Radiation Hazards (Art. 20)
- Chapter 9 Compensation (Art. 21)
- Supplementary Provisions

Chapter 1

General Provisions

(Objective)

Article 1. The objective of this Law should be to secure energy resources in the future, to achieve the progress of science and technology and the promotion of industries by fostering the research, development and utilization of atomic energy and thereby

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to contribute to the welfare of mankind and to the elevation of the national living standard.

(Basic policy)

Article 2. The research, development and utilization of atomic energy shall be limited to peaceful purposes and performed independently under democratic management, the results therefrom shall be made public to contribute to international cooperation.

(Definitions)

Article 3. The terms of this Law mentioned hereunder shall be construed in compliance with the following definitions:

(i) "Atomic energy" means all kinds of energy released from atomic nuclei in process of nuclear transformation.

(ii) "Nuclear fuel materials" means materials which release a large amount of energy in process of nuclear fission such as uranium, thorium, etc., and which are to be specified by the Cabinet Order.

(iii) "Nuclear source materials" means materials which are raw materials for nuclear fuel materials, such as uranium ore, thorium ore, etc., and which are to be specified by the Cabinet Order.

(iv) "Reactor" means the apparatus wherein nuclear fuel materials are used as fuel, excluding those to be specified by the Cabinet Order.

(v) "Radiation" means electro-magnetic waves or particle rays, which are capable of ionizing air directly or indirectly and which are to be specified by the Cabinet Order.

（昭和四十四年）
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Chapter 2

The Atomic Energy Commission

(Establishment)

Article 4. In the Prime Minister's Office, there shall be established the Atomic Energy Commission for the purposes of carrying out the planned national policies on the research, development and utilization of atomic energy and of realizing the democratic operation of atomic energy administration.

(Functions)

Article 5. The Atomic Energy Commission shall plan, deliberate and decide on the matters related to the research, development and utilization of atomic energy.

(Organization, operation and authority)

Article 6. The matters concerning the organization, operation and authority of the Atomic Energy Commission shall be provided by other law.

Chapter 3

Atomic Energy Development Institutions

(The Atomic Energy Research Institute and the Power Reactor and Nuclear Fuel Development Corporation)

Article 7. In order to conduct the research and experiment on the development of atomic energy and any other necessary matters to promote the development of atomic energy under the supervision of the Government, the Atomic Energy Research Institute, shall be established and in order to conduct the development, etc. concerning the fast breeder and the advanced converter in reactors, nuclear source materials and nuclear fuel materials, the Power

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Reactor and Nuclear Fuel Development Corporation shall be established respectively.

2 The provisions concerning the Atomic Energy Research Institute and the Power Reactor and Nuclear Fuel Development Corporation shall be provided by other law.

Chapter 4

Development and Acquisition of Minerals concerning Atomic Energy

(Special exceptions to the Mining Law)

Article 8. Concerning the mining right or the lease right on nuclear source materials, special exceptions to the provision of the Mining Law (Law No. 289 of 1950) shall be provided by other law.

(Order to purchase or to transfer)

Article 9. The Government may, as provided by other law, order any person to be designated by it to purchase nuclear source materials, or any producer, possessor or caretaker of nuclear source materials to transfer nuclear source materials to any person to be designated by the Government.

(Control over nuclear source materials)

Article 10. The import, export, transfer, receipt and purification of nuclear source materials shall be entrusted, as provided by other law, only to those designated by the Government.

(Bounties, etc.)

Article 11. The Government may grant bounties or awards, within the limit of the budget, to those who contribute to the development of nuclear source materials.

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Chapter 5

Control over Nuclear Fuel Materials

(Regulation concerning nuclear fuel materials)

Article 12. Those who attempt to produce, import, export, possess, hold, transfer, receive, use or transport nuclear fuel materials shall be subject, as provided by other law, to the regulations to be enforced by the Government.

(Order to transfer nuclear fuel materials)

Article 13. In enforcement of the regulations provided in the preceding Article, the Government may, according to the provisions of other law, order those who possess or hold nuclear fuel materials to transfer them by indicating an transferee and price.

Chapter 6

Control over Reactors

(Regulation over construction etc. of reactors)

Article 14. Those who attempt to construct reactors shall be subject to the regulations to be enforced by the Government as provided by other law. The same shall apply also to those who attempt to reconstruct or remove them.

Article 15. Those who attempt to transfer or receive reactors shall be subject to the regulations to be enforced by the Government as provided by other law.

Article 16. Those who have constructed, reconstructed, removed or received reactors in compliance with the regulations stipulated in the preceding two Articles shall, as provided by other law,

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obtain the sanction of the Government for the operation plan prior to their operation.

Chapter 7

Measures for Patented Inventions

(Measures under the Patent Law)

Article 17. The Government, if deemed necessary for the public interest, shall take measures under Article 93 of the Patent Law (Law No. 121 of 1959), with respect to patented inventions relating to atomic energy.

(Restriction of transfer)

Article 18. The conclusion of any contract by which the patented inventions, techniques, etc. relating to atomic energy may be used abroad shall be subject to the regulations to be enforced by the Government as provided by other law.

(Bounties, etc.)

Article 19. The Government may grant bounties or awards, within the limit of the budget, with respect to the inventions under patent applications or the patented inventions relating to atomic energy.

Chapter 8

Protection from Radiation Hazards

(Protective measures from radiation hazards)

Article 20. The regulations on the manufacture, sale, use, measurement, etc. and any other safety and hygienic measures relating to radioactive materials and radiation generating apparatus to protect from radiation hazards and to secure the public safety shall be provided by other law.

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Chapter 9

Compensation

(Compensation)–

Article 21. The Government or any person who shall be designated by it shall pay reasonable compensation on the basis of the provisions of this Law as well as of the laws enforcing this Law if, in the exercise of its or his authority to develop nuclear source materials under respective laws, it or he has inflicted any loss to the owners of rights in lands, mining rights, lease rights or any other rights and to any interested person.

Supplementary Provisions

This Law shall come into force as from Jan. 1, 1956.

THE LAW FOR THE REGULATIONS OF
NUCLEAR SOURCE MATERIAL,
NUCLEAR FUEL MATERIAL
AND REACTORS.

(LAW No.166, JUNE 10, 1957)

原子力局調査国際協力課

第4編 核原料物質、核燃料物質及び原子炉の規制に関する法律

THE LAW FOR THE REGULATIONS OF
NUCLEAR SOURCE MATERIAL, NUCLEAR
FUEL MATERIAL AND REACTORS

(Law No.166. June 10, 1957)

Partially revised by Law No. 161. May 20, 1958.

Law No. 103. Apr. 4, 1959.

Law No. 50. Mar. 31, 1961.

Law No. 147. Jun. 17, 1961.

Law No. 140. May 16, 1962.

Law No. 170. July 11, 1964.

Law No. 78. May 22, 1965.

Law No. 73. July 20, 1967.

Law No. 120. Aug 1, 1967.

Law No. 55. May 20, 1968.

and Law No.53. May 1, 1971.

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Chapter I

General Provision

(Purposes)

Article 1. This Law, in accordance with the spirits of the Atomic Energy Basic Law (Law No. 186, 1955), is enacted for the purposes of providing the necessary regulations on the refining business, the fabricating business and the reprocessing business, and on the establishment and operation of reactors, and on the uses of international controlled material, to execute the agreements or other international arrangements concerning the research, development and use of atomic energy, in order to ensure the peaceful uses of nuclear source material, nuclear fuel material and reactors, the planned uses of nuclear source material, nuclear fuel material and reactors and, at the same time, the public safety by preventing from the accidents thereof.

(Definitions)

Article 2. In this Law, "atomic energy" means atomic energy provided in Article 3 item(i) of the Atomic Energy Basic Law.

2. In this Law, "nuclear fuel material" means nuclear fuel

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the safety regulations.

4. The Power Reactor and Nuclear Fuel Development Corporation, and any employee of it shall observe the safety regulations.

(Chief/technician of nuclear fuel)

Article 51. Any reprocessing undertaker shall, as provided by the Order of the Prime Minister's Office, appoint the chief technician of nuclear fuel among the persons who have a certificate of the chief technician of nuclear fuel as provided in paragraph 1 of the Article 22-3, to make him supervise safety maintenance concerning the operation of reprocessing facilities.

2. The provisions of paragraph 2 of Article 22-2, Article 22-4 and Article 22-5 shall apply mutatis mutandis to the chief technician of nuclear fuel provided in the preceding paragraph.

Chapter VI

Regulations Concerning Use, Etc. of
Nuclear Fuel, Etc.

(Permission of use)

Article 52. Any person who wishes to use nuclear fuel material shall, as provided by the Cabinet Order, obtain the Prime Minister's permission; provided that this provision shall not apply to one of the cases coming under the following sub-paragraphs;

(1) When a refining undertaker (including the Power Reactor and Nuclear Fuel Development Corporation in case

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of undertaking refining business, hereinafter apply to the matters except Article 65 and Article 66) use unclear fuel material for refining business,

(ii) When A fabricating undertaker use nuclear fuel material for fabricating business,

(iii) When a reactor establisher use nuclear fuel material as fuel in reactors,

(iv) When a reprocessing undertaker use nuclear fuel material for reprocessing business,

(v) When nuclear fuel material is used in the kinds and quantity provided by the Cabinet Order.

2. Any person who wishes to obtain the permission under the preceding paragraph shall present to the Prime Minister an application from containing the following items,

(i) The name and the address and, in case of a juridical person, the name of its representative,

(ii) The purpose and method of use,

(iii) The kinds of nuclear fuel material,

(iv) The place where nuclear fuel material is used,

(v) The estimated period of use and the estimated quantity to be used in a year (in case where the estimated period is less than a year, the estimated quantity in that estimated period),

(vi) The method of disposition of spent fuel,

(vii) The location, structure and equipment of facilities in which nuclear fuel material is to be used (hereinafter referred to as "using facilities",

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(viii) The location, structure and equipment of facilities in which nuclear fuel material is to be stored (hereinafter referred to as "storing facilities").

(ix) The location, structure and equipment of facilities to dispose of nuclear fuel material or material contaminated by nuclear fuel (hereinafter referred to as "disposing facilities").

(Basis for the permission)

Article 53. When an application for the permission under paragraph 1 of the preceding Article is rendered, the Prime Minister shall not give the permission unless he recognizes that the application comes under each of the following item;

(i) That nuclear fuel material will not be used for nonpeaceful purposes.

(ii) That the permission will cause no hindrance to the planned research, development and utilization of atomic energy,

(iii) That the location, structure and equipment of using facilities, storing facilities and disposing facilities (hereinafter referred to as "using facilities etc.") are such that they will cause no hindrance to prevent from accidents by nuclear fuel or material contaminated by nuclear fuel.

(iv) That the applicant has technical ability sound enough to use nuclear fuel material competently.

(Ineligibility for the permission)

Article 54. No person who comes under one of the fol-

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lowing items will be given the permission under Article 52 paragraph 1;

(i) A person whose permission under Article 52 paragraph 1 has been cancelled, as provided in the provisions of Article 56, and for whom two years have not yet elapsed from the day of the cancellation,

(ii) A person who has been condemned to the penalty heavier than the fine for violation of the provisions of this Law or the Orders based on this Law, and for whom two years have not yet elapsed after having executed or suspended to execute the penalty,

(iii) A legally incompetent person,

(iv) A juridical person, any of whose executed officials comes under one of the preceding items.

(Permission and report of the change)

Article 55. When a person who has obtained the permission under Article 52 paragraph 1 (hereinafter referred to as "users") wishes to change any matter provided in paragraph 2 items (ii), (iii), (iv), (vii), (viii) or (ix) of the said Article, he shall obtain the permission of the Prime Minister, as provided by the Cabinet Order.

2. When a user has changed any matter provided in Article 52 paragraph 2 item (i) or (v), he shall report the change to the Prime Minister within thirty days of the day of being changed.

3. The provision of Article 53 shall apply mutatis mutandis to the permission under paragraph 1.

(Inspection of facilities)

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Article 55-2. Any user shall not use the using facilities etc. for nuclear fuel material provided by the Cabinet Order before having submitted the construction work to the inspection of the Prime Minister and having passed, as provided by the Order of the Prime Minister's Office. This shall also apply to the alteration of them.

2. The inspection provided in preceding paragraph is considered as passed when the construction work of using facilities etc. conforms to the technical basis provided by the Order of the Prime Minister's Office.

(Cancellation of the permission, etc.)

Article 56. When a user comes under one of the following items, the Prime Minister may cancel the permission under Article 52 paragraph 1, or may order the suspension of the use of nuclear fuel material for a period not exceeding one year;

(i) When a user comes under one of the items (ii), (iii) and (iv) of Article 54,

(ii) When he has changed the item for which he should have obtained the permission as provided in the provisions of paragraph 1 of the Article 55. without the permission.

(iii) When he has violated the provision of paragraph 1 or 4 of Article 56-3, or the order provided in paragraph 3 of the said Article,

(iv) When he has violated the technical basis provided in the Article 57, 58, 59 and 60.

(v) When he has violated the conditions of Article

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62 paragraph 1 or 2.

(vi) When he has violated the provisions of Article 6 of the Nuclear Liability Law.

(Records)

Article 55-2. Any user shall, as provided by the Order of the Prime Minister's Office, record the item provided by the Order of the Prime Minister's Office concerning use of nuclear fuel material and keep this record at the factory or in the place of business.

(Safety regulations)

Article 55-3. When any user uses nuclear fuel material defined by the Cabinet Order, he shall, as provided by the Order of the Prime Minister's office, lay down regulations and obtain the sanction of the Prime Minister before starting use of nuclear fuel material. This shall also apply to the alteration of it.

2. The Prime Minister shall not give the sanction under the preceding paragraph, when he deems the safety regulations is not sound enough to prevent from accidents by nuclear fuel material or material contaminated by nuclear fuel material.

3. The Prime Minister may order any user to alter its safety regulations, when he deems it necessary to prevent from accidents by nuclear fuel material or material contaminated by nuclear fuel material.

4. Any user and employee of it shall observe the safety regulations.

(Basis of the use)

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Article 57. Any user when he uses nuclear fuel material, shall do so in accordance with the technical basis provided by the Order of the Prime Minister's Office.

(Basis of the disposal)

Article 58. Any user when he disposes of nuclear fuel material or material contaminated by nuclear fuel material, shall do so in accordance with the technical basis provided by the Order of the Prime Minister's Office.

(Basis of the transportation)

Article 59. Any user or person who is entrusted with transportation by a refining undertaker, a reprocessing undertaker, a fabricating undertaker, a reactor establisher or a user shall, when he is to transport nuclear fuel material (excluding the transportation by vessel or aircraft), do so in accordance with the technical basis provided by the Order of the Prime Minister's Office (in case of transportation by railway, track line, cableway, trackless trolley car, automobiles and light vehicles; the Order of the Minister of Transportation).

(Basis of the storage)

Article 60. Any user or person who is entrusted with storage, by a refining undertaker, a reprocessing undertaker, a fabricating undertaker, a reactor establisher or a user shall, when he is to store nuclear fuel material, do so in accordance with the technical basis provided by the Order of the Prime Minister's Office.

(Restrictions on the transfer and receipt)

Article 61. Nuclear fuel material shall not be transfer-

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red or received, except in case coming under one of the following items; provided that this shall not apply to the case where the Government receives or transfers nuclear fuel material, or where nuclear fuel material is received from the Government in accordance with the international arrangement;

(i) Where a refining undertaker transfers nuclear fuel material to a fabricating undertaker, a reactor establisher a reprocessing undertaker, a user or other refining undertaker, or receives it from them.

(ii) Where a fabricating undertaker transfers nuclear fuel material to a refining undertaker, a reactor establisher, a reprocessing undertaker, a user or other fabricating undertaker, or receives it from them,

(iii) Where a reactor establisher transfers nuclear fuel material to a refining undertaker, a fabricating undertaker, a reprocessing undertaker, a user or other reactor establisher, or receives it from them,

(iv) Where a reprocessing undertaker transfers nuclear fuel material to a refining undertaker, a fabricating undertaker, a reactor establisher, a user or other reprocessing undertaker, or receives it from them,

(v) Where a user transfers nuclear fuel material to a refining undertaker, a fabricating undertaker, a reactor establisher, a reprocessing undertaker or other user, or receives nuclear fuel material of the kinds for which the permission is provided in Article 55 paragraph 1 (including the permission provided in Article 55

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paragraph 1).

(vi) Where a refining undertaker, a fabricating undertaker, a reactor establisher, a reprocessing undertaker or a user transfers or receives nuclear fuel material of the kinds and the quantity defined by Cabinet Order provided in Article 52 paragraph 1 item (v), or such nuclear material is received from them or transferred to them,

(vii) Where a refining undertaker, a fabricating undertaker, a reactor establisher, a reprocessing undertaker or a user exports or imports nuclear fuel material,

(viii) Where nuclear fuel material is transferred or received, as provided in the order based on the provisions of Article 66 paragraph 1,

(ix) Where nuclear fuel material is transferred by the order provided in Article 61-8.

(Report of the use of nuclear source material)

Article 61-2. Any person who wishes to use source material shall, as provided by the Cabinet Order, before hand report to the Prime Minister; provided that this shall not apply to one of the cases coming under the following items;

(i) Where a refining undertaker uses nuclear source material for refining business,

(ii) Where a person who obtained a permission provided by the paragraph 1 of next Article, use nuclear source material which is international controlled material for the permitted purpose,

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(iii) Where source material whose radio activity or quantity of thorium or uranium does not exceed the limit provided by the Cabinet Order, is used,

2. Any person who wishes to report as provided by the preceding paragraph, shall present the document containing the following items;

(i) The name and the adress and, in case of a juridical person, the name of its representative,

(ii) The purpose and method of use,

(iii) The kinds of nuclear source material,

(iv) The place where nuclear source material is used,

(v) The estimated period of use and the estimated quantity to be used in a year (in case where the estimated period is less than a year, the estimated quantity in that estimated period),

(vi) The general description of the location, structure and equipment of facilities in which nuclear source material is to be used,

3. Any person who made the report based on paragraph 1 (hereinafter referred to as "user of nuclear source material"), in the case where any change of items of preceding paragraph occurs, shall report without delay to the Prime Minister, as provided by the Cabinet Order.

4. Any user of nuclear source material when he uses nuclear source material (except the use provided by (i) or (iii) of paragraph 1, this shall apply to the next paragraph), shall do so in accordance with the technical basis provided by the Order of the Prime Minister's

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Office.

5. The Prime Minister may order any person who uses the nuclear source material to correct in order to meet the basis, when he deems that the use of nuclear source material does not meet the basis under the preceding paragraph.

6. Any user of nuclear source material shall, as provided by the Order of the Prime Minister's Office, record the items provided by the Order of the Prime Minister's Office concerning use of nuclear source material and keep this record at the factory or in the place of business.

Chapter VI-2

Control Concerning the Uses of International

Controlled Material

(Permission and report of the use)

Article 61-3. Any person who wishes to use international controlled material shall, as provided by the Cabinet Order, obtain the Prime Minister's Permission; provided that this shall not apply to one of the cases coming under the following items;

(i) When a refining undertaker use international controlled material for refining business,

(ii) When a fabricating undertaker use international controlled material for fabricating business,

(iii) When the Japan Atomic Energy Research Institute and a reactor establisher use international controlled material to establish or operate reactors,

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(iv) When a user uses international controlled material for the use defined under the permission of Article 52 the paragraph 1.

2. Any person who wishes to obtain the permission under the preceding paragraph shall present to the Prime Minister an application from containing the following items;

(i) The name and the address, and in case of a juridical person, the name of its representatives,

(ii) The purpose and method of use,

(iii) The kinds and quantity of international controlled material,

(vi) The place where international controlled material is used,

(v) The estimated period of use.

(iv) When a reprocessing undertaker use international controlled material for reprocessing business,

3. Any person who wishes to obtain the permission under paragraph 1 shall append papers stating the items under (vi) paragraph 3 in the preceding Article together with the application form under the provided that preceding paragraph; this shall not apply to the case under (iii) paragraph 1 in the said Article.

4. when any person (except the PNC under (i) paragraph 1) comes under one of the items of paragraph 1, he shall report beforehand, as provided by the Order of the Prime minister's Office (by the Order of the Prime Minister's Office and the Ministry of International Trade

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and Industry in the case under (i) of the said paragraph), the type, quantity and estimated period of use of the international controlled material to the Prime Minister (to the Prime Minister and Minister of International Trade and Industry in the case under (i) of the said paragraph).

(Ineligibility for the permission)

Article 61-4. No person who comes under one of the following items will be given the permission under 1 paragraph 1 of preceding Article;

(i) A person whose permission under paragraph 1 of preceding Article has been cancelled, as provided in the provision of Article 61-6, and for whom two years have not yet elapsed from the day of the cancellation,

(ii) A person who has been condemned to the penalty heavier than the fine for violation of the provisions of this Law or the Orders based on this Law, and for whom two years have not yet elapsed after executed or suspended to executive the penalty,

(iii) A legally incompetent person.

(iv) A juridical person, any of whose executive officials comes under one of the preceding items,

(Report of the change)

Article 61-5. When a person who has obtained the permission under Article 61-3 paragraph 1 (hereinafter referred to as "user of international controlled material") wishes to change any matter provided in items (ii) (iii) or (iv) of the said Article paragraph 2, he shall in advance

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report the change to the Prime Minister, as provided by the Order of the Prime Minister's Office.

2. When a user of international controlled material has changed any matter provided in items(i) or(v) of Article 61-2 paragraph 2, he shall report the change to the Prime Minister within thirty days of the day of being changed.

(Cancellation of the permission, etc.)

Article 61-6. When a user of international controlled material comes under one of the following items, the Prime Minister may cancel the permission under Article 61-3 paragraph 1, or may order the suspension of use of international controlled material for a period not exceeding one year;

(i) When a user comes under one of the items (ii), (iii) and (iv) of Article 61-4

(ii) When a user changed the items for which he should have reported as provided in the paragraph 1 of the preceding Article, without making a report,

(iii) When a user violated the provision of the paragraph 2 of Article 62,

(Records)

Article 61-7. Any user of international controlled material shall, as provided by the Order of the Prime Minister's Office, record the items provided by the Order of the Prime Minister's Office concerning use of international controlled material, and keep this record at the factory or the place of business.

(Order to return, Etc.)

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Article 61-8. The Prime Minister may order a user of international controlled material to return or transfer international controlled material when it comes under one of the following items;

(i) When the international arrangement is superseded, expired or terminated,

(ii) When any government of the state(including the international agency, and this is also the same in the following), which has supplied international controlled material, exercises the option to purchase in accordance with the international arrangement.

Chapter VIII

Miscellaneous Provisions

(Conditions of the authorization the permission)

Article 62. The conditions may be attached to the authorization or the permission provided by this Law, except in the case under the following paragraph.

2. The limitation of use or transfer of international controlled material, or other conditions necessary to exercise the international arrangements, may be attached to the authorization provided in Article 3 paragraph 1, or the permission provided in Article 13 paragraph 1, Article 23 paragraph 1, Article 52 paragraph 1 or Article 61-3 paragraph 1.

3. The conditions of the preceding two paragraph shall be confined to the minimum necessary to ensure the enforcement of the items concerning the authorization or

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2. Loading Inspection Standards for Ships Carrying Nuclear Fuel Materials

With regard to transportation of nuclear fuel materials by ship, Sub-section 1 of Section 129 of the Regulations on Marine Transport and Storage of Hazardous Materials makes it mandatory for the captain of the ship to receive a loading inspection.

This inspection is to be carried out by the public interest body (Japan Maritime Inspection Association) which is approved by the Chief of the Maritime Bureau or Minister of Transport. Because of the special nature of nuclear fuel materials, there is a need to establish appropriate inspection standards to facilitate the inspector's job.

The following is a review of the various laws and regulations which affect transportation of nuclear fuel materials, definitions of nuclear fuel materials, equipment inspection procedures, containers to be used, materials to be transported, loading methods, stevedoring methods, and procedures used for prevention of radiation hazards.

2.1 Laws and Regulations Relative to the Transport of Nuclear Fuel Materials

There is a diversity of laws and regulations which affect the manufacture, use, handling, and transport of nuclear fuel materials. The following is an outline of those laws and regulations which are concerned with the transport of these materials. In reviewing these laws and regulations, however, one should keep in mind that some of them will be revised in the near future.

2.1.1. Domestic Laws and Regulations

(1) Fundamental Law on Atomic Energy (1955 Law#186)

Limiting the use of atomic energy for peaceful purposes, the Law prescribes the basic conditions for research, development, and use of atomic energy. Section 12 contains regulations on transport of nuclear fuel materials.

(2) Law on Nuclear Fuel Materials, Nuclear Materials, and Nuclear Reactor (1957 Law #166)

In accordance with the spirit of the Fundamental Law on Atomic Energy, the Law prescribes regulations on the use of nuclear materials, nuclear fuel materials, and nuclear reactor

in order to prevent accidents. Section 59 of the Law contains regulations on the transport of nuclear fuel materials.

1 Regulations on the Use of Nuclear Fuel Materials
(1957 Prime Minister's Office Ordinance 84)

In accordance with the provisions of the Law on Nuclear Materials, Nuclear Fuel Materials, and Nuclear Reactor, and its enforcement ordinance (1957 Government Ordinance #324), the Regulations prescribe rules for the enforcement of the Law and the Ordinance. Section 5 prescribes technical standards for transporting nuclear fuel materials.

2 Regulations on the Use of Nuclear Materials (Source Materials)
(1968 Prime Minister's Office Ordinance 46)

In accordance with the provisions of the same law and ordinance as in 1, the Regulations prescribe rules for the enforcement of the Law and Ordinance. Paragraph 12 of Section 2 prescribe technical standards for transporting nuclear materials.

3 Regulations on Vehicular Transport of Radioactive Materials
(1958 Ministry of Transport Ordinance 16)

In accordance with the provisions of Section 59 of the Law on Nuclear Materials, Nuclear Fuel Materials and Nuclear Reactor, and Section 18 of the Law to Prevent Radiation Hazards from Radioactive Isotope, the Regulations prescribe rules on the transport of radioactive materials by vehicle (railway, track, trackless, cable, trackless tram, motor vehicle and light vehicle).

(3) Law on Prevention of Radiation Hazards from Radioactive Isotope
(1957 Law #167)

In accordance with the spirit of the Fundamental Law on Atomic Energy, the Law prescribes regulations on the use, sale, and handling of radioactive isotope to prevent radiation hazards. Section 18 prescribes transport standards.

1 Regulations Relative to the Enforcement of the Law on Prevention of Radiation Hazards from Radioactive Isotope
(1960 Prime Minister's Office Ordinance 56)

In accordance with the provisions of the Law on Prevention of Radiation Hazards from Radioactive Isotope and its enforcement ordinance (1960 Government Ordinance #259), the Regulations prescribe rules for enforcing the Law. Section 18 prescribes technical standards for non-vehicular transport of radioactive isotope.

(4) Aviation Act (1952 Law #231)

With regard to the transport of hazardous materials by aircraft, Section 86 of the Act prohibits air transport of certain types of explosives.

1 Regulations Relative to the Enforcement of the Aviation Act (Ministry of Transport Ordinance 36)

Sub-section 1 of Section 194 lists the types of explosives which are prohibited by Section 86 of the Aviation Act. The Regulations also provide that the transport of other types of explosives should be done in accordance with the transport standards prescribed by the Ministry of Finance Notification (1964 Notification No. 298 of the Ministry of Finance).

(5) Ships Safety Act (1933 Law #11)

The Act prescribes safety standards for ships and freight. Section 28 stipulates that necessary rules will be established by a decree on the transport and storage of hazardous materials and prevention of dangers during navigation.

1 Regulations on Marine Transport and Storage of Hazardous Materials (1957 Ministry of Transport Ordinance 30)

In accordance with the provisions of Section 28 of the Ships Safety Act, the Regulations prescribe detailed standards for marine transport and storage of hazardous materials. Paragraph 1 of Chapter 1 (Section 87 to Sub-section 2 of Section 91) prescribes transport standards for nuclear fuel materials.

(6) Harbor Act (1947 Law #174)

The purpose of the Act is to regulate the handling of hazardous materials in the harbor in order to assure the safety and orderly passage of ships in the harbor. Sections 21 to 23 prescribe regulations concerning handling of ships with hazardous materials.

1 Regulations Relative to the Enforcement of the Harbor Act (1948 Ministry of Transport Ordinance 29)

In accordance with the provisions of Sections 21 to 23 of the Harbor Act, Sections 12 to 14 of the Regulations describe types of hazardous materials and methods of handling them.

2.1.2. Safety Standards for Transport of Radioactive Materials (1975 Atomic Energy Commission)

Although this is not a law, it prescribes standards for container design, testing and transport of radioactive materials and contaminated materials in accordance with the IAEA regulations.

2.1.3. International Agreements, and Foreign Laws and Regulations

(1) IAEA Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition

IAEA (International Atomic Energy Agency) has established regulations concerning container design, testing and transport of radioactive materials and contaminated materials in order to protect the people involved, goods and environment from radiation. Each country has, in turn, enacted its own regulations in accordance with the IAEA regulations.

The first edition of the IAEA Regulations was published in 1961, and the Regulations were revised subsequently in 1964, 1967, and 1973.

(2) IMCO International Maritime Dangerous Goods Code

At the SOLAS (Safety of Life at Sea) Treaty Conference in 1960, basic rules for transport of hazardous materials by ship were established and included in the Chapter 7 of the Treaty. Furthermore, the same Conference through its Recommendation #56 proposed that international uniform agreement should be established regarding marine transport of hazardous materials. Thus, IMCO established IMDG Code in accordance with the recommendations submitted by the Technical Committee of the Economic and Social Council of the United Nations. With regard to transport of radioactive materials (Class 7), however, regulations were established in accordance with the IAEA Regulations rather than the United Nations' recommendations. Regulations of Class 7 materials in the IMDG Code were completely revised in 1975 in accordance with the 1973 edition of the IAEA Regulations.

(3) Code of Federal Regulations, Title 49 - Transportation of Hazardous Materials Regulations

The Code prescribes uniform standards for transport of hazardous materials by air, sea and land. The Code was revised and put in effect on January 1, 1977. However, those regulations which deal with transport of radioactive materials are the same as the old ones - they were established in

accordance with the 1967 edition of IAEA Regulations.

(4) The Merchant Shipping (Dangerous Goods) Rules - England

The Rules prescribe regulations on transport of dangerous goods by ship, which were taken completely from IMCO IMDG Code. Furthermore, the regulations on transport of radioactive materials are exactly the same as those contained in IMDG code, which was, in turn, established in accordance with the 1973 edition of IAEA Regulations.

nuclear materials (nuclear source materials)

Korea

1. Short introduction.

The basic law is the Atomic Energy Law of 1958 (Appendix K-13). Principal regulations governing spent fuel cover safety measures, duties of reactor operators, and much handling of fissionable materials (Appendix K-9, 11,12). Third-party liability is governed by four separate Decrees (Appendix K-4,5,6,7). Providing for safeguards of spent fuel are the Non-Proliferation Treaty and its related bilateral agreement with IAEA (Appendix K-15). The latter agreement suspends safeguards provisions formerly in effect with the U.S. and France (Appendix K-1,2,3), but those with Canada are still in effect (Appendix K-14).

2. List of relevant laws and regulations.

- K-1 Agreements between IAEA, Korea and France for the Application of Safeguard, Sept. 22, 1975, U.N.T.S..
- K-2 Agreement for Application of Safeguards, Jan. 5, 1968, IAEA-Korea-U.S., 19 U.S.T. 4404, T.I.A.S. 6435.
- K-3 Amendment to Safeguards Agreement, Nov. 30, 1972, IAEA-Korea-U.S., 24 U.S.T. 829, T.I.A.S. 7584.
- K-4 Law No. 7755 of Feb. 22, 1975, The Presidential Decree on the Law of Indemnity Agreement for Compensation of Nuclear Damage.

- K-5 Law No. 2764 of April 7, 1975, The Law of Indemnity Agreement for Compensation of Nuclear Damage.
- K-6 Law No. 5396 of Dec. 3, 1970, as last amended by Law No. 7756 of Aug. 22, 1975, The Presidential Decree on the Nuclear Damage Compensation Law.
- K-7 Law No. 2094 of Jan. 24, 1969, as amended by Law No. 2765 of April 7, 1975, The Nuclear Damage Compensation Law.
- K-8 Ordinance Concerning the Control of Radio Isotopes and Safeguards Against Radiation Hazards due to Radio Isotopes in Korea, Presidential Decree (P.D.) No. 4806 (March 3, 1970, as last amended by P.D. No. 6708 May 25, 1973).
- K-9 Regulations Concerning Handling of Nuclear Fissionable Materials and Source Material, and Concerning the Related Facilities Thereto, P.D. No. 5494 (Jan. 22, 1971), amended by P.D. No. 6709 (May 25, 1973).
- K-10 Enforcement Regulation of Decree on Installation, Operation and Management, etc. of Nuclear Reactor, Prime Ministerial Decree (P.M.D.) No. 89 (June 2, 1970) as last amended by P.M.D. No. 145 (Feb. 28, 1975).
- K-11 Regulations Concerning Technical Standards and Safety Measures, etc. of Nuclear Reactor. P.D. No. 5493 (Jan. 22, 1971), amended by P.D. No. 6702 (May 25, 1973).

- K-12 Regulations Concerning the Installation, Operation, and Management, etc., of a Nuclear Reactor. P.D. No. 4055 (Sept. 10, 1969), as last amended by P.D. No. 7402 (Dec. 3, 1974).
- K-13 Atomic Energy Law, Law No. 483 (Mar. 11, 1958), as last amended by Law No. 2602 (Mar. 12, 1973).
- K-14 Agreement for Cooperation, January 1976, Korea-Canada, U.N.T.S..
- K-15 Agreement for the Application of Safeguards in Connection with the NPT, Oct. 31, 1975, IAEA-Korea, U.N.T.S..
- K-16 Pollution Prevention Law, No. 2305, Jan 22, 1971.

3. Text of principal laws and treaties.

- K-13 Atomic Energy Law, Law No. 483 (Mar. 11, 1958), as last amended by Law No. 2602 (Mar. 12, 1973).

ATOMIC ENERGY LAW

Ministry of Science and Technology

ATOMIC ENERGY LAW

Law No. 483 Promulgated on March 11, 1958
As amended by Law No. 735 on October 2, 1961
As amended by Law No. 1537 on December 16, 1963
As amended by Law No. 1615 on December 16, 1963
As amended by Law No. 1833 on August 3, 1966
As amended by Law No. 1948 on March 30, 1967
As amended by Law No. 2093 on January 24, 1969
As amended by Law No. 2444 on January 15, 1973
As amended by Law No. 2602 on March 12, 1973

CHAPTER I. GENERAL PROVISIONS

Article 1 (Purpose)

The purpose of this law is to provide the fundamental matters pertaining to the research, development, production and control of atomic energy (hereinafter referred to as "utilization of atomic energy") for the advancement of scientific knowledge and industrial development, and thereby to contribute to the betterment of the nation's living standard and to the welfare of human society.

Article 2 (Definition)

Terminology used in this law shall refer to such meanings as are defined herewith:

1. Atomic energy shall mean all energy emitting from an atom nucleus in the process of nuclear reaction.

Article 17 (Mining Right)

Matters relating to the right to mine fissionable source materials shall be separately provided by a law.

Article 18 (Permit for Handling of Fissionable Materials etc.)

Paragraph 1. The acquisition, production, import, export, possession, purchase or sale, control and management, and other acts of handling of the fissionable materials, fissionable source materials, and radioisotopes shall be limited to such persons as designated or licensed by the Minister of Science and Technology.

(Amended by Law Nos. 1948 and 2444)

Paragraph 2. Any particulars necessary for designation or licensing mentioned in the preceding paragraph shall be provided for in the Presidential Decree.

(Amended by Law No. 1537)

Article 19 (Expropriation and Transfer of Fissionable Materials, etc.)

Paragraph 1. Government may, in accordance with the provisions of separate law, expropriate the producers, owners and custodians of fissionable materials, fissionable source materials and

radioisotopes from their rights thereof, or may cause them to transfer their rights to the persons as designated by the Minister of Science and Technology.

(Amended by Law Nos. 1948 and 2444)

Paragraph 2. In case of the preceding paragraph, a considerable amount of compensation shall be made to the right holders.

CHAPTER V. CONTROL OF NUCLEAR REACTORS AND RELATED ATOMIC ENERGY FACILITIES

Article 20 (Handling etc., of Nuclear Reactors and Related Facilities)

Paragraph 1. The acquisition, production, import, export, construction, possession, purchase and sale, control and operation of the nuclear reactors and other related atomic energy facilities shall be limited to such persons as designated or licensed by the Minister of Science and Technology.

(Amended by Law Nos. 1948 and 2444)

Paragraph 2. The particulars necessary for designation or licensing mentioned in the preceding paragraph shall be determined by Presidential Decree.

(Amended by Law No. 1537)

Article 20-2 (Inspection of Nuclear Reactors and Atomic Energy Related Facilities)

Paragraph 2. Matters necessary for the criteria mentioned in the preceding paragraph shall be determined by Presidential Decree.

(Amended by Law No. 1537)

Article 25 (Criteria For Handling of Radioisotopes)

Paragraph 1. Persons who produce or use the radioisotopes shall comply with the technical and operational criteria with respect to location ~~arrangement~~, structure, distribution, transportation storage, use, disposal, control, and/or the related facilities of said radioisotopes.

Paragraph 2. Particulars necessary for the criteria mentioned in the preceding paragraph shall be determined by Presidential Decree.

(Amended by Law No. 1537)

Article 26 (Restriction in Hiring Employees for Handling of Radioisotopes etc.)

No person shall hire any person under eighteen years of age to handle radioisotopes or materials contaminated with radioisotopes, or to control, utilize or handle nuclear reactors or radiation generating devices.

(Amended by Law No. 1537)

Article 27 (Prevention of Accident and Theft etc.)

Paragraph 1. In case accidents have occurred in the course of handling nuclear reactors, radioisotopes, or radiation generating devices, or in case any fissionable materials, radioisotopes, and other materials, machines and appliances which were radioactively contaminated become mislaid or stolen, the responsible manager or user shall without delay report such matters to the Minister of Science and Technology, and shall take the measures necessary for prevention of the dangers.

(Amended by Law Nos. 1537 and 2444)

Paragraph 2. The particulars necessary for the foregoing paragraph shall be provided for in Presidential Decree.

(Amended by Law No. 1537)

Article 27-2 (Restricted Area for Residence, etc.)

Paragraph 1. In case the State or a corporation established pursuant to special law has installed nuclear reactors or radiation generating facilities for experimental or research use, the State or the corporation may establish the restricted area to the extent necessary for safeguards against hazards to human bodies, materials and public facilities and interests.

Paragraph 2. The orders may be issued to restrict general public's access to and residence in the said restricted area mentioned in the preceding paragraph.

Paragraph 3. The particulars necessary for the scope of the restricted area mentioned in the paragraph 1 and for restriction on access and residence mentioned in paragraph 2 shall be determined by Presidential Decree.

Paragraph 4. Due compensation shall, in accordance with the provisions of Presidential Decree, be paid for the damages caused by the restrictions mentioned in paragraph 2 in the restricted area mentioned in paragraph 1.

(Newly established by Law No. 2602)

Article 28 (License to Person Handling Nuclear Reactors)

Person who handles nuclear reactors or radioisotopes, or person who supervises such persons shall be required to obtain license in accordance with the provisions of Presidential Decree. (Amended by Law No. 1537).

CHAPTER VIII. REMUNERATIONS

Article 29. (Allowances and Pension to Public Officials Relative to Atomic Energy)

Paragraph 1. Public officials who are engaged in the research, utilization and practical works relating to atomic energy or radioisotopes, may receive such allowances for research, dangers, services, and health as pension, in addition to the remuneration and allowances paid in accordance with the Public Officials Law.

Paragraph 2. The particulars necessary for the foregoing paragraph shall be determined by Presidential Decree (Amended by Law No. 1537).

Article 30 (Compensation for Bodily Injury)

Persons who have suffered physical injury from radiation in the course of utilization of atomic energy, shall receive compensatory payments as determined by the Presidential Decree.

(Amended by Laws No. 1537 and 2098)

CHAPTER IX. PENAL PROVISIONS

Article 31

Persons who have violated the provision of Article 10 shall be punished by penal servitude or imprisonment of not more than 10 years.

(Amended by Law No. 2444)

Article 32

Persons who have violated the provisions of Article 13, Article 20, Articles 24 through 27, and Article 28, or persons who have refused or obstructed the inspection provided under Article 20-2 shall be punished by penal servitude or imprisonment of less than two years, or by suspension of qualification for less than five years, or by the fines of less than 5000,000.

(Amended by Laws No. 2093/and 2602)

Article 32-2

Persons who have refused or evaded the order of restriction on access or residence stipulated under paragraph 2 of Article 27-2, shall be punished by penal servitude of less than one year or by the fines of \$300,000 or less.

(Newly established by Law No. 2602)

Article 33

Paragraph 1. Persons who have inflicted harm upon lives or bodies of others as a result of improper operation of nuclear reactors, radiation generating devices, fissionable materials, and other atomic energy related materials, shall be punished by penal servitude or imprisonment of three years or less.

(Amended by Laws No. 1537 and 2093)

Paragraph 2. Persons who have caused the death of others by committing the crimes mentioned in the preceding paragraph shall be punished by the penal servitude of one year or more.

Article 34 (Destruction of Nuclear Reactors)

Paragraph 1. Persons who have destroyed nuclear reactors, and thus have inflicted harm upon the lives, bodies and/or properties of other persons, and/or have disturbed the public peace, shall be punished by death or by penal servitude for life or for three years or more.

Luxemburg

1. Short introduction.

The basic laws of Luxemburg are listed in the next section. These are generally not available in English. The OECD publication is available in English.

Included in the Appendix is an informal translation of the proposed agreement between Luxemburg and Germany concerning the nuclear power plant at Remerschen.

2. List of the relevant laws and regulations.

- L-1 Act of March 25, 1963, Concerning the Protection of the Public against the Hazards of Ionizing Radiation O.G. [Official Gazette] April 10, 1963.
- L-2 Grand Ducal Regulation of March 27, 1964 O.G. April 23, 1964.
- L-3 Grand Ducal Regulation of February 8, 1967, O.G. March 8, 1967.
- L-4 Agreement between Luxemburg and Germany concerning Nuclear Power Plant at Remerschen.
- L-5 OECD/NEA, Regulations Governing Nuclear Installations and Radiation Protection, Nuclear Legislation Analytical Study, pp. 283-299 (1972).

3. The text of principal laws and treaties.

- L-4 Agreement between Luxemburg and Germany concerning Nuclear Power Plant at Remerschen.

Agreement between the Government of the Federal Republic of Germany and the Government of the Grand-Duchy of Luxemburg on equal treatment of the Nuclear Power Plant at Remerschen and the German nuclear reactors under aspects of the management of spent nuclear fuel elements, safety, and environmental protection measures.

Whereas

the Government of the Grand-Duchy of Luxemburg intends to erect a nuclear power plant under the responsibility of the Societe Luxembourgeoise d'Energie Nucleaire S.A. (SENU) in cooperation with the Rheinisch-Westfaelisches Elektrizitaetswerk A.G. (RWE);

the nuclear power plant will be operated as part of the European electric grid;

Luxemburg does not have the facility to employ a reprocessing center of its own;

the Nuclear Power Plant Remerschen will contribute to the safe energy supply for both countries;

now, therefore,

the two parties have agreed as follows:

Article 1

The Government of the Federal Republic of Germany and the Government of the Grand-Duchy of Luxemburg hereby agree that there shall be equal treatment between the Nuclear Power Plant Remerschen and comparable German nuclear power plants regarding safety measures as well as safeguarding measures during the construction, operation and decommissioning under safety aspects as well as aspects of protection of the environment and radiation protection.

Article 2

The Government of the Grand-Duchy of Luxemburg will not issue an operating license unless the Grand-Duchy of Luxemburg has signed the Paris Convention of July 20, 1960 and the Addendum to this Agreement of January 31, 1963, and furthermore has given assurance that liability goes beyond the amount mentioned in these liability conventions up to a current maximum of the equivalent of DM 500 million.

Article 3

The Government of the Federal Republic of Germany gives equal treatment to the Nuclear Power Plant at Remerschen and the equivalent German nuclear power plants regarding the reprocessing of spent nuclear fuel elements as well as the final disposal of nuclear waste originating from the reactor.

Article 4

The parties will provide for the harmonization of the monitoring program covering emission of the Nuclear Power Plant at Remerschen during the erection and the operation between the involved companies.

Article 5

Both parties oblige themselves for mutual assistance in the case of nuclear incidents at the Power Plant Remerschen.
In case of accidents which might have an impact on the external environment, the two parties oblige themselves to provide the facilities for immediate information of the responsible authorities.

Article 6

Articles 1, 2 and 5 do equally apply for the transport of nuclear fuel elements.

Article 7

The Government of the Grand-Duchy of Luxemburg obliges itself to approve any license for the export of electric power from SENU to RWE into the Federal Republic of Germany under the existing laws and regulations.
The Government of the Federal Republic of Germany obliges itself to approve any license for the export of electric power from RWE to SENU into the Grand-Duchy of Luxemburg under the existing laws and regulations.

Article 8

The Agreement shall also apply to Land Berlin, provided that the Government of the Federal Republic of Germany has not made a contrary declaration to the Government of the Grand-Duchy of Luxemburg within three months from the date of entry into force of this Agreement.

Article 9

Any difference in opinion between the two parties regarding the interpretation and implementation of this Agreement shall be settled in mutual agreement, as far as possible. If such a difference of opinion can not be resolved, it will be presented to a court of arbitration at the request of one of the parties.
The court of arbitration will be formed on a case-by-case basis in such

a way that each of the parties appoints a representative, these two representatives appoint a foreman, who must be citizen of a third country.

Should the arbitrators and the foreman not have been appointed within two months after the request, each of the parties is entitled to ask the President of the European Court to make the necessary appointments. In case of absence of the President, the most senior chamber president will make the appointments.

The court of arbitration will reach its decision by majority. Its decisions are binding for the parties. The salary of the arbitrators and the foreman and the other costs arising from the court activities will be covered by the two parties in equal parts. All other procedures will be determined by the court itself.

Article 10

This Agreement will enter into force as soon as the parties have informed each other that the respective domestic regulations have been established to implement the provisions of the Agreement.

Netherlands

1. Short introduction.

The basic legislation is the Nuclear Energy Act of 1963 (N-1). This Act outlines the competencies of the Government and the obligations of the persons concerned. Under the Act there are a number of decrees which implement selected portions of it..

2. List of the relevant laws and regulations.

N-1	Nuclear Energy Act, Act of Feb. 21, 1963
N-2	Decree 405 of June 17, 1971
N-3	Decree 403 of Sept. 4, 1969
N-4	Secrecy Decree of January 22, 1971
N-5	Act of October 27, 1965, Containing
Provisions Relating to Legal Liability
in the Field of Nuclear Energy
N-6	Draft Act on Liability for Damage
Caused by Nuclear Incidents

3. The text of relevant laws and treaties.

N-3	Decree 403 of Sept. 4, 1969

403 DECREE of 4 September 1969 governing the implementation of Sections 16, 17, 19(1) and 21 of the Nuclear Act (Nuclear Installations, Fissionable Materials and Ores Decree).

We JULIANA, by the grace of God, Queen of the Netherlands, Princess of Orange-Nassau, etc., etc., etc.

On the recommendation of Our Ministers for Economic Affairs and for Social Affairs and Public Health of May 8, 1968. No. 668/372, W.J.A., submitted in conjunction with Our Minister of Transport, Water Control and Public Works, and having heard the advice of the Central Council for Nuclear Energy;

Having regard to Sections 16, 17, 19 (1), 21, 26, 73 and 76 (1) of the Nuclear Energy Act (Bulletin of Acts, Orders and Decrees No. 82 of 1963);

Having heard the advice of the Council of State (recommendation of July 10, 1968, No. 42);

Having considered the further report of Our Minister for Economic Affairs and the State Secretary for Social Affairs and Public Health of September 3, 1968, No. 669/609 W.J.A., presented in conjunction with Our Minister of Transport, Water Control and Public Works;

HAVE ORDAINED AND DECREED, AS WE DECREE HEREBY:

Chapter I

Introductory provisions

Section 1

- (1) In the application of the provisions of this Decree the following definitions shall apply:

Act: the Nuclear Energy Act (Bulletin of Acts, Orders and Decrees No. 82 of 1963);

Our Ministers: Our Ministers for Economic Affairs and for Social Affairs and Public Health.

- (2) Section 2 of the Nuclear Energy Act Definition Decree (Bulletin of Acts, Orders and Decrees No. 358, of 1969) shall be applicable.

Section 2

The present Decree shall not be applicable to the transportation or having available during storage in connection with transportation of fissionable materials or ores, or the moving, or the causing to be moved into or out of Netherlands territory of such fissionable materials or ores.

Chapter II

Applications for licences

Part. 1. General provisions

Section 3

- (1) Applications for licences as referred to in Section 15 of the Act shall be submitted in writing. They shall be addressed to our Ministers and shall be submitted to Our Minister for Economic Affairs with a copy at the same time to Our Minister for Social Affairs and Public Health.
- (2) Each application shall include:
 - (a) the applicant's name and address;
 - (b) a factual description of what the applicant wishes to do with the fissionable materials or ores, or a broad statement as to the establishment or equipment stating the use which the applicant wishes to make of the establishment or equipment;
 - (c) in so far as one or more of the provisions incorporated in Sections 4 - 14 are applicable to the application concerned, the data which the application is expressly required to provide under the relevant Section or Sections, or else, if such data are provided in a separate document, a brief summary of the nature of these particulars, including a reference to the annexe concerned;
 - (d) an indication of the period for which the licence is sought.
- (3) Applications for licences which fall under different provisions of paragraphs (2) to (4) of this Section may, in so far as they relate to the same establishment or equipment, or to establishments which together form one unit and which are situated in close proximity to one another, or to equipment which is to be or has been installed in the same ship, be submitted in the form of a single, combined application. All provisions relating to the individual applications

composing such a combined application shall be applicable to the combined application, with the proviso that in cases where the application in full of these provisions would lead to repetition of the same data, such data need only be stated once.

- (4) If an application for a licence relates to an establishment or equipment in respect of which an application has already been submitted, reference to the earlier application will suffice, in so far as data are concerned that have been furnished for that earlier application and have not since undergone any change.
- (5) The application should be dated and signed by or on behalf of the applicant. The copy referred to in (1) of this Section should be signed by or on behalf of the applicant to certify that it is a true copy.
- (6) Either of Our Ministers may require submission of further copies of the application or of the annexes.
- (7) If one of Our Ministers, or one of Our other Ministers involved, is of the opinion that an application does not contain all the data necessary, he may require additional data to be furnished within a time limit to be set by him.

Part 2. Applications for licences to have available or dispose of fissionable materials or ores

Section 4

- (1) Applications for licences to have fissionable materials available should include:
 - (a) a statement of the quantities, the chemical and physical state, the form, the content and the degree of enrichment, and, for irradiated fissionable materials, as accurate a statement as possible of the activity of these fissionable materials;
 - (b) a statement of the purpose for which the applicant wishes to have the said fissionable materials available;
 - (c) a statement of the establishment or equipment in which the fissionable materials will be held available, stating the licence granted in respect of the establishment or equipment under Section 15 (b) or (c) of the Act, or referring to the application submitted for such a licence.
- (2) Applications for licences to have ores available should include:
 - (a) a statement of the nature, quantity and average uranium or thorium contents of these ores;
 - (b) a statement of the purpose for which the applicant wishes to have the said ores available;

- (c) a description of the place where the ores are to be held available, and a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plants and goods.

Section 5

- (1) Applications for licences to dispose of fissionable materials should include:
 - (a) a statement of the quantities, the chemical and physical state, the form, the content and the degree of enrichment, together with as accurate a statement as possible of the activity of these fissionable materials;
 - (b) a description of the place where and in what manner the applicant wishes to dispose of the fissionable materials;
 - (c) a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plant and goods.
- (2) Applications for licences to dispose of ores should include in particular:
 - (a) a statement of the nature, quantity and average uranium or thorium contents of these ores;
 - (b) a description of the place where and the manner in which the applicant wishes to dispose of the ores;
 - (c) a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plants and goods.

Part. 3. Applications for licences in respect of establishments as referred to in Section 15 (b) of the Act

Section 6

- (1) Applications for licences to erect establishments where nuclear energy can be released should include:
 - (a) a statement as to and a description of the place where the establishment shall be set up, stating all relevant geographical, geological, climatological and other conditions;
 - (b) a description of the establishment, including the installations to be employed in it, and of the functioning of the establishment and installations, listing the suppliers of the components which are important for the assessment of the safety of the establishment and installations, and stating the highest capacity at which the establishment will operate;

- (c) a statement of the chemical and physical state, the form, the content and the degree of enrichment of the fissionable materials which will be used in the establishment, stating the maximum quantity of each fissionable material which will be present in the establishment at any particular time;
 - (d) a description of the manner in which the fissionable materials as referred to under (c) preceding will be used in the establishment, and of the manner in which they will be stored before and after utilization;
 - (e) a statement of the approximate total number of persons who will be employed in the establishment during normal operations, together with a statement of the number of experts and other personnel who will be directly concerned with the releasing of nuclear energy, and of the distribution of duties between these personnel and - as regards the supervisory personnel - of the grounds on which they may be deemed to be sufficiently expert for the discharge of their duties;
 - (f) a description of the manner in which the applicant proposes to dispose of the fissionable materials as referred to under (c) of this Section after utilization;
 - (g) a description of the manner in which the applicant proposes to dispose of the radioactive materials which will be produced during the utilization of the fissionable materials as referred to under (c) of this Section;
 - (h) a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plants and goods, including measures to prevent danger, damage or nuisance outside the establishment during normal operation, and for the protection of persons, animals, plants and goods against dangers resulting from the accidents to be stated in the description and which may reasonably be deemed credible and liable to result in contamination of the surroundings (safety report);
 - (i) a statement of the financial security which the applicant shall provide and maintain in order to satisfy special statutory requirements governing liability in the field of nuclear energy, stating all relevant details.
- (2) Should the safety report referred to in para (1) (h) of this Section contain information which in the opinion of Our Ministers must be kept secret in the interests of the State or for other reasons, Our Ministers may, (when the interests of the State are involved) demand that the applicant give the full report in a separate annex to the application and attach to the application a second copy not containing the said secret information which second copy shall be made available for public inspection pursuant to Section 18, or (when other reasons are involved) may permit the applicant on request

application and attach to the application a second copy not containing the said secret information which second copy shall be made available for public inspection pursuant to Section 18.

Section 7

- (1) Applications for licences to erect an establishment in which fissionable materials containing plutonium or enriched uranium, or irradiated fissionable materials, can be made, processed or worked up should include the data referred to in Section 6 (1), with the proviso that:
 - (a) under (b), "the highest capacity at which the establishment will operate" shall be replaced by "the greatest quantity of the individual fissionable materials which can be made, ~~processed~~ or worked up in the establishment in a set period";
 - (b) where the terms "used" and "utilization", or "the releasing of nuclear energy" occur, these shall be replaced by "made, processed or worked up" or "the making, processing or working up", respectively.
- (2) Section 6 (2) shall be correspondingly applicable.
- (3) Paragraphs 1 and 2 of this Section shall be correspondingly applicable to applications for licences to put into or keep in operation an establishment as referred to in (1) of this Section.

Section 8

- (1) Applications for licences to erect an establishment in which fissionable materials as referred to in Section 7 (1) will be stored should include:
 - (a) a statement as to and a description of the place where the establishment is to be set up, stating all relevant geographical, geological, climatological and other conditions;
 - (b) a statement of the chemical and physical state, the form, the content and the degree of enrichment of the fissionable materials, adding for irradiated fissionable materials as accurate a statement of their activity as possible, and indicating the maximum quantities of the individual fissionable materials which will be present in the establishment at any time;
 - (c) a statement of the approximate total number of persons who will be employed in the establishment under normal conditions, together with a statement of the number who will be directly concerned with the storage of fissionable materials, and of the

distribution of responsibilities between these personnel and - as regards the supervisory personnel - of the groundson which they may be deemed to be sufficiently expert for the discharge of their responsibilities;

- (d) a safety report as referred to in Section 6 (1) (h);
 - (e) the financial security as referred to in Section 6 (1) (i).
- (2) Section 6 (2) shall be correspondingly applicable.
- (3) Paragraphs (1) and (2) of this Section shall be correspondingly applicable to applications for licences to put into and keep in operation an establishment as referred to in paragraph (1).

Section 9

- (1) Applications for licences to erect an establishment in which non-irradiated, fissionable materials containing, can be made, processed or worked up should include:
- (a) a description of the place where the establishment is to be set up;
 - (b) a description of the establishment;
 - (c) a statement of the chemical and physical state, the form and the content of the fissionable materials, indicating the maximum quantities of the individual fissionable materials which will be present in the establishment at any time;
 - (d) a statement of the number of personnel who will be responsible for the making, processing or working up of fissionable materials in an expert manner, stating the grounds on which they may be deemed to be sufficiently expert;
 - (e) a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plants and goods, including the measures to prevent danger, damage or nuisance outside the establishment.
- (2) Paragraph 1 of this Section shall be correspondingly applicable to applications for licences to put into or keep in operation an establishment as referred to in (1) of this Section.

Section 10

- (1) Applications for licences to erect an establishment in which fissionable materials as referred to in Section 9 (1) will be stored shall furnish in particular the

data to which reference is made in Section 9 (1) (a), (b), (c) and (e).

- (2) Paragraph 1 of this Section shall be correspondingly applicable to applications for licences to put into or keep in operation an establishment as referred to under (1) of this Section.

Section 11

- (1) Applications for licences to modify an establishment as referred to in Sections 6, 7, 8, 9 or 10, should include:
- (a) a statement of the licence under which the establishment has been set up or put into or kept in operation;
 - (b) a description of the modification proposed;
 - (c) if the application relates to an establishment as referred to in Sections 6, 7 or 8, and the modification proposed would affect one or more of the data incorporated in the safety report submitted in order to obtain the licence as referred to under (a) of this Section, a relevant supplement to the report.
- (2) With respect to a supplement as referred to under (c) of this Section, Section 6 (2) shall be correspondingly applicable.

Part 4. Applications for licences in respect of equipment as referred to in Section 15 (c) of the Act

Section 12

- (1) Applications for licences to fit out a ship with equipment capable of propelling it by nuclear power and intended to be put into or kept in operation in Netherlands territory, should include:
- (a) a statement as to the place where the equipment is to be fitted in the ship;
 - (b) a statement as to and a description of the place where the equipment is to be put into operation for trial purposes for the first time (if that place is in the Netherlands, the statement to include all relevant geographical, climatological and other conditions) and listing the ports where the ship will berth when in the Netherlands;
 - (c) a description of the equipment, including all appurtenant apparatus, and of the functioning of the equipment and apparatus, listing the suppliers of the components important for the evaluation of the safety of the equipment and apparatus and stating the highest capacity at which the equipment will operate;

- (d) a statement of the chemical and physical form, the content and the degree of the fissionable materials which will be in the equipment stating the maximum quantity of individual fissionable materials which will be in the equipment at any time;
- (e) a description of the manner in which the materials as referred to under (d) of this Section will be used in the equipment and of the manner in which they will be stored before and after use;
- (f) a statement of the approximate total number of persons who will be carried by the ship and passengers under normal operation, a statement of the number of experts and other members who will be directly involved in the operation of the equipment into and keeping it in operation, of the division of duties among the members of the crew and - as regards the supervisory personnel - of the grounds on which they may be deemed to be sufficiently expert for the discharge of their duties;
- (g) a description of the manner in which the applicant proposes to dispose of the fissionable materials as referred to under (d) of this Section after utilization;
- (h) a description of the manner in which the applicant proposes to dispose of the radioactive substances which will be produced during the utilization of the fissionable materials as referred to under (d) of this Section;
- (i) a description of the ship, stating such details as are necessary to assess the danger which the ship could cause to persons, animals, plants and goods;
- (j) a description of the measures which will be taken by or on behalf of the applicant for the protection of persons, animals, plants and goods, including measures to prevent danger or damage outside the ship, during normal operation, and for the protection of persons, animals, plants and goods against accidents resulting from the accidents to be stated in the said description and which may reasonably be expected to be credible and liable to result in contamination of the surroundings (safety report);
- (k) a statement of the financial security which the applicant shall provide and maintain in order to satisfy special statutory regulations in regard to liability in the field of nuclear energy, including all relevant details.

- (2) Should the safety report referred to in para (1) of this Section contain information which in the interests of Our Ministers must be kept secret in the interests of the State or for other reasons, Our Minister (when the interests of the State are involved) shall require that the applicant give the full report in a separate annex to the application and attach to the application

persons are involved, may permit the holder of a Request to give the full report in a separate copy to the application and attach to the application a second copy not containing the said secret information, which second copy shall be made available for public inspection pursuant to Section 25.

- (3) With the exception of the case for which provision is made in (5) below, paragraphs (1) and (2) of this Section shall be correspondingly applicable to applications for licences to keep the ship fitted out with or to put into or keep in operation equipment as referred to under (1) of this Section.
- (4) Applications for licences to fit out or keep fitted out a Netherlands ship with equipment capable of propelling it by nuclear power, but not intended to be put into or kept in operation in Netherlands territory, should, except in the case provided for in (5) below, include in particular the data as referred to under (c) - (k) of this Section, together with a statement to the effect that the equipment is not intended to be put into or kept in operation in Netherlands territory, and, in the case of an application for a licence to fit out a ship with equipment, a statement of the place where fitting the equipment in the ship will be carried out.
- (5) If with respect to a ship a certificate and a safety dossier as referred to in Regulations 10 and 7 of Chapter VIII of the regulations attached to the 1960 International Convention for the Safety of Life at Sea (Netherlands Treaty Series 1961, Nos. 83 and 84) can be submitted, an application for a licence as referred to in (3) or (4) of this present Section should include in particular:
 - (a) the certificate concerned;
 - (b) the dossier concerned;
 - (c) a list of the ports at which the ship concerned will berth when in the Netherlands, or, if the application relates to equipment as referred to in (4) of this Section, the statement to the effect that the equipment is not intended to be put into or kept in operation in Netherlands territory;
 - (d) a statement as referred to in (1) (k) of this Section.

Section 13

- (1) Applications for licences to modify equipment as referred to in Section 12 (1), or equipment fitted in a Netherlands ship as referred to in Section 12 (4), should include:
 - (a) a statement of the licence by virtue of which the equipment has been or is kept fitted in the ship;
 - (b) a description of the proposed modification;

- (d) if the place where the equipment will be put into operation for the first time for trial purposes after modification is in the Netherlands, a description of that place, stating all relevant geographical, geological, climatological and other circumstances;
 - (e) if the proposed modification affects one or more data stated in the safety report or safety dossier submitted in order to obtain the licence as referred to under (a) of this Section, a relevant supplement to the report or dossier.
- (2) With respect to the supplement as referred to under (e) of this Section, Section 12 (2) shall be correspondingly applicable, in so far as the supplement relates to equipment as referred to in Section 12 (1).

Section 14

- (1) Applications for licences to fit out a non-Netherlands ship or keep it fitted out with equipment capable of propelling it by nuclear power, but not intended to be put into or kept in operation in Netherlands territory, should include the statement that the equipment is not intended to be put into or kept in operation in Netherlands territory, together with an indication of the place where the fitting of the equipment in the ship will be carried out, or of the ports where the ship will berth when in the Netherlands, or, if it is not to call at any Netherlands ports, a description of the route which it will follow through Netherlands waters.
- (2) Applications for licences to modify equipment fitted in a non-Netherlands ship as referred to in (1) of this Section should state:
- (a) the licence by virtue of which the equipment in question has been fitted into or is kept fitted in the ship concerned;
 - (b) the place where the equipment will be modified.

Chapter III

Notification of applications and objections procedure relating to licences as referred to in Chapter II, Parts 3 and 4

Part 1. Notification of applications for licences in respect of establishments as referred to in Sections 6 - 8

Section 15

1 Applications for:

- (a) licences to erect, put into operation or keep in operation establishments as referred to in Sections 6, 7 or 8, or
- (b) licences for the modification of such establishments shall be notified by Our Ministers to the executive council of the province in which the place where the establishment is to be erected or put into or kept in operation is situated or is substantially situated. This notification shall not include the data of the documents which have to accompany the applications.

2 If the place where the establishment as referred to under (1) of this Section is to be erected or is situated is less than ten kilometres from the boundary of another province, the executive council of that other province shall also be notified.

Section 16

- 1 Upon receipt of a notification as referred to in Section 15 (1), the provincial executive council shall immediately notify the council of the municipality in which the place where the establishment is to be erected or put into or kept in operation is situated or is substantially situated of the application. If that place is less than ten kilometres from the boundary of another municipality within the province, the council of that other municipality shall also be notified of the application.
- 2 Upon receipt of a notification as referred to in Section 15 (2), the provincial executive council shall immediately notify the councils of municipalities in the province which are ten kilometres or less from the place where the establishment is to be erected or is situated.
- 3 The provincial executive council shall further immediately notify the bodies responsible for the prevention of pollution of surface waters in the province which are completely or partially within ten kilometres of the place where the establishment is to be erected or is

- (4) The provincial executive council shall immediately inform Our Ministers of the municipalities whose councils have been notified in accordance with (1) or (2) of this Section, stating the date on which they were notified.

Part 2. Objections procedure relating to applications for licences in respect of establishments as referred to in Sections 6 - 8

Section 17

- (1) A municipal council which receives a notification as referred to in Section 16 shall ensure that within three weeks of the date of receipt of the notification:
- (a) a public announcement of the matter is made in the manner customary in the municipality; and further that:
 - (b) if the site on which the establishment concerned is to be erected or is situated is located entirely or partially within the municipality:
 - (i) the matter is publicly announced by means of bills posted on the site, and that
 - (ii) the owners and occupants or users of all premises adjoining the site receive written notification.
- (2) The municipal council shall at the same time ensure that the application in question shall be available for public inspection in the municipality from the day on which it makes the public announcement as referred to under (1) (a) of this Section.
- (3) The public announcement which the council has to make and the notification which it has to provide in accordance with (1) of this Section shall include the fact that the application is available for public inspection, stating the place where it may be inspected and specifying the procedure by which interested parties may submit objections against the granting of the licence sought on the grounds of fear of danger, damage or nuisance.
- (4) Our Ministers shall be informed immediately of the date on which the public announcement as referred to under (1) (a) of this Section is made.

Section 18

The council of the municipality in which the place where the establishment is to be erected or put into or kept in operation is situated or is substantially situated shall ensure that a copy, to be provided by Our Ministers, of the application and the relevant application

shall be made available for public inspection. The fact that this safety report is available for public inspection and the place where it may be inspected shall be stated in the announcements and notifications which are the responsibility of the council pursuant to Section 17 (1).

Section 19

- 1 Interested parties may submit objections to Our Ministers against the granting of the licence sought on the grounds of fear of danger, damage or nuisance by informing a committee to be set up by Our Ministers of such objections either verbally or in writing.
- 2 Our Ministers shall nominate the members of a committee as referred to under (1) of this Section after consultation with Our other Ministers involved. The members of the said committee shall in any case include:
 - (a) a member of the executive council of the province in which the municipality is situated where the public session of the Committee as referred to under (4) of this Section will be held;
 - (b) the Inspector of Public Health responsible for supervision over the hygiene of the environment, within whose district the municipality as referred to under (a) preceding is situated;
 - (c) the district head of the Labour Inspectorate within whose district the municipality as referred to under (a) above is situated;
 - (d) if the establishment to which the application relates will discharge waste into surface waters, a representative of the State Institute for the Purification of Waste Water.
- (3) The chairman of the committee shall be the provincial executive council member appointed to it. Our Ministers shall arrange for the secretarial services required by the committee.
- (4) Objections as referred to under (1) of this Section may be made verbally at a public session of the committee referred to therein. Such objections may be communicated in writing by the submission in quadruplicate of a statement of objection addressed to the committee, either at the public session or to the council of the municipality where this public session is held, at least one day before the opening of the session. The municipal council concerned shall ensure that statements of objection submitted to it are handed over to the committee before the opening of the public session.

- (5) The public session as referred to under (4) of this Section shall be held at least one month but not more than two months after the date on which the public announcement as referred to in Section 17 (1) (a) has been made in the municipality concerned, or, if more than one municipality is concerned, in all the municipalities concerned, in the municipality where the establishment is to be erected or is situated or substantially situated, at a place, on a day and at a time to be determined by Our Ministers and which shall be announced at least three days in advance in one or more newspapers.
- (6) Interested parties may attend the session in person or have themselves represented by a proxy. Proxies who are not registered as barristers or solicitors have to be provided with a written mandate.
- (7) Minutes shall be kept of the proceedings of the meeting and shall be signed in quadruplicate by the chairman and by the person responsible for the secretariat. One copy of the minutes and of each of the objections submitted shall be sent at the earliest opportunity to each of Our Ministers and to the council of the municipality where the session is held.
- (8) The municipal council as referred to under (7) of this Section shall ensure that the copy of the minutes sent to it shall be made available within the municipality for perusal by interested parties. The fact that the minutes are available for perusal and the place where they are available shall be publicly announced in the manner customary in the municipality.

Section 20

- (1) Sections 17, 18 and 19 of the present Decree shall not be applicable to applications for licences as referred to in Section 15 (1) if a licence as therein referred to has previously been granted in respect of the establishment concerned, and if in the opinion of Our Ministers the erection, putting into or keeping in operation or modification of the establishment cannot cause any greater danger, damage or nuisance than that already taken into consideration when a previous licence in respect of the establishment was granted.
- (2) In the cases as referred to in (1) preceding interested parties may, not later than three weeks after the application has been published in the Government Gazette and one or more newspapers pursuant to Section 17 (1) of the Act, submit objections in writing to Our Ministers against the granting of the licence sought on the grounds of fear of danger, damage or nuisance. This opportunity shall be notified in the publications above referred to.

Part 3. Notification of applications and objections
procedure relating to establishments as referred
to in Sections 9 and 10

Section 21

(1) Applications for:

- (a) licences to erect, put into or keep in operation an establishment as referred to in Sections 9 or 10 or
- (b) licences for the modification of such an establishment,

shall be notified by Our Ministers to the council of the municipality, or the councils of the municipalities, in which the place where the establishment is to be erected or is situated. This notification shall not include the documents which have to accompany the applications.

(2) Section 17 shall be correspondingly applicable.

- (3) Interested parties may, not later than one month after the public announcements as referred to in Section 17 (1) (a) have been made in the municipality concerned, or in all the municipalities concerned if there are more than one, submit objections in writing to Our Ministers against the granting of the licence sought on the grounds of fear, danger, damage or nuisance.

- (4) The provisions of (2) and (3) preceding shall not be applicable in cases as referred to in Section 20 (1). In such cases Section 20 (2) shall be correspondingly applicable.

Part 4. Notification of application for licences in respect
of equipment as referred to in Section 12 (1)

Section 22

(1) Applications for:

- (a) licences to fit out or keep fitted out a ship with equipment as referred to in Section 12 (1) or to put into or keep in operation such equipment, or

(b) licences for the modification of such equipment, shall be notified by Our Ministers to the executive council of the province in which the place is situated where the equipment will be put into operation for trial purposes, and also the executive councils of the provinces in which the ports are situated in which the ship will berth when in the Netherlands. This notification shall not include the documents which

- (2) If a place or port as referred to in (1) preceding is less than two kilometres from the boundary of another province, the executive council of that other province shall also be notified of the application.

Section 23

- (1) Upon receipt of a notification as referred to in Section 22 (1), the provincial executive council shall immediately notify the council of the municipality in which the place is situated where the equipment will be put into operation for trial purposes, and also the councils of the municipalities in which the ports are situated in which the ship will berth when in the Netherlands. If that place or such a port is less than two kilometres from the boundary of another municipality in the province, the council of that other municipality shall also be informed of the application.
- (2) Upon receipt of a notification as referred to in Section 22 (2), the provincial executive council shall immediately notify the councils of municipalities in the province which are less than two kilometres from a place or port as referred to in (1) preceding.
- (3) The provincial executive council shall further immediately notify the bodies responsible for the prevention of pollution of surface waters in the province which are situated wholly or partially less than two kilometres from a place or port as referred to in (1) of this Section.
- (4) The provincial executive council shall immediately inform Our Ministers of the municipalities whose councils have been notified in accordance with (1) or (2) of this Section, stating the date on which they were notified.

Part 5. Objections procedure relating to applications for licences in respect of equipment as referred to in Section 12 (1)

Section 24

- (1) The council of a municipality which receives a notification as referred to in Section 23 shall ensure that the matter is publicly announced in the manner customary in that municipality within fourteen days of the date of receipt of the notification.
- (2) The council of the municipality shall ensure at the same time that the application shall be available for public inspection in the municipality from the day on which the public announcement as referred to in (1) preceding is made.

- (3) The public announcement which the council is required to make in accordance with (1) of this Section shall include the fact that the application is available for public inspection pursuant to (2) preceding, stating the place where it may be inspected and specifying the procedure by which interested parties may submit objections against the granting of the licence sought on the grounds of fear of danger, damage or nuisance.
- (4) Our Ministers shall be immediately informed of the date on which the public announcement as referred to in (1) of this Section is made.

Section 25

- (1) The council of the municipality in which the place is situated where the equipment will be put into operation for trial purposes shall ensure that a copy, to be provided by Our Ministers, of the safety report or safety dossier accompanying the relevant application is available for public inspection in the municipality. The fact that the safety report or safety dossier is available for public inspection, and the place where it may be inspected, shall be stated in the public announcement which the municipality is required to make in accordance with Section 24 (1).
- (2) The provisions of (1) preceding shall be correspondingly applicable to the council of the municipality or the councils of the municipalities in which the ports are situated in which the ships concerned will berth when in the Netherlands.

Section 26

Interested parties may submit objections in writing to Our Ministers against the granting of the licence sought on the grounds of fear of danger, damage or nuisance, within one month of the date on which the public announcement as referred to in Section 24 is made in the municipality concerned or, if there are more than one, in all the municipalities concerned.

Section 27

- (1) Sections 24, 25 and 26 of the present Decree shall not be applicable to applications for licences as referred to in Section 22 (1) if a licence as therein referred to has previously been granted in respect of the same equipment in the same ship, and if in the opinion of Our Ministers the fitting out or keeping fitted out of the ship with the equipment or the putting into operation or keeping in operation of the equipment or the modification thereof cannot cause any greater damage than that already taken into consideration when the previous licence in respect of the equipment was granted.

- (2) In the cases as referred to in (1) preceding, interested parties may, not later than three weeks after the application has been published in the Government Gazette and one or more newspapers pursuant to Section 17 (1) of the Act, submit objections in writing to Our Ministers against the granting of the licence sought on the grounds of fear of danger, damage or nuisance. This opportunity shall be notified in the publications above referred to.

Part 6. Notification of applications and objections
procedure relating to equipment as referred to in
Sections 12 (4) and 14 (1)

Section 28

- (1) An application for a licence as referred to in Section 12 (4) of Section 14 (1) shall be notified by Our Ministers to the council of the municipality in which the place is situated where the ship will be fitted out with the equipment, and to the councils of the municipalities in which the ports are situated in which the said ship will berth when in the Netherlands.
- (2) An application for a licence to modify equipment as referred to in Section 12 (4) or in Section 14 (1) shall be notified by Our Ministers to the Council of the municipality in which the place is situated where the equipment will be modified.
- (3) Section 27 (2) shall be correspondingly applicable to applications as referred to in (1) and (2) preceding.

Part 7. Objections by public bodies

Section 29

The public bodies which are notified of applications for licences in accordance with Sections 15, 16, 21, 22, 23 or 28 may submit objections against the licences sought to Our Ministers not later than the latest date on which interested parties may submit their objections pursuant to Sections 19, 20, 21, 26, 27 or 28.

Part 8. Procedure for dealing with objections submitted

Section 30

- (1) The Committee set up pursuant to Section 19 shall

submitted by forwarding to him a copy of the minutes of the public session and of each of the statements of objections submitted to it. If Section 19 has not been applicable, Our Ministers shall inform the applicant for the licence of the statements of objection submitted to them.

- 2 The applicant for the licence may inform Our Ministers in writing, within a period to be set by them, of his comments on the objections submitted, or the way in which he is prepared to meet such objections.
- 3 Within one week of the dispatch of their decision regarding an application Our Ministers shall inform all who have submitted objections against the granting of the licence of their decision, stating, if the licence has been granted, the points which have been taken into account when considering these objections.
- 4 If Section 19 has been applied, Our Ministers shall further, within one week of the dispatch of their decision regarding the application, inform the executive council of the province in which the public session has been held of their decision, stating, if the licence has been granted, the points which have been taken into account when considering the objections submitted.
- (5) Within one week of the dispatch of their decision regarding an application Our Ministers shall inform the councils of the municipality or municipalities referred to in the first sentence of Section 16 (1), or the first sentence of Section 23 (1), respectively, of their decision.

Chapter IV

Rules in respect of requirements to be attached to licences as referred to in Section 15 of the Act

Part 1. Protection of persons, animals, plants and goods

Section 31

- (1) With a view to the protection of persons, animals, plants and goods, requirements shall be attached to licences as referred to in Section 15 of the Act to ensure that:
 - (a) irradiation or contamination of persons, animals, plants and goods shall be prevented to the maximum extent possible;
 - (b) in cases where irradiation or contamination is unavoidable, this shall be restricted to the mini-

- (c) in cases where irradiation or contamination is unavoidable, the number of persons exposed to ionizing radiation shall be restricted to the minimum possible taking into account the necessity to avoid an amount of radiation or contamination per person which is deemed impermissible.
- (2) The requirements as referred to in (1) preceding shall include, except in the case of licences as referred to under section 14, requirements to ensure that:
- (a) work involving fissionable materials or ores shall be carried out by or under the direction or supervision of persons who are sufficiently expert for the work to be safely carried out;
 - (b) in cases where persons could receive a dose equivalent to over 0.5 rem in one year for the blood-making organs and the gonads, or where persons can be exposed to radiation, periodical or, if the circumstances so require, continuous measurements of the rate of dosage shall be carried out at places where persons have to work or determine the level of contamination, and that on the grounds of the results of the readings the necessary measures shall be taken;
 - (c) the apparatus used for the work and all appurtenances thereto shall be kept in a good state of repair.

Section 32

- (1) The requirements as referred to in Section 31 (1) shall include, in the case of licences for the disposal of fissionable materials or ores other than by means of delivery to third parties, requirements relating to the place where, the manner in which and the circumstances under which the licence-holder may dispose of the fissionable materials or ores.
- (2) The requirements as referred to in Section 31 (1) shall include, in the case of licences for the disposal of waste materials containing fissionable materials or ores by means of delivery to third parties, requirements relating to:
- (a) the persons to whom the said waste materials may be delivered;
 - (b) the place where, the manner in which and the circumstances under which the licence-holder may ultimately have these waste materials discharged or dumped.

Section 33

- (1) The requirements as referred to in Section 31 (1) shall include, in the case of licences as referred to under Section 15 (b) of the Act, requirements to ensure that:
 - (a) the floors, ceilings and walls and all hatches, doors, windows, and sight glasses therein of rooms in which fissionable materials or ores are present shall be composed or constructed in such a way that persons outside such rooms cannot receive a dose equivalent to over 0.5 rem for the blood-making organs and the gonads in one year;
 - (b) the radiation-reducing capacity of means of protection against radiation and parts of the buildings which serve to provide protection against radiation shall be clearly and ineffaceably marked on such means of protection and parts of buildings, or else data shall be kept available from which the radiation-reducing capacity of such means of protection or parts of buildings shall be apparent;
 - (c) appropriate and clear warning boards or signs shall be put up at suitable points at all places where persons can receive a dose equivalent to over 0.5 rem for the blood-making organs and the gonads and where there is a danger of contamination.
- (2) The requirements as referred to in Section 31 (1) may include, in the case of licences as referred to under Section 15 (b) of the Act, a requirement setting out the obligation to ensure that there shall be in the establishment a sufficient number of experts responsible for the protection of the health of the persons in that establishment, the number of experts being in proportion to the size and nature of the establishment and of the work to be carried out therein, and also to the number of persons regularly present therein.
- (3) In order to prevent danger, damage or nuisance outside the establishment, other requirements in addition to those as referred to in Section 31 (1) may be attached to licences as referred to under Section 15 (b) of the Act.

Section 34

- (1) The requirements as referred to in Section 31 (1) shall include, in the case of licences as referred to under Section 15 (c) of the Act, a requirement relating to the Netherlands waters in which the ship concerned may sail and the ports in which the said ship may berth when in the Netherlands.
- (2) The requirements as referred to in Section 31 (1) shall include, in the case of licences as referred to under Section 15 (c) of the Act which are not licences as referred to under Section 14, conditions as referred to in Section 33 (1).

- (3) The requirements as referred to in Section 31 (1) may include, in the case of licences as referred to under Section 15 (c) of the Act which are not licences as referred to under Section 14:
- (a) a requirement as referred to in Section 33 (2);
 - (b) the requirement that the ship concerned may only sail in the Netherlands waters designated pursuant to this Section, and may only berth in the Netherlands ports designated pursuant to this Section, if notice thereof at least prior to a period specified in the requirement has been given to the authorities designated thereby;
 - (c) the requirement that in the Netherlands fissionable materials may only be introduced into the equipment or removed therefrom at a place designated by Our Minister for Social Affairs and Public Health;
 - (d) The requirement that, once the fissionable materials have been introduced therein, the equipment may only be put into operation for trial purposes in the Netherlands at a place to be stated in the requirement or to be designated by Our Minister for Social Affairs and Public Health.

Part 2. Security of the State

Section 35

- (1) Requirements with a view to the security of the State shall be attached to licences as referred to in Section 15 of the Act, if such licences relate solely or partially to the carrying out of operations:
- (a) involving the utilization of information, devices or materials, or an establishment or equipment regarding which Our Ministers, in conjunction with Our other Ministers involved, consider that the interests of State security require that an obligation to observe secrecy be imposed or that the use of the information, devices, materials, establishment or equipment be restricted, or
 - (b) in the course of which research is carried out or methods are employed regarding which Our Ministers, in conjunction with Our other Ministers involved, consider the interests of State security require that an obligation to observe secrecy be imposed, or
 - (c) which, according to a declaration by Our Ministers concerned, are of vital importance for military or civil defence.

- (2) Requirements as referred to in (1) above may include the obligation:
- (a) to ensure that secrecy be observed with regard to information, devices, materials, an establishment or equipment or research or methods as referred to in (1) of this Section;
 - (b) to utilize information, devices, materials, or an establishment or equipment as referred to in (1) of this Section with due observance of the restrictions laid down in the relevant requirement;
 - (c) to render secure in a manner as specified by the relevant requirement all sites, buildings and rooms where operations as referred to in (1) of this Section are carried out, or information, devices or materials utilized in such operations are stored;
 - (d) to regulate in a manner as laid down in the relevant requirement the utilization of information, devices or materials, or an establishment or equipment as referred to in (1) of this Section, together with the application of knowledge acquired from such utilization;
 - (e) to inform Our Ministers or the Netherlands supervisory agencies designated by the relevant requirement well in advance of any proposed replacement of the person or persons responsible for the management of the enterprise or institution to which the licence has been granted;
 - (f) to cause all or certain operations to be carried out by persons concerning whom Our Minister as designated by the relevant requirement has declared that there may in his opinion be deemed to be adequate guarantees that they will duly observe the obligation to maintain secrecy;
 - (g) to provide bodies as designated by the relevant requirement which are entrusted with responsibilities relating to the implementation of the Act with information as specified in that requirement regarding data, devices or materials, or an establishment or equipment, as referred to in (1) of this Section, and to keep records for furnishing such information from which the accuracy of the information furnished may be proved in a straightforward manner;
 - (h) immediately to inform Our Ministers as designated by the relevant requirement, or the Netherlands supervision agencies as designated by that requirement, should either serious failures to observe the requirements laid down with a view to the security of the State or espionage be suspected or discovered;
 - (i) to appoint an officer of the enterprise or institution who shall be specially responsible for the drawing up of measures for the implementation of the requirements attached to the licence

Part 3. Storage and guarding of fissionable materials and ores

Section 36

- (1) Requirements relating to the storage and guarding of fissionable materials and ores shall be attached to licences as referred to in Section 15 of the Act, if and in so far as is necessary for the protection of the interests as referred to in Section 19 (1) (a), (b), (d) or (f) of the Act.
- (2) Requirements as referred to in (1) above may include the obligation:
 - (a) to store fissionable materials or ores at a place and in a manner to be specified in the relevant requirement, in order to preclude any danger of radiation or contamination to persons, animals, plants or goods;
 - (b) to store fissionable materials or ores in such a manner that they are protected to the fullest extent possible against fire, theft or loss through any other cause;
 - (c) to guard sites, buildings and rooms where fissionable materials or ores are stored in a manner to be specified in the relevant requirement;
 - (d) to appoint one or more persons employed by the enterprise or institution to which the licence has been granted who shall be specially responsible for the drawing up of measures for the implementation of the requirements attached to the licence with respect to storage and guarding, and for ensuring that these measures are observed.

Part 4. Energy supply

Section 37

- (1) Requirements with a view to energy supplies shall be attached to licences as referred to under Section 15 (a) of the Act, if regular supplies of fissionable materials or ores are not adequately ensured.
- (2) Requirements as referred to in (1) above may include the obligation to obtain fissionable materials or ores solely from suppliers to be designated in the relevant requirement, or to supply fissionable materials or ores solely to users to be designated in the relevant requirement.

Section 38

- (1) Requirements with a view to energy supplies shall be attached to licences as referred to under Section 15 (b) of the Act in respect of establishments for the generation of thermal or electric energy for public energy supplies, if:
 - (a) regular supplies of the fissionable materials required for the establishment are not adequately ensured, or
 - (b) the uninterrupted operation of the establishment is not adequately ensured.
- (2) Requirements as referred to in (1) (a) above may include the obligation to maintain a stock of fissionable materials, of a nature, composition and size to be specified in the relevant requirement and for periods to be laid down in that requirement.
- (3) Requirements as referred to under (1) (b) of this Section may include the obligation to cause the establishment to be connected to a national grid or to have available through other means reserve capacity of such a nature that energy supplies will be ensured for a period to be specified in the relevant requirement.

Part 5. The security to be provided as guarantee of payment of the indemnification due to third parties in respect of damage or injury caused to them

Section 39

Licences as referred to in Section 15 (b) or (c) of the Act and which relate exclusively or partially to an establishment or equipment to which a special statutory regulation governing liability in the field of nuclear energy is applicable, shall, with a view to ensuring payment of the indemnification due to third parties in respect of damage or injury caused to them, include the requirement to have and maintain appropriate insurance or other financial security in accordance with the said statutory regulations.

Part 6. Observance of international obligations

Section 40

- (1) Requirements with a view to the observance of international obligations may be attached to licences as referred to in Section 15 of the Act, if the licences relate exclusively or partially to the carrying out of operations in which information, devices or materials,

the Netherlands and which relate entirely or partially to nuclear energy or ionizing radiation, impose obligations on the State.

- (2) Requirements as referred to in (1) above may include the obligation:
- (a) to ensure secrecy with respect to information, devices or materials, or an establishment or equipment, as referred to in (1) above, or to utilize the same with due observance of the restrictions laid down in the relevant requirement;
 - (b) for bodies as designated in the relevant requirement and entrusted with responsibilities relating to the implementation of the agreements or resolutions as referred to in (1) above, to cause information as specified in the requirement to be provided concerning data, devices or materials, or an establishment or equipment, as referred to in (1) above, and to keep records for the furnishing of such information from which the accuracy of the information furnished may be demonstrated in a straightforward manner.

Chapter V

Exemptions from the prohibition contained in

Section 15 of the Act

Part 1. Fissionable materials and ores

Section 41

The prohibition in Section 15 (a) of the Act shall not apply to having available in an establishment non-irradiated fissionable materials containing solely natural or depleted uranium or natural thorium in quantities of not more than 100 grammes of each of these elements, and no plutonium.

Section 42

The prohibition in Section 15 (a) of the Act shall not apply to having available:

- (a) ores, if packed in watertight metal containers;
- (b) ores which are not packed, or are packed in a manner other than that referred to in (a) above, if the specific activity of the said ores does not exceed 0.01 microcurie per gramme.

Section 43

- (1) The prohibition in Section 15 (a) of the Act shall not apply to the disposing of:
 - (a) fissionable materials in cases where these may be held available without a licence in accordance with Section 41;
 - (b) ores the specific activity of which does not exceed 0.01 microcurie per gramme;
 - (c) fissionable materials or ores, in so far as they are disposed of to a person who is authorized by law to have such materials available, or to a person who is authorized by law to transport such materials, and the materials are destined for a person who is authorized in virtue of Netherlands, Belgian or Luxembourg law to have such materials available, or for a person in a country other than the Netherlands, Belgium or Luxembourg;
 - (d) fissionable materials or ores containing waste materials, by means of handing over to a collection service for radioactive waste recognized by Our Minister for Social Affairs and Public Health.
- (2) (1) (a) above shall not be applicable to the disposing of fissionable materials by discharging the materials into the air or water, if:
 - (a) upon discharge into the air the concentration of the fissionable materials concerned leaving the discharge channel is higher than 1 picocurie per cubic metre;
 - (b) upon discharge into water the concentration of uranium or thorium containing fissionable materials leaving the discharge channel is higher than 10,000 or 1,000 picocuries per litre, respectively.
- (3) All persons who in cases as referred to in (1) above dispose of fissionable materials or ores by handing them over for transportation elsewhere are required to ensure that the relevant regulations governing the forms of packing to be used and the inscriptions and danger labels to be applied are complied with.

Part 2. Establishments

Section 44

The prohibition in Section 15 (b) of the Act shall not apply to the erection, putting into or keeping in operation or modifying of an establishment in which fissionable materials may be made, processed, or worked up, or in which fissionable materials are stored, if the

establishment is not intended for and is not used for materials other than non-irradiated fissionable materials, containing only natural or depleted uranium or natural thorium in quantities of not more than 100 grammes of each of these elements, and no plutonium.

Chapter VI
Concluding provisions

Section 45

- (1) This Decree may be cited as the Nuclear Installations, Fissionable Materials and Ores Decree.
- (2) It shall enter into force at a time to be determined by Us.

Our Ministers for Economic Affairs and for Social Affairs and Public Health shall be charged with the implementation of this Decree, which shall be placed in the Bulletin of Acts, Orders and Decrees together with the relevant explanatory memorandum and whereof a copy shall be sent to the Council of State.

MINISTER FOR ECONOMIC AFFAIRS

MINISTER FOR SOCIAL AFFAIRS AND PUBLIC HEALTH

Philippines

1. Introduction to regulations.

The basic legislation is Republic Act No. 5207 of 1968 (Appendix P-1). It has basic provisions for licensing of facilities, but it contains comprehensive provisions on third-party liability. More detailed regulations on facility licensing were published in 1974 (Appendix P-2). Principal international agreements include the Non-Proliferation Treaty and its related safeguards agreement (Appendix P-4).

2. A list of the relevant laws and regulations.

- P-1 Republic Act No. 5207 of June 15, 1968, providing for the licensing and regulation of atomic energy facilities (Philippines), 65 O.G. No. _____, p. 4485 (May 5, 1969).
- P-2 Regulations for the Licensing of Atomic Energy Facilities (Philippines), 70 O.G. No. 22, p. 4434 (June 3, 1974).
- P-3 Presidential Decree No. 606 of December 13, 1974, transferring the Philippine Atomic Energy Commission to the Office of the President.
- P-4 Agreement to apply safeguards in connection with the NPT, February 21, 1973, Philippines - IAEA, _____ U.N.T.S. _____.

P-5 Agreement for the application of safeguards,
 Philippines - U.S. - IAEA, July 15, 1968,
 19 U.S.T. 5427, T.I.A.S. 6524.

3. The text of principal laws and treaties.

P-1 Republic Act No. 5207 of June 15, 1968,
 providing for the licensing and regulation
 of atomic energy facilities (Philippines),
 65 O.G. No. _____, p. 4485 (May 5, 1969).

Spain

1. Short introduction.

The basic act in Spain is the Nuclear Energy Act of April 29, 1964. (SP-1). Although this Act gives broad authority to the Head of State, he has yet to promulgate extensive regulations to implement its provisions.

2. List of relevant laws and regulations.

SP-1 Nuclear Energy Act of April 29, 1964.

SP-2 Decree No. 175411976. Regulations for the transport of dangerous goods by road.

SP-3 Decree No. 2072 of July 27, 1968.

SP-4 Decree No. 2869 of July 21, 1972.

SP-5 Order of December 22, 1959, as amended by the Order of July 10, 1962.

3. Text of principal laws and treaties.

(none)

Sweden

1. Short introduction.

The general law of Sweden which governs nuclear activities is the Atomic Energy Act of 1956 (S-1). In addition to this legislation, there are several laws which have significant relevance to the Swedish spent fuel situation, including the Stipulations Law of 1977 (S-2).

2. List of the relevant laws and regulations.

- S-1 Atomic Energy Act, Act No. 306 of June 1, 1956
- S-2 Stipulations Law of 1977, April 21, 1977
- S-3 Radiation Protection Act, Act No. 110 of March 14, 1958
- S-4 Urban Planning and Building Act, Act No. 385 of June 30, 1947
- S-5 Nuclear Liability Act, as amended, March 25, 1968

3. Text of principal laws and treaties.

- S-2 Stipulations Law of 1977, April 21, 1977
- S-5 Nuclear Liability Act, as amended, March 25, 1968

Law on special permit to charge a nuclear reactor with nuclear fuel, issued April 21, 1977 SFS 1977:140.

In accordance with the decision of the Riksdag (the parliament) the government stipulates as follows:

1 §

This law applies to a plant for winning nuclear energy (nuclear reactor) for which, before the entering into force of this law, a licence for construction and operation according to the Atomic energy act 2 § (1956:306) has been granted and which has not been charged with nuclear fuel before October 8, 1976.

The term charging a nuclear reactor with nuclear fuel means in this law that the reactor has been charged for the first time with nuclear fuel so that a self-perpetuating nuclear fission reaction can take place.

2 §

If an application for final approval of the nuclear reactor for operation has not been given to the Swedish Nuclear Power Inspectorate before October 8, 1976, the reactor must not be charged with nuclear fuel unless the government gives a special permit. Such permit may be given only if the proprietor of the reactor

1. has produced a contract, which adequately provides for the reprocessing of spent fuel, and has also demonstrated how and where the final deposition of the highly radioactive waste resulting from the reprocessing can be effected with absolute safety, or
2. has shown how and where the spent but not reprocessed nuclear fuel can be stored with absolute safety.

3 §

If an application for final approval of a nuclear reactor for operation has been given to the Swedish Nuclear Power Inspectorate before October 8, 1976, the reactor must not be charged with nuclear fuel or, if so already has been done, be operated after the end of the year of 1977 or after the day after the end of September 1977 which the government decides, unless the government gives a special permit.

Such permit may be given, if the proprietor of the reactor before the end of September 1977

1. has produced a contract, which adequately provides for the reprocessing of spent fuel or
2. has shown, that the spent but not reprocessed fuel can be managed in an absolutely safe way.

If permit is not granted according to what is now said, permit may be granted only if the proprietor of the reactor complies with what is stipulated in the 2 § for gaining such a permit that is meant there.

4 §

In case such a permit that is meant in the 2 or the 3 § is refused or if this law otherwise causes that a licence according to the 2 § in the Atomic Energy Act (1956:306) can not be utilized, the proprietor of the nuclear reactor is entitled to compensation from the state for losses in consequence of measures which he, before the entering into force of this law, has taken in pursuance of the licence according to the Atomic Energy Act.

If the proprietor neglects to take reasonable measures in order to confine the loss, the compensation is reduced correspondingly.

5 §

Anyone who intentionally or by carelessness violates what is stipulated in the 2 §, the first section, or the 3 §, the first section, shall be sentenced to fine or to imprisonment for at the highest two years.

On behalf of the government

Thorbjörn Fälldin

Olof Johansson
(The Ministry of Industry)

The law entered into force May 17, 1977.

S W E D E N

NUCLEAR LIABILITY ACT*

8th March 1968 (No. 45)

INTRODUCTORY PROVISIONS

Section 1

(a) For the purposes of this Act:

(i) "Nuclear fuel" means fissionable material consisting of uranium or plutonium metal, alloy or chemical compound and such other fissionable material as the Government shall determine;

(ii) "Radioactive products" means any radioactive material other than nuclear fuel, and radioactive waste, if the material or waste has been produced in the process of producing or utilizing nuclear fuel or has become radioactive by exposure to radiation incidental to such production or utilization;

(iii) "Nuclear substances" means nuclear fuel other than natural uranium or depleted uranium, and radioactive products other than radio-isotopes which are used or prepared to be used for any industrial, commercial, agricultural, medical or scientific purpose;

(iv) "Nuclear reactor" means any structure containing nuclear fuel in such an arrangement that a self-sustaining chain process can occur therein without an additional source of neutrons;

(v) "Nuclear installation" means any nuclear reactor other than one with which a ship or any other means of transport is equipped for use as a source of power; any factory for the production or processing of nuclear substances; any factory for the separation of isotopes of nuclear fuel; any factory for the reprocessing of irradiated nuclear fuel; any facility where nuclear substances are stored with the exception of any facility intended exclusively for storage incidental to the carriage of such substances; any such other installation containing nuclear fuel or radioactive products as the Government shall determine;

English translation, prepared within the Swedish Ministry of Justice with the assistance of the Secretariat of the European Nuclear Energy Agency.

(vi) "Installation State", in relation to a nuclear installation, means the Contracting State within the territory of which that installation is situated or, if it is not situated within the territory of any State, the Contracting State by which the nuclear installation is operated or which has authorized its operation;

(vii) "Operator" means, in relation to a nuclear installation situated in Sweden, the person operating or in charge of the installation, whether authorized thereto under the Atomic Energy Act of 1st June 1956 (No. 306) or not, and, in relation to a nuclear installation outside Sweden, the person recognized under the law of the Installation State as the operator of that installation;

(viii) "Nuclear damage" means

(1) any damage caused by the radioactive properties of nuclear fuel or radioactive products or a combination of radioactive properties with toxic, explosive or other hazardous properties of such fuel or products;

(2) any damage caused by ionizing radiation emitted from any source of radiation inside a nuclear installation other than nuclear fuel or radioactive products;

(ix) "Nuclear incident" means any occurrence or series of occurrences having the same origin which causes nuclear damage;

(x) "Paris Convention" means the Convention on Third Party Liability in the Field of Nuclear Energy, signed in Paris on 29th July 1960 and amended by the Additional Protocol signed in Paris on 28th January 1964;

(xi) "Supplementary Convention" means the Convention supplementary to the Paris Convention, signed in Brussels on 31st January 1963 and amended by the Additional Protocol signed in Paris on 28th January 1964;

(xii) "Contracting State" means any State Party to the Paris Convention.

(b) The Government may prescribe that any nuclear installation, nuclear fuel or radioactive products shall be excluded from the application of this Act, if the small extent of the risks involved so warrants.

Section 2

The Government or an authority appointed by the Government may in respect of nuclear installations situated in Sweden determine that two or more installations operated by one and the same operator and located at the same site shall, for the purposes of this Act, be deemed to be one single installation.

Section 3

(a) This Act does not apply to nuclear damage resulting from nuclear incidents occurring in the territory of a non-Contracting State.

(b) Where liability lies with an operator of a nuclear installation situated in Sweden, this Act applies to nuclear damage suffered in the

territory of a non Contracting State only if the nuclear incident occurred in Sweden. Where liability lies with an operator of a nuclear installation situated outside Sweden, the territorial extent of the liability is governed by the law of the Installation State.

(c) In relation to a non-Contracting State the Government may determine that compensation for nuclear damage suffered in the territory of that State shall be payable in Sweden only if and to the extent that compensation for nuclear damage suffered in Sweden would be payable in that State. Such decision shall not, however, affect liability arising under any such international agreement as referred to in Section 14 (c) by which Sweden is bound.

(d) Provisions regarding the right in certain cases of a person who has paid compensation for nuclear damage to bring, notwithstanding the provisions of this Section, an action of recourse against an operator of a nuclear installation are laid down in Section 15.

Section 4

The Government may, having due regard to Sweden's obligations under the Paris Convention, determine that a non-Contracting State shall for the purposes of this Act be deemed to be a Contracting State.

COMPENSATION

Section 5

The operator of a nuclear installation shall be liable to pay compensation for nuclear damage caused by a nuclear incident in his installation. However, except if otherwise stipulated by express terms of a contract in writing, the operator shall not be liable in respect of a nuclear incident involving only nuclear substances which have been stored in the installation incidentally to their carriage to or from another nuclear installation situated in the territory of a Contracting State.

Section 6

(a) The operator of a nuclear installation shall be liable to pay compensation for nuclear damage caused by a nuclear incident occurring in the course of carriage of nuclear substances from a nuclear installation situated in Sweden or in the territory of another Contracting State, except if otherwise provided in paragraphs (b) or (c) of this Section.

(b) In the case of carriage of nuclear substances to a nuclear installation situated in Sweden or in the territory of another Contracting State the liability for damage caused by a nuclear incident occurring in the course of the carriage shall lie with the consignee operator as from the time which has been fixed by a written contract between him and the consignor. In the absence of such contract the liability shall be transferred to the consignee when the nuclear substances are taken in charge by him.

(c) In the case of carriage of nuclear substances to a nuclear reactor with which a ship or any other means of transport is equipped and which is intended to be used therein as a source of power, the consignor operator shall cease to be liable when the nuclear substances have been

taken in charge by the person duly authorized to operate or be in charge of that reactor.

Section 7

(a) Where nuclear substances are sent from a non-Contracting State to a nuclear installation situated in Sweden or in the territory of another Contracting State with the written consent of the operator of that installation, the latter shall be liable for nuclear damage caused by any nuclear incident occurring in the course of the carriage, except if otherwise provided in paragraph (b) of this Section.

(b) In the case of carriage of nuclear substances from a nuclear reactor with which a ship or any other means of transport is equipped and which is intended to be used therein as a source of power, to a nuclear installation situated in Sweden or in the territory of another Contracting State, the operator of that installation shall be liable from the time when he takes charge of the nuclear substances.

(c) Liability for nuclear damage caused by a nuclear incident occurring in Sweden in the course of carriage of nuclear substances, other than carriage from or to a nuclear installation situated in Sweden or in the territory of another Contracting State, shall lie with the person authorized under the Atomic Energy Act to perform the carriage. The provisions of this Act relating to an operator of a nuclear installation situated in Sweden shall in such case apply to the person thus authorized.

Section 8

The provisions of Sections 6 and 7 of this Act on liability for nuclear damage caused by a nuclear incident in the course of carriage of nuclear substances shall apply also in respect of nuclear incidents occurring while the substances are stored incidentally to their carriage, except where the substances have been stored in a nuclear installation and the operator of that installation is liable pursuant to such contract as referred to in Section 5.

Section 9

Where nuclear damage in cases other than those governed by Sections 5 - 8 of this Act has been caused by nuclear substances which came from a nuclear installation situated in Sweden or in the territory of another Contracting State or, prior to the nuclear incident, had been in the course of such carriage as referred to in Section 7 of this Act, the operator who had the substances in his possession at the time of the incident shall be liable for such damage; provided that, if at the time of the incident no operator had the nuclear substances in his possession, liability shall lie with the operator who last had the substances in his possession. However, if prior to the nuclear incident the nuclear substances had been in the course of carriage and no operator had taken charge of the substances after the carriage was interrupted, liability shall lie with the operator who at the time when the carriage ended was liable pursuant to Section 6 or 7 of this Act for nuclear damage caused by a nuclear incident occurring in the course of the carriage.

Section 10

(a) On request of a carrier performing such carriage as referred to in Section 6 or 7 the Government, or an authority appointed by the Government, may determine that the carrier shall be liable, in place of the operator of a nuclear installation situated in Sweden, for nuclear damage caused by a nuclear incident occurring in the course of or in connection with the carriage. Such decision may be taken only if the operator concerned has consented thereto and the carrier has demonstrated that insurance has been taken out pursuant to Sections 22 - 26 or that other financial security has been furnished pursuant to Section 27. Where such decision has been taken, any provision of this Act relating to the operator concerned shall apply to the carrier instead of the operator in respect of nuclear incidents occurring in the course of or in connection with the carriage.

(b) Where a similar decision has been taken according to the law of another Contracting State in respect of nuclear damage for which an operator of a nuclear installation situated in that State would be liable, such decision shall under this Act have the same effect as a decision pursuant to paragraph (a) of this Section.

Section 11

(a) The operator of a nuclear installation shall be liable to pay compensation due under this Act even if there has been no fault or negligence on his part.

(b) However, the operator of a nuclear installation situated in Sweden shall not be liable under this Act for nuclear damage caused by a nuclear incident directly due to an act of war, armed conflict, civil war or insurrection or caused by a grave natural disaster of an exceptional character. The operator of a nuclear installation situated in the territory of another Contracting State shall in such case be liable only if the law of the Installation State so provides.

(c) In cases referred to in paragraph (b) of this Section, liability under rules of the law of torts other than those laid down in this Act shall arise only to the extent provided for in Section 14 (b) .

Section 12

(a) The operator of a nuclear installation shall not be liable under this Act for damage to the nuclear installation itself or to any property which, at the time of the nuclear incident, was on the site of the installation and was used or intended to be used in connection with that installation.

(b) Where the operator of a nuclear installation situated in the territory of another Contracting State is liable for damage caused by a nuclear incident occurring in the course of carriage of nuclear substances, the question whether compensation shall be awarded for damage to the means of transport shall be governed by the law of the Installation State.

(c) In cases referred to in the preceding paragraphs of this Section liability under rules of the law of torts other than those laid down in this Act shall arise only to the extent provided for in Section 14 (b).

Section 13

- (a) Except as otherwise provided in this Act, compensation payable under the Act shall be fixed in accordance with the general rules of the law of torts.
- (b) Where the person suffering damage has contributed thereto the operator may be exonerated, wholly or partially, from his liability only where such person has acted or omitted to act with intent to cause damage or where there has been gross negligence on his part.

Section 14

- (a) Claims for compensation for nuclear damage covered by the provisions of this Act relating to compensation for such damage or by the corresponding legislation of another Contracting State may not be brought against any person other than the operator or the person providing insurance covering the liability of the operator, except as otherwise provided in the second sentence of Section 16.
- (b) Claims for compensation for nuclear damage for which the operator, pursuant to Section 11 or 12 of this Act or the corresponding provisions of the law of another Contracting State, is not liable can be brought only against an individual who has caused the damage by an act or omission done with intent to cause damage. The operator shall, however, be liable in accordance with the general rules of the law of torts for such damage to a means of transport as referred to in Section 12 (b).
- (c) As regards liability for nuclear damage caused by a nuclear incident occurring in the course of carriage of nuclear substances or nuclear damage otherwise arising in connection with the operation of a ship or any other means of transport the provisions of the preceding paragraphs of this Section shall not affect the application of any international agreement in force or open for signature, ratification or accession on 29th July 1960 or of any provisions of national legislation based on such agreement. The Government may determine that this shall apply also to other provisions of the law of a Contracting State which are equivalent to the provisions of such agreement.
- (d) Provisions on compensation out of public funds are laid down in Sections 28 - 35.

Section 15

- (a) Any person who has been held liable to pay compensation for nuclear damage under such international agreement or provisions of national legislation as referred to in Section 14 (c) of this Act or under the law of any foreign State shall acquire by subrogation the rights of the person suffering the damage against the operator liable for the damage under this Act. Where the compensation paid relates to damage covered by a decision taken under Section 3 (c) of this Act, the person liable shall have a right of recourse against the operator, who would have been liable for the damage if no such decision had been taken.
- (b) Any person who has his principal place of business in Sweden or in the territory of another Contracting State or who is the servant of such person and who has been held liable to pay compensation for nuclear damage for which the person suffering damage, by virtue of the provisions of Section 3, has no right to compensation under this Act shall, subject to the application, mutatis mutandis, of the provisions of the first

sentence of paragraph (a) of this Section, have a right of recourse against the operator who, but for the provisions of Section 3, would have been liable for the damage; provided, however, that in the case of nuclear damage caused by a nuclear incident occurring in the course of carriage of nuclear substances to a non-Contracting State, the operator of the nuclear installation from which the nuclear substances were sent shall incur no liability after the substances have been unloaded from the means of transport by which they have arrived in the non-Contracting State, and in case of nuclear damage caused by a nuclear incident occurring in the course of carriage of nuclear substances from a non-Contracting State the operator of that installation shall incur no liability until the nuclear substances have been loaded on the means of transport by which they are to be carried from the territory of the non-Contracting State.

(c) A person who is himself liable for nuclear damage pursuant to Section 20 of this Act shall have no right of subrogation or recourse under the preceding paragraphs of this Section.

Section 16

Where a person has simultaneously suffered nuclear damage for which he is entitled to compensation under this Act and other damage, the provisions of this Act regarding liability for nuclear damage shall apply equally to such other damage if and to the extent that such damage is not reasonably separable from the nuclear damage. These provisions shall not, however, limit or otherwise affect the liability of a person other than the operator liable under this Act as regards damage caused by an emission of ionizing radiation not covered by this Act.

Section 17

(a) The liability under this Act of an operator of a nuclear installation situated in Sweden shall not exceed fifty million kronor in respect of nuclear damage caused by any one nuclear incident. The Government or an authority appointed by the Government may, taking account of the size or character of a nuclear installation, of the extent of a carriage or of any other circumstances, fix a lower amount, which shall, however, in no event be less than twenty-five million kronor. The amount of liability of an operator of a nuclear installation situated outside Sweden shall be determined pursuant to the law of the Installation State. In case of a nuclear incident occurring in the course of carriage of nuclear substances the liability of the operator under this Act for damage other than damage to the means of transport shall in no case be limited to an amount less than twenty-five million kronor.

(b) Compensation payable in respect of loss of life or personal injury shall be limited to one million kronor for each person killed or injured.

(c) The amounts referred to in the preceding paragraphs of this Section shall not include any interest or costs awarded by a court.

Section 18

(a) Where nuclear damage gives rise to the liability of two or more operators, they shall be jointly and severally liable to pay compensation; provided that the liability of each operator shall be limited to

the amount established with respect to him pursuant to Section 17 (a). However, where the damage has arisen in the course of carriage of more than one consignment of nuclear substances carried on one and the same means of transport or while more than one consignment have been stored in one and the same nuclear installation incidentally to their carriage to aggregate liability of the operators shall not exceed the highest amount established with respect to any of them.

(b) The apportionment of the aggregate liability as between the operators liable shall be determined with due regard to the extent to which the damage caused is attributable to each of the nuclear installations involved as well as to any other relevant circumstances.

Section 19

(a) If the maximum amount of liability applicable pursuant to Section 17 (a) or Section 18 (a) is not sufficient to satisfy in full the claims of those who are entitled to compensation, their compensation and any interest accruing thereto shall be reduced proportionally.

(b) If, following a nuclear incident, there are reasons to believe that a reduction pursuant to the preceding paragraph of this Section will prove necessary the Government or an authority appointed by the Government may decide that until further notice the compensation payable shall be reduced by such percentage of the full amount of compensation as shall be determined by the Government or competent authority.

Section 20

In respect of any sum that the operator of a nuclear installation has been held liable to pay as compensation under this Act or under the corresponding legislation of another Contracting State, the operator shall have a right of recourse against any individual who has caused the damage by an act or omission done with intent to cause damage or against any person who has assumed liability for the damage under the express terms of a contract in writing with the operator. Except as otherwise provided in the second sentence of Section 16 or in Section 18 (b) the operator of a nuclear installation shall in no other case have a right of recourse against any person in respect of any sum he may have paid as compensation under this Act or under the corresponding legislation of another Contracting State.

Section 21

(a) The right to bring an action for compensation for nuclear damage under Section 5, 6, 7, 8, 9 or 15 of this Act against the operator of a nuclear installation or against the person providing insurance to cover such liability shall be extinguished if a claim for compensation has not been made against the operator within three years from the date at which the person suffering damage had knowledge or by observing due diligence ought reasonably to have known both of the fact that he has suffered damage entitling him to compensation under this Act and of the operator liable or, in cases referred to in Section 15 (a) or (b), from the date at which the claim for compensation was made against him.

(b) The right to compensation for nuclear damage shall be extinguished if an action is not brought against the operator or his insurer

within ten years from the date of the nuclear incident. In the case of nuclear damage caused by a nuclear incident involving nuclear substances which had been stolen, lost or abandoned and had not yet been recovered, no action for compensation may, however, be brought later than twenty years after the date of the theft, loss or abandonment. In cases where it is necessary in order to comply with the provisions of the Paris Convention, the Government shall determine that a person suffering damage shall, on conditions to be prescribed by the Government, retain his right to compensation, notwithstanding that he has not brought an action before a Swedish court within the period specified in this paragraph.

(c) Provisions regarding compensation out of public funds in certain cases where the operator has ceased to be liable are laid down in Section 32.

INSURANCE

Section 22

(a) The operator of a nuclear installation situated in Sweden is required to take out and maintain insurance to cover his liability for nuclear damage under this Act or the corresponding legislation of another Contracting State up to the amount specified in Section 17 (a). The insurance shall be approved by the Government or an authority appointed by the Government.

(b) Insurance may be taken out either

- (i) to cover the liability for each nuclear incident that may occur; or
- (ii) to cover at any time the nuclear installation by an agreed amount after deduction of any sum of compensation paid out or to be paid out by the insurer under the insurance policy.

(c) Liability for damage arising in the course of carriage of nuclear substances may be covered by a separate insurance.

Section 23

(a) In cases referred to in Section 22 (b) (i) the insurance amount shall be not less than the amount of liability established with respect to the operator pursuant to Section 17 (a). In cases referred to in Section 22 (b) (ii), the insurance amount shall be not less than one hundred and twenty per cent of the aforementioned maximum amount of liability. The amount covered by the insurance policy shall not include any interest or costs awarded by a court.

(b) Where insurance has been taken out in accordance with Section 22 (b) (ii) and an insurance contingency occurs which itself or together with one or more earlier contingencies is deemed likely to entail a reduction of the insurance amount below the amount of liability established with respect to the operator, the operator shall without delay take out such supplementary insurance as will bring the insurance amount up to an amount of not less than one hundred and twenty per cent of the said amount of liability.

Section 24

Any person entitled to compensation for nuclear damage shall have a right to bring an action for such compensation directly against the insurer. Except if otherwise provided in the insurance policy, the operator shall thereby be insured against any liability for nuclear damage under this Act or the corresponding legislation of another Contracting State.

Section 25

(a) If the insurance policy is cancelled or otherwise ceases to be valid, the insurer shall nevertheless, in relation to any person suffering damage, continue to be liable to pay compensation in respect of nuclear damage caused by a nuclear incident occurring within two months from the date at which the authority appointed for this purpose by the Government has been notified in writing of the time of expiry of the policy. Where the insurance policy covers liability for nuclear damage caused by a nuclear incident occurring in the course of carriage of nuclear substances and such carriage has started before the expiry of the said period, the insurer shall, however, in no case cease to be liable for such damage until the carriage has come to an end.

(b) The provisions of the preceding paragraph of this Section shall not apply with respect to nuclear incidents occurring after the day on which a new insurance contract has come into force.

(c) Except as provided in the preceding paragraphs of this Section, the insurer may in no case invoke as a defence against a claim for compensation any circumstances due to a person other than the person suffering the damage.

Section 26

The provisions of Sections 24 and 25 shall apply where an action for compensation for nuclear damage under this Act may be brought in Sweden and notwithstanding that the law of a foreign State may be applicable to the relationship between the insurer and the operator liable or that the nuclear installation involved is situated outside Sweden.

Section 27

(a) The State shall be exempted from the obligation under Section 22 to take out and maintain insurance.

(b) The Government or an authority appointed by the Government may relieve an operator from the obligation to take out insurance, provided that the operator furnishes adequate financial security to cover his obligations under this Act and under the corresponding legislation of any other Contracting State and shows that he has taken satisfactory measures to ensure the settlement of any claims for compensation.

(c) The provisions of this Act relating to insurance shall apply, mutatis mutandis, to such other financial security as referred to in the preceding paragraph of this Section or the corresponding provisions of the legislation of another Contracting State.

COMPENSATION OUT OF PUBLIC FUNDS

Section 28

(a) If a person who is entitled under this Act or the corresponding legislation of another Contracting State to obtain compensation for nuclear damage from the operator of a nuclear installation situated in Sweden shows that he has been unable to recover the compensation due from the operator's insurer, compensation shall be paid by the State.

(b) The total compensation payable under the preceding paragraph of this Section shall not exceed the maximum amount of liability established with respect to the operator pursuant to Section 17 (a).

Section 29

(a) Where liability for nuclear damage lies with the operator of a nuclear installation, used for peaceful purposes and situated in Sweden or in the territory of another State Party to the Supplementary Convention and appearing at the time of the nuclear incident on the list referred to in Article 13 of the Supplementary Convention, and jurisdiction over actions for compensation lies with Swedish courts in accordance with the provisions of Section 36 of this Act, and the amount of liability established pursuant to Section 17 (a) or Section 18 (a) is insufficient to satisfy the claims for compensation due, or the compensation payable has, by virtue of a decision taken under Section 19 (b), been reduced to a fixed percentage of the full amount due, compensation out of public funds shall be afforded for nuclear damage suffered

(i) in Sweden or in the territory of another State Party to the Supplementary Convention; or

(ii) on or over the high seas on board a ship or aircraft registered in Sweden or in the territory of another State Party to the Supplementary Convention; or

(iii) in any other case on or over the high seas by a State Party to the Supplementary Convention or by a national of such State; provided, however, that compensation shall be payable for damage to a ship or an aircraft only if such ship or aircraft was at the time of the nuclear incident registered in the territory of a State Party to the Supplementary Convention.

(b) By application of the provisions of the preceding paragraph of this Section the term "national of a State Party to the Supplementary Convention" shall include any company, association or other society, foundation or other similar body, whether corporate or not, established in the territory of such State. Any person who under the law of a State Party to the Supplementary Convention other than Sweden is considered to have his habitual residence in that State and in respect of his right to compensation under the Supplementary Convention is under that law assimilated to the nationals of that State shall under this Act be considered to be a national of a State Party to the Supplementary Convention.

Section 30

- (a) Compensation out of public funds pursuant to Section 29 shall be fixed in accordance with the principles laid down in Section 11 (a), Sections 12 and 13 and Section 17 (b) and (c).
- (b) The provisions of the first sentence of Section 15 (a) and of Section 15 (c) regarding rights of recourse against an operator shall apply, mutatis mutandis, to rights of recourse against the State in respect of any sum paid as compensation for nuclear damage and for which compensation is payable out of public funds under Section 29.

Section 31

- (a) The total amount of compensation for nuclear damage caused by a nuclear incident payable pursuant to Sections 5 - 21, 29 and 30 by one or more operators and the State, and payable pursuant to any such agreement as referred to in Article 15 of the Supplementary Convention, shall not exceed an amount equivalent to one hundred and twenty million units of account referred to in the European Monetary Agreement of 5th August 1955 and as defined in Article 24 of that Agreement, on 29th July 1960. The amount shall not include any interest or costs awarded by a court.
- (b) If the amount available for compensation out of public funds pursuant to Sections 29 and 30 is not sufficient to satisfy in full the claims for compensation due, the amounts of compensation and any interest accruing thereto shall be reduced proportionally. The provisions of Section 19 (b) shall apply, mutatis mutandis.

Section 32

- (a) If a nuclear incident in respect of which liability lies with the operator of a nuclear installation situated in Sweden has caused nuclear damage in Sweden, which has not come to light until after the rights of compensation against the operator have been extinguished pursuant to Section 21 (b) or the corresponding provisions of the legislation of another Contracting State but within thirty years after the date of the incident, compensation for such damage shall be paid by the State. The State shall also be liable to pay compensation for nuclear damage which has come to light before the rights of compensation have been so extinguished if the person suffering the damage has failed to bring an action against the operator or to take other appropriate measures to preserve his rights within the periods applicable but has had reasonable excuses for not bringing such action or taking such measures.
- (b) If compensation has been reduced pursuant to Section 19 (a) and, whenever applicable, Section 31 (b) or the corresponding provisions of the legislation of another Contracting State, the compensation payable out of public funds under the present Section shall be reduced accordingly. In other respects, the liability to pay compensation shall be determined as if the operator had been liable for the damage. The right to bring an action for compensation shall be extinguished if a claim for compensation has not been made against the State, with the authority appointed for this purpose by the Government, within the period specified in Section 21 (a).
- (c) The Government may decide that compensation under the present Section shall be payable also in respect of nuclear damage suffered outside Sweden.

Section 33

If and to the extent that the amount of liability established with respect to the operator pursuant to Section 17 (a) or Section 18 (a) or the corresponding provisions of the legislation of another Contracting State is not sufficient to satisfy in full the claims for compensation due for nuclear damage sustained in Sweden, and if compensation for such damage is not payable out of public funds pursuant to Section 29 or otherwise under the Supplementary Convention, compensation out of public funds shall be payable under terms and conditions to be determined by the Government and Parliament. In such cases compensation shall also be granted to supplement compensation payable pursuant to Section 32 for nuclear damage sustained in Sweden, to the extent that such compensation has been reduced pursuant to the first sentence of Section 32 (b). Compensation under this Section shall also be granted for nuclear damage sustained in Sweden in cases where, pursuant to a decision under Section 19 (b), the compensation to be paid by the operator has been reduced to a fixed percentage of the full amount due and compensation out of public funds is not payable under the Supplementary Convention.

Section 34

Compensation pursuant to Section 28, 29 or 33 shall not be payable for nuclear damage caused by such nuclear incidents as referred to in Section 11 (b).

Section 35

(a) In respect of any sums paid out of public funds pursuant to Section 28 the State shall have a right of recourse only against the operator, his insurer and any person against whom the operator has a right of recourse under Section 20.

(b) In respect of any sums paid out of public funds pursuant to Section 29 or 33 on the grounds of the existence of a decision under Section 19 (b), the State shall acquire by subrogation the right to obtain compensation from the operator that the person suffering the damage may have. With regard to any other sums paid out by the State pursuant to Sections 29 - 31 or otherwise paid out in accordance with the provisions of the Supplementary Convention in respect of a nuclear incident giving rise under the law of another Contracting State to the liability of the operator of a nuclear installation situated in Sweden or paid out by the State pursuant to Section 33, the State shall have a right of recourse only against an individual who has caused the damage by an act or omission done with intent to cause damage. The provisions of the present paragraph shall apply, *mutatis mutandis*, in respect of compensation paid out by the State pursuant to Section 32.

COMPETENT COURTS, ETC.

Section 36

(a) Actions for compensation due under Sections 5, 6, 7, 8, 9 or 15 against the operator of a nuclear installation or against his insurer shall be brought before Swedish courts, if

(i) the nuclear incident has occurred wholly or partly in Sweden; or

(ii) the nuclear installation involved is situated in Sweden and either the nuclear incident has occurred wholly outside the territory of any Contracting State or the place of the nuclear incident cannot be determined with certainty.

(b) Whenever required in order to comply with the provisions of Article 13 (c) (ii) of the Paris Convention the Government shall restrict the jurisdictional competence conferred upon Swedish courts under the preceding paragraph of this Section.

Section 37

(a) Jurisdiction over actions for compensation in respect of nuclear damage brought before Swedish courts pursuant to Section 36 and over actions for compensation against the State pursuant to Sections 28, 29, 32 or 33 of this Act shall lie exclusively with the court within the jurisdictional area of which the nuclear incident occurred. Where competence would thus lie with two or more courts, the action may be brought before either of them.

(b) Should there be no competent court under the preceding paragraph of this Section, the action shall be brought before the City Court of Stockholm.

Section 38

(a) Where in accordance with the provisions of the Paris Convention jurisdiction over actions for compensation for nuclear damage lies with the courts of another Contracting State, any judgement entered by such court in such action shall, as soon as the judgement has become enforceable under the law of that State, on request be enforceable also in Sweden, without the merits of the claim being subject to any further proceedings. This provision shall, however, not entail any obligation to enforce a judgement to the extent that the applicable maximum amount of liability of the operator would thereby be exceeded.

(b) An application for enforcement shall be made before the Svea Court of Appeal. The application shall have attached to it

(i) the original judgement or a copy thereof certified by the competent public authority; and

(ii) a declaration issued by the competent public authority of the State where the judgement was entered that the judgement relates to compensation due under the Paris Convention and that it is enforceable in that State.

(c) The abovementioned documents shall contain a certificate concerning the due competence of the person having signed the documents. Such certificate shall be issued by a Swedish Embassy or Consul or by the Minister of Justice of the State concerned. If any of the relevant documents is in a foreign language other than Danish or Norwegian, a translation into Swedish shall be attached to the document. The correctness of

the translation shall be certified by a diplomatic or consular officer or by a Swedish notary public.

(d) No application for enforcement shall be granted unless the defendant has had an opportunity to submit his comments on the application.

(e) Where the application is granted, the judgement shall be enforceable in the same manner as a judgement entered by a Swedish court, unless the Supreme Court has decided otherwise upon an appeal against the decision of the Court of Appeal.

FINAL PROVISIONS

Section 39

(a) Where nuclear substances are sent from a nuclear installation situated in Sweden to a consignee outside Sweden or to such installation from a consignor outside Sweden and under such circumstances that the operator of the said installation is liable pursuant to Section 6 or 7 for nuclear damage arising in the course of the carriage, the operator shall provide the carrier with a certificate issued by the insurer and stating the name and address of the operator, the nuclear substances and the carriage in respect of which the insurance applies as well as the amount, type and duration of the insurance. The certificate shall include a statement by the authority appointed for this purpose by the Government that the operator named therein is an operator of a nuclear installation within the meaning of the Paris Convention. The person by whom the certificate is issued shall be responsible for the correctness of the certificate as regards the name and address of the operator and the amount, type and duration of the insurance.

(b) The form of certificate to be issued under the preceding paragraph of this Section shall be established by the Government or an authority appointed by the Government.

Section 40

Any person who fails to fulfil his obligations under this Act to take out and maintain insurance or to observe such conditions for furnishing financial security as may be laid down pursuant to Section 27 (b) shall be liable to fines or to imprisonment for a term not exceeding six months.

Section 41

The Government may enact provisions for the application of this Act.

This Act shall come into force, Sections 29 - 31 on a day to be determined by the Government, and the remainder of the Act on 1st April 1968.

Switzerland

1. Short introduction.

Although it has an ambitious nuclear power program, Switzerland has enacted few laws directly relating to nuclear energy. The basic law, of course, is the Atomic Energy Act of December 23, 1959 (SW-1). This Act has survived relatively intact for the last twenty years, although the Swiss Government has recently proposed major changes to it (SW-2) and expects to revise it completely within five years.

2. List of the relevant laws and regulations.

- SW-1 Atomic Energy Act of December 23, 1959.
- SW-2 Amendments to Act of December 23, 1959
(proposed August 24, 1977).
- SW-3 Ordinance of April 19, 1963.

3. The text of principal laws and treaties.

- SW-1 Atomic Energy Act of December 23, 1959.
- SW-2 Amendments to Act of December 23, 1959
(proposed August 24, 1977).

LOI FÉDÉRALE

sur

l'utilisation pacifique de l'énergie atomique et la protection contre les radiations

(Du 23 décembre 1959)

L'Assemblée fédérale de la Confédération suisse,
vu les articles 24^{quinties}, 64 et 64^{bis} de la constitution;
vu le message du Conseil fédéral du 8 décembre 1958, ⁽¹⁾

arrête:

CHAPITRE PREMIER

Définitions et mesures d'encouragement

Article premier

¹ L'énergie atomique est toute forme d'énergie libérée lors de processus nucléaires. Définitions

² Sont réputées installations atomiques au sens de la présente loi les installations qui servent à produire de l'énergie atomique ou à obtenir, traiter, entreposer ou rendre inoffensifs des combustibles nucléaires et des résidus radioactifs.

³ Le Conseil fédéral peut définir, par une ordonnance, les notions de combustible nucléaire et de résidus ainsi que d'autres notions employées dans la présente loi.

⁴ Le Conseil fédéral peut assimiler aux résidus les parties intégrantes d'installations atomiques qui deviennent radioactives lors de la production d'énergie atomique. Il peut prévoir des exceptions aux dispositions de la présente loi concernant le régime de l'autorisation, de la responsabilité civile et de l'assurance obligatoire pour les combustibles nucléaires et les résidus dont les radiations sont de faible intensité.

⁽¹⁾ FF 1958, II, 1549.

Art. 2

¹ La Confédération encourage les recherches scientifiques sur l'utilisation pacifique de l'énergie atomique, sur les dangers des radiations et sur les moyens de s'en préserver; elle favorise la formation de spécialistes.

² Il n'est pas accordé de subvention pour les recherches effectuées par des entreprises à but lucratif. Des projets tendant à encourager la recherche et la formation de spécialistes, réalisés par des entreprises à but lucratif, peuvent exceptionnellement bénéficier de l'appui financier de la Confédération, si l'intérêt public le commande. La Confédération peut participer à de telles entreprises.

Art. 3

Pour couvrir les besoins du pays, la Confédération peut acquérir des matières brutes et des combustibles nucléaires et les mettre à la disposition des exploitants d'installations atomiques et de la recherche scientifique.

CHAPITRE DEUXIÈME

Mesures administratives

Art. 4

¹ Une autorisation de la Confédération est requise:

- a. Pour la construction et l'exploitation d'une installation atomique, de même que pour toute modification du but, de la nature et de l'ampleur d'une telle installation;
- b. Pour le transport, la remise et la réception, de même que pour toute autre forme de détention de combustibles nucléaires et de résidus radioactifs;
- c. Pour l'importation, le transit et l'exportation de combustibles nucléaires et de résidus radioactifs;
- d. Pour l'exportation d'énergie produite par des installations atomiques.

² Le Conseil fédéral peut décréter qu'une autorisation sera requise pour l'importation, le transit et l'exportation d'équipements de production, d'appareils et de matières nécessaires à la technique nucléaire ainsi que de matières brutes destinées à la production de combustibles nucléaires.

³ Les attributions de police de la Confédération et des cantons, en particulier en ce qui concerne les constructions, le feu, les eaux

et la surveillance du matériel de guerre, sont réservées, de même que les mesures prévues par d'autres dispositions en matière d'importation, d'exportation et de transit.

Art. 5

¹ L'autorisation doit être refusée ou subordonnée à l'accomplissement de conditions ou d'obligations appropriées si cela est nécessaire à la sauvegarde de la sûreté extérieure de la Suisse et au respect de ses engagements internationaux ou à la protection des personnes, des biens d'autrui ou de droits importants.

² L'autorisation doit être refusée si le requérant ne justifie pas de l'assurance ou de la fourniture des sûretés qui lui incombent, si les personnes responsables de la direction et de la surveillance dans les cas prévus à l'article 4, 1^{er} alinéa, lettres a et b, ne possèdent pas les aptitudes nécessaires ou si le requérant n'offre pas toute garantie quant à l'observation des dispositions de la présente loi et des conditions ou charges qui pourraient lui être imposées.

³ Le Conseil fédéral peut subordonner l'octroi de l'autorisation de construire ou d'exploiter une installation atomique à la condition que le requérant soit citoyen suisse et habite la Suisse. Si l'autorisation est sollicitée par une personne morale, le Conseil fédéral peut exiger que deux tiers au moins des membres du conseil d'administration soient citoyens suisses et habitent la Suisse et que la personne morale ait son siège en Suisse.

⁴ L'autorisation d'exporter des combustibles nucléaires radioactifs, des matières brutes et des matières nécessaires à la technique nucléaire peut être refusée si cette mesure s'impose pour couvrir les besoins du pays.

⁵ L'autorisation d'exporter de l'énergie produite par des installations atomiques doit être refusée si l'exportation est contraire à l'intérêt public et s'il est à prévoir que cette énergie trouvera une utilisation convenable en Suisse dans le temps pour lequel l'autorisation est demandée.

Art. 6

Le Conseil fédéral ou l'organe désigné par lui statue sur les demandes d'autorisation.

Art. 7

¹ La demande d'autorisation de construire, d'exploiter ou de modifier une installation atomique doit être accompagnée d'un rapport technique détaillé. L'autorité compétente doit se procurer, aux frais du requérant, un avis permettant d'établir, en particulier, si le projet prévoit toutes les mesures que l'on peut raisonnablement exiger pour

b. Conditions

c. Compétence

d. Procédure

la protection des personnes, des biens d'autrui et de droits importants. Cet avis doit être porté à la connaissance du requérant.

² Le canton sur le territoire duquel l'installation atomique doit être érigée sera en outre invité à donner son préavis.

Art. 8

Surveillance
par
l'État

¹ Les installations atomiques ainsi que toute détention de combustibles nucléaires et de résidus radioactifs sont soumises à la surveillance de la Confédération.

² Le Conseil fédéral et les organes désignés par lui sont autorisés, dans l'exercice de leur surveillance, à ordonner en tout temps les mesures qui s'imposent pour assurer la protection des personnes, des biens d'autrui et de droits importants, pour sauvegarder la sûreté extérieure de la Suisse et garantir le respect de ses engagements internationaux; ils sont également compétents pour veiller à l'exécution de ces mesures.

³ Tout projet de modification d'une installation atomique doit être annoncé aux organes compétents, même s'il s'agit d'une modification pour laquelle une autorisation n'est pas nécessaire.

Art. 9

¹ Les autorisations sont incessibles.

² Une autorisation peut être révoquée par l'organe qui l'a délivrée si elle a été obtenue sur la base d'indications inexactes ou incomplètes ou si les conditions auxquelles elle a été subordonnée ne sont pas ou plus remplies.

³ Si une autorisation d'exploiter une installation atomique est révoquée, l'exploitant est tenu d'éliminer toutes les sources de dangers de l'installation mise hors service.

⁴ Lorsque l'autorisation de détenir des combustibles nucléaires et des résidus radioactifs est révoquée, ces matières doivent être transférées immédiatement à un autre bénéficiaire d'une autorisation ou à la Confédération; au besoin, la Confédération peut faire saisir ces matières (art. 39) ou faire éliminer toutes les sources de dangers aux frais du bénéficiaire de l'autorisation révoquée.

⁵ Si une autorisation doit être révoquée pour des motifs auxquels le bénéficiaire est étranger, la Confédération verse à ce dernier une indemnité équitable pour le dommage résultant de la révocation. En cas de contestation, le Tribunal fédéral statue conformément à l'article 110 de la loi fédérale d'organisation judiciaire du 16 décembre 1943.

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Surveillance
par
l'État

CHAPITRE TROISIÈME

Protection contre les radiations

Art. 10

Quiconque utilise des matières radioactives ou en détient sous quelque forme que ce soit et quiconque utilise des installations et appareils émettant des radiations ionisantes est tenu, en vue de protéger la vie et l'intégrité corporelle, de prendre toutes les mesures que commandent les expériences faites et l'état de la science et de la technique. En particulier, les prescriptions édictées en vertu de l'article 11 doivent être observées.

Obligation
générale

Art. 11

¹ Le Conseil fédéral édicte des prescriptions sur la protection contre les radiations ionisantes.

Prescriptions
spéciales

² Le Conseil fédéral peut en particulier:

- Déclarer qu'une autorisation sera requise pour le transport, la remise, la réception et toute autre forme de détention et d'utilisation, de même que pour l'importation, le transit et l'exportation de matières radioactives qui ne sont pas visées par l'article 4;
- Décider que des installations et appareils émettant des radiations ionisantes ne devront être employés ou mis dans le commerce qu'après un examen officiel de leurs dispositifs de sécurité et qu'au besoin, cet examen sera renouvelé; l'emploi de tels installations et appareils peut être soumis à une autorisation.

L'octroi des autorisations peut être subordonné à la condition que le maniement de ces objets soit confié à des personnes qualifiées.

³ Le Conseil fédéral et les organes désignés par lui veillent à l'observation de ces prescriptions.

CHAPITRE QUATRIÈME

Responsabilité civile et assurance

Art. 12

¹ Si, au cours de l'exploitation d'une installation atomique, des processus nucléaires, par leurs effets radioactifs, toxiques, explosifs ou autres, provoquent la mort d'une personne, la lèsent dans sa santé ou causent un dommage matériel, l'exploitant de l'installation est seul responsable.

Responsabilité
civile
a. Principe

² De même, l'exploitant d'une installation atomique est seul responsable des dommages causés par des processus nucléaires se produisant au sein de combustibles nucléaires et de résidus radioactifs qui proviennent de son installation et qui, au moment du sinistre n'avaient pas encore été pris en charge par l'exploitant d'une autre installation atomique.

³ L'exploitant d'une installation atomique qui reçoit des combustibles nucléaires et des résidus radioactifs de l'étranger est responsable des dommages causés en Suisse par des processus nucléaires se produisant au sein de ces matières en cours du transport à destination de son installation.

⁴ En cas de transport de combustibles nucléaires et de résidus radioactifs, le bénéficiaire de l'autorisation de transport peut, avec l'assentiment de l'autorité compétente, assumer la responsabilité à la place de l'exploitant de l'installation atomique s'il justifie de l'assurance ou des sûretés exigées.

⁵ Aucune autre personne que celles mentionnées aux alinéas 1 à 4 n'est responsable des dommages de cette sorte. Celui qui est responsable en vertu d'accords internationaux possède un droit de recours contre la personne dont la responsabilité est engagée d'après la présente loi.

⁶ La responsabilité est limitée à la somme d'assurance fixée aux articles 21, 2^e et 3^e alinéas, et 22, ou, le cas échéant, à celle qui est prescrite par le Conseil fédéral.

Art. 13

¹ Les personnes responsables en vertu de l'article 12 ont un droit de recours contre celles qui intentionnellement ont causé le dommage, dérobé ou recelé les combustibles nucléaires et les résidus radioactifs de même que contre ceux qui ont expressément accepté qu'un recours soit exercé contre eux.

² Est réservé le droit de recours contre l'exploitant de l'installation atomique à l'étranger d'où proviennent les combustibles nucléaires et résidus radioactifs.

Art. 14

La responsabilité civile au sens de l'article 12 n'est pas encourue si le dommage a été causé par des cataclysmes naturels de caractère exceptionnel, par des faits de guerre ou par une faute grave du lésé, pour autant que la personne civilement responsable au sens de l'article 12 ou une personne dont elle répond n'ait pas commis de faute.

Art. 15

¹ Le mode et l'étendue de la réparation ainsi que l'allocation d'une indemnité à titre de réparation morale se déterminent suivant les principes du code des obligations concernant les actes illicites.

d. Réparation
du dommage,
réparation morale

² L'autorité compétente peut, après la survenance d'un sinistre, ordonner une enquête aux fins de rechercher les personnes susceptibles d'avoir été exposées à des radiations et obliger par sommation publique toutes les personnes susceptibles d'avoir été exposées à des radiations à s'annoncer immédiatement, mais au plus tard dans les trois mois qui suivent la sommation, à un organe désigné par elle. En déterminant le montant des dommages-intérêts et de la réparation morale, le juge apprécie librement la violation inexcusable de cette obligation de s'annoncer.

³ Lorsque la victime jouissait d'un revenu exceptionnellement élevé, le juge peut, en tenant compte de toutes les circonstances, réduire équitablement l'indemnité.

Art. 16

¹ Sont nulles les conventions qui excluent ou restreignent la responsabilité civile découlant de la présente loi.

e. Conventions

² Sont annulables, dans le délai d'un an à compter de leur conclusion, les conventions stipulant des indemnités manifestement insuffisantes.

Art. 17

¹ Les actions en dommages-intérêts et en réparation du tort moral fondées sur la présente loi se prescrivent par deux ans à compter du jour où le lésé a eu connaissance du dommage et de la personne qui en est responsable, mais en tout cas par dix ans dès le jour où l'influence nocive s'est produite.

f. Prescription

² Si les actions dérivent d'une infraction soumise par le droit pénal à une prescription plus longue, celle-ci est déterminante également en matière civile.

Art. 18

¹ Après l'expiration du délai de prescription de dix ans ou, le cas échéant, après l'expiration du délai plus long prévu par le droit pénal, le lésé peut faire valoir ses prétentions en réparation de dommages corporels contre le fonds pour dommages atomiques différés.

g. Dommages
différés
h. Action
en réparation

² Les prétentions contre le fonds se prescrivent par deux ans à compter du jour où le lésé a eu connaissance du dommage et de la personne qui en est responsable.

Art. 19

Fonds
dommages
non différés

¹ Le fonds pour dommages atomiques différés est institué par le Conseil fédéral; il est placé sous sa surveillance et a la personnalité juridique. Le Conseil fédéral nomme une commission de gestion de 5 à 7 membres.

² Les exploitants d'installations atomiques et les bénéficiaires de l'autorisation de transport, qui d'après l'article 12, 4^e alinéa, assument la responsabilité, doivent verser au fonds des contributions qui ne peuvent excéder un tiers de la prime de l'assurance-responsabilité civile obligatoire. Dans cette limite, le Conseil fédéral fixe, par voie d'ordonnance, le montant des contributions. Il dispense de l'obligation de verser des contributions lorsque le fonds a atteint un montant approprié.

³ La commission de gestion du fonds perçoit les contributions. Ses décisions peuvent être déférées au Tribunal fédéral par voie de recours de droit administratif, conformément à l'article 97 de la loi fédérale d'organisation judiciaire du 16 décembre 1943.

⁴ La Confédération peut accorder des avances au fonds. L'Assemblée fédérale peut dispenser entièrement ou partiellement de l'obligation de les restituer.

⁵ En ce qui concerne le placement de la fortune du fonds, la tenue des comptes et l'exonération d'impôt, l'article 108, 1^{er} alinéa, 1^{re} et 2^e phrases, et l'article 110 de la loi fédérale du 20 décembre 1946 sur l'assurance-vieillesse et survivants sont applicables par analogie.

Art. 20

responsabilité
civile
assurance
contre
accidents

¹ Les lésés assurés auprès de la caisse nationale d'assurance en cas d'accidents conservent les prétentions découlant pour eux de la présente loi, sous réserve de l'article 129 de la loi fédérale du 13 juin 1911 sur l'assurance en cas de maladie et d'accidents. La caisse nationale a le droit de recours prévu par l'article 100 de la dite loi.

² Si l'exploitant responsable a payé tout ou partie des primes d'une assurance privée, les prestations faites au lésé par cette assurance seront déduites du montant des réparations dues par l'exploitant en proportion de sa participation au paiement des primes, à moins que le contrat d'assurance n'en dispose autrement.

Art. 21

assurance de
responsabilité
civile
principe

¹ Celui qui est responsable aux termes de la loi doit, pour couvrir cette responsabilité, contracter une assurance auprès d'une entreprise d'assurance autorisée à opérer en Suisse.

² Sous réserve de l'article 22, l'assurance doit couvrir la responsabilité civile jusqu'à concurrence de 40 millions de francs pour chaque installation atomique ou chaque détenteur de combustibles nucléaires ou de résidus radioactifs. Si l'intérêt public le permet ou l'exige, le Conseil fédéral peut augmenter ou diminuer la somme d'assurance généralement prescrite.

³ Si une installation atomique se compose de plusieurs réacteurs, le Conseil fédéral peut imposer à l'exploitant l'obligation de s'assurer pour des sommes supérieures à celles qui sont généralement prescrites.

⁴ La Confédération n'est soumise à l'obligation de s'assurer ni pour les installations qu'elle exploite, ni pour les combustibles nucléaires et les résidus radioactifs qu'elle détient. Sa responsabilité à l'égard des tiers est engagée jusqu'à concurrence du montant pour lequel un particulier devrait s'assurer dans les mêmes circonstances.

Art. 22

¹ Lorsque l'assureur a fourni des prestations ou qu'il a constitué des réserves pour un sinistre survenu, la somme assurée diminue d'autant. Si ces prestations ou réserves atteignent un dixième de la somme assurée, l'assureur est tenu d'en informer le preneur d'assurance et l'autorité fédérale compétente.

b. Reconstitution
de la garantie
intégrale

² En cette occurrence, le preneur d'assurance est tenu de contracter une assurance complémentaire de sorte que le montant initial soit de nouveau intégralement disponible pour garantir la réparation des dommages. L'assurance complémentaire ne couvre toutefois que les dommages qui se sont produits après son entrée en vigueur. Dans les cas douteux, l'autorité compétente, en tenant compte du montant des réserves, statue sur l'obligation du preneur d'augmenter la somme d'assurance.

³ Un montant réservé pour le règlement de dommages antérieurs à l'entrée en vigueur de l'assurance complémentaire, mais non employé, ne peut être revendiqué pour des sinistres qui se sont produits après cette entrée en vigueur.

Art. 23

L'assureur annoncera à l'autorité compétente la suspension ou la cessation de l'assurance; celles-ci ne produiront leurs effets que trois mois après réception de la notification de l'assureur, à moins que l'assurance n'ait été, au préalable, remplacée par une autre.

c. Suspension
et cessation
de l'assurance

Art. 24

en directe
l'assureur,
options

¹ Le lésé peut intenter une action directe contre l'assureur dans la limite du montant prévu par le contrat d'assurance.

² Les exceptions découlant du contrat d'assurance ou de la loi fédérale du 2 avril 1908 sur le contrat d'assurance ne peuvent être opposées au lésé.

³ Dans la mesure où il aurait été autorisé à refuser ou à réduire ses prestations d'après le contrat d'assurance ou la loi fédérale du 2 avril 1908 sur le contrat d'assurance, l'assureur a un droit de recours contre le preneur d'assurance. En outre, il est subrogé aux droits de recours du responsable.

Art. 25

relève

Le Conseil fédéral peut dispenser de l'obligation de s'assurer la personne civilement responsable qui fournit, sous une autre forme, des sûretés équivalentes pour les lésés.

Art. 26

for,
relation
preuves

¹ Si le dommage est survenu par suite de l'exploitation d'une installation atomique, les actions fondées sur la présente loi seront intentées devant le juge du lieu où est située cette installation.

² Si le dommage est survenu lors du transport de combustibles nucléaires ou de résidus radioactifs, l'action doit être ouverte devant le juge du lieu de l'accident. Lorsque le lieu de l'accident ne peut pas être déterminé, l'action doit être intentée:

- a. Si l'exploitant de l'installation atomique est responsable, devant le juge du lieu où est située cette installation;
- b. Si le bénéficiaire de l'autorisation de transport est responsable, devant le juge de son domicile.

³ Le bénéficiaire de l'autorisation de transport qui veut assumer la responsabilité à la place de l'exploitant de l'installation atomique et qui n'a pas de domicile en Suisse doit, lorsqu'il sollicite l'autorisation visée par l'article 12, 4^e alinéa, se soumettre par une déclaration écrite à la juridiction suisse et élire domicile en Suisse pour les actions découlant du 2^e alinéa, lettre b.

⁴ Dans les procès relatifs à des prétentions découlant de la présente loi, le juge apprécie les faits sans être lié par les règles de la procédure cantonale en matière de preuve.

CHAPITRE CINQUIÈME

Grands sinistres

Art. 27

¹ Si l'on doit s'attendre que les moyens disponibles ne seront pas suffisants pour satisfaire toutes les demandes de réparation, l'Assemblée fédérale établit un règlement d'indemnisation. La Confédération verse des prestations pour le dommage non couvert.

Principes
généraux

² En vue d'assurer une répartition équitable de tous les fonds disponibles, ce règlement d'indemnisation fixera, en dérogeant le cas échéant à la présente loi, les principes généraux d'indemnisation des lésés. L'Assemblée fédérale peut instituer un organe spécial indépendant pour assurer l'application de ces principes. Le recours au Tribunal fédéral contre les décisions de cet organe devra être prévu.

³ Le Conseil fédéral prend toutes mesures provisionnelles qui s'imposent.

⁴ Si une faute est imputable à la personne civilement responsable en vertu de l'article 12, la Confédération peut exiger d'elle le remboursement de ses versements.

Art. 28

¹ Si un grand sinistre entraîne un état de nécessité, le Conseil fédéral est autorisé à édicter, dans le domaine de l'assurance privée, des prescriptions sur la modification des prestations de l'assureur, de même que sur la perception de primes de répartition auprès des preneurs d'assurance et sur la déduction de telles primes des prestations d'assurance. Cette autorisation ne s'étend pas aux assurances de la responsabilité civile qui doivent être souscrites en vertu des articles 21 et 22.

Modification
des prestations
d'assurance,
primes
de répartition

² Le Conseil fédéral est également autorisé à prendre des mesures analogues dans le domaine des assurances sociales et des assurances de droit public.

CHAPITRE SIXIÈME

Dispositions pénales

Art. 29

¹ Celui qui, intentionnellement, aura libéré ou tenté de libérer de l'énergie atomique ou qui, par malveillance, aura causé une perturbation de l'exploitation d'une installation atomique, dans le dessein de mettre en danger la vie ou la santé des personnes, ou des choses d'autrui de grande valeur, sera puni de la réclusion.

Mise en danger
par libération
d'énergie
atomique, etc.

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sera puni de l'emprisonnement ou de l'amende.

Dans les cas graves, en particulier lorsque le délinquant a agi dans l'intérêt d'un organisme officiel ou privé étranger ou d'une entreprise privée étrangère, ou de leurs agents, le juge pourra prononcer la réclusion.

² La peine sera l'emprisonnement pour un an au plus ou l'amende si le délinquant a agi par négligence.

Art. 35

¹ Celui qui, intentionnellement ou par négligence, aura enfreint la présente loi et ses dispositions d'exécution,

celui qui, en particulier, aura accompli, sans y être autorisé, des actes pour lesquels une autorisation est requise, n'aura pas observé les conditions et charges liées à l'octroi d'une autorisation ou ne se sera pas conformé à l'obligation de s'assurer ou de fournir des sûretés,

sera, à moins que les éléments constitutifs d'une infraction plus grave ne soient réunis, passible d'une amende de 20 000 francs au plus. La tentative et la complicité sont punissables.

² Lorsqu'une infraction a été commise dans la gestion d'une personne morale, d'une société en nom collectif ou en commandite, ou d'une entreprise individuelle, les dispositions pénales sont applicables aux personnes qui ont agi ou auraient dû agir en leur nom; la personne morale, la société ou le propriétaire de l'entreprise individuelle répondent toutefois solidairement du paiement de l'amende et des frais, à moins que la direction responsable ne prouve qu'elle n'a rien négligé pour que les personnes en cause observent les prescriptions. Les personnes solidairement responsables ont les mêmes droits que les inculpés.

Art. 36

¹ Les dispositions générales du code pénal suisse sont applicables.

² Les infractions mentionnées dans la présente loi relèvent de la juridiction fédérale.

CHAPITRE SEPTIÈME

Dispositions d'exécution et dispositions finales

Art. 37

¹ Le Conseil fédéral édicte les prescriptions d'application requises et nomme les organes administratifs nécessaires.

² Le Conseil fédéral peut faire appel au concours des cantons et des groupements économiques pour l'application, sous sa surveillance, de la présente loi.

³ Des émoluments, dont le taux est fixé par le Conseil fédéral, peuvent être perçus pour la délivrance des autorisations et l'exécution des contrôles.

Art. 38

Le Conseil fédéral nomme des commissions chargées d'étudier les problèmes relatifs à l'énergie atomique et à la protection contre les radiations.

Art. 39

¹ Les personnes chargées d'exercer le contrôle sont en droit de vérifier en tout temps si les dispositions de la loi ainsi que les prescriptions et décisions fondées sur elle sont observées; elles peuvent en particulier exiger des renseignements, des communications et une documentation spéciale, de même qu'elles peuvent prendre connaissance de toutes les pièces existantes; dans la mesure où l'accomplissement de leurs fonctions l'exige, elles ont libre accès à toutes les installations ainsi qu'à tous les locaux d'affaires et entrepôts.

² L'organe compétent peut, au besoin, saisir des matières ou des installations dangereuses, faire interdire temporairement l'accès de biens-fonds, de bâtiments déterminés et de certains locaux, ou encore prendre ou faire prendre toutes mesures de protection utiles aux frais de l'exploitant qui, après sommation, a négligé d'y recourir lui-même dans le délai imparti.

Art. 40

Toutes les personnes chargées par la Confédération de l'application de la présente loi et de ses dispositions d'exécution sont soumises aux mêmes prescriptions que les fonctionnaires fédéraux en ce qui concerne leur responsabilité en matière pénale et civile et l'obligation de garder le secret.

Art. 41

¹ La restitution de subventions et d'autres privilèges octroyés par la Confédération peut être requise s'ils ont été accordés à tort ou si le bénéficiaire, après sommation, n'accomplit pas les conditions ou obligations qui lui ont été imposées.

² Il n'y a pas lieu à restitution, dans la mesure où celui qui a reçu indûment prouve qu'il n'est plus enrichi lors de la restitution, à moins cependant:

- Qu'il n'ait, pour obtenir la subvention, fourni intentionnellement ou par négligence des indications inexacts, fallacieuses ou incomplètes;
- Qu'il n'ait négligé, par sa faute, de remplir les conditions ou obligations qui lui ont été imposées, ou

Commissions

Contrôle,
mesures
de sécurité

Responsabilité,
obligation
de garder
le secret

Restitution
de subventions

ractions
la loi

248

juridiction
fédérale

exécution

c. Qu'il ne se soit dessaisi de ce qu'il a reçu en sachant qu'il pouvait être tenu à restituer.

³ Le Conseil fédéral désigne les offices habilités à réclamer la restitution et, au besoin, à engager, conformément à l'article 110 de la loi d'organisation judiciaire du 16 décembre 1943, une action de droit administratif devant le Tribunal fédéral.

⁴ Les droits de la Confédération se prescrivent par un an à compter du jour où les organes fédéraux compétents en ont eu connaissance, mais au plus tard par cinq ans dès le jour où ces droits ont pris naissance. Si la revendication que peut faire valoir la Confédération dérive d'une infraction soumise par le droit pénal à une prescription plus longue, celle-ci est déterminante.

⁵ Tout acte de recouvrement interrompt la prescription; celle-ci est suspendue aussi longtemps que la personne tenue à restituer ne peut être poursuivie en Suisse.

Art. 42

Entrée
en vigueur

¹ Le Conseil fédéral fixe la date de l'entrée en vigueur de la présente loi.

² L'arrêté fédéral du 18 décembre 1946 encourageant les recherches dans le domaine de l'énergie atomique sera abrogé à la même date.

Ainsi arrêté par le Conseil des Etats.

Berne, le 23 décembre 1959.

Le président, G. Despland

Le secrétaire, F. Weber

Ainsi arrêté par le Conseil national.

Berne, le 23 décembre 1959.

Le président, Gaston Clottu

Le secrétaire, Ch. Oser

Le Conseil fédéral arrête:

La loi fédérale ci-dessus sera publiée en vertu de l'article 89, 2^e alinéa, de la constitution fédérale et de l'article 3 de la loi du 17 juin 1874, concernant les votations populaires sur les lois et arrêtés fédéraux.

Berne, le 23 décembre 1959.

Par ordre du Conseil fédéral suisse:

12350

Le chancelier de la Confédération,

Ch. Oser

Date de la publication: 31 décembre 1959

Délai d'opposition: 30 mars 1960

**Message
à l'appui d'un projet d'arrêté concernant
la loi sur l'énergie atomique**

77.053

du 24 août 1977

Madame et Monsieur les Présidents,
Mesdames et Messieurs,

Nous vous soumettons notre message à l'appui d'un projet d'arrêté de portée générale complétant la loi sur l'énergie atomique et vous proposons d'adopter le projet ci-joint.

Nous vous prions d'agréer, Madame et Monsieur les Présidents, Mesdames et Messieurs, les assurances de notre haute considération.

24 août 1977

Au nom du Conseil fédéral suisse:
Le président de la Confédération, Furgler
Le chancelier de la Confédération, Huber

Vue d'ensemble

La révision de la loi du 23 décembre 1959 sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations (RS 732.0, appelée ci-après la loi) s'impose à divers égards. C'est ce que prouvent plusieurs interventions parlementaires, les initiatives de trois cantons et une initiative populaire.

Trois points, plus particulièrement, devraient être révisés le plus rapidement possible. Il faudrait: a) modifier la procédure d'autorisation des installations atomiques, afin d'assurer à la population un droit de discussion plus étendu; b) subordonner l'autorisation de construire une installation atomique à la condition qu'elle réponde à un besoin; c) l'octroi d'une telle autorisation étant devenu un acte de caractère politique, attribuer la compétence de la délivrer à une autorité politique.

Le projet d'arrêté complétant la loi prévoit, à titre d'innovation, une «autorisation générale». La demande d'autorisation doit être mise à l'enquête publique et chacun peut formuler ses objections. Le souci d'assurer la sécurité et des considérations d'ordre politique sont les principales raisons pour lesquelles il y a lieu, en vertu de la loi, de refuser l'autorisation de construire une installation atomique ou de la subordonner à certaines conditions ou charges. Or, le projet d'arrêté prévoit en outre que l'autorisation générale pourra être refusée si l'installation envisagée ne répond pas à un besoin. De plus, le requérant devra remplir certaines conditions quant à sa nationalité. Enfin, il faudra que l'octroi de l'autorisation générale puisse être subordonné à la condition que le titulaire permette une utilisation rationnelle de la chaleur produite (p. ex. pour le chauffage à distance ou à des fins industrielles). La décision relative à l'octroi de l'autorisation sera dorénavant prise par le Conseil fédéral qui devra préalablement entendre les cantons et demander les expertises nécessaires. Une autorisation générale devra également être délivrée pour les centrales de Kaiseraugst, Graben et Verbois; cependant, au cours de la procédure préalable, on se bornera à examiner si l'énergie qui sera produite dans ces centrales répond à un besoin effectif dans le pays. Autre innovation importante: les producteurs de déchets radioactifs assumeront la responsabilité de l'élimination sûre de ceux-ci, la Confédération restant autant que possible au second plan, tout en se réservant le droit d'intervenir s'il le faut. Toutefois, elle ne portera atteinte à la garantie de la propriété et à la liberté du commerce et de l'industrie que dans une mesure compatible avec le principe de la proportionnalité.

Ce sont là les adjonctions particulièrement urgentes qu'il faudrait apporter à la loi au moyen d'un arrêté fédéral de portée générale et de durée limitée.

Cependant, une révision plus complète de la loi s'impose, car diverses questions n'y sont pas réglées ou ne le sont pas suffisamment. C'est pourquoi la révision totale de la loi a été entreprise. La commission de juristes, qui a été chargée de ce

travail, pense pouvoir l'achever au cours du second semestre de cette année. La procédure de consultation, la préparation du message destiné aux Chambres fédérales et les débats parlementaires exigeront toutefois beaucoup de temps, de sorte que la loi entièrement révisée ne pourra pas être mise en vigueur avant 1981. Cependant, pour des raisons d'ordre politique, nous estimons inopportun de continuer à traiter selon le droit en vigueur les demandes, actuellement pendantes, d'autorisation de construire des installations atomiques, puisque l'octroi de ces autorisations a pris un caractère politique. Il est indispensable qu'elles puissent faire l'objet d'une discussion aussi large que possible. De plus, il importe que l'initiative «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques», à laquelle aucun contre-projet ne peut être opposé, soit soumise dès que possible au peuple et aux cantons. Le droit de discussion que la population réclame instamment et qui est inévitable de nos jours, peut toutefois être instauré par les adjonctions apportées à la loi, telles que nous vous les proposons.

Message

1 Partie générale

11 Situation générale

111 Historique et situation actuelle

111.1

Le peuple et les cantons ont accepté le 24 novembre 1957 l'article 24^{quinquies} de la constitution fédérale, qui a la teneur suivante:

¹ La législation sur l'énergie atomique est du domaine de la Confédération.

² La Confédération édicte des prescriptions sur la protection contre les dangers des rayons ionisants.

L'énergie atomique ayant été déclarée domaine relevant du législateur fédéral, celui-ci a toute liberté d'action. La restriction suivante a toutefois été formulée dans le message relatif à l'article constitutionnel:

Cela ne signifie nullement que la future loi sur les questions atomiques doit prévoir des interventions de l'Etat sur le plan économique. Au contraire, dans l'état actuel des choses, on devrait pouvoir se passer de pareilles interventions. Le législateur devra en tout cas partir du point de vue que l'utilisation de l'énergie nucléaire est l'affaire de l'économie et s'inspirer du souci de préserver le libre jeu de la concurrence dans toute la mesure possible.

Les Chambres fédérales ont adopté la loi fédérale sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations le 23 décembre 1959. Nous avons mis la loi en vigueur le 1^{er} juillet 1960 après l'expiration du délai référendaire. Elle se fonde sur le principe qu'il appartient à l'économie privée d'utiliser l'énergie atomique. Les solutions qui consistaient à en faire un monopole d'Etat ou à instituer un régime de concession ou d'autorisation fondé sur des considérations relevant de la politique économique ont été rejetées, bien qu'elles aient été conformes à la constitution. La loi ne prévoit qu'un régime très strict d'autorisation de police à des fins de surveillance. La surveillance est exercée par la Confédération.

111.2

L'article 5 de la loi sur l'énergie atomique énumère de manière exhaustive les raisons pour lesquelles l'autorisation doit être refusée ou, à titre de mesure plus élémentaire, subordonnée à l'accomplissement de conditions ou d'obligations appropriées. Si chacune d'elles est remplie, le requérant a droit à l'autorisation, c'est-à-dire que celle-ci doit lui être accordée. Outre la sauvegarde de la sûreté extérieure de la Suisse, le respect de ses engagements internationaux et certaines

exigences quant à la nationalité et à l'assurance des risques, ce sont surtout des *raisons de sécurité* qui exigent que l'autorisation soit refusée ou subordonnée à certaines conditions ou charges.

Dans la procédure actuelle d'autorisation, on s'efforce principalement de déterminer s'il est satisfait à toutes les conditions de sécurité pouvant être raisonnablement exigées en matière de construction et d'exploitation d'installations atomiques au stade actuel de la science et de la technique pour la protection des personnes, des biens d'autrui et de droits importants (art. 3 de l'ordonnance du 13 juin 1960 concernant la Commission fédérale pour la sécurité des installations atomiques, RS 732.21). Or, l'établissement des preuves que doit apporter le requérant quant à la sécurité de l'installation, et l'adaptation du projet aux exigences y relatives posées par les services de l'Etat chargés d'examiner la requête demandent des années de travail. Ces préparatifs occupent, tant chez les promoteurs des centrales que chez leurs fournisseurs, de nombreux spécialistes et occasionnent des frais qui s'élèvent à plusieurs millions de francs. Vu que l'établissement du projet dépend de l'emplacement de la centrale et que la loi ne prévoit pas de droit d'expropriation pour l'aménagement d'installations atomiques, des travaux de planification aussi coûteux n'ont un sens que si le promoteur dispose du terrain nécessaire. Il est donc contraint de l'acquiescer avant de demander l'autorisation. Les délais de livraison de certains matériaux et équipements nécessaires à la construction et à l'exploitation de l'installation, par exemple le combustible nucléaire, sont très longs. C'est pourquoi le promoteur les commande, s'il le faut, à ses propres risques et périls avant d'avoir obtenu l'autorisation de construire. Compte tenu également des intérêts qui courent pendant des années, les dépenses devant être assumées par le requérant jusqu'à ce que la décision sur l'octroi de l'autorisation de construire ait été prise, peuvent s'élever, comme l'expérience le prouve, à plus d'une centaine de millions de francs. Cette charge financière l'oblige à réaliser le projet le plus rapidement possible pour que le capital investi produise un rendement dans les plus brefs délais. Les progrès techniques rapides exercent des effets semblables, car ils le contraignent d'adapter sans cesse son projet jusqu'au début des travaux de construction.

111.3

La production et la consommation d'électricité ont évolué comme il suit au cours des années soixante-dix:

Tableau 1

Année hydrologique (1. 10-30. 9)	Production (millions de kWh)	Consommation (millions de kWh)	Excédent (millions de kWh) + = exportations - = importations	Exportations (millions de kWh)	Importations (millions de kWh)
1970/71	31 527	28 756	+ 2771	8 213	5442
1971/72	29 762	29 788	— 26	7 984	8010
1972/73	34 744	31 504	+ 3240	10 418	7178
1973/74	35 635	32 482	+ 3153	9 507	6354
1974/75	40 973	32 272	+ 8701	13 838	5137
1975/76	34 833	32 588	+ 2245	9 615	7370

La consommation d'électricité pendant le semestre d'hiver s'élève aujourd'hui à environ 53 pour cent de la consommation annuelle. Elle est donc moindre en été. De plus, la production des centrales hydro-électriques au fil de l'eau est beaucoup plus élevée qu'en hiver en raison des débits non accumulables des cours d'eau. Pendant le semestre d'été, il y a donc généralement une surproduction qu'il faut exporter. C'est pourquoi les besoins et la production d'électricité doivent être déterminés d'après le semestre d'hiver. Le débit des cours d'eau ayant été favorable et aucune panne ne s'étant produite dans les centrales thermiques traditionnelles et les centrales nucléaires, alors que la consommation ne croissait que lentement, il y a eu excédent des exportations au cours des quatre derniers semestres d'hiver.

Tableau 2

Semestre d'hiver (1. 10-31. 3)	Excédent des exportations (+) Excédent des importations (-) (millions de kWh)
1970/71	+ 614
1971/72	— 1812
1972/73	— 256
1973/74	+ 341
1974/75	+ 1094
1975/76	+ 1531
1976/77	+ 1705

Pendant la période de forte croissance économique (1950-1973), la consommation d'énergie électrique en hiver a augmenté en moyenne de 5,4 pour cent par an. Cependant, la courbe de croissance a fléchi ces quatre hivers derniers en raison de la récession et de la température relativement clémente. Le taux de croissance a oscillé entre 0,4 et 3,7 pour cent et a été de 2 pour cent en moyenne.

112 Principales interventions visant à compléter la loi

112.1

Les centrales de Beznau I, Beznau II et Mühleberg ont été construites et mises en service sans qu'une opposition se soit manifestée dans la population. En revanche, les projets suivants se sont heurtés à une hostilité croissante. C'est à l'égard de la centrale de Kaiseraugst, où le terrain prévu pour la construction a été occupé en 1975 pendant plusieurs semaines par les adversaires de l'énergie nucléaire, que cette opposition s'est manifestée de la manière la plus spectaculaire. Elle s'étend depuis peu à la centrale nucléaire de Gösgen, qui est sur le point d'être achevée et où des manifestations analogues se sont déroulées. L'énergie nucléaire a donné lieu à de nombreuses interventions parlementaires, initiatives cantonales et pétitions, notamment à la suite des événements de Kaiseraugst. Elle fait aussi l'objet d'une initiative populaire encore pendante; présentée sous la forme d'un projet rédigé de toutes pièces, elle demande que l'article 24^{quatrième} de la constitution soit complété par plusieurs dispositions. Dans l'énumération ci-dessous, nous ne mentionnons que les interventions visant à modifier la législation. Leur texte complet figure à l'annexe I.

112.11 Interventions parlementaires (par ordre chronologique)

11 268 Postulat *Rothen*, du 17 mars 1972, concernant les centrales atomiques, transmis par le Conseil national le 11 décembre 1972;

11 338 Postulat *Rasser*, du 5 juin 1972, concernant la politique énergétique nationale. Cette intervention, présentée sous la forme de motion, a été adoptée par le Conseil national le 11 décembre 1972 sous forme de postulat;

12 140 Postulat *Ziegler-Genève*, du 4 octobre 1974, concernant les déchets radioactifs / transport et dépôt, transmis par le Conseil national le 19 mars 1976;

75.408 Postulat du *Groupe socialiste*, du 17 juin 1975, concernant la révision de la loi sur l'énergie atomique. Cette intervention présentée sous la forme de motion a été adoptée par le Conseil national le 24 juin 1976 sous forme de postulat;

75.430 Postulat du *Groupe des indépendants*, du 20 juin 1975, concernant la révision de la loi sur l'énergie atomique. Cette intervention présentée sous la forme de motion a été adoptée par le Conseil national le 24 juin 1976 sous forme de postulat;

76.388 Motion *Morf*, du 22 juin 1976, concernant les accidents atomiques/somme d'assurance, transmise par le Conseil national le 29 septembre 1976 et par le Conseil des Etats le 30 novembre 1976;

76.228 Initiative parlementaire *Meizoz*, du 1^{er} décembre 1976, concernant les centrales nucléaires/moratoire dans la construction, encore pendante au Conseil national.

Les interventions parlementaires qui, bien qu'elles se rapportent à l'énergie nucléaire, ne visent pas à modifier la législation, ne sont pas mentionnées ici.

112.12 Initiatives cantonales

Trois cantons ont présenté des initiatives au sens de l'article 93, 2^e alinéa, de la constitution; elles ont pour but, entre autres, de modifier la loi.

11 671 Initiative du canton d'Argovie, du 27 mars 1973, transmise par l'Assemblée fédérale au Conseil fédéral pour rapport, selon décision du 4 juin 1973;

11 877 Initiative du canton de Bâle-Campagne, du 21 janvier 1974, transmise par l'Assemblée fédérale au Conseil fédéral pour rapport, selon décision du 29 janvier 1974;

12 018 Initiative du canton de Bâle-Ville, du 29 mars 1974, transmise par les deux conseils législatifs au Conseil fédéral pour rapport, selon décision du 10 juin 1974.

112.13 Initiative populaire

Une initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques» a été présentée le 20 mai 1976. Elle porte 123 779 signatures valables.

Nous nous prononçons sur cette initiative dans un message distinct.

112.14 Pétitions

La «BASNU, Basler Arbeitsgemeinschaft zum Schutz von Natur und Umwelt» (qui, selon ses propres indications, groupe 33 associations comptant 36 000 membres en tout) et M. Jacques Dreyer, conjointement avec le «Nordwestschweizer Aktionskomitee gegen den Bau von Atomkraftwerken» ont adressé chacun, en 1974 et 1975, une pétition à l'Assemblée fédérale.

112.2

Les principales revendications formulées dans ces interventions, initiatives et pétitions sont les suivantes:

- Attribuer au Conseil fédéral ou à l'Assemblée fédérale la compétence de délivrer les autorisations;
- Remplacer le régime de l'autorisation de police par celui de la concession;
- Subordonner l'octroi des autorisations à la condition que l'installation réponde à un besoin;
- Améliorer le droit de discussion de la population;
- Réglementer l'élimination et le stockage des déchets radioactifs;
- Réformer le régime de la responsabilité civile et de l'assurance;

Délimiter clairement les compétences entre la Confédération et les cantons, éventuellement conférer à la seule Confédération toutes les attributions relatives aux autorisations;

- Planifier l'implantation des centrales nucléaires et se concerter à ce sujet avec les pays limitrophes.

Enfin, on demande de suspendre l'octroi des autorisations jusqu'au moment où une conception globale de l'énergie aura été élaborée et où une solution définitive aura été trouvée au problème de l'élimination et du stockage des déchets radioactifs (moratoire).

12 Appréciation de la situation initiale

121 Revision de la loi

Il est incontestable que la loi doit être révisée. Aussi le chef du Département fédéral des transports et communications et de l'énergie (appelé ci-après département), agissant de concert avec le Conseil fédéral, a-t-il chargé, en automne 1975, une commission de juristes d'en préparer un projet de révision totale. Cet organe est composé de MM. Werner Dubach, ancien président de la Cour de droit public et de droit administratif du Tribunal fédéral (président), Charles-A. Morand, professeur à l'Université de Genève, Jörg-Paul Müller, professeur à l'Université de Berne, et Peter Saladin, professeur, anciennement à l'Université de Bâle, actuellement à celle de Berne, ainsi que de M^{re} Max Rudolf, chef de la II^e Division de législation de la Division fédérale de la justice. De hauts fonctionnaires de l'Office fédéral de l'économie énergétique prennent part aux travaux de la commission avec voix consultative.

La commission pense pouvoir achever ses travaux dans la seconde moitié de 1977. Si elle y parvient, la procédure de consultation et la mise au point du projet exigeront encore une année au moins, de sorte que nous ne pourrions guère présenter à l'Assemblée fédérale le message et le projet de loi avant 1979. Quelles que soient les propositions tendant à une nouvelle réglementation des points politiquement controversés de la loi actuelle, elles donneront vraisemblablement lieu à de longs débats parlementaires. La nouvelle loi n'entrera donc guère en vigueur avant 1981; d'ici là, les autorisations de construire de nouvelles centrales nucléaires devraient être délivrées selon la procédure prévue par la loi en vigueur. A l'instar de la commission d'experts, nous estimons qu'il ne serait pas admissible de retarder aussi longtemps la réalisation de revendications urgentes. C'est pourquoi les innovations ne pouvant être différées devraient être apportées le plus tôt possible.

121.1 Réforme de la procédure d'autorisation

Le 1^{er} mars 1977, 197 réacteurs de puissance étaient en service dans le monde entier. L'expérience montre que le degré de sécurité pour le personnel d'explo-

ration et les environs est très élevé. Tous les organes spécialisés compétents de la Confédération¹⁾ estiment que, du point de vue de la sécurité, on peut prendre la responsabilité d'utiliser l'énergie nucléaire à des fins pacifiques. Nous nous référons à ce sujet au chiffre 2 («sécurité des installations atomiques, protection des personnes et de l'environnement») de notre message du 24 août 1977 concernant l'initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques».

La fission nucléaire et les radiations ionisantes suscitent néanmoins une profonde méfiance dans de larges milieux de la population, méfiance que partagent des savants réputés. La question des déchets radioactifs, dont une petite partie émet des rayons virtuellement nocifs pendant plusieurs dizaines de milliers d'années, accentue le malaise. On craint aussi la grande concentration d'énergie sur un espace réduit, qui est le propre des centrales nucléaires. Les dimensions insolites de ces centrales, notamment des tours de refroidissement, sont un autre sujet de controverses. On redoute aussi que la chaleur et la vapeur dégagées par ces tours modifient le climat. De plus, le sentiment largement répandu que les hommes d'aujourd'hui sont à la merci de l'essor technique et industriel se traduit par une aversion toute particulière pour les installations atomiques, dont le fonctionnement échappe au profane. Le fait, enfin, que l'énergie nucléaire s'est manifestée pour la première fois par la bombe atomique n'est pas non plus sans exercer un effet négatif sur le subconscient de la population. Il est indéniable que l'utilisation pacifique de l'énergie atomique a suscité un malaise et de la méfiance dans de larges milieux de la population et dans le monde entier. C'est pourquoi l'autorisation de construire des centrales nucléaires et l'exécution des travaux sont devenues une affaire d'ordre politique. Aussi une réforme de la procédure d'autorisation répond-elle à une urgente nécessité.

Presque tous ceux qui préconisent une modification de la loi sur l'énergie atomique critiquent le fait que la procédure d'autorisation, telle qu'elle est fixée dans cette loi, ne permet à la population touchée ni de s'informer suffisamment, ni de sauvegarder ses intérêts. En sus d'une expertise permettant d'établir si le projet prévoit toutes les mesures que l'on peut raisonnablement exiger pour la protection des personnes, des biens d'autrui et de droits importants, la loi ne prescrit en effet que la consultation du canton sur le territoire duquel l'installation atomique doit être érigée (art. 7). Le canton a la faculté de déterminer à sa guise qui il veut entendre. En général, il ne consulte que les services cantonaux intéressés et la commune où l'on projette la construction d'une centrale. La loi ne contient aucune disposition relative à la participation de tiers à la procédure.

¹⁾ Commission pour la sécurité des installations atomiques, Commission de la protection contre les radiations, Commission de la radioactivité, Section de la radioprotection du Service de l'hygiène publique, Division pour la sécurité des installations nucléaires de l'Office de l'économie énergétique, les titulaires des chaires y relatives des écoles polytechniques et les spécialistes de l'Institut de recherches en matière de réacteurs.

La loi fédérale du 20 décembre 1968 sur la procédure administrative (RS 172.021) ne permet pas de tenir compte du caractère particulier des autorisations qui doivent être délivrées dans le domaine de la technique nucléaire.

Précédemment, l'octroi des autorisations n'était notifié qu'au requérant et au canton. Cette pratique a été modifiée à la suite de la décision sur recours que nous avons prise le 14 janvier 1976 quant à l'approbation du site de Verbois (canton de Genève). Connaissant déjà le projet de cette décision, le département a publié le 19 décembre 1975, dans la Feuille fédérale (FF 1975 II 2334), une première autorisation partielle de construire la centrale nucléaire de Leibstadt. On a largement fait usage de la possibilité de recourir devant nous.

Les autorisations de police que le canton et la commune sont appelés à délivrer ne peuvent remettre en question la décision de la Confédération quant à l'autorisation de créer une installation atomique. C'est ce que le Tribunal fédéral a constaté dans un arrêt relatif à la centrale nucléaire de Kaiseraugst (ATF 99 Ia 247). Dans un arrêt plus récent, ayant trait à la centrale nucléaire de Verbois, dont les attendus ne sont pas encore connus au moment de la rédaction du présent message, le Tribunal fédéral a reconnu au canton intéressé certaines attributions qui découlent du droit régissant l'aménagement du territoire et les eaux, attributions qui peuvent entrer en conflit avec celles de la Confédération en matière d'autorisation de créer des installations atomiques. Mais il s'agit là de procédures indépendantes de la loi sur l'énergie atomique.

Les autorités et la population des régions sises à une certaine distance d'une installation atomique projetée sont exclues des processus de décision. Elles ne peuvent formuler des objections qu'indirectement par l'intermédiaire du canton où sera située la centrale. Par notre projet, nous voudrions donner à la population la possibilité de s'informer à un stade précoce et, s'il y a lieu, de présenter ses objections. Or le pouvoir de décision doit être attribué à une autorité politique.

121.2 Preuve du besoin

Il y a toujours plus de personnes qui estiment que la décision de construire une centrale nucléaire ne saurait être laissée à la discrétion du seul promoteur. En effet, la construction d'une telle centrale n'est pas une simple affaire d'investissement et de rentabilité. L'utilisation de l'énergie nucléaire expose nécessairement à des risques l'être humain et son environnement. Certes, l'exploitant a l'obligation de faire face à ces risques et de les prévenir dans la mesure humainement possible; toutefois, pour s'assurer qu'il s'en acquitte pleinement, il y a lieu de se livrer à un examen approfondi du projet et d'exercer une surveillance minutieuse de son exécution et de son exploitation. Or, en raison de leur importance, ces tâches incombent à la collectivité. En admettant qu'il se produise – hypothèse du reste très invraisemblable – une catastrophe provoquant de grands dommages qui ne pourraient pas être couverts par les assurances, l'aide de la Con-

édération serait indispensable. Cet exemple prouve que la construction et l'exploitation de centrales nucléaires sont une affaire de grande portée politique.

Une centrale nucléaire de capacité courante produit environ un cinquième de la quantité d'électricité consommée actuellement en Suisse. Si l'on construisait à un rythme plus rapide que ne le justifient les besoins normaux d'énergie, on risquerait de pousser artificiellement à la consommation d'électricité, ce qui serait contraire aux objectifs de la politique énergétique et de la protection de l'environnement: on créerait en effet des besoins qui perpétueraient le gaspillage d'énergie et provoqueraient une pollution accrue et un épuisement prématuré des ressources. Aussi faut-il, en dérogation au régime juridique actuellement applicable, veiller dorénavant à ne pas autoriser la construction de centrales nucléaires dont la production n'est pas indispensable pour couvrir les besoins du pays en énergie. Les prévisions que nous avons établies à partir des données les plus récentes fournies par la Commission de la conception globale de l'énergie montrent qu'il faut, le cas échéant, étaler la réalisation des centrales projetées si l'on entend éviter une forte surproduction.

L'institution de la preuve du besoin n'a toutefois pas pour effet de dispenser l'industrie électrique de veiller à ce que les installations de production soient en nombre suffisant. Le «contrôle» de la capacité de production par la preuve du besoin est purement passif. Ce régime permet tout au plus aux autorités fédérales d'empêcher la construction d'une centrale nucléaire, mais non de demander l'aménagement d'une nouvelle centrale si le besoin s'en faisait sentir. En exigeant que le besoin soit prouvé, les autorités politiques endosseront toutefois une partie de la responsabilité lorsqu'elles auront refusé l'autorisation de construire une centrale qui, après coup, se sera révélée nécessaire.

121.21 Rôle de l'énergie nucléaire dans l'économie énergétique de la Suisse

121.211 Prévisions relatives à la consommation globale d'énergie

Il faut s'attendre à ce que l'actuelle stagnation économique ne soit pas de longue durée. Une croissance économique est nécessaire même si elle n'atteint pas le rythme enregistré entre 1960 et 1973. Il y avait alors un rapport étroit entre l'évolution du produit intérieur brut et celle de la consommation d'énergie.

La Commission de la conception globale de l'énergie a fait procéder récemment, par des institutions indépendantes de l'économie énergétique, à l'étude de diverses variantes portant sur l'augmentation de la consommation d'énergie jusqu'en l'an 2000. Les résultats divergent assez considérablement suivant que l'on part de l'hypothèse que la consommation:

- a. se développera *sans intervention de l'Etat*;
- b. évoluera parallèlement sous l'influence de *mesures d'économie d'énergie* pouvant être ordonnées en vertu d'attributions constitutionnelles fédérales et cantonales existantes;

- c. se développera même si l'on épuise les *mesures d'économie d'énergie* qui pourraient être ordonnées en vertu d'une *disposition de la constitution fédérale* - encore à créer - relative à l'énergie.

Si l'on admet que la croissance démographique fléchira fortement, que le nombre des travailleurs diminuera et que les prix de l'énergie marqueront une augmentation comparable à la hausse générale des prix, on peut s'attendre pour la période comprise entre 1975 et l'an 2000, même sans intervention de l'Etat (let. a), à un accroissement annuel de la consommation finale d'énergie notablement plus faible qu'au cours de la période s'étendant de 1960 à 1973, c'est-à-dire de 2,5 pour cent au lieu de 6,6 pour cent. L'accroissement moyen de 1975 à l'an 2000 pourrait fléchir dans l'hypothèse formulée sous lettre b, pour n'atteindre plus que 2,2 pour cent et, dans l'hypothèse retenue sous lettre c, plus que 1,5 pour cent par année.

La Commission de la conception globale de l'énergie a fait élaborer par un groupe de travail, qui préconise une *croissance zéro de la consommation d'énergie*, une variante dite de stabilisation. Il en résulte que la consommation d'énergie ne devrait plus augmenter dès 1985, c'est-à-dire dès la date la plus proche de celle à laquelle des mesures prises en vertu de la loi pourraient produire leurs effets. Cette variante sera aussi l'objet des débats publics auxquels donnera lieu le rapport final de la Commission de la conception globale de l'énergie et aidera les citoyens à se forger une opinion sur la politique future en matière d'énergie.

121.212 Economies d'énergie

Les possibilités d'économiser l'énergie étant multiples, nous nous abstenons d'exposer chacune d'entre elles. La Commission de la conception globale de l'énergie a publié, en annexe à son rapport intermédiaire de mai 1976, une brochure qui indique ces possibilités. De son côté, l'Office de l'économie énergétique en a signalé plusieurs dans un bulletin paraissant périodiquement. L'automne et l'hiver prochains, une campagne de lutte contre le gaspillage d'énergie sera menée officiellement. La Confédération ne dispose encore que de pouvoirs légaux très limités pour prescrire des mesures d'économie. En mai dernier, le département a invité les cantons à prendre toutes les mesures de leur ressort aux fins de réaliser des économies en la matière.

Nous indiquons ci-après quelques possibilités de lutter efficacement contre le gaspillage d'énergie. L'*isolation thermique des bâtiments* a une grande importance, étant donné que près de la moitié de la quantité d'énergie consommée en Suisse sert à chauffer des locaux. Le système appelé «*couplage chaleur-force*», applicable dans l'industrie et les centrales thermiques, est un autre moyen d'assurer une utilisation rationnelle de l'énergie. Le combustible qui produit simultanément de la chaleur et de l'électricité a un bien meilleur rendement que s'il ne produit que l'une de ces deux sources d'énergie. A cet égard, ce sont

urtout de grandes centrales de chauffage reliées à des réseaux de distribution de chauffage à distance qui entrent en ligne de compte. Une étude récemment arue (Plenar) recommande même de recueillir la *chaleur de rejet* des centrales thermiques conventionnelles et des centrales nucléaires, ainsi que la chaleur résiduelle émanant d'entreprises industrielles ou autres, en vue de les conduire des agglomérations de quelque importance où elles seraient utilisées à l'aide de thermopompes pour le chauffage de locaux. Selon les auteurs de l'étude, ce système permettrait de réaliser une économie annuelle s'élevant à plusieurs millions de tonnes d'huile de chauffage. Relevons toutefois que l'actionnement des thermopompes exige une énergie de haute qualité et coûteuse, notamment l'électricité. Les services spécialisés de la Confédération examinent actuellement cette étude. En matière de *transports*, l'un des moyens les plus efficaces d'économiser l'énergie serait que les particuliers utilisent davantage les transports en commun.

121.213 Energies de substitution

On affirme souvent que si l'on économisait l'énergie, exploitait plus rationnellement les sources d'énergie renouvelables et perfectionnait de nouvelles techniques, l'on pourrait renoncer à l'énergie nucléaire.

121.213.1 Sources d'énergie renouvelables

Sur mandat de la Commission de la conception globale de l'énergie, l'Association suisse pour l'aménagement des eaux a élaboré de janvier à mai 1977 un rapport sur l'importance des *forces hydrauliques* non encore exploitées dans notre pays. Nous reviendrons sous chiffre 121.222 aux conclusions et à l'importance de ce rapport.

Outre l'énergie hydro-électrique, la Suisse dispose d'une autre source d'énergie renouvelable: le *bois de chauffage*. Il serait souhaitable d'en faire un plus large usage également dans l'intérêt de nos forêts. Des systèmes modernes de combustion permettent d'automatiser le chauffage aux copeaux de bois.

121.213.2 Nouvelles techniques

Parmi les *nouvelles techniques*, l'utilisation de l'énergie solaire occupe le premier rang. Elle est particulièrement indiquée lorsqu'il s'agit de préparer de l'eau chaude ou de chauffer des locaux dans l'entre-saisons. La construction de centrales utilisant l'énergie solaire, notamment dans les régions des Alpes exemptes de brouillard, pourrait mériter attention en cas de hausses des prix de l'énergie. Toutefois, elles requièrent des superficies étendues de captation d'énergie et ne manqueront probablement pas d'adversaires soucieux de protéger le paysage.

Dans certains pays, la chaleur de la terre (*énergie géothermique*) peut aussi être utilisée pour le chauffage de locaux et, en partie, pour la production d'électricité. On étudie également la possibilité d'utiliser cette source d'énergie dans notre pays.

La *thermopompe* permet d'utiliser la chaleur ambiante (air, eau, eau souterraine, chaleur du sol) dans la mesure où la température du vecteur de la chaleur destinée au chauffage des locaux ou à la préparation d'eau chaude est portée à un niveau plus élevé. A vrai dire, la thermopompe ne peut fonctionner sans énergie mais elle restitue sous forme de chaleur nettement plus d'énergie qu'elle n'en dépense.

Dans les exploitations agricoles, l'utilisation du *biogaz* (gaz provenant du fumier d'étable et du purin) peut avoir une certaine importance. Lorsque les circonstances sont favorables, cette production de biogaz peut permettre aux exploitations agricoles de couvrir leurs besoins de combustible.

Il faut enfin signaler l'utilisation des *ordures*, qui permet d'obtenir de la chaleur et de l'électricité.

La Commission de la conception globale de l'énergie estime que ces sources renouvelables d'énergie (abstraction faite de l'énergie hydro-électrique) et ces nouvelles techniques devraient permettre en l'an 2000 de couvrir 3 à 8 pour cent de l'ensemble des besoins d'énergie, suivant les mesures d'encouragement qui auront été prises.

121.214 Remplacement du pétrole

Une très large part des besoins d'énergie devra encore être couverte, dans le proche avenir, par les agents énergétiques qui prédominent actuellement. Une enquête de l'OCDE publiée récemment (*Perspectives énergétiques mondiales*) conclut, il est vrai, qu'en 1985 déjà, les pays producteurs de pétrole pourraient ne plus être en état de couvrir les besoins globaux du monde en pétrole. Outre des mesures rigoureuses d'économies, le remplacement du pétrole par une autre source d'énergie est inévitable. Cette nécessité s'imposera aussi à notre pays du seul fait que son approvisionnement dépend très unilatéralement des produits pétroliers. Ceux-ci couvrent actuellement les $\frac{3}{4}$ environ de l'ensemble de ses besoins d'énergie. Pour le moment, seuls le charbon, le gaz naturel et l'énergie nucléaire peuvent nous aider de manière appréciable à remplacer le pétrole.

Les *réserves de charbon* dans le monde, compte tenu de la consommation actuelle, suffisent encore pour des siècles. Mais ce combustible n'est, le plus souvent, pas encore concurrentiel; de plus, son usage est contesté parce qu'il pollue l'air. A long terme, l'avenir du charbon semble mieux assuré s'il est liquéfié ou transformé en gaz et en courant électrique. Il est permis de penser que ces modes de transformation permettront également au charbon d'affronter la concurrence au fur et à mesure que le pétrole et le gaz naturel deviendront moins abondants et plus coûteux.

Le gaz naturel est une énergie relativement propre qui est utilisable partout où existent des réseaux d'alimentation appropriés. Dans certains Etats industrialisés importants, il couvre une part beaucoup plus élevée de la consommation d'énergie qu'en Suisse, où il est fortement concurrencé par le pétrole en raison des dépenses qu'entraîne la longueur des voies d'acheminement. Il serait cependant souhaitable que la part de ce gaz dans la consommation d'énergie fût plus considérable, dans l'intérêt d'un approvisionnement en énergie aussi diversifié que possible. Il est vrai que les réserves de gaz naturel sont également limitées. On présume que la gazéification du charbon et la technique de l'hydrogène permettront de le remplacer ultérieurement.

121.215 Energie nucléaire

Environ 20 pour cent des besoins d'énergie électrique de notre pays sont actuellement couverts par des centrales nucléaires. Pour que l'économie suisse puisse rester compétitive sur le plan international, elle devra poursuivre ses efforts de rationalisation, ce qui impliquera le plus souvent un recours accru à l'énergie électrique.

Ces derniers temps, on prétend parfois que la rationalisation est socialement dommageable. Elle tendrait à réduire la main-d'œuvre et provoquerait ainsi du chômage. A ces assertions il convient d'objecter qu'une telle argumentation part de l'hypothèse que le niveau technique et le degré de rationalisation de l'économie suisse peuvent être choisis librement. Tel ne serait le cas que si la Suisse était un pays non tributaire du commerce extérieur. Même s'il ne l'était pas, une renonciation au progrès technique entraînerait une stagnation du niveau de vie. Par exemple, l'accroissement de la longévité aurait pour effet, si l'âge de la retraite restait le même, d'abaisser le revenu disponible par habitant.

La Suisse est un petit Etat pauvre en matières premières et dont la capacité de production est limitée. Sa population est habituée à un libre choix en matière de consommation. Pour pouvoir satisfaire la demande, l'approvisionnement en matières premières, en produits et en services requiert des importations considérables. Leur paiement exige à son tour des exportations pour une valeur correspondante. L'économie suisse doit être capable de concurrencer l'offre étrangère tant sur le marché intérieur que sur les marchés internationaux. A cela s'ajoute qu'en ce qui concerne le niveau des salaires, la Suisse figure dans le groupe de tête des pays industrialisés. Son économie ne peut compenser ce facteur que par la qualité des produits offerts et la technicité des méthodes de production. Elle ne peut rester concurrentielle qu'à la condition de bénéficier, à des prix supportables, de la quantité d'énergie dont elle a besoin. Une renonciation à la rationalisation et à un approvisionnement suffisant en énergie à des prix avantageux se ferait au détriment de places de travail qui seraient menacées. Pendant les années de prospérité économique et de sous-évaluation du franc suisse, l'amélioration des produits et des installations de production a été négligée en maints endroits. La diminution du nombre des postes de travail enregistrée

depuis lors a permis à chacun de se rendre compte des conséquences sociales qu'exerce un fléchissement de la capacité de concurrence.

Le lien qui existe entre le plein emploi et la consommation d'énergie fait actuellement l'objet d'une enquête approfondie à laquelle procèdent des experts sur mandat de la Commission de la conception globale de l'énergie.

Dans de nombreux domaines, des économies de courant sont possibles et souhaitables. Mais elles ne parviendront pas à elles seules à compenser l'accroissement de la demande. Il est probable que la consommation de courant continuera à s'intensifier, quoique à un rythme moins rapide que précédemment (ch. 121.221). Lorsque l'aménagement des forces hydrauliques économiquement utilisables sera achevé, notre pays devra couvrir ses besoins grandissants par l'importation d'énergie électrique, la production d'électricité dans des centrales exploitées au charbon, au mazout ou au gaz et, enfin, par les centrales nucléaires.

L'importation d'énergie électrique nous rendrait par trop tributaires de la capacité de livraison et du bon vouloir d'Etats étrangers.

L'exploitation à l'huile lourde des centrales thermiques conventionnelles est celle qui entre d'abord en ligne de compte pour des raisons de rentabilité. Mais l'un des principaux objectifs de notre politique énergétique doit viser à nous rendre moins dépendants à l'égard des produits pétroliers, puisqu'à moyen terme déjà, le pétrole ne sera vraisemblablement plus disponible en quantités illimitées. La construction de centrales thermiques alimentées par les huiles lourdes serait diamétralement contraire à l'évolution souhaitable. Pour l'instant, les centrales alimentées au charbon et au gaz naturel produisent en régime continu une énergie plus chère que celle des centrales exploitées au mazout et des centrales nucléaires, sans compter qu'à l'étranger on s'oppose à la construction de centrales thermiques au charbon parce qu'elles polluent l'air.

L'entreposage de gaz naturel en prévision de périodes durant lesquelles les importations seraient entravées fait actuellement l'objet d'un examen. La constitution de réserves d'hydrocarbures et de charbon est plus coûteuse que celle de stocks de combustible nucléaire et requiert aussi de beaucoup plus grands espaces.

Les centrales alimentées par le pétrole et le charbon chargent l'atmosphère de gaz d'échappement. Outre les effets directs des matières nocives contenues dans ces gaz, on craint que l'anhydride carbonique que dégage la combustion du pétrole et du charbon ne provoque indirectement une modification fondamentale du climat. En revanche, les centrales nucléaires ne produisent ni anhydride carbonique, ni gaz d'échappement toxiques. Selon les expériences faites dans le monde entier, l'émission de radioactivité dans l'environnement est si faible que la radioactivité naturelle omniprésente n'augmente dans le voisinage des centrales nucléaires que de quelques pour-cent au plus. Cet accroissement des taux naturels de radioactivité est notablement inférieur aux différences entre les taux de radioactivité constatés dans diverses localités de notre pays.

Même si l'on appliquait toutes les mesures imaginables pour économiser de l'énergie, l'on ne pourrait, en raison notamment de la nécessité de recourir à l'énergie atomique pour remplacer le pétrole, renoncer à la construction d'un nombre limité de nouvelles centrales nucléaires. Elles sont nécessaires pour assurer la production d'électricité et de chaleur servant au chauffage à distance des villes et à des fins industrielles. Elles peuvent contribuer à supplanter le pétrole et, partant, réduire notre dépendance à l'égard de cette source d'énergie en voie d'épuisement.

121.22 Evolution probable des besoins et de la production d'énergie électrique

Dans son rapport intermédiaire, la Commission de la conception globale de l'énergie a analysé en détail l'évolution probable de nos besoins d'énergie électrique entre 1975 et 1985 et les moyens de les satisfaire. Tenant compte des éléments exposés ci-dessus, elle est arrivée à la conclusion que le programme de construction en voie d'exécution, et comprenant les centrales de Gösgen, Leibstadt et Kaiseraugst était justifié et adéquat quant à son ampleur et aux délais dans lesquels on envisage de le réaliser. Une nouvelle centrale nucléaire (il s'agit plus particulièrement de celle de Gräben) sera nécessaire vers le milieu des années quatre-vingt. La commission est partie de l'idée que la reprise économique serait relativement rapide. Mais celle-ci se fait attendre et la consommation d'électricité n'a pas augmenté dans la mesure prévue. C'est pourquoi il faut réviser ces prévisions.

121.221 Evolution probable de la consommation d'électricité

Conformément à ce que nous avons exposé ci-dessus, il faut s'attendre que la consommation d'électricité continue à augmenter, mais à un rythme plus lent que pendant les 25 dernières années. Lorsqu'on suppose la consommation future, il faut rester conscient de l'incertitude des pronostics. La Commission fédérale de la conception globale de l'énergie a chargé le Centre Saint-gallois de futurologie de déterminer les perspectives d'évolution des besoins d'énergie finale. La commission et sa sous-commission économique ont soigneusement examiné cette étude, dans laquelle ses auteurs ont tenu compte d'un grand nombre de facteurs. Les chiffres y relatifs – ce sont les plus récents – constituent les données les plus sûres actuellement disponibles; c'est pourquoi nos considérations suivantes s'en inspirent.

Si l'on s'abstient d'influer sur la consommation d'électricité, on peut admettre que pendant le semestre d'hiver, elle croîtra durant les prochaines années de 3,2 pour cent en moyenne par an, puis de 2,3 pour cent vers la fin de ce siècle (ch. 121.211). La consommation d'électricité en hiver augmenterait donc d'ici à l'an 2000 de

quelque 2,7 pour cent en moyenne par an au stade de l'énergie finale¹⁾. En déterminant les besoins, il ne faut toutefois pas se fonder sur leur évolution naturelle; il importe au contraire de tenir compte de la nécessité de remplacer le pétrole par l'électricité et des économies possibles.

La Commission de la conception globale de l'énergie ne s'est prononcée provisoirement sur le remplacement du pétrole par l'électricité que dans son rapport intermédiaire de mai 1976. Elle estime que les quantités maximales suivantes d'électricité pourront être utilisées pour remplacer le pétrole: 4,5 milliards de kWh (dont 3,5 en hiver) en 1985 et 18,5 milliards de kWh (dont 12,5 en hiver) en l'an 2000. En fait, la quantité d'électricité qui devrait être produite en remplacement du pétrole sera vraisemblablement de beaucoup inférieure aux chiffres ci-dessus.

On ne peut actuellement qu'estimer les effets que les mesures d'économie exerceront sur la consommation d'électricité. Aux fins d'estimer les diverses économies qui peuvent être réalisées dans l'état actuel des législations, la commission précitée a procédé à une enquête auprès des cantons pour déterminer les mesures qu'ils entendent prendre en se fondant sur leurs compétences constitutionnelles actuelles. Il ressort de cette enquête et des études de la Commission de la conception globale de l'énergie que la consommation, *substitution non comprise*, augmentera de 2,3 pour cent par an, ces économies étant prises en considération. Compte tenu de la substitution maximale possible, l'augmentation annuelle moyenne pendant le semestre d'hiver passera à 3,8 pour cent au maximum. Nous avons tablé sur ces deux valeurs (2,3 et 3,8%) pour établir les calculs et graphiques figurant sous chiffre 121.223.

121.222 Evolution probable de la production

La production de courant électrique en Suisse repose sur trois piliers: les forces hydrauliques, l'énergie nucléaire et l'énergie thermique traditionnelle. Les parts respectives de ces agents énergétiques dans la production totale au cours du semestre d'hiver 1976/1977 se sont élevées à 71, 22 et 7 pour cent.

La presque totalité des forces hydrauliques de notre pays est exploitée. Sur mandat de la Commission de la conception globale de l'énergie, l'Association suisse pour l'aménagement des eaux a élaboré, en janvier 1977, un rapport sur les forces hydrauliques encore inexploitées (Importance des forces hydrauliques suisses encore inexploitées), document auquel quelques corrections ont encore été apportées en mai 1977. L'association précitée y tire les conclusions suivantes: les installations hydro-électriques actuellement en construction feront croître d'environ 0,38 milliard de kWh la capacité moyenne annuelle de production. En modernisant et agrandissant des aménagements existants, on pourrait augmenter la production moyenne annuelle de 1,5 à 2 milliards de kWh

¹⁾ Energie finale: énergie au stade final de la distribution (consommateur).

usqu'en l'an 2000 (de 0,3 milliard de kWh jusqu'en 1985). Enfin, l'aménagement de nouvelles installations hydro-électriques, dont la réalisation est considérée comme «probable» ou «possible», permettrait d'augmenter encore de 1,5 milliard de kWh la production moyenne annuelle jusqu'en l'an 2000 (aucune nouvelle centrale ne sera probablement construite d'ici à 1985).

On pourrait donc accroître la production hydro-électrique annuelle de 3 à 3,5 milliards de kWh en tout jusqu'en l'an 2000 en modernisant et agrandissant les aménagements actuels et en construisant de nouveaux aménagements (non compris ceux qui sont actuellement en construction et qui produiront annuellement 0,38 milliard de kWh). Ce chiffre représente approximativement la moitié de la production d'une centrale nucléaire de la catégorie de 1000 mégawatts. Il faut toutefois considérer que, parmi les projets compris dans ce calcul, plusieurs ont été abandonnés par souci de protéger la nature et le paysage, et que la Confédération ne peut ordonner directement ni la transformation d'aménagements existants ni la construction de nouveaux. Un peu moins de la moitié de la production supplémentaire possible sera vraisemblablement réalisée pendant le semestre d'hiver. C'est à cette période de l'année que se rapportent les considérations suivantes. Nous n'avons pas tenu compte dans les tableaux et graphiques ci-après de cette production supplémentaire possible, parce qu'elle est aléatoire.

En déterminant la production future probable, il faut d'abord tenir compte du fait que la production hydro-électrique dépend dans une large mesure des conditions météorologiques et qu'elle est donc loin d'être constante. D'autre part, il faut considérer que les interruptions de la production sont plus fréquentes dans les centrales nucléaires que dans les centrales hydro-électriques et qu'elles peuvent y être assez longues.

Il a été tenu compte dans les calculs figurant sous chiffre 121.223 aussi bien des possibilités d'importation de courant en provenance des centrales nucléaires françaises de Fessenheim et de Bugey que des obligations des centrales de Leibstadt et de Kaiseraugst quant à la livraison d'énergie à leurs partenaires étrangers. Pour calculer la production probable, il faut également prendre en considération les expériences que la mise en service des centrales thermiques a permis de faire. Il en résulte que la production croît lentement et qu'elle n'atteint son niveau normal que six ans après la mise en service. En opérant de la sorte, on tient compte des difficultés initiales possibles. Cependant, il est tout à fait possible que de nouvelles centrales nucléaires atteignent leur niveau normal de production après une ou deux années de fonctionnement; dans ce cas, les chiffres estimatifs sur lesquels nous nous sommes fondés pour établir les graphiques ci-après s'en trouveraient notablement augmentés.

Les calculs tablent sur les dates suivantes de mise en service possible des centrales nucléaires en construction ou projetées:

Centrale	Date de la mise en service possible
Gösgen-Däniken.....	mars 1978
Leibstadt	décembre 1980
Kaiseraugst	octobre 1984
Graben	octobre 1986

La date de la mise en service des autres centrales nucléaires projetées (Verbois, Rütli et Inwil) ne peut pas encore être indiquée.

121.223 Comparaison entre la production possible et les besoins

Pour apprécier la situation en matière d'approvisionnement, il y a lieu de tenir compte de faibles débits des cours d'eaux et d'interruptions possibles assez longues de la production des centrales nucléaires. A ce propos, il faut se demander dans quelle mesure il convient d'envisager des conditions de production extrêmement défavorables, c'est-à-dire des débits minimaux des cours d'eau et une panne de centrale nucléaire durant tout un hiver. Nous sommes relativement bien renseignés sur les variations de la production hydro-électrique. Depuis le début des années 50, il existe un indice des possibilités de production. En revanche, les centrales nucléaires suisses ne sont en service que depuis quelques années. Il n'est donc pas encore possible d'apprécier de manière concluante la probabilité de pannes d'une certaine durée. D'autre part, la question du degré désirable de sécurité en matière d'approvisionnement n'a pas encore été discutée à fond, ni résolue. La crise du pétrole de 1973/74 a montré qu'il importe de disposer d'énergie en permanence et mis en évidence à quel point la société et l'économie sont tributaires d'un approvisionnement sûr. En revanche, les milieux que la protection de la nature intéresse considèrent qu'une sécurité réduite de l'approvisionnement en électricité serait supportable, quitte à s'accommoder occasionnellement de pénuries et de rationnements.

Tant les surcapacités que les pénuries sont coûteuses pour l'économie. Les données actuellement disponibles ne permettent pas de déterminer le degré économiquement optimal de la sécurité de l'approvisionnement. C'est pourquoi nous tenons à indiquer ci-après comment se présente la couverture des besoins d'électricité pendant le semestre d'hiver, en nous fondant sur des cas supposés. C'est ainsi que nous considérons quatre variantes, reposant sur l'hypothèse que le pétrole est remplacé dans la plus large mesure possible (ch. 121.221).

Variante I

Production hydro-électrique moyenne; production *normale* des centrales nucléaires¹⁾

Hiver	Production (millions de kWh)	Besoins ²⁾ (millions de kWh)	Excédent de production (+) Déficit de production (-) (millions de kWh)
1979/80	22 300	20 400	+1900
1984/85	29 200	25 000	+4200
1989/90	34 300	30 300	+4000
1994/95	35 500	36 200	-700

Résultat: Excédent constant jusqu'en 1993/94, maximum de 5300 millions de kWh en 1986/87, déficit dès 1994/95.

Variante II

Production hydro-électrique *minimale*, production *normale* des centrales nucléaires¹⁾

Hiver	Production (millions de kWh)	Besoins ²⁾ (millions de kWh)	Excédent de production (+) Déficit de production (-) (millions de kWh)
1979/80	20 200	20 400	-200
1984/85	27 100	25 000	+2100
1989/90	32 200	30 300	+1900
1994/95	33 400	36 200	-2800

Résultat: Déficits minimes au début, suivis d'excédents jusqu'en 1991/92, puis de déficits croissants.

¹⁾ Dates supposées de mise en service des centrales nucléaires: Gösgen-Däniken, mars 1978; Leibstadt, décembre 1980; Kaiseraugst, octobre 1984; Graben, octobre 1986. Durée d'exploitation supposée: 1^{re} et 2^e années, 2000 h; 3^e année, 2500 h; 4^e année, 3000 h; 5^e année, 3500 h; dès la 6^e année, 4000 h (toutes ces indications se rapportent à l'hiver, les centrales fonctionnant à pleine charge).

²⁾ Taux de croissance de 2,3 pour cent en moyenne par hiver, à quoi s'ajoutent les besoins d'énergie de remplacement (ch. 121.221).

Variante III

Production hydro-électrique *moyenne* et *panne* de la plus grande centrale nucléaire pendant tout l'hiver¹⁾

Hiver	Production (millions de kWh)	Besoins ²⁾ (millions de kWh)	Excédent de production (+) Déficit de production (-) (millions de kWh)
1979/80	20 500	20 400	+100
1984/85	25 500	25 000	+500
1989/90	30 700	30 300	+400
1994/95	30 900	36 200	-5300

Résultat: Jusqu'en 1989/90: en général excédents. Dès 1990/91: déficits croissant rapidement.

Variante IV

Production hydro-électrique *faible* en hiver, *comme c'est le cas en moyenne tous les quatre ans*, et *panne* simultanée de la plus grande centrale nucléaire pendant tout l'hiver¹⁾

Hiver	Production (millions de kWh)	Besoins ²⁾ (millions de kWh)	Excédent de production (+) Déficit de production (-) (millions de kWh)
1979/80	19 800	20 400	-600
1984/85	24 800	25 000	-200
1989/90	29 900	30 300	-400
1994/95	30 200	36 200	-6000

Résultat: Déficits constants à trois petites exceptions près (cf. graphiques)

¹⁾ Dates supposées de mise en service des centrales nucléaires: Gösgen-Däniken, mars 1978; Leibstadt, décembre 1980; Kaiseraugst, octobre 1984; Graben, octobre 1986. Durée d'exploitation supposée: 1^{re} et 2^e années, 2000 h; 3^e année, 2500 h; 4^e année, 3000 h; 5^e année, 3500 h; dès la 6^e année, 4000 h (toutes ces indications se rapportent à l'hiver, les centrales fonctionnant à pleine charge).

²⁾ Taux de croissance de 2,3 pour cent en moyenne par hiver, à quoi s'ajoutent les besoins d'énergie de remplacement (ch. 121.221).

Le cas d'une production hydro-électrique minimale et d'une panne durable d'une centrale nucléaire est très peu probable. Si l'on voulait exiger en l'occurrence une sécurité absolue de l'approvisionnement, une réserve exagérée d'installations de production serait nécessaire. Les expériences faites à l'étranger ont montré qu'il est nécessaire de disposer d'une réserve de production de près de 20 pour cent pour le cas où la plus grande centrale nucléaire d'un pays tomberait en panne.

Les graphiques ci-après montrent l'évolution probable des besoins et des possibilités de production, compte tenu de ces diverses hypothèses.

121.23 Conclusions

Les secteurs de l'économie énergétique doivent être considérés dans leur ensemble et non pas séparément. La politique énergétique doit s'intégrer dans la politique économique et sociale, de manière à assurer un approvisionnement convenable en énergie, à sauvegarder les places de travail, à réduire la dépendance politique et économique à l'égard de l'étranger ou à prévenir une dépendance trop unilatérale, à protéger l'homme, à sauvegarder un milieu naturel digne de ce nom et à ménager les ressources naturelles. Il ne saurait être question de diriger l'économie par le biais de la politique énergétique, ce qui ne serait d'ailleurs pas réalisable de manière satisfaisante. En élaborant la conception globale de l'énergie, la commission doit tenir compte notamment des possibilités d'utilisation de techniques ménageant les ressources énergétiques et le milieu naturel, de la recherche et du développement, ainsi que des moyens de ramener la consommation à un niveau convenable. Or les études que la commission a entreprises dans ce sens et dont elle a rendu compte dans son rapport intermédiaire de mai 1976, généralement bien accueilli par le public, ainsi que celles qu'elle entreprendra encore, ne se justifient que si les décisions à prendre ultérieurement s'en inspirent.

C'est pourquoi nous proposons de subordonner la construction de nouvelles centrales nucléaires à la condition que l'énergie devant y être produite réponde à un réel besoin.

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121.3 Déchets radioactifs

Les déchets radioactifs ne proviennent pas seulement des centrales nucléaires mais aussi, en quantités comparables (sous le rapport du volume tout au moins), des hôpitaux, des laboratoires de recherche et de l'industrie. Aux termes de l'article 106 de l'ordonnance du 30 juin 1976 concernant la protection contre les radiations (RS 814.50), le Département de l'intérieur est tenu de faire aménager des dépôts pour le stockage des déchets radioactifs ne provenant pas de centrales nucléaires.

En revanche, c'est aux propriétaires de centrales nucléaires qu'il incombe actuellement d'éliminer les déchets radioactifs provenant desdites centrales. En 1972, les exploitants et promoteurs de centrales nucléaires ont fondé à cet effet la Société coopérative nationale pour l'entreposage de déchets radioactifs (CEDRA). La Confédération en a été un membre fondateur afin de pouvoir déposer ses propres déchets dans le ou les dépôts devant être créés par la société. Il n'y a aucune raison de ne pas stocker ou éliminer ensemble les déchets émanant des centrales nucléaires et ceux des autres provenances précitées.

Jusqu'à présent, les *déchets faiblement radioactifs* recueillis par la Confédération ainsi que ceux des centrales nucléaires étaient conditionnés par l'Institut fédéral de recherches en matière de réacteurs, coulés dans du béton et immergés dans l'Atlantique à l'occasion de campagnes collectives dirigées par l'Agence

internationale de l'énergie de l'OCDE, cela conformément aux prescriptions de la «Convention de Londres pour la protection des eaux maritimes». On ignore jusqu'à quand on pourra encore procéder de la sorte. C'est pourquoi il faut, par précaution, créer des dépôts en Suisse le plus tôt possible, où seront également stockés les déchets provenant des hôpitaux, laboratoires, etc., qui doivent être recueillis par la Confédération.

Pour le moment, les *déchets moyennement radioactifs* des centrales nucléaires sont déposés dans des ouvrages en béton situés dans l'enceinte des centrales. Leur capacité suffit encore pour un certain nombre d'années.

Les *déchets hautement radioactifs* ne proviennent que des éléments combustibles des centrales nucléaires. Les éléments irradiés sont envoyés dans des usines de retraitement à l'étranger. On y sépare les produits de fission de l'uranium restant et du plutonium qui s'y est formé pendant l'irradiation. L'uranium et le plutonium peuvent être réintégrés dans le cycle du combustible. Les déchets hautement radioactifs sont stockés sous forme liquide pendant cinq à dix ans. Durant cette période, ils dégagent de la chaleur et perdent une partie de leur radioactivité. Puis on les fait passer à l'état solide, ce qui, de nos jours, s'opère principalement par vitrification. Enfin, cette matière vitrifiée et insoluble dans l'eau doit être déposée pour le stockage définitif dans des formations géologiques restées stables pendant des périodes géologiques considérables, notamment en ce qui concerne la dissolution par l'eau. Ces formations doivent aussi résister à la radiation des déchets et disperser la chaleur de fission qui continue de s'en dégager. Le stockage vise à isoler complètement les matières radioactives de la biosphère, donc à éviter que la radioactivité émanant du dépôt définitif n'atteigne une concentration pouvant être nocive pour les êtres humains et l'environnement. L'état actuel des connaissances techniques permet de garantir la sécurité du stockage pendant des milliers d'années.

Les contrats conclus par les exploitants suisses de centrales nucléaires avec les entreprises étrangères de retraitement ne les obligent pas encore à ramener les déchets hautement radioactifs en Suisse. Il est possible toutefois qu'au moment où ces contrats seront arrivés à expiration et où il s'agira d'en conclure de nouveaux, les usines de retraitement exigeront la reprise des déchets. Mais comme ceux-ci restent d'abord plusieurs années à l'usine pour y être refroidis et ne sont solidifiés et, partant, mis en état d'être transportés, qu'à la fin de cette période, la question de la reprise ne se posera vraisemblablement que vers la fin des années quatre-vingt au plus tôt. Cela n'empêche pas qu'il faille d'ores et déjà vouer toute l'attention voulue au problème de l'élimination des déchets faiblement, moyennement et hautement radioactifs, car la création de dépôts à cet effet requiert des recherches compliquées et de longue haleine.

En République fédérale d'Allemagne, on considère que les formations de sel gemme épaisses de plusieurs centaines de mètres se prêtent le mieux au stockage de déchets à faible, moyenne et haute radioactivité. On ne connaît pas de telles formations en Suisse. C'est pourquoi la CEDRA s'intéresse plus particuliè-

rement aux couches d'anhydrite qu'on trouve en Suisse. Elle a demandé à l'Office de l'économie énergétique cinq autorisations en vue du forage et du sondage de galeries à des fins expérimentales. La population locale s'y oppose toutefois. Les cantons intéressés ont été invités à se prononcer, mais ils désirent attendre pour cela que la Commission fédérale pour la sécurité des installations atomiques ait déposé le rapport d'expertise qui lui a été demandé.

Le problème du traitement des résidus et des déchets radioactifs des centrales nucléaires et plus particulièrement de celui du combustible après son extraction du réacteur prendra peut-être une nouvelle dimension si l'on en croit le président des Etats-Unis d'Amérique qui a annoncé que son pays entend empêcher le retraitement du combustible irradié et, partant, la séparation du plutonium, matière première utilisée pour la fabrication d'armes nucléaires. Si le président des Etats-Unis parvient à imposer cette politique, les éléments combustibles irradiés devront éventuellement être stockés sous cette forme. La question de l'évacuation et du stockage des déchets est donc en pleine évolution, et des éléments nouveaux peuvent exiger des solutions nouvelles.

La CEDRA, le Groupe des exploitants et promoteurs de centrales nucléaires, l'Institut fédéral de recherches en matière de réacteurs et la Division pour la sécurité des installations nucléaires de l'Office de l'économie énergétique se préoccupent depuis des années des questions que posent le traitement des résidus et plus particulièrement le stockage des déchets radioactifs. Cette division a institué un comité de coordination pour le stockage de déchets radioactifs, qui a élaboré une documentation volumineuse. Un groupe de travail au sein duquel seront représentés les services et offices fédéraux intéressés poursuivra la tâche de ce comité sous la direction de l'Institut fédéral de recherches en matière de réacteurs. En outre, cet institut effectuera les travaux et les études qui lui seront confiés par ce groupe de travail et pourra, à cet effet, recourir aux services de bureaux d'ingénieurs et d'autres spécialistes.

La loi sur l'énergie atomique respecte le principe selon lequel l'utilisation pacifique de l'énergie nucléaire est l'affaire de l'économie privée. Le projet d'arrêté qui fait l'objet du présent message s'en tient à ce principe. Par voie de conséquence, le problème de l'élimination des déchets radioactifs doit être résolu au premier chef par ceux qui les produisent. Toutefois, il ne fait aucun doute qu'une élimination sûre desdits déchets est d'intérêt public. Aussi la Confédération doit-elle pouvoir aider les centrales nucléaires et la CEDRA à accomplir cette tâche ou, s'il le faut, s'en charger elle-même. Il faudrait alors s'accommoder de certaines restrictions apportées à la liberté du commerce et de l'industrie ainsi qu'à la propriété.

Toutefois, dans ce domaine, la Confédération n'a pas comme fonction principale de se substituer aux centrales nucléaires et à la CEDRA, mais de les soutenir par des mesures appropriées, notamment en collaborant avec elles dans le secteur de la recherche, en les aidant à trouver des sites adéquats ou en mettant à leur disposition du terrain lui appartenant. Au surplus, elle peut, sur le

plan international, proposer ses bons offices, notamment lors de la conclusion d'accords avec d'autres pays. Il va de soi que toutes ces mesures seront exécutées aux frais des producteurs de déchets radioactifs. Enfin, la Confédération pourra transférer son droit d'expropriation à des tiers ou l'exercer elle-même.

- 121.4 Autres points à reviser qui n'ont pas été retenus dans le présent projet d'arrêté

Nous énumérerons brièvement ci-après les principaux autres points de la loi qui devraient être amendés, mais dont la revision n'est pas de première urgence et fait encore l'objet d'études.

L'augmentation du montant de couverture des dommages causés aux tiers, qui a été rendue nécessaire par la dévalorisation de la monnaie et l'accroissement de la puissance des centrales nucléaires modernes depuis le 1^{er} juillet 1960, date de l'entrée en vigueur de la loi, est une question à part. Nous fondant sur l'article 21 de la loi, nous avons, par notre ordonnance du 6 juillet 1977 (RO 1977 1424), porté ce montant de 40 à 200 millions de francs. Cette modification entrera en vigueur le 1^{er} octobre 1977.

Ce sont plus particulièrement les dispositions relatives à la responsabilité civile et à l'assurance qui doivent être revisées.

La loi devrait en premier lieu être adaptée à la «Convention de Paris du 29 juillet 1960 sur la responsabilité civile dans le domaine de l'énergie nucléaire» et à la «Convention complémentaire de Bruxelles» du 31 janvier 1963. Ces conventions sont entrées respectivement en vigueur en 1968 et en 1974. La Suisse les a signées mais pas encore ratifiées. Nous avons renoncé jusqu'à présent à proposer l'adaptation de la loi à ces accords, parce qu'il était question d'une revision de la convention de Paris et que nous voulions éviter de reviser la loi à deux reprises à peu d'intervalle. Or on n'entrevoit pas encore l'achèvement des travaux de revision de cette convention. Les pourparlers portent actuellement sur une nouvelle définition de l'unité monétaire utilisée, combinée le cas échéant avec une augmentation du montant de couverture. Or le projet de ce nouveau texte n'a pas encore paru. Une prompt ratification est souhaitable, ne serait-ce que parce que les conventions règlent la question des dégâts qui s'étendent au-delà des frontières nationales. La ratification exigera de nombreuses modifications de la loi, modifications dont une partie découle directement des conventions.

D'autre part, la loi ne règle pas suffisamment le rapport entre les attributions de la Confédération et celles des cantons (point sur lequel portent aussi les trois initiatives cantonales précitées). Aussi le Tribunal fédéral a-t-il dû s'occuper à plusieurs reprises de la délimitation de ces compétences.

Les initiatives cantonales et d'autres interventions demandent un plan d'ensemble régissant l'implantation de centrales nucléaires et l'harmonisation des planifications correspondantes des pays limitrophes. Les bases légales pour une telle planification obligatoire font actuellement défaut.

De plusieurs côtés, on suggère que le régime actuel d'autorisation des centrales nucléaires soit remplacé par un *système de concession*. Certains milieux préconisent aussi l'introduction du *droit d'expropriation* pour l'aménagement d'installations atomiques.

Lors de la procédure de consultation, quelques cantons ont demandé que la loi garantisse aux petites entreprises d'électricité le droit de *participer aux centrales nucléaires*.

Enfin, la loi actuelle ne contient aucune disposition relative au *démontage d'installations désaffectées*.

L'approvisionnement des centrales nucléaires en combustible atomique et l'élimination des déchets radioactifs requièrent, notamment en raison de leurs incidences sur les relations internationales, l'intervention des autorités. C'est ainsi que la Confédération, pour respecter les engagements qu'elle a pris dans le cadre d'accords bilatéraux et multilatéraux, est tenue de garantir que les installations nucléaires, le combustible et les résidus sont utilisés uniquement à des fins pacifiques. Un système international de contrôle permet de vérifier si les pays qui utilisent l'énergie atomique s'acquittent de cette obligation. Aux fins d'empêcher les fuites qui pourraient se produire en raison des lacunes d'ordre géographique que présente le Traité du 1^{er} juillet 1968 sur la non-prolifération des armes nucléaires et conduire à une plus large dissémination de l'arme nucléaire, les principaux pays exportateurs d'équipement nucléaire, dont la Suisse, se sont déclarés disposés à contrôler également l'importation et l'exportation de certaines informations «nucléaires». Il importerait de créer la base légale nécessaire à cet effet, en insérant une disposition à ce sujet dans la loi sur l'énergie atomique.

Ces problèmes et d'autres encore exigent une étude approfondie, tâche à laquelle se consacre notamment la commission Dubach, composée de juristes. Toutefois, pour ne pas retarder la réalisation des modifications impératives que nous proposons, le règlement de la plupart de ces problèmes devrait être différé jusqu'à la révision totale de la loi qui est déjà fort avancée.

122 Solutions possibles

122.1 Généralités

L'introduction de la preuve du besoin, l'attribution à une autorité politique de la compétence d'octroyer des autorisations et l'amélioration du droit de regard du citoyen dans la procédure d'autorisation en exigent la réforme. Toutes ces innovations pourraient être apportées par une révision de la loi. Toutefois, il faudrait pour ce faire modifier de nombreux articles existants et en insérer un certain nombre de nouveaux. Cela porterait atteinte à la bonne ordonnance de la loi, qui en deviendrait presque illisible. C'est pourquoi nous nous sommes résolus à laisser la loi telle qu'elle est et à faire précéder la procédure qui y est

prévue par une procédure spéciale. Vu qu'il s'agit là d'un régime transitoire qui ne durera que jusqu'à l'entrée en vigueur de la loi totalement révisée, notre projet a été libellé non pas sous la forme de loi, mais sous celle d'arrêté fédéral de portée générale et de durée limitée (art. 6 de la loi sur les rapports entre les conseils, RS 171.11). Il est donc soumis au référendum facultatif.

122.2 Autorité compétente

Actuellement, c'est le Département fédéral des transports et communications et de l'énergie qui délivre les autorisations de police pour les installations atomiques affectées à la production d'électricité, alors que l'Office fédéral de l'économie énergétique accorde les autorisations pour les autres installations atomiques (p. ex. les réacteurs de recherches et les dépôts pour déchets radioactifs provenant des installations nucléaires). Nous leur avons délégué cette compétence par notre ordonnance du 13 juin 1960/23 décembre 1968 concernant les définitions et les permis dans le domaine de l'énergie atomique (RS 732.11). Vu la nature principalement technique des autorisations, cette réglementation était alors judicieuse. Ce sont les experts que nous avons désignés en vertu de la loi qui préparent la décision et en assument la responsabilité sur le plan technique.

Comme nous l'avons déjà mentionné, l'autorisation de créer une installation atomique a toutefois pris un caractère de plus en plus politique ces années dernières en raison de la controverse à laquelle donne lieu l'énergie nucléaire. Aussi faudrait-il que ce soit dorénavant une autorité politique qui décide de l'autorisation d'aménager une installation atomique. L'autorité compétente peut être soit le Conseil fédéral, soit l'Assemblée fédérale.

122.21 Attribution de la compétence au Conseil fédéral

Le système politique suisse, selon lequel il appartient au Conseil fédéral d'appliquer les lois fédérales (art. 102, ch. 5, est.) plaide en faveur de l'attribution de la compétence à cette autorité. La nouvelle autorisation prévue sera une autorisation de police comme celles dont il est question dans la loi actuelle. La délivrance de ce document sera une mesure d'exécution de la loi, car l'autorisation devra être octroyée si les conditions légales sont remplies. L'attribution de la compétence au Conseil fédéral s'impose uniquement de ce fait. Un autre argument en faveur de cette solution réside dans le fait que de nombreux aspects techniques doivent être examinés et que la procédure serait plus rapide. Enfin, il faudrait tenir compte du désir, formulé à maintes reprises, de ne pas confier sans nécessité absolue de nouvelles tâches à notre parlement de milice qui est déjà surchargé.

122.22 Attribution de la compétence à l'Assemblée fédérale

Il est exact que la séparation des pouvoirs législatif et exécutif n'a jamais été appliquée avec une rigueur absolue dans l'accomplissement des tâches fédérales. Divers actes administratifs auxquels on attribuait une grande portée politique ont été déclarés comme étant du ressort du Parlement. Mentionnons, entre autres, l'octroi de concessions ferroviaires, l'autorisation d'ouvrir de nouvelles lignes des CFF et la détermination du réseau des routes nationales. Compte tenu de son importance pour l'économie nationale et de sa portée politique, l'autorisation d'aménager des installations atomiques peut très bien être comparée à ces autres tâches du Parlement.

De plus, on accèderait aux vœux exprimés quant à une amélioration du droit de discussion de la population en attribuant la compétence à l'Assemblée fédérale, qui est la représentante du peuple tout entier. Un autre avantage de cette solution serait que partisans et adversaires pourraient faire valoir publiquement leurs arguments au cours de la procédure d'autorisation.

122.23 Attribution de la compétence au Conseil fédéral avec possibilité de recourir à l'Assemblée fédérale

Une troisième variante consisterait à attribuer la compétence au Conseil fédéral statuant en première instance et à prévoir une possibilité de recourir à l'Assemblée fédérale (art. 85, ch. 12, et 113, 2^e al., est; art. 79 LPA, RS 172.021). Cependant, une telle procédure à deux échelons serait longue et provoquerait des retards.

122.24 Votation populaire

Il va de soi que l'octroi de l'autorisation pourrait également être décidé en votation populaire, ce qui exigerait cependant une modification de la constitution. En effet, celle-ci ne comporte pas encore de disposition autorisant le référendum sur des questions touchant à l'exécution de lois. De plus, son article 24^{quinties} ne constitue pas une base suffisante pour permettre de l'introduire. Cette solution doit toutefois être rejetée pour d'autres raisons exposées sous chiffre 122.32.

122.3 Procédure

Nous avons déjà relevé que la procédure actuelle ne donne pas satisfaction. Il importe surtout de trouver un moyen qui permette à la plus grande partie possible de la population de participer à la procédure d'autorisation sans en prolonger la durée à l'excès.

122.31 Limitation de la consultation aux intéressés au sens de la loi sur la procédure administrative (RS 172.021)

Une telle limitation correspondrait pour l'essentiel au régime actuel, qui n'est pas satisfaisant pour les raisons exposées ci-dessus (ch. 121.1).

122.32 Participation générale

Actuellement, chaque projet d'installation atomique provoque à chaque phase de la procédure d'autorisation et de l'exécution des interventions de personnes et d'organisations dans tout le pays et dans les régions étrangères limitrophes. Une solution extrême sur le plan législatif consisterait donc à faire en sorte que chacun puisse se prononcer sur la requête et sur les expertises demandées et que le peuple décide de l'octroi de l'autorisation. Cependant, une votation populaire à ce sujet est contraire à notre conception de l'Etat et de la démocratie. En effet, notre Etat est une démocratie conférant aux citoyens des droits politiques étendus. Les votations fédérales ne portent en principe jamais sur des actes individuels. Or l'autorisation de construire ou d'exploiter une centrale nucléaire est un acte portant sur un cas particulier et doit donc être placée sur le même pied qu'une autre autorisation de construire, bien qu'elle soit de tout autre portée.

L'initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques» demande des votations populaires régionales. Or de tels scrutins de portée plus ou moins limitée, qui dicteraient ou faciliteraient simplement les décisions à prendre dans un domaine relevant de la Confédération, tel que l'utilisation pacifique de l'énergie atomique, ou en rapport avec l'exécution d'une loi fédérale seraient contraires à notre conception du droit public. De plus, il ne serait guère possible de délimiter de manière satisfaisante la région où la votation devrait se dérouler. En effet, une centrale nucléaire n'alimente pas seulement une région déterminée en électricité, mais contribue à l'approvisionnement de tout le pays. Il y a lieu de craindre que des scrutins régionaux ne provoquent une tournure d'esprit par trop régionaliste et ne mettent ainsi en péril notre communauté nationale. Nous nous référons à ce que nous avons dit à ce propos dans notre message du 24 août 1977 relatif à l'initiative précitée.

122.33 Droit transitoire

L'institution de la condition selon laquelle l'installation atomique doit répondre à un besoin constitue indubitablement l'un des points essentiels de notre projet. Il convient donc de se demander à quelles centrales nucléaires cette condition doit s'appliquer. Une solution consisterait à l'appliquer à toutes les centrales nucléaires qui ne sont pas encore en service (Gösgen, Leibstadt, Kaiseraugst, Graben, Verbois, Rütli et Inwil) et de subordonner l'octroi de la prochaine

autorisation à la condition que l'énergie produite dans l'installation réponde à un besoin. Une autre possibilité serait de n'exiger la preuve du besoin qu'en ce qui a trait aux projets pour lesquels la Confédération n'a pas encore délivré l'autorisation de construire, mais dont le site a déjà été approuvé (Kaiseraugst, Graben et Verbois). Enfin, on pourrait ne subordonner l'octroi de l'autorisation à la preuve du besoin venant s'ajouter aux conditions actuelles, que s'il s'agit de centrales n'ayant encore fait l'objet d'aucune autorisation au sens de la loi (Rüthi et Inwil).

Selon la solution que choisira le législateur, il faudra nécessairement se demander si la Confédération sera *tenue d'indemniser* le bénéficiaire d'une approbation de site. Celui-ci pourra-t-il, en vertu du droit et selon les règles de l'équité, exiger le remboursement des dépenses qu'il a faites en prévision de l'approbation de site, si l'autorisation générale requise selon le droit nouveau devait lui être refusée du fait, par exemple, que l'installation ne répond pas à un besoin? D'après la situation juridique actuelle, l'approbation de site confirme simplement qu'une centrale nucléaire peut être construite et exploitée à l'emplacement prévu, sans compromettre la protection des personnes, des biens d'autrui et de droits importants (art. 7 de la loi). Si le projet répond à ces conditions, le requérant a droit à la délivrance de l'autorisation de construire prévue par la loi. Il en est de même pour l'autorisation d'exploiter. En revanche, nul ne peut prétendre à ce qu'une loi ne soit jamais modifiée. Mais il y a lieu de se demander si l'on peut refuser une indemnité au citoyen qui a entrepris une œuvre licite et dont les intérêts économiques ont été gravement lésés par la modification du droit. Les experts juristes ont étudié cette question à fond. Ils ont constaté que ni la jurisprudence ni la doctrine n'y répondent clairement et qu'en tout cas il n'est pas possible d'invoquer sans plus les principes qui se sont développés dans le droit des constructions. Il y a également lieu de douter qu'un droit à l'indemnité découle de l'article 9, 5^e alinéa, de la loi.

13 Procédure de consultation

131 Généralités

Le 10 décembre 1976, le département a soumis à l'appréciation des gouvernements cantonaux, des organisations économiques centrales et d'autres associations intéressées le projet d'arrêté élaboré par la commission chargée de la révision de la loi sur l'énergie atomique, accompagné d'un commentaire. La consultation porta, entre autres, sur l'opportunité d'introduire l'obligation de fournir la preuve du besoin et de soumettre la construction d'installations atomiques au régime de l'autorisation dite «générale». La question de l'autorité compétente – Assemblée fédérale ou Conseil fédéral – pour délivrer cette autorisation fut laissée en suspens. Le projet se bornait à régler la procédure d'autorisation dans les grandes lignes et ne contenait aucune disposition sur l'élimination des déchets radioactifs.

Tous les milieux consultés ou presque auraient préféré que l'on procède rapidement à une révision totale de la loi plutôt que de la compléter par l'arrêté qui fait l'objet du présent message. Si la plupart d'entre eux semblent s'accommoder de cette solution en raison de l'impérieuse nécessité de modifier certains points, ils n'en expriment pas moins le désir que l'on accélère le plus possible la révision totale.

Quant au fond, les opinions exprimées divergent fortement; certains milieux entendent encourager, d'autres freiner, d'autres encore faire cesser la construction de centrales nucléaires. Certains, en outre, préconisent un moratoire comme solution transitoire jusqu'à l'entrée en vigueur de la nouvelle loi.

132 Résultats de la consultation

132.1 Preuve du besoin

La plupart des cantons (Zurich, Berne, Uri, Unterwald-le-Bas, Glaris, Zoug, Schaffhouse, Appenzell-Rhodes Extérieures et Intérieures, Saint-Gall, Grisons, Argovie, Thurgovie, Valais, Neuchâtel, Genève) *s'opposent* à ce que l'on subordonne l'octroi de l'autorisation générale de construire une centrale à la condition que l'énergie qui y sera produite réponde à un besoin suffisant dans le pays. Le Parti radical-démocratique suisse, l'Union suisse des arts et métiers, l'Association suisse des banquiers, le Directoire de l'Union suisse du commerce et de l'industrie, le Forum de l'énergie, l'Association suisse pour l'énergie atomique et l'Union des centrales suisses d'électricité sont du même avis. Les cantons de Schwyz, d'Unterwald-le-Haut, de Soleure, de Bâle-Ville et de Bâle-Campagne, l'Alliance des indépendants, le Parti du travail, le Parti socialiste, l'Union suisse des paysans, l'Union syndicale suisse, la Confédération des syndicats autonomes, l'Association des salariés évangéliques, la Société suisse pour la protection du milieu vital, la Ligue suisse pour la protection de la nature et la Fondation suisse pour l'énergie sont *partisans de la preuve du besoin*.

Voici en substance les arguments invoqués par les cantons et les milieux consultés:

- Il apparaîtrait peu judicieux de ne vouloir contrôler qu'un petit secteur de l'économie énergétique, soit la production d'électricité par le procédé de la fission nucléaire, en invoquant des motifs qui s'appliquent à cette économie dans son ensemble. Cette attitude serait contraire à la raison et au principe de l'égalité. S'il fallait empêcher que l'on ne produise de l'énergie en quantités illimitées, il importerait de contrôler tous les secteurs de production d'énergie. Or la solution prévue aurait pour conséquence indésirable que les producteurs éluderaient la difficulté en ayant recours à des ressources énergétiques dont la production n'est pas limitée, notamment – et cela va de soi – aux combustibles fossiles, qu'il s'agit précisément de remplacer, du moins en partie, par d'autres sources d'énergie (énergie de substitution).

Les cantons auraient dirigé depuis plus de 80 ans la croissance de la production d'électricité. Ils auraient réussi à adapter sans cesse cette production aux besoins et à éviter aussi bien des surproductions passagères considérables que des pénuries. Il n'y aurait donc aucune raison de penser que les cantons et les entreprises d'électricité qu'ils dirigent ne seront plus à la hauteur de cette tâche, ni que la Confédération sera plus apte qu'eux à l'accomplir.

En introduisant à l'échelon fédéral l'obligation de prouver le besoin, la Confédération non seulement s'engagerait à planifier le développement en matière d'énergie, mais encore assumerait la pleine responsabilité de l'approvisionnement en énergie. Cette situation serait incompatible avec la structure des entreprises d'électricité.

Serait-il possible d'apprécier les besoins à coup sûr? On ne peut qu'en douter. Il faudrait à cet effet tabler sur des taux de croissance de l'économie suisse encore inconnus au moment où il s'agirait de prendre une décision. En outre, il importerait de tenir toujours compte des interconnexions indispensables à l'échelon européen, sans lesquelles chacune des industries nationales de l'électricité devrait disposer de capacités de production sensiblement plus élevées. D'autre part, les interconnexions étant précisément ce que critiquent sévèrement les adversaires des centrales nucléaires, l'on cherche des critères qui permettraient de réduire leur influence sur la consommation ou la production totale.

Cependant, les adversaires et les partisans des centrales nucléaires s'accordent – bien qu'en se fondant sur des considérations divergentes – à constater que le projet d'arrêté donne une définition beaucoup trop vague de l'obligation de prouver le besoin. Les adversaires voudraient notamment élargir la portée de cette obligation en ce sens qu'elle devrait permettre à la Confédération d'imposer des mesures d'économie ou le remplacement des énergies traditionnelles par des agents énergétiques écologiquement moins nocifs.

13.2 Autorité compétente pour octroyer l'autorisation générale

La grande majorité des cantons préfère attribuer au Conseil fédéral la compétence d'octroyer l'autorisation. Ceux de Bâle-Ville, Bâle-Campagne, d'Argovie, du Tessin et de Genève voudraient la conférer à l'Assemblée fédérale, le Tessin préconisant de soumettre la décision de celle-ci au référendum facultatif.

Sont favorables à la première solution: le Parti démocrate chrétien, le Parti radical-démocratique et le Parti libéral suisse; le Parti évangélique populaire, l'Alliance des indépendants, le Parti du travail, l'Union démocratique du centre et le Parti socialiste se prononcent quant à eux en faveur de l'attribution de cette compétence à l'Assemblée fédérale.

Les associations et organisations suivantes préfèrent conférer ladite compétence au Conseil fédéral: Union suisse des paysans, Union suisse des arts et métiers, Association suisse des banquiers, Confédération des syndicats chrétiens de la

Suisse, Directoire de l'Union suisse du commerce et de l'industrie, Forum suisse de l'énergie, Association suisse pour l'énergie atomique, Union des centrales suisses d'électricité, Société coopérative nationale pour l'entreposage de déchets radioactifs et Mouvement social chrétien de la Suisse. En revanche, l'Union syndicale suisse, l'Association suisse des salariés évangéliques, l'Union suisse des syndicats autonomes, la Ligue suisse pour la protection de la nature, la Société suisse pour la protection du milieu vital, la Fondation suisse de l'énergie et le Comité de l'initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques» plaident en faveur de la seconde solution. Quelques groupements voudraient en outre soumettre la décision de l'Assemblée fédérale au référendum facultatif.

132.21 Arguments en faveur de la première solution

De nombreuses organisations et autorités estiment que si la décision est prise par le Conseil fédéral, il est plus sûr qu'elle le sera selon des critères objectifs et juridiques. En outre, il y aurait lieu d'examiner de nombreux problèmes techniques qui, pour la plupart, dépassent l'Assemblée fédérale. De plus, on craint que le système bicaméral ne complique la procédure de décision et qu'il en résulte des retards fâcheux.

Enfin, notre système politique plaide en faveur de l'attribution de la compétence au Conseil fédéral, puisqu'en tout état de cause c'est à lui qu'il incombe d'exécuter les lois.

132.22 Arguments en faveur de la seconde solution

Selon les partisans de l'attribution de la compétence à l'Assemblée fédérale, l'octroi de l'autorisation générale est une décision politique. Choisir cette solution, c'est garantir que toutes les opinions pourront s'exprimer et que la procédure se déroulera de la manière la plus transparente possible et au grand jour. De plus, l'Assemblée fédérale est moins exposée que le Conseil fédéral à l'influence latente de l'administration et des diverses associations.

132.3 Procédure d'autorisation

L'instauration du régime de l'autorisation générale est acceptée à quelques exceptions près. Certains milieux consultés préféreraient toutefois un système de concession (Parti socialiste, Alliance des indépendants, Union syndicale suisse, Ligue suisse pour la protection de la nature et, éventuellement, canton d'Argovie). On approuve généralement aussi que la population ait un droit de regard plus étendu. Divers milieux objectent toutefois que le terme «intéressés» ne délimite pas clairement le cercle des personnes ayant qualité pour formuler des objections. On propose également de renoncer à restreindre ce cercle.

Dans quelques avis, on préconise d'accorder à la population non seulement un droit de regard, mais un droit de codécision. On estime aussi que la consultation des communes devrait être réglée sous une forme ou sous une autre.

On critique souvent que les opposants ne puissent pas se prononcer sur les rapports d'experts puisque ces documents ne sont demandés que lorsque les objections ont été formulées.

32.4 Droit transitoire

32.41 Introduction

Dans le projet des experts soumis à l'appréciation des cantons et des milieux intéressés, le droit transitoire était conçu comme il suit:

¹ Lorsque le site d'une installation atomique a déjà été approuvé, la procédure devant l'Assemblée fédérale (*variante*: la procédure selon le présent arrêté fédéral) se limite à l'examen de ce qui n'est pas encore réglé dans l'approbation de site, à moins qu'une reconsidération ne s'impose par suite d'un changement notable de la situation, ou pour tenir compte des plus récents progrès scientifiques ou techniques.

² Une autorisation générale n'est pas requise pour les installations atomiques déjà exploitées ou faisant déjà l'objet d'une autorisation de construire selon la loi sur l'énergie atomique.

D'après ledit projet, l'autorisation générale se serait donc en principe substituée à l'approbation de site au sens du droit actuel, sans pour autant l'annuler. Elle aurait dû permettre d'examiner d'autres aspects de l'installation projetée. En d'autres termes, cela signifie que, quand bien même l'autorisation générale n'aurait pas pu être accordée parce que l'installation prévue, par exemple, ne répond pas à un besoin, l'approbation de site restait valable.

Cette réglementation aurait affecté les centrales de Kaiseraugst, Graben et Verbois.

132.42 Résultats de la consultation

Les gouvernements cantonaux (excepté ceux de Bâle-Ville et de Bâle-Campagne), l'industrie de l'électricité et diverses associations économiques trouvent inadmissibles les dispositions transitoires proposées et les rejettent. Ils font valoir que les cantons et les entreprises d'électricité qui relèvent de leur autorité ont assuré l'approvisionnement en électricité pendant de nombreuses décennies et élaboré les projets de Kaiseraugst, Graben et Verbois en se fiant à la législation en vigueur et en se fondant sur des prévisions sérieuses des besoins futurs. En outre, ces cantons et ces entreprises auraient investi des fonds considérables dans ces projets. Aussi la Confédération, si elle modifiait l'état actuel des choses, aurait-elle l'obligation de les indemniser complètement du dommage qu'ils subiraient de ce fait (ch. 122.33). Certains avis insistent sur le

fait que les dispositions proposées sont contraires aux principes fondamentaux auxquels obéit l'Etat fondé sur le droit, et plus particulièrement à ceux de la non-rétroactivité des lois, de la sécurité du droit et de la bonne foi.

En revanche, certains milieux consultés demandent que les approbations de site pour les projets de Kaiseraugst, de Graben et de Verbois soient annulées et que l'on reprenne à zéro la procédure d'autorisation. Seuls quelques avis approuvent sans réserve le régime transitoire prévu par les experts (Parti évangélique populaire suisse, Union suisse des paysans, Union suisse des syndicats autonomes, Association suisse des salariés évangéliques).

2 Projet d'arrêté fédéral de portée générale complétant la loi sur l'énergie atomique

21 Généralités

211 Procédure d'autorisation

Le projet que nous vous présentons vise à instaurer un régime d'autorisation générale, qui serait délivrée par le Conseil fédéral et dont dépendrait l'octroi de toutes les autorisations subséquentes, auxquelles elle servirait également de base.

La requête tendant à l'obtention de l'autorisation générale devra être publiée; chacun pourra formuler ses objections avant que la décision sur l'octroi ne soit prise. Le canton sur le territoire duquel l'installation doit être implantée ne sera plus le seul à être consulté. Tous les cantons seront invités à se prononcer et ils devront aussi entendre les communes intéressées. Les services fédéraux compétents examineront ensuite la requête ainsi que les objections de la population et les avis formulés par les cantons. Ils demanderont des expertises aux commissions spécialisées en la matière et, s'il le faut, à d'autres experts. Chacun pourra formuler à nouveau des objections aux conclusions des avis et des rapports d'expertise. Ce droit appartient également à tous les cantons et à toutes les communes intéressées. Ces objections seront portées à la connaissance de ceux qu'elles concernent pour qu'ils y répondent. Enfin, le Conseil fédéral examinera la requête ainsi que les avis, rapports d'experts et objections et prendra sa décision en se fondant sur toutes ces données.

Après avoir soupesé tous les avantages et inconvénients exposés sous chiffre 132.2, nous avons opté pour l'attribution de la compétence au Conseil fédéral. Il faudrait, en effet, éviter de contrevenir, sans nécessité absolue, au principe selon lequel il lui incombe d'exécuter les lois, principe qui vaut a fortiori lorsque la décision à prendre non seulement présente des aspects hautement politiques – que l'on ne saurait nier – mais aussi très techniques. En outre, le système de l'autorisation de police, que nous entendons maintenir, est mieux adapté à la compétence du Conseil fédéral.

Pour ce qui est du droit de regard de la population, nous proposons de l'étendre dans la mesure du possible sans qu'il en résulte un risque de prolongation excessive de la procédure d'autorisation.

Les autorisations postérieures à l'autorisation générale sont de nature essentiellement technique. Actuellement, elles sont accordées en vertu d'une délégation de compétence par le département statuant en première instance. Conformément à l'article 72 de la loi fédérale sur la procédure administrative (RS 172.021), elles peuvent faire l'objet d'un recours au Conseil fédéral. Le département statue en se fondant sur une expertise de la Commission fédérale pour la sécurité des installations atomiques, qui est secondée par la Division pour la sécurité des installations nucléaires de l'Office fédéral de l'économie énergétique et peut aussi faire appel à d'autres spécialistes. Etant donné que, dans la procédure de recours, le Conseil fédéral ne peut pas s'appuyer sur des experts ayant des connaissances plus étendues que les spécialistes des organes consultés par le département, on peut se demander si l'actuel ordre des juridictions (il s'agit d'affaires essentiellement techniques) est vraiment judicieux. Nous ne le pensons pas.

Aussi envisageons-nous de révoquer la compétence que nous avons déléguée au département et certaines attributions que nous avons conférées à l'Office de l'économie énergétique. Ainsi, le Conseil fédéral sera désormais seul à décider de l'octroi des autorisations postérieures à l'autorisation générale. Les parties, au sens de l'article 6 de la loi sur la procédure administrative¹⁾, n'en seront pas moins en mesure de défendre leurs intérêts, puisque les requêtes devront être publiées et faire l'objet d'un dépôt public.

212 Détermination du besoin

Pour déterminer si l'aménagement d'une nouvelle centrale nucléaire est réellement nécessaire, il faut examiner à la fois les besoins d'énergie et la quantité d'énergie produite par les installations existantes.

212.1 Besoins

Dans son rapport intermédiaire de mai 1976, la Commission fédérale de la conception globale de l'énergie a notamment conclu qu'il n'est pas indispensable de satisfaire tous les besoins d'énergie, mais uniquement ceux qu'il restera à couvrir malgré les *mesures d'économie* qui seront prises. Par mesures d'économie, elle entend surtout celles qui permettent de rationaliser l'utilisation de l'énergie tout en ne diminuant pas trop le confort auquel nous sommes habitués.

¹⁾ « Ont qualité de parties les personnes dont les droits ou les obligations pourraient être touchés par la décision à prendre, ainsi que les autres personnes, organisations ou autorités qui disposent d'un moyen de droit contre cette décision. »

Toutefois, en règle générale, leur efficacité dépend d'investissements préalables (isolation des bâtiments, modernisation et réfection d'installations de chauffage, récupération de la chaleur et modification de procédés industriels, couplage chaleur-force dans les usines ainsi que dans les centrales thermiques traditionnelles et dans les centrales nucléaires, etc.). Le couplage chaleur-force, notamment, permet de produire de grandes quantités de chaleur utilisable dans les maisons pour le chauffage de locaux et de l'eau, ainsi que dans l'industrie pour la fabrication de produits, sans qu'il en résulte une forte diminution de la production d'électricité. Cette technique assure un meilleur rendement de l'énergie et contribue à résoudre le problème de la chaleur résiduelle. Les études de la commission montrent qu'on peut aussi réaliser des économies substantielles d'électricité, par exemple en isolant les bâtiments, en utilisant rationnellement les appareils ménagers, en usant avec parcimonie d'installations de climatisation, etc. Dans l'industrie aussi, la récupération de la chaleur, le couplage chaleur-force et la modification des procédés de fabrication permettent d'économiser de l'énergie. Non seulement il est indispensable de ne pas gaspiller l'énergie, mais encore il importe de *remplacer le pétrole* par d'autres agents énergétiques aux fins de diversifier davantage notre approvisionnement en énergie. Du reste, il s'agit là d'une des mesures que l'Agence internationale de l'énergie recommande instamment à ses membres, soulignant qu'en raison de l'accroissement probable de la consommation, il ne sera plus possible dès 1985 de satisfaire les besoins mondiaux de pétrole en dépit des mesures d'économie qui seront prises d'ici là.

Réduire la quantité de pétrole qui entre dans notre approvisionnement en énergie est aussi l'un des buts principaux de notre politique énergétique. De plus, le remplacement du pétrole par d'autres agents énergétiques s'impose de manière impérieuse en raison de la pollution de l'air, dans les agglomérations notamment. Dans quelques endroits de notre pays la teneur de l'air en dioxyde de soufre et en gaz de combustion atteint déjà la limite tolérée en cas d'inversion de la température. L'électricité peut être utilisée au lieu du pétrole notamment dans les procédés industriels (p. ex. pour produire de la vapeur), pour chauffer de l'eau (chauffe-eau électriques) et des locaux. Du point de vue énergétique, l'utilisation de thermopompes et de chauffe-eau électriques est particulièrement rationnelle, parce qu'elle permet de se passer de chaudières combinées, dont le rendement est faible pendant l'été.

Pour remplacer le pétrole, on peut également avoir recours dans une plus large mesure au gaz naturel, au charbon, au bois de chauffage et à de nouvelles techniques, telles que le captage de l'énergie solaire, de l'énergie géothermique et l'utilisation de thermopompes (ch. 121.21). Selon la solution que l'on adoptera, la substitution exigera une plus ou moins grande quantité d'énergie électrique.

Enfin, il faut encore s'attendre à une *croissance « naturelle » des besoins* en raison de l'évolution démographique et économique. A cela s'ajoute que les consommateurs continueront de s'équiper d'appareils électriques de tous genres.

12.2 Production d'électricité

La production des *centrales hydro-électriques* dépend du *débit des cours d'eau*. Les variations de production entre les semestres d'été et d'hiver sont considérables et l'expérience montre que les pénuries de courant se produisent plutôt pendant le semestre d'hiver (ch. 121.22). Des conditions hydrologiques qui varient d'un semestre à l'autre peuvent provoquer des fluctuations supplémentaires de la production.

Dans les centrales *thermiques* et, plus particulièrement, dans les centrales nucléaires, il peut se produire des *interruptions* plus ou moins longues de la production (en raison p. ex. du remplacement des éléments combustibles). En ce qui concerne les centrales nucléaires, il convient en outre de relever que l'intervalle entre la planification et la mise en service est considérable et que ces installations n'atteignent leur plein rendement qu'après une période assez longue (env. 6 ans).

Enfin, on observera que les entreprises suisses d'électricité, en participant au financement de centrales nucléaires à l'étranger, se sont assurées un droit à la livraison d'électricité par ces centrales. Réciproquement, nous autorisons la livraison d'électricité aux entreprises étrangères qui ont contribué au financement de centrales suisses. Pour déterminer les besoins, il faut donc tenir compte des *quantités importées et exportées*. La balance des livraisons auxquelles les partenaires ont droit est excédentaire pour la Suisse. En raison de notre participation au financement de centrales nucléaires sises en France, ce pays nous fournira quelque 600 mégawatts. Les livraisons débuteront en 1977. En revanche, la quantité d'électricité que nous devons livrer à l'étranger se monte à 440 mégawatts (115 MW provenant de la centrale de Leibstadt et 325 de celle de Kaiseraugst). L'excédent des importations (160 mégawatts) équivaudra approximativement à la moitié de la production de la centrale nucléaire de Mühleberg.

Quelques entreprises suisses doivent depuis longtemps *approvisionner en électricité des régions étrangères limitrophes*.

Il y a lieu de prévoir une certaine réserve de capacité de production en cas de débit insuffisant durant l'hiver et d'interruption voulue ou fortuite de la production dans les centrales nucléaires. Il faut éviter que l'on ne pallie l'insuffisance de l'offre d'électricité produite par des centrales hydro-électriques et nucléaires en ayant recours à des centrales exploitées au mazout. Une telle solution est indésirable pour des raisons d'ordre écologique; de plus, elle ne ferait que nous rendre davantage tributaires des produits pétroliers.

Les centrales hydro-électriques doivent régler la production compte tenu de la situation hydrologique hivernale. Aussi est-il inévitable qu'en été elles produisent des surplus d'énergie qui doivent être exportés.

212.3 Institution d'une commission de l'économie énergétique

Lorsque la Commission fédérale de la conception globale de l'énergie aura achevé ses travaux, nous prévoyons d'instituer une commission spéciale de l'économie énergétique, qui aura notamment pour tâche de supporter continuellement l'évolution des besoins.

213 Déchets radioactifs

Le projet d'arrêté soumis aux cantons et aux milieux intéressés ne contenait encore aucune disposition au sujet de l'élimination des déchets radioactifs. Or, outre le fait que quelques milieux consultés réclament que l'on règle cette question par la voie législative, l'élimination des déchets radioactifs est devenue depuis peu l'un des principaux chevaux de bataille des adversaires de l'énergie nucléaire. Il est donc impérieux d'établir une réglementation efficace dans ce domaine. Pour le reste, nous renvoyons aux considérations que nous avons émises sous chiffre 121.3.

214 Régime transitoire

214.1 Projet des experts

214.11

Le projet des experts, qui a été soumis à l'appréciation des cantons et des milieux intéressés, prévoyait que l'autorisation générale devait être demandée pour les centrales dont le site a déjà été approuvé, mais pour lesquelles l'autorisation de construire n'a pas encore été délivrée (ch. 122.33 et 132.4).

214.12

Selon la commission d'experts, il est peu vraisemblable que la Confédération soit tenue, en vertu de la constitution ou de la loi sur l'énergie atomique, d'indemniser les entreprises auxquelles l'autorisation générale serait refusée pour une centrale dont le site aurait déjà été approuvé (ch. 122.33). Il faut toutefois noter que ces entreprises, se fondant sur l'approbation de site et se fiant à la portée que lui confère le droit actuel, ont investi et investiront encore des sommes importantes dans leurs projets. Si l'autorisation générale pour les centrales de Kaiseraugst, Graben et Verbois n'était pas accordée ou ne l'était qu'avec un grand retard, les entreprises intéressées pourraient subir une perte de plusieurs centaines de millions de francs au total, à laquelle viendrait probablement s'ajouter la suppression d'emplois chez les fournisseurs. Ces pertes devraient être compensées d'une manière ou d'une autre. Si, en vertu d'un arrêt du Tribunal fédéral, la Confédération était obligée d'indemniser les entreprises, elle devrait

le faire au moyen des deniers publics. Si la société constituée pour exploiter une centrale nucléaire fait faillite, ce sont les bailleurs de fonds (actionnaires, obligataires et autres créanciers) et les fournisseurs qui en subiront les conséquences. Si les actionnaires, qui sont généralement des entreprises d'électricité, sont disposés à prendre la perte à leur charge, ils devront la compenser par une hausse des prix du courant. D'une manière ou d'une autre, ce sera en définitive le consommateur ou le contribuable qui paiera.

214.2 Réglementation transitoire proposée

214.21

Les graphiques figurant sous chiffre 121.223 montrent ce qui suit:

Si les centrales de Gösgen, Leibstadt, Kaiseraugst et Graben sont mises en service au rythme prévu, il est vraisemblable que dès la fin des années 80, il ne devrait plus se produire de pénuries d'électricité qu'un cas de substitution maximum d'énergie électrique au pétrole et de panne simultanée de la plus importante centrale nucléaire en exploitation.

A supposer qu'il soit impossible de remplacer le pétrole par l'électricité dans la mesure souhaitée et que les conditions de production soient mauvaises, la Suisse devrait connaître jusque dans la seconde moitié des années quatre-vingt-dix une surproduction de courant, durant les semestres d'hiver également.

214.22

Sous chiffre 22 de notre message relatif à l'initiative populaire pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques, nous avons relevé que l'utilisation de l'énergie nucléaire est admissible sur les plans de la sécurité et de la protection contre les radiations et qu'on peut assumer la responsabilité de cette utilisation. Une question se pose néanmoins: Se justifie-t-il de construire de nouvelles centrales, tant que l'énergie qui y sera produite ne répond pas à un besoin effectif? Opter pour le non, c'est être prêt à s'accommoder de difficultés passagères d'approvisionnement en électricité, au cas où les conditions de production seraient particulièrement défavorables.

214.23

Après avoir pesé soigneusement tous les arguments, nous sommes arrivés à la conclusion que l'on peut raisonnablement exiger de la population qu'elle s'accommode de telles difficultés. Aussi nous proposons-nous de soumettre au régime de l'autorisation générale les centrales dont le site a déjà été approuvé, mais pour lesquelles l'autorisation de construire n'a pas encore été délivrée. Au

cours de la procédure préalable à l'octroi de l'autorisation générale, on se bornerait toutefois à examiner si l'énergie produite dans ces centrales répond à un besoin effectif dans le pays. Il s'agirait donc d'une procédure simplifiée, qui serait applicable aux centrales de Kaiseraugst, Graben et Verbois.

214.3 Obligation d'indemniser

Si pour les centrales de Kaiseraugst, Graben et Verbois, l'autorisation générale n'était pas accordée, ou ne l'était qu'avec un grand retard, les entreprises intéressées pourraient, comme nous l'avons relevé sous chiffre 214.12, subir d'importantes pertes financières. La Confédération serait-elle tenue dans ce cas d'indemniser ces entreprises? Nous n'en sommes pas certains, nous l'avons déjà dit.

Nous renonçons à donner de longues explications sur la portée de l'autorisation de site et sur la différence qui existe entre la restriction de la propriété sans indemnité et l'expropriation matérielle. Sur ces deux points le droit n'est pas clair. C'est au Tribunal fédéral qu'il appartiendrait de les élucider pour autant que le législateur renonce à les régler.

215 Interventions parlementaires et initiatives cantonales

Le projet d'arrêté qui fait l'objet du présent message ne satisfait pas à toutes les exigences formulées dans les interventions parlementaires et les initiatives cantonales énumérées sous chiffres 11 et 12. La revision totale devra porter sur les autres points de ces interventions. C'est pourquoi nous ne pouvons pas encore en proposer le classement.

22 Les dispositions du projet

Nous ne commenterons ci-après les diverses dispositions du projet que dans la mesure où nous ne l'avons pas déjà fait ci-dessus.

221 Titre et préambule

L'arrêté fédéral complète la loi sur l'énergie atomique pour une durée limitée. Il n'en abroge aucune disposition, mais y introduit des prescriptions supplémentaires. Aux termes de l'article 6 de la loi sur les rapports entre les conseils (RS 171.11), les actes législatifs de durée limitée qui contiennent des règles de droit doivent être édictés sous forme d'arrêté fédéral de portée générale.

Il ressort de l'article 6, 2^e alinéa, du projet d'arrêté que les installations atomiques doivent être construites et exploitées compte tenu des impératifs en matière de protection de l'environnement, de la nature et du paysage ainsi que

de l'aménagement du territoire. C'est pourquoi les articles 22^{quater}, 24^{sexies} et 24^{quinties} de la constitution ont été mentionnés dans le préambule en sus de l'article 24^{quinties} (énergie atomique et protection contre les radiations).

22 Section 1: Autorisation générale

22.1 Article premier (Objet, compétence, teneur et portée)

L'article 1^{er} instaure le nouveau régime juridique que constitue l'«autorisation générale». Il définit l'objet de celle-ci, en fixe la teneur et la portée et désigne l'autorité compétente pour l'octroyer.

C'est l'article 1^{er}, 2^e alinéa, de la loi sur l'énergie atomique qui précise ce qu'il faut entendre par «installations atomiques». Ce sont des «installations qui servent à produire de l'énergie atomique ou à obtenir, traiter, entreposer ou rendre inoffensifs des combustibles nucléaires et des résidus radioactifs».

L'autorisation générale fixe le site de l'installation et les grandes lignes du projet de construction. Il faut toutefois laisser en l'occurrence une certaine liberté d'action au requérant, pour lui permettre de choisir des solutions plus judicieuses qui pourraient se présenter lors de l'élaboration du projet détaillé.

Il est loisible au requérant de présenter des demandes pour plusieurs systèmes de réacteur. Par voie de conséquence, l'autorisation générale peut porter sur plusieurs systèmes; cela devrait toutefois être dûment souligné, en disant, s'il le faut, l'autorisation générale en plusieurs autorisations partielles.

274 L'autorisation générale règle les questions fondamentales et, le cas échéant, les points qui font l'objet d'une controverse politique (p. ex. le besoin). Sa délivrance constitue une condition dont dépend l'octroi des autorisations subséquentes, qui sont de nature principalement technique, à savoir l'autorisation de construire (qui peut être accordée sous forme d'autorisations partielles), l'autorisation de mise en service et l'autorisation d'exploiter. Les requêtes tendant à l'obtention des autorisations subséquentes continueront d'être examinées et accordées selon les dispositions de la loi actuelle. Nous nous réservons toutefois, comme nous l'avons déjà mentionné, la faculté de révoquer la compétence que nous avons déléguée au Département des transports et communications et de l'énergie et certaines attributions que celui-ci a conférées à l'Office de l'économie énergétique.

Il serait excessif de ne pas soumettre au régime de l'autorisation générale l'ensemble des installations atomiques destinées à la recherche. En effet, il y a lieu de prouver que ces installations répondent elles aussi à un besoin et de permettre à ceux qui le désirent de formuler des objections à l'aménagement de celles-ci.

Faut-il soumettre au régime de l'autorisation générale les installations atomiques destinées à des établissements et instituts fédéraux de recherche et d'enseignement? Ce sont les prescriptions applicables auxdits établissements

qui le déterminent. L'Institut fédéral de recherches en matière de réacteurs, centre national de recherche dans le domaine de l'énergie nucléaire, est un établissement qui, n'étant pas autonome et n'ayant pas la personnalité juridique, n'est pas tenu de demander une autorisation générale.

4^e alinéa. Aux termes de l'article 22^{quater}, 3^e alinéa, de la constitution, la Confédération tient compte, dans l'accomplissement de ses tâches, des besoins de l'aménagement national, régional et local du territoire. Cette disposition constitutionnelle a son pendant à l'article 24^{sexies}, 2^e alinéa, de la constitution, relatif à la protection du paysage et des sites. Toutes deux lient les autorités fédérales et le législateur, même si elles n'ont pas donné lieu à une législation d'exécution. Si, se fondant sur la compétence législative que lui confère l'article 24^{quinties} de la constitution, la Confédération entreprend de réexaminer et de réformer la procédure d'autorisation applicable à la construction de centrales nucléaires, notamment en ce qui concerne l'approbation de site, elle doit, conformément à l'article 22^{quater}, 3^e alinéa, de la constitution, tenir compte des besoins de l'aménagement national, régional et local du territoire. Il est donc indispensable, en complétant la loi sur l'énergie atomique, de tenir compte des impératifs de l'aménagement du territoire dans la mesure où cela est nécessaire pour assurer une utilisation judicieuse du sol et une occupation rationnelle du territoire. Par analogie à d'autres plans de construction soumis à une procédure d'approbation en vertu de certaines lois fédérales spéciales, telles que la loi sur les chemins de fer (art. 18, notamment 2^e à 4^e al. [RS 742.101] ou la loi sur les installations de transport par conduites, art. 23 [RS 746.1]), il faudrait confier à un seul et même organe la tâche de déterminer si l'installation projetée est compatible avec l'intérêt public qui doit normalement être défendu par les autorités cantonales, à savoir à l'organe qui, selon le droit fédéral, est compétent pour délivrer l'autorisation. S'agissant d'aménagement du territoire, cela est tout à fait possible puisque, selon l'article 22^{quater}, 1^{er} alinéa, de la constitution, la Confédération est compétente pour «édicter par voie législative des principes que les cantons seront appelés à établir en vue d'assurer une utilisation judicieuse du sol et une occupation rationnelle du territoire» et que la détermination du site d'une installation atomique pose au premier chef des problèmes touchant à la sécurité et à la protection de l'environnement, donc relevant de domaines dans lesquels la Confédération dispose d'une compétence législative étendue. Enfin, on ne saurait admettre qu'une décision cantonale ou communale puisse remettre en cause l'autorisation générale qui a un caractère fondamental et dont l'octroi est du ressort du Conseil fédéral. Aussi le droit fédéral doit-il, pour satisfaire aux exigences de la sécurité du droit, autrement dit pour que les intéressés aient la certitude que la décision du Conseil fédéral est exécutoire, conférer à l'autorisation générale un caractère impératif pour les cantons et les communes également. C'est dans ce sens qu'il faut interpréter le 4^e alinéa.

222.2 Article 2 (Limitation de la durée de validité)

L'autorisation générale ne pouvant être accordée que si l'installation projetée répond à un besoin suffisant, il s'impose, lors de sa délivrance, de fixer au titulaire des délais pour présenter des requêtes tendant à l'obtention des autorisations subséquentes (autorisations de construire ou autorisations partielles de construire, autorisations de mettre en service et d'exploiter) et, une fois celles-ci accordées, construire et mettre en service l'installation. En cas de dépassement de ces délais (qui peuvent être prorogés pour de justes motifs), l'autorisation générale devient caduque pour le projet en question, ce qui permet, le cas échéant, de la délivrer pour un autre projet répondant à un besoin.

222.3 Article 3 (Conditions)

Dans la procédure actuelle d'approbation de site, qui, en pratique, est la première condition dont dépend l'octroi de l'autorisation de construire, on examine essentiellement si l'installation projetée peut être construite et exploitée à l'emplacement prévu sans porter atteinte à la sécurité des personnes, des biens d'autrui et de droits importants.

Selon le droit en vigueur, il n'y a notamment pas lieu d'examiner si la nouvelle installation est nécessaire à notre approvisionnement en énergie.

L'article 3, 1^{er} alinéa, lettre b, du projet d'arrêté permettra dorénavant de subordonner l'octroi de l'autorisation générale à la condition que l'installation projetée réponde à un besoin.

Si les conditions préalables fixées à l'article 3, 1^{er} alinéa, sont remplies, le requérant a droit à l'autorisation générale. L'autorité qui la délivre doit toutefois tenir compte des nécessités de la protection de l'environnement, de la nature et du paysage, ainsi que de l'aménagement du territoire (cf. commentaire de l'art. 1^{er}, 4^e al.). Cette obligation découle de la constitution. Dans le projet d'arrêté, elle ressort de l'article 6, 2^e alinéa, lettre a, selon lequel ces nécessités doivent être considérées comme «droits importants» au sens de l'article 5, 1^{er} alinéa, de la loi sur l'énergie atomique; si la sauvegarde de ces droits l'exige, l'autorisation générale doit, selon le 1^{er} alinéa (art. 3), être refusée ou subordonnée à l'observation d'autres conditions ou charges.

Il en résulte que la portée de l'autorisation générale est bien plus étendue que celle de l'approbation de site actuelle.

Le 2^e alinéa qui prescrit la nationalité du requérant vise à empêcher que l'autorisation générale ne doive être accordée à des sociétés placées sous contrôle étranger, si les conditions fixées au 1^{er} alinéa sont remplies.

Selon le 3^e alinéa, l'octroi de l'autorisation générale peut être subordonné à la condition que le titulaire permette une production combinée de chaleur et d'électricité (couplage chaleur-force).

Grâce à cette technique le combustible est utilisé de manière beaucoup plus rationnelle que s'il servait à produire uniquement du courant. En effet, la chaleur fournie par les centrales nucléaires aux centrales de chauffage à distance ou à des entreprises industrielles permet de réaliser une économie d'huile de chauffage et, partant, de réduire la pollution atmosphérique. Il va de soi que le couplage chaleur-force doit être rentable.

222.4 Article 4 (Présentation et teneur de la requête)

Pour qu'elle se prête à la publication dans la Feuille fédérale selon l'article 5, 1^{er} alinéa, la requête doit être libellée de la manière la plus concise possible. Elle doit être motivée dans des annexes, qui feront l'objet d'un dépôt public.

222.5 Article 5 (Publication de la requête, dépôt des documents et objections)

Au 1^{er} alinéa, nous n'avons intentionnellement pas indiqué l'endroit où doivent être déposés les requêtes et les documents; nous entendons ainsi tenir compte des particularités locales. Il est certain qu'ils seront déposés à proximité immédiate du site prévu, au siège de l'administration de la commune sur le territoire de laquelle l'installation sera construite ou de celle du district correspondant. Nous prévoyons en outre de déposer la requête et les documents à l'administration des cantons compris dans le système d'alarme de la centrale nucléaire projetée (ch. 24 de notre message du 24 août 1977 concernant l'initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques»).

Le 2^e alinéa prévoit que chacun peut formuler des objections à l'octroi de l'autorisation générale. Dans son projet, la commission d'experts ne voulait accorder ce droit qu'aux «intéressés». Or la plupart des milieux consultés considèrent que ce terme est trop vague. De plus, il est difficile d'en préciser le sens. Faut-il entendre par là les personnes concernées par l'installation lorsqu'elle fonctionne normalement ou celles qui pourraient être touchées lors d'une – très improbable – catastrophe nucléaire? Du reste, pour quelle raison écarterait-on d'emblée les objections pertinentes que pourraient formuler des personnes qui ne font pas partie du cercle des intéressés proprement dits?

Il va de soi que le Conseil fédéral ne pourra pas examiner chaque objection et répondre à chacun des opposants; les objections seront d'abord groupées par catégories selon le ou les points sur lesquels elles portent, ce qui ne devrait pas causer de difficultés; puis le Conseil fédéral se prononcera sur les objections de chaque catégorie. En renonçant à limiter géographiquement le cercle des personnes ayant qualité pour formuler des objections, on ne s'expose donc pas à un surcroît de travail considérable; de plus l'on donne à toute personne que le projet inquiète la possibilité de se faire entendre. La commission d'experts, elle

aussi, avait reconnu que chacun devait être autorisé à formuler des objections. Nous nous sommes ralliés à son opinion. Le terme «chacun» englobe également les groupements de personnes n'ayant pas la personnalité juridique et d'autres organisations. Celui qui formule des objections n'acquiert toutefois pas de ce fait la qualité de partie dans la procédure d'autorisation. La procédure prévue ne débouche donc pas sur ce qu'il est convenu d'appeler le recours populaire ou l'action populaire, institutions que l'on refusa catégoriquement lors de l'élaboration de la loi fédérale sur la procédure administrative (RS 72.021) et de la révision de la loi fédérale d'organisation judiciaire (RS 73.110) (cf. notre message du 24 septembre 1965 concernant l'extension de la juridiction administrative fédérale, FF 1965 II 1301 s., en particulier 1354 s.).

Le délai de 90 jours dans lequel les objections devront être présentées peut paraître long. Cependant, il n'est guère possible d'étudier sérieusement la requête et ses volumineuses annexes dans un temps plus court. Cela n'empêchera d'ailleurs pas les experts de commencer l'examen de la requête avant l'expiration de ce délai. Ce travail prend en effet beaucoup de temps. Il n'est pas nécessaire qu'ils aient connaissance des objections dès le début de leur étude. Elles pourront leur servir par la suite à examiner s'ils ont élucidé tous les points auxquels elles ont trait.

222.6 Article 6 (Consultations et expertises)

222.61 Consultation des cantons et des communes

Si l'on autorise chacun à formuler des objections, il faut logiquement permettre à tous les cantons de se prononcer. L'innovation consistant à subordonner l'octroi de l'autorisation générale à la preuve du besoin peut notamment avoir pour conséquence que des cantons éloignés désirent se prononcer, puisque c'est le besoin de l'ensemble du pays qui est déterminant. En revanche, il serait exagéré d'exiger que les cantons consultent toutes leurs communes. Il suffit que les communes intéressées, c'est-à-dire celles qui entendent donner leur avis, puissent se prononcer. D'autre part, les cantons qui ne font pas eux-mêmes usage du droit de se faire entendre sont tenus de porter les avis des communes intéressées à la connaissance du Conseil fédéral. Relevons qu'aucune prescription n'est faite aux cantons et aux communes sur la manière d'exprimer leurs avis.

222.62 Consultation des services spécialisés compétents de la Confédération

Actuellement déjà, tous les services fédéraux intéressés à un titre quelconque ont la possibilité de se prononcer au cours de la procédure d'approbation de site. Ils en auront également la faculté durant la procédure d'autorisation générale. Ces services seront probablement les suivants: Direction du droit international

public, Service de l'hygiène publique, Office de la protection de l'environnement, Office de la protection civile, Délégué à l'aménagement du territoire, Direction de l'administration militaire, Division du commerce, Office fédéral de l'industrie, des arts et métiers et du travail, Délégué aux questions conjoncturelles, Délégué à la défense nationale économique, Office de l'économie hydraulique, Office de l'économie énergétique.

222.63 Expertises à demander

Les expertises prévues à l'article 6, 2^e alinéa, peuvent être exécutées par les organes suivants:

- a. Appréciation de la sécurité «nucléaire»: Commission fédérale pour la sécurité des installations atomiques et Division pour la sécurité des installations nucléaires de l'Office de l'économie énergétique;
- b. Appréciation des mesures de prévention (radioactivité de l'atmosphère et protection de la population): Commission fédérale de surveillance de la radioactivité et son comité d'alarme;
- c. Appréciation des effets exercés sur l'environnement et les eaux: Commission fédérale des tours de refroidissement et offices, établissements et instituts fédéraux qui y sont représentés; Commission fédérale de la météorologie du Haut-Rhin et Rhin supérieur en territoire suisse;
- d. Appréciation de la compatibilité avec les objectifs de la protection de la nature et du paysage: Commission fédérale pour la protection de la nature et du paysage et Division de la protection de la nature et du paysage de l'Inspection des forêts;
- e. Appréciation du besoin: Commission fédérale de la conception globale de l'énergie qui, à l'expiration de son mandat, sera remplacée par une commission de l'économie énergétique, dans laquelle seront représentés les milieux intéressés.

222.7 Article 7 (Publication des avis recueillis et des rapports d'expertise; second délai pour la présentation d'objections)

Lors de la procédure de consultation, divers milieux ont attaché une grande importance à ce que le citoyen puisse aussi se prononcer sur les rapports d'expertise. En effet, il serait paradoxal qu'il soit habilité à émettre un avis sur la requête, mais non point sur les conclusions de ces rapports. Rappelons que les objections formulées durant le dépôt public de la requête devraient notamment permettre aux experts de vérifier s'ils ont étudié tous les aspects du projet. Quand bien même il ne s'agit pas d'examiner chaque argument dans les détails, il doit cependant être loisible à tout opposant de déterminer si les experts ont abordé

examen de ses observations. Tout opposant qui pense que ce n'est pas le cas, soit parce que les experts se seraient trompés, soit parce qu'ils n'auraient pas pris en considération tous ses arguments, doit pouvoir formuler à nouveau ses objections. Ceux qui n'ont pas présenté d'objection durant le dépôt public de la requête, peuvent également profiter du second délai qui est imparti pour le faire.

Les cantons et les communes intéressées (ch. 221.61) ont également le droit de présenter à nouveau des objections. Cette fois encore, les cantons entendront les communes intéressées. Ils transmettront au Conseil fédéral les avis émis par elles-ci, intégralement et non sous forme de résumés.

Enfin, un délai convenable est imparti aux auteurs des préavis et aux experts intéressés pour leur permettre de se prononcer sur les objections auxquelles leurs conclusions ont donné lieu.

22.8 Article 8 (Décision du Conseil fédéral)

Aucune observation.

22.9 Article 9 (Prescriptions complémentaires de procédure)

Le Conseil fédéral s'inspirera de la loi fédérale sur la procédure administrative pour régler les autres modalités de la procédure. Cependant, il doit pouvoir s'en écarter en raison de la particularité de la matière. Pour ce faire, il tiendra compte de l'article 4 de ladite loi.

223 Section 2: Déchets radioactifs (art. 10)

Nous vous renvoyons aux chiffres 121.3 et 213. C'est à dessein que nous n'avons pas fixé à l'article 10, la manière dont les déchets radioactifs doivent être éliminés. Actuellement, le procédé le plus courant consiste à les entreposer définitivement sous terre, à des endroits formés de roches d'un certain type; toutefois la technique et la science étant censées évoluer, nous avons voulu laisser la voie libre à d'autres modes d'élimination desdits déchets. De même, nous n'avons pas précisé si cette élimination doit se faire en Suisse ou à l'étranger; nous entendions nous réserver ces deux possibilités.

224 Section 3: Dispositions finales

224.1 Article 11 (Droit transitoire)

Une autorisation générale simplifiée est requise pour les centrales nucléaires de Kaiseraugst, Graben et Verbois. Elle ne remet pas en cause les autorisations de site déjà octroyées. La procédure applicable à la délivrance de cette autorisa-

tion générale selon les articles 1^{er} à 9 du projet fera plutôt suite à la procédure – maintenant close – d'octroi de l'autorisation de site et précèdera la procédure relative à la délivrance de l'autorisation de construire qui, selon le droit actuel, peut débiter une fois l'autorisation de site délivrée. Au cours de cette procédure supplémentaire, le Conseil fédéral se bornera à examiner si l'énergie produite dans l'installation répond à un besoin effectif dans le pays. Le nouveau régime atténue quelque peu la portée juridique de l'autorisation de site. Toutefois il n'entraîne ni sa remise en cause, ni sa révocation, mais fait d'elle une condition supplémentaire dont dépend l'octroi par la Confédération de l'autorisation de construire l'installation projetée. La révocation d'autorisations de site et les indemnités que la Confédération pourrait, selon les cas, être tenue de verser aux bénéficiaires touchés par cette décision, continuent d'être régies par le droit en vigueur (art. 9, 2^e et 5^e al., de la loi sur l'énergie atomique).

Aussi avons-nous attribué la compétence de prononcer la révocation d'autorisations de site à l'autorité qui les a délivrées, soit au Département fédéral des transports et communications et de l'énergie, étant entendu que la décision prise par ce département pourrait faire l'objet d'un recours au Conseil fédéral. Pour le reste, nous vous renvoyons au chiffre 214.

224.2 Article 12 (Référéndum, entrée en vigueur et durée de validité)

La validité de l'arrêté est limitée au 31 décembre 1983, date à laquelle la révision totale de la loi sur l'énergie atomique sera vraisemblablement achevée. Nous avons renoncé à vous proposer de prendre un arrêté fédéral urgent. L'arrêté qui fait l'objet du présent message devrait cependant pouvoir entrer en vigueur dès que possible, mais au plus tard au début de 1979.

3 Conséquences financières et effets sur l'état du personnel

31 Conséquences financières pour la Confédération, les cantons et les communes

Les frais qu'occasionnent à l'Office de l'économie énergétique la procédure d'autorisation et la surveillance des centrales nucléaires ont toujours été mis à la charge des requérants et des titulaires d'autorisations et continueront de l'être. La nouvelle tâche qui incombera à la Confédération en vertu de l'article 10 (élimination des déchets radioactifs) ne lui causera pas de dépenses supplémentaires, puisque les producteurs de déchets ont l'obligation de financer l'élimination de ceux-ci.

Pour les cantons et les communes, l'arrêté n'entraînera vraisemblablement aucune charge financière notable.

Effets sur l'état du personnel

La procédure, l'examen des objections qui ne manqueront pas d'être présentées à l'élaboration de la proposition qui sera soumise au Conseil fédéral entraîneront un certain surcroît de travail dans divers services de l'Office de l'économie énergétique. L'effectif de cet office et plus particulièrement celui des services intéressés est actuellement insuffisant pour assurer un déroulement rapide de la procédure. Il sera donc indispensable d'engager deux ou trois fonctionnaires.

3 Charges occasionnées aux cantons et aux communes par l'exécution de l'arrêté

L'exécution de l'arrêté ne devrait entraîner pour les cantons et les communes aucun changement notable.

1 Constitutionnalité

L'article 31 de la constitution fédérale ne garantit la liberté du commerce et de l'industrie que « sous réserve des dispositions restrictives de la constitution et de la législation qui en découle ». Il est généralement admis que l'exécution de l'article 24^{quinquies} sur l'énergie atomique puisse entraîner des restrictions de ladite liberté. Nous l'avons d'ailleurs exprimé en ces termes dans les messages relatifs à l'article constitutionnel sur l'énergie atomique (FF 1957 I 1169) et à la loi fédérale sur l'énergie atomique (FF 1958 II 1549): « En statuant que la législation touchant l'énergie atomique est du domaine de la Confédération, la disposition que nous proposons laisse les mains entièrement libres au législateur fédéral... ». A cet égard nous avons envisagé les solutions suivantes:

Le monopole d'Etat, le système de la concession, le régime d'autorisation s'inspirant de considérations d'ordre économique et la simple autorisation de police. Si, dans l'arrêté que nous vous soumettons, nous avons introduit la clause du besoin, ce n'est pas pour des raisons économiques, mais par souci d'assurer la sécurité en général. Mais même si l'on y voit une atteinte à la liberté du commerce et de l'industrie, cette atteinte est fondée sur l'article 24^{quinquies} de la constitution.

Interventions parlementaires et initiatives

Textes des interventions parlementaires, des initiatives des cantons d'Argovie, de Bâle-Campagne et de Bâle-Ville, ainsi que de l'initiative populaire « pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques ».

1 Interventions parlementaires (par ordre chronologique)

11 268 Postulat *Rothen*, du 17 mars 1972, concernant les centrales atomiques, transmis par le Conseil national le 11 décembre 1972:

Les centrales atomiques constituent, de l'avis de tous les spécialistes, l'unique possibilité de faire face à l'accroissement futur de la consommation de courant en Suisse. Cependant, leur construction se heurte à des difficultés de plus en plus grandes.

Selon le droit actuel, il faut, pour pouvoir construire des centrales atomiques, obtenir des autorisations de la Confédération, du canton et de la commune. Comme chaque centrale atomique revêt une importance nationale, la décision devrait appartenir au gouvernement du pays, les cantons et les communes pouvant sauvegarder leurs intérêts au cours de la procédure de consultation.

Le Conseil fédéral est par conséquent invité à présenter un rapport et des propositions sur l'opportunité de réviser la loi fédérale sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations, de sorte que la construction et l'exploitation de centrales atomiques, y compris les installations nécessaires pour éliminer la chaleur résiduelle, soient subordonnées à une concession fédérale.

11 338 Postulat *Rasser*, du 5 juin 1972, concernant la politique énergétique nationale. Cette intervention, présentée sous la forme de motion, a été adoptée par le Conseil national le 11 décembre 1972 sous la forme d'un postulat ainsi libellé:

Le Conseil fédéral est invité à élaborer une conception d'ensemble, applicable à la politique énergétique nationale, et à fixer les emplacements des centrales projetées en tenant compte des exigences de l'aménagement du territoire et de la protection de l'environnement, ainsi que de la recherche biologique. Il est invité en outre à créer les bases légales qui sont nécessaires pour empêcher que de nouvelles centrales nucléaires puissent être mises en service avant que la législation générale y afférente ne soit entrée en vigueur.

12 140 Postulat *Ziegler-Genève*, du 4 octobre 1974, concernant les déchets radioactifs/ transport et dépôt, transmis par le Conseil national le 19 mars 1976:

Les déchets radioactifs produits par les centrales nucléaires constituent un danger grave pour la population. Et ceci durant plusieurs centaines d'années après leur dépôt.

Selon les plus récentes informations, les déchets radioactifs des réacteurs suisses ne peuvent plus être déposés dans les salines de Bretagne. Le dépôt des déchets suisses en mer du Nord est devenu problématique, les mouvements pacifistes et écologiques hollandais s'opposant par des barrages de rue à leur transport.

Le Conseil fédéral envisage maintenant le dépôt des déchets radioactifs dans des grottes des Alpes et du Jura.

Dans un petit pays comme le nôtre qui ne dispose point d'espaces désertiques accessibles, le dépôt de déchets radioactifs pose – quelle que soit la solution choisie – des problèmes presque insolubles.

Avant de désigner des lieux de dépôts dans des couches géologiques (Alpes ou Jura), le Conseil fédéral est invité à :

1. Examiner le système d'immersion des déchets dans des piscines spéciales construites en collaboration avec d'autres Etats européens.
2. Examiner dans quelle mesure la Confédération pourra elle-même (par la création d'un service spécial chargé du transport, de la surveillance et du dépôt) assurer le traitement des déchets radioactifs.

75.408 Postulat du *Groupe socialiste*, du 17 juin 1975, concernant la révision de la loi sur l'énergie atomique. Cette intervention présentée sous forme de motion a été adoptée par le Conseil national le 24 juin 1976 sous la forme d'un postulat ainsi libellé :

Les événements qui se sont déroulés sur le terrain de la centrale nucléaire projetée à Kaiseraugst ont montré que la loi sur l'utilisation pacifique de l'énergie atomique, qui date de 1959, présente plusieurs lacunes; celles-ci devraient être comblées le plus vite possible par des modifications du texte légal. Le Conseil fédéral est par conséquent invité à procéder au plus tôt à la révision de la loi susmentionnée, en s'inspirant des objectifs suivants :

1. Il y a lieu de prendre des mesures visant à influencer sur les besoins d'énergie et à trouver de nouvelles sources d'énergie.
2. Il convient d'élaborer, pour l'ensemble du pays, une planification des emplacements destinés aux installations nucléaires et énergétiques, compte tenu des installations étrangères limitrophes.
3. La construction de centrales nucléaires ne sera autorisée que suivant l'importance des besoins probables d'énergie.
4. Le droit de la région touchée à exprimer son avis sera garanti, dans les limites de la procédure de consultation.
5. Il faut établir clairement les attributions respectives de la Confédération, des cantons et des communes en ce qui concerne l'autorisation de construire des installations nucléaires et énergétiques.
6. Il y a lieu d'instaurer une procédure de dépôt des plans telle qu'elle est prévue dans la législation sur la construction et l'expropriation.
7. Tous les exploitants d'installations seront tenus de conclure une assurance couvrant leur responsabilité civile de manière illimitée.
8. Les frais résultant du transport de combustibles (y compris le dépôt des résidus de la combustion et des déchets radioactifs) doivent être mis à la charge des exploitants d'installations.
9. Des règles seront établies sur le traitement des installations devenues inutilisables.
10. L'article 24^{quatrième} de la constitution fédérale sera complété, le cas échéant, en vue d'assurer la réalisation de toutes ces mesures.

75.430 Postulat du *Groupe des indépendants*, du 20 juin 1975, concernant la révision de la loi sur l'énergie atomique. Cette intervention, présentée sous la forme de motion, a été adoptée par le Conseil national le 24 juin 1976 sous la forme d'un postulat ainsi libellé :

Le Conseil fédéral est chargé de modifier au plus vite la loi du 23 septembre 1959 sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations, compte tenu des desiderata énumérés ci-dessous, et de soumettre au Parlement un rapport et des propositions à ce sujet :

1. La construction et l'extension de centrales nucléaires ainsi que d'installations destinées à l'entreposage de combustibles nucléaires et de déchets radioactifs sont subordonnées à l'octroi d'une concession.
2. L'Assemblée fédérale est compétente pour l'octroi des concessions.
3. La concession ne peut être accordée que si la protection des personnes et de l'environnement est entièrement assurée, notamment en cas de catastrophe.
4. Lors de l'examen de la demande de concession, il s'agira de garantir le droit de participation non seulement de la commune d'implantation et des communes contiguës, mais aussi de la population de la région touchée.
5. La loi sur l'utilisation pacifique de l'énergie atomique doit en outre garantir une planification des emplacements de centrales nucléaires qui soit conçue pour l'ensemble de la Suisse et en harmonie avec les planifications des Etats limitrophes.

76.388 Motion *Morf*, du 22 juin 1976, concernant les accidents atomiques/somme d'assurance, transmise par le Conseil national le 29 septembre 1976 et par le Conseil des Etats le 30 novembre 1976 :

Le Conseil fédéral est chargé de soumettre au Parlement un projet de révision de la loi fédérale sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations (du 23 décembre 1959), projet qui portera sur les points suivants :

1. La somme assurée garantissant la répartition de dommages éventuels – qui s'élève actuellement à 40 millions de francs au maximum – doit être adaptée aux conditions techniques, financières et économiques présentes et, surtout, tenir compte de l'intérêt général.
2. Le financement de la réparation de dommages différés doit être mieux garanti.
3. Il y a lieu de prolonger le délai de prescription des actions en dommages-intérêts.

76.228 Initiative parlementaire *Meizoz*, du 1^{er} décembre 1976, concernant les centrales nucléaires/moratoire dans la construction (cette initiative est encore pendante devant le Conseil national) :

Le soussigné, se fondant sur l'article 21^{sexies} de la loi sur les rapports entre les conseils, propose au Conseil fédéral l'élaboration d'un arrêté fédéral, de portée générale, au sens de l'article 89^{quatrième} de la constitution, qui suspendrait, jusqu'au 31 décembre 1981, toute approbation de site ainsi que l'octroi de toute autorisation de construire une installation atomique.

Initiatives des cantons

Trois cantons ont présenté à l'Assemblée fédérale des initiatives cantonales au sens de l'article 93, 2^e alinéa, de la constitution fédérale, initiatives qui réclament notamment une modification de la loi sur l'énergie atomique.

1 671 Initiative du canton d'Argovie, du 27 mars 1973, transmise par l'Assemblée fédérale au Conseil fédéral pour rapport selon décision du 4 juin 1973. Cette initiative est ainsi libellée:

Le Grand Conseil du canton d'Argovie, se fondant sur le droit d'initiative conféré aux cantons par l'article 93, 2^e alinéa, de la constitution fédérale, présente à la Confédération les revendications suivantes:

1. La loi fédérale du 23 décembre 1959 sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations doit être modifiée de telle sorte que les procédures d'autorisation relatives aux centrales nucléaires relèvent de la Confédération.
2. Il y a lieu d'élaborer une conception concernant la localisation des centrales nucléaires en Suisse.
3. Les cantons et les communes touchés doivent avoir le droit d'être dûment entendus.
4. La Confédération est invitée à ouvrir des négociations avec les Etats limitrophes au sujet de la localisation des centrales nucléaires dans les régions frontalières et à faire en sorte que les planifications soient mises en harmonie de part et d'autre de la frontière.

1 877 Initiative du canton de Bâle-Campagne, du 21 janvier 1974, transmise par les deux Chambres législatives au Conseil fédéral pour rapport, selon décisions du 29 janvier 1974. Cette initiative est ainsi libellée:

Le Grand Conseil du canton de Bâle-Campagne, se fondant sur le droit d'initiative conféré aux cantons par l'article 93, 2^e alinéa, de la constitution fédérale, présente à la Confédération les revendications suivantes:

1. L'octroi d'autorisation pour la construction de centrales atomiques est du domaine de la Confédération; la loi fédérale du 23 décembre 1959 sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations sera modifiée en conséquence. Le droit d'être entendu sera accordé au canton où la centrale est construite et aux cantons voisins.
2. Un plan d'ensemble, valable pour tout le pays, sera établi pour localiser l'emplacement des centrales atomiques; il tiendra compte à la fois des options prises dans le cadre d'une politique énergétique globale et des limites imposées par l'équilibre naturel.

12 018 Initiative du canton de Bâle-Ville, du 29 mars 1974, transmise par les deux Chambres législatives au Conseil fédéral pour rapport, selon décision du 10 juin 1974. Cette initiative est ainsi libellée:

Le Grand Conseil du canton de Bâle-Ville, se fondant sur le droit d'initiative conféré aux cantons par l'article 93, 2^e alinéa, de la constitution fédérale, présente à la Confédération les revendications suivantes:

1. Les autorités fédérales compétentes élaboreront une conception globale de l'approvisionnement en énergie, concernant aussi les nouvelles sources d'énergie. Si des centrales nucléaires doivent être établies, il y aura lieu de prévoir un plan complet d'implantation. On y tiendra

compte des limites que la charge de l'environnement ne doit pas dépasser, ainsi que des exigences de l'aménagement du territoire et de la planification s'y rapportant. L'autorisation de construire et d'exploiter une centrale nucléaire ne doit être accordée que lorsque les conditions susmentionnées sont remplies.

2. La loi fédérale du 23 décembre 1959 sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations doit être modifiée de telle manière que la procédure d'autorisation des centrales nucléaires soit dorénavant du domaine de la Confédération. Il y aura lieu d'accorder le droit d'être consulté aux électeurs de la commune et du canton sur le territoire desquels la construction d'une centrale nucléaire est projetée.
3. La Confédération est invitée à mener des négociations avec les pays limitrophes sur l'implantation de centrales nucléaires dans les régions frontalières ainsi que pour harmoniser leurs planifications respectives, compte tenu de la charge que peut supporter l'environnement.

3 Initiative populaire

Une initiative populaire «pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l'exploitation d'installations atomiques» a été déposée le 20 mai 1976. Elle porte 123 779 signatures valables et est ainsi libellée:

L'article 24^{quatrième} de la constitution est complété par les nouveaux alinéas suivants:

Art. 24^{quatrième}, 3^e à 9^e al., est. (nouveaux)

³ Les centrales atomiques et les installations de production, de traitement et de stockage de combustibles nucléaires et de déchets radioactifs (ci-après: installations atomiques) doivent faire l'objet d'une concession. Il en va de même pour les agrandissements d'installations existantes. La durée de la concession pour les centrales atomiques s'étend à 25 ans au plus. Elle peut être prolongée en renouvelant la procédure.

⁴ L'Assemblée fédérale est compétente pour l'octroi de la concession. L'octroi d'une concession est subordonné à l'accord des électeurs de l'ensemble de la commune de site et des communes adjacentes, ainsi qu'à l'accord des électeurs de chacun des cantons dont le territoire n'est pas éloigné de plus de 30 km de l'installation atomique.

⁵ La concession pour une installation atomique ne peut être accordée que si sont garanties la protection de l'homme et de l'environnement, et la surveillance du site jusqu'à l'élimination de toute source de danger. Les mesures en vue de la protection de la population, notamment en cas de catastrophes, doivent être rendues publiques au moins 6 mois avant la première votation.

⁶ Si la protection de l'homme et de l'environnement l'exige, l'Assemblée fédérale doit ordonner sans dédommagement l'arrêt provisoire ou définitif d'exploitation de l'installation ou sa suppression.

⁷ Le détenteur de la concession est responsable pour tout dommage causé par l'exploitation ou l'élimination de l'installation, par des combustibles nucléaires qui lui sont destinés ou par des déchets radioactifs qui en proviennent. De même, celui qui transporte des combustibles nucléaires ou des déchets radioactifs est responsable pour tout dommage qui en résulte.

Les créances des lésés envers le responsable et l'assurance sont prescrites au plus tôt 90 ans après l'événement cause du dommage. Il appartient au législateur de prévoir, par des prescriptions légales, une couverture suffisante de l'assurance-responsabilité civile obligatoire pour faire face aux créances de tous les lésés. Il crée également un fonds, auquel les personnes astreintes à s'assurer versent des contributions pour compenser les frais éventuellement non couverts.

⁸ En ce qui concerne les installations atomiques limitrophes, la Confédération prend toute mesure utile pour garantir la protection de l'homme et de l'environnement des deux côtés de la frontière.

⁹ Ont également un droit de recours les communes et cantons concernés selon l'alinéa 4, lors d'atteinte aux présentes dispositions constitutionnelles et aux dispositions d'application en découlant.

Disposition transitoire

Pour les installations atomiques déjà existantes, il y a lieu de passer rétroactivement par la procédure de concession. Pour les installations qui sont en construction ou en exploitation au 1^{er} juin 1975, l'accord des électeurs des communes et des cantons selon l'alinéa 4 n'est pas requis. Toute installation à laquelle, dans un délai de 3 ans, la concession n'a pas pu être accordée doit cesser son activité.

Arrêté fédéral concernant la loi sur l'énergie atomique

L'Assemblée fédérale de la Confédération suisse,

vu les articles 22^{quater}, 24^{quinquies}, 24^{sexies} et 24^{septies} de la constitution;
vu le message du Conseil fédéral du 24 août 1977¹⁾,

arrête:

Section 1: Autorisation générale

Article premier Objet, compétence, teneur et portée

¹ Celui qui entend construire une installation atomique au sens de l'article 1^{er}, 2^e alinéa, de la loi fédérale du 23 décembre 1959²⁾ sur l'utilisation pacifique de l'énergie atomique et la protection contre les radiations (loi sur l'énergie atomique) doit être en possession d'une autorisation générale du Conseil fédéral. La construction d'installations destinées à des établissements et instituts fédéraux est régie par les prescriptions applicables à ces établissements et instituts.

² La délivrance préalable de l'autorisation générale est une condition à laquelle est subordonné l'octroi des autorisations de construire et d'exploiter selon l'article 4, 1^{er} alinéa, lettre a, de la loi sur l'énergie atomique.

³ L'autorisation générale fixe:

- a. Le site;
- b. Les grandes lignes du projet, en particulier:
 1. Lorsqu'il s'agit de réacteurs nucléaires, le système de réacteur, la catégorie de puissance, le système principal de refroidissement, ainsi que la grandeur et la structure approximatives des principaux bâtiments;
 2. Lorsqu'il s'agit de dépôts pour déchets radioactifs, la capacité d'entreposage, les catégories de déchets, ainsi que la structure approximative des constructions souterraines et en surface.

⁴ L'autorisation générale lie également les cantons et les communes.

¹⁾ FF 1977 III

²⁾ RS 732.0

rt. 3 Cont

L'autorisation générale doit être refusée ou subordonnée à l'observation de conditions ou charges adéquates lorsque:

- a. L'application de l'article 5, 1^{er} alinéa, de la loi sur l'énergie atomique l'exige;
- b. L'installation ou l'énergie qui doit y être produite ne répond vraisemblablement pas à un besoin effectif dans le pays. En déterminant ce besoin, il y a lieu de tenir compte du remplacement du pétrole par l'énergie atomique.

L'autorisation générale n'est accordée qu'à des citoyens suisses domiciliés en Suisse et à des personnes morales régies par le droit suisse, qui ont leur siège en Suisse et sont indubitablement sous contrôle suisse.

L'octroi de l'autorisation générale peut être subordonné à la condition que le titulaire permette une utilisation judicieuse de la chaleur produite.

rt. 4 Présentation et teneur de la requête

La requête doit être présentée par écrit à la Chancellerie fédérale.

Elle doit contenir les indications nécessaires à l'octroi de l'autorisation générale. Elle sera accompagnée des documents justificatifs.

rt. 5 Publication de la requête, dépôt des documents et objections

Le Conseil fédéral publie la requête dans la Feuille fédérale et procède de manière appropriée au dépôt public des documents.

Chacun peut présenter par écrit à la Chancellerie fédérale, dans les 90 jours qui suivent la publication, des objections à l'octroi de l'autorisation générale. Celui qui fait usage de cette faculté n'acquiert pas de ce fait la qualité de partie dans la procédure d'autorisation.

Les objections doivent comprendre une requête motivée et être accompagnées des moyens de preuve disponibles; ceux qui ne le sont pas seront spécifiés. Toutes les objections doivent être signées par leur auteur ou son représentant.

Art. 6 Consultations et expertises

Le Conseil fédéral demande aux cantons et aux services spécialisés compétents de la Confédération de donner leur avis. Il leur impartit à cet effet un délai

- a. La protection des personnes, des biens d'autrui et de d... importants, y compris celle des intérêts qu'ont à sauvegarder la protect... l'environnement, de la nature et du paysage ainsi que l'aménagement du territoire;
- b. Le besoin au sens de l'article 3, 1^{er} alinéa, lettre b;
- c. Les objections présentées et les avis recueillis.

³ En règle générale, le requérant assume les frais des expertises.

Art. 7 Publication des avis recueillis et des rapports d'expertise; second délai pour la présentation d'objections

¹ Le Conseil fédéral publie dans la Feuille fédérale les conclusions formulées dans les avis et les rapports d'expertise reçus. Il fait procéder de manière appropriée au dépôt public des avis et des rapports d'expertise, pour qu'ils puissent être consultés, à l'exception de leurs parties qu'il y a des raisons de tenir secrètes au sens de l'article 27, 1^{er} alinéa, de la loi fédérale sur la procédure administrative¹⁾.

² Chacun peut présenter par écrit à la Chancellerie fédérale, dans les 90 jours qui suivent la publication, des objections aux conclusions formulées dans les avis et les rapports d'expertise. Le même droit est reconnu aux cantons ainsi qu'aux communes intéressées. Celui qui fait usage de cette faculté n'acquiert pas de ce fait la qualité de partie dans la procédure d'autorisation.

³ Les objections doivent indiquer de manière précise à quelles conclusions elles ont trait et être motivées; elles seront accompagnées des moyens de preuve disponibles et spécifieront ceux qui ne le sont pas. Toutes les objections doivent être signées par leur auteur ou son représentant.

⁴ Le Conseil fédéral invite les cantons, les services fédéraux ou les experts à se prononcer sur les objections auxquelles leurs conclusions ont donné lieu. Il leur impartit à cet effet un délai convenable.

Art. 8 Décision du Conseil fédéral

Après avoir examiné la requête ainsi que les avis, les rapports d'expertise et les objections présentées, le Conseil fédéral prend une décision.

Art. 9 Prescriptions complémentaires de procédure

¹ Le Conseil fédéral règle les autres modalités de la procédure.

¹⁾ RS 172.021

³ Le présent arrêté a effet jusqu'à l'entrée en vigueur de la loi sur l'énergie atomique, mais au plus tard jusqu'au 31 décembre 1983.

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United Kingdom

1. Short introduction.

A number of statutes have special applicability to nuclear energy. Each is directed to a particular aspect of its use and involves a number of government agencies. Thus, the U.K., unlike most nations, does not have a single law of predominant importance in the field.

2. List of relevant laws and regulations.

- UK-1 Radioactive Substances Act 1960.
- UK-2 Radioactive Substances Act 1948.
- UK-3 Merchant Shipping (Safety Convention) Act 1949.
- UK-4 Merchant Shipping (Dangerous Goods) Rules 1965.
 S.I. 1965/1067, as amended S.I. 1965/332 and
 S.I. 1972/666.
- UK-5 Code of Practice for the carriage of radioactive
 materials through ports, 1975.
- UK-6 The Nuclear Installations Act of 1965 as
 amended. S.I. 1974/2056.
- UK-7 The Official Secrets (Prohibited Places) Order
 1975. S.I. 1975/182.
- UK-8 The Atomic Energy Authority (Special Constables)
 Act 1976.
- UK-9 The Control of Pollution (Radioactive Waste)
 Regulations 1976. S.I. 1976/959.
- UK-10 Town and Country Planning Act.

3. Text of principal laws and treaties.

(none)

BNFL AND ITS BUSINESS

THE NEED FOR THE PROPOSED NEW REPROCESSING PLANT AT WINDSCALE¹

INTRODUCTION

BNFL, formed in February 1971, assumed the responsibilities of the Production Group of the U.K. Atomic Energy Agency. The Company principally provides nuclear fuel cycle services. The three divisions of the Company, the Fuel, Enrichment, and Reprocessing Divisions, are responsible for processing of uranium ore concentrates and the manufacture of uranium-based fuels; uranium enrichment operations, and irradiated fuel transport and reprocessing, the manufacture of plutonium-based fuels and the operation of the Company's power stations, respectively.

BNFL has tried to establish the closest possible links between development, plant design and operation in order to ensure that design and development accounts for past operating experience and that those in charge of a plant's operation have been associated with its design.

BNFL AND THE NUCLEAR FUEL CYCLE

The nuclear fuel cycle starts with uranium ore's purification and conversion into uranium ore concentrates. While Magnox reactors are fuelled with natural uranium (0.7% U235), the AGR, LWR and SGHWR require enriched uranium in the form of uranium oxide (2-4% U235). Uranium hexafluoride, "Hex", is the first stage of enrichment. BNFL-produced hex is fed into its own enrichment plants as well as customer-owned concentrates being exported for enrichment overseas.

After use in reactors, irradiated fuel is sent to BNFL's Windscale works where it is reprocessed by separating the residual uranium (about 97% of the irradiated fuel) from plutonium (less than 1%) and from the radioactive waste (2-3%). The waste is then treated and stored at Windscale, the uranium is sent back to plants for

1) Based on information extracted from BNFL testimonies at Windscale Hearings.

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ments for new uranium and enrichment capacity. A single recycle of uranium and plutonium would enable 30-40% more power to be generated from the same amount of uranium ore. The advent of a Fast Breeder Reactor program would increase this energy saving fifty times.

Many nations developed nuclear power programs in order to minimize their energy imports. However, many of these same countries do not have significant indigenous supplies of uranium and must import. While it appears that world uranium supplies are sufficient, the great imbalances of distribution indicate that the amount available for import is much less than it would first appear. Further, because a free world market cannot be guaranteed, reprocessing is essential for uranium-importing nations.

The fuel materials recovered from the lifetime irradiated fuel produced by 20 1000 MWe thermal reactors alone would fuel another 30 1000 MWe fast reactors over their lifetimes. Such economic and resource savings from reprocessing are great, but comparison of costs for reactors programs, with and without reprocessing and recycle, is difficult because no waste management route other than reprocessing have been sufficiently developed to permit cost estimates to be made on the same basis as reprocessing.

REPROCESSING AS A METHOD OF WASTE MANAGEMENT

Although the bulk of radioactive waste will have decayed to a point of inactivity in a few hundred years, the small fraction of actinides, including plutonium, will remain potentially harmful for thousands of years and, reprocessed or not, must be prevented from harming the environment for the duration.

By reprocessing, the great bulk of the irradiated fuel is removed and recycled, leaving the highly active radioactive waste isolated as a single low volume stream. Reprocessing further provides a basis for long term control and eventual safe disposal of that waste. Through a glassification process, the highly active waste stream is put into a chemically and physically stable form which will demand minimum requirements for disposal.

Unreprocessed irradiated fuel disposal is not acceptable because the technologies required to convert this fuel into a sufficiently stable form are undeveloped, and would inevitably involve some type of reprocessing and glassifying. As some reprocessing has to be performed eventually to permit safe disposal, BNFL believes it should be done in the near-term using established techniques.

THE NEED TO REPROCESS FUEL FROM UK NUCLEAR POWER STATIONS

In the mid-1960s, BNFL decided to modify the B204 reprocessing plant to handle the oxide fuel arising from both the British AGRs and overseas LWR power stations, in order to gain operating experience with oxide fuels. The plant effected the dissolution and first stage of separating the waste before the resulting liquor was sent to the main B205 Magnox reprocessing plant to complete the process.

The facility started operations in 1969 and operated on an intermittent basis through 1973. In 1971, BNFL decided to increase its capacity from 100 to 300-400 tons per annum. They intended to shut down the plant in 1974, restart in 1976 and operate the plant through the early 1980s to see how to best provide increased oxide reprocessing capacity in the longer term. In September 1973, however, an accidental release of radioactivity occurred in the building.

At least until the early 1980s, the B205 plant will be committed to Magnox fuels, with little capacity to process the oxide fuel liquors from the renovated B204 plant. The B204 plant will recommence oxide reprocessing, but will only handle a few hundred tons of fuel as the B204 cannot be relied upon to meet contractual commitments.

Examination of the forecast arisings of oxide fuel from UK power stations, as shown in Appendix 4, is necessary in considering the need, timing and capacity of a new reprocessing plant at Windscale.

By 1995, some 3,300 tons of oxide fuel will be available for reprocessing, possibly increasing by 1,300 tons with any additional power station construction. BNFL is contractually committed to accept this fuel for storage and reprocessing at Windscale. In order to handle the reprocessing of this accumulated fuel, a plant

in the range of a 500-800 ton capacity would be needed.

Because of the eight year construction time, any delay in building a plant would cancel the possibility of the UK having an established oxide fuel reprocessing industry in the 1990s.

The energy and balance of trade saving in reprocessing (the uranium in the 3,300 tons of irradiated fuel will be worth £170M at present prices and £300M if the expected rise in price takes place) are worth pursuing without delay. Further, a reprocessing capacity will keep the option of a Fast Breeder Reactor program open.

Furthermore, without reprocessing, by the early 1990s, large amounts of fuel will have been stored beyond the ten years of the present limit of practical storage experience. Large scale cladding failure is not expected, but, if this occurred, remedial measures on a massive scale would be required under difficult circumstances.

THE CASE FOR REPROCESSING OVERSEAS FUEL AT WINDSCALE

Many overseas countries face greater pressure than the UK to achieve the energy savings offered by reprocessing (Appendix 5 gives the forecast of irradiated oxide fuel produced in the Western World). At present only the UK and France can offer them a reprocessing service. However, recognizing the need to reprocess the oxide fuel from UK reactors, BNFL wondered if it should take on business from overseas.

If a 600 ton per annum plant were built to cover the domestic oxide fuel reprocessing needs, the capital cost would be split 40% for the process plant and 60% for other costs (building and civil work, mechanical installation, and electrical supplies and instrumentation). If the capacity were increased to the point where a single line of operating process equipment still sufficed, only the process plant cost would alter significantly. BNFL has determined that a single operating line of equipment can handle 1,200 tons per annum, with expenditures of 50% for the process plant and 50% for the other costs.

R&D and plant operating costs should be unaffected by this increased

plant capacity, whereas highly active waste storage costs will increase in direct proportion to the amount of fuel reprocessed. Appendix 6's comparison of cost for a 600 and a 1,200 ton per annum project over a ten year operating period indicates that the latter will only cost 20% more than the former.

Therefore, BNFL concluded that a 1,200 plant, coupled with new overseas business, makes great economic sense. Domestic oxide fuel would be reprocessed at a lower unit cost, the cost of construction would be apportioned between UK and overseas customers and a major contribution toward correcting the UK balance of trade would be realized.

Consequently, BNFL began negotiations in 1974 with Japanese utilities to reprocess fuel from Japanese nuclear power stations in the 1990s. The Government approved, in March 1976, these negotiations as long as the Company retains the options to return residual radioactive waste to the customer and will not be obligated to keep it in the UK for long-term storage.

The Company would not enter a contract unless the terms met the requirement for advance payment to finance construction and insured full recovery of costs, met the Government's requirements on return of waste products and provided for Government approvals governing the return of uranium and plutonium to the customer with appropriate safeguards. Contracts are being negotiated with Japan, Germany, Sweden and Switzerland.

BNFL had also previously contracted to reprocess 1,250 tons of oxide fuel from Germany, Switzerland, Sweden, Spain, Italy and Japan.

BNFL advocates strict international control of the storage and release of plutonium under international safeguards and would welcome international agreement for strengthening the powers of the IAEA in this regard. The recent U.S. government announcement that they will not authorize transport and reprocessing of fuel of U.S. origin except on a case-by-case basis complicates the present situation. However, as far as BNFL is concerned, the main risk must lie with the customer.

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Economies of Scale Between 600 and 1200 Tonne Per
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APPENDIX 1 DETAILS OF HOME BOARDS' MAGNOX AND AGR NUCLEAR POWER STATIONS

Board	Station	Reactor Type	Capacity MW(E)	On-Power Date
CEGB	Derby	MAGNOX	280	1962
CEGB	Bradwell		300	1962
SSEB	Hunterston 'A'		300	1964
CEGB	Hinkley 'A'		500	1965
CEGB	Trawsfynydd		500	1965
CEGB	Dungeness 'A'		550	1965
CEGB	Sizewell		580	1966
CEGB	Oldbury		600	1967
CEGB	Wylfa	AGR	1180	1971
CEGB	Hinkley 'B'		1200	1976
SSEB	Hunterston 'B'		1200	1976
CEGB	Dungeness 'B'		1250	(proj)1979
CEGB	Hartlepool		1200	(proj)1979
CEGB	Heysham		1200	(proj)1980

APPENDIX 2 - BNFL SUBSIDIARY AND ASSOCIATED COMPANIES

Subsidiary Companies

BNFL Enrichment Limited - The organisation is wholly owned by British Nuclear Fuels Limited and is the central subsidiary through which all financial aspects of participation in the tripartite centrifuge project are handled. In addition, four subordinate companies, wholly owned through BNFL Enrichment Limited, are used as vehicles for the financing of particular sections of the project. They are BNFL Enrichment (Plant and Equipment) Limited, BNFL Enrichment (Operations) Limited, BNFL Enrichment (Operations-UK) Limited and BNFL Enrichment (Operations-Europe) Limited.

Associated Companies

Centec GmbH - Incorporated in Germany in 1971 for purposes connected with the development, design and manufacture of centrifuges and plants for the enrichment of uranium by the centrifuge process, BNFL holds one-third of the shares. The remainder of the capital is held by Netherlands and German shareholders.

Urenco Limited. (UK and Netherlands) - Incorporated in England in 1971 with the purposes of owning and operating, through partnerships established in the UK and in the Netherlands, enrichment plants using the centrifuge process and marketing enriched uranium produced in these plants. BNFL holds one-third of the shares; the remainder are held by Netherlands and German shareholders.

United Reprocessors GmbH - This firm was incorporated in Germany in 1971 for the purpose of marketing and providing services for the reprocessing of irradiated fuel from nuclear power stations using uranium oxide fuel. BNFL holds one-third of the shares, the remainder being held by French and German shareholders, COGEMA and KEMA.

Nuclear Transport Limited (NTL) - Incorporated in England in 1972, this company has been formed for the purpose of providing services for the transport of irradiated nuclear fuel elements from oxide-fuelled power reactors to reprocessing plants. BNFL holds one-third of the shares; the remainder are held by French and German shareholders.

Pacific Nuclear Transport Limited (PNFL) - Incorporated in England in 1975 for the purpose of providing services for the transport to reprocessing plants of irradiated fuel elements from oxide and Magnox-fuelled power reactors in Japan and the Far East, BNFL holds three-quarters of the shares, the remainder being held by Japanese shareholders.

Combustibili Nucleari SpA - This organisation was incorporated in Italy in 1967 for the purpose of manufacturing and supplying fuel and fuel components and providing related services, including reprocessing for nuclear power stations. BNFL holds half of the shares, the remainder being held by an Italian company.

Nukleardienst - GmbH - Incorporated in Germany in 1964 with the purpose of providing nuclear fuel services for AGR type reactors built in that country or in certain other European countries, BNFL holds half of the shares of this enterprise, the remainder being held by a Germany company.

APPENDIX 5 ESTIMATE OF FREE WORLD URANIUM RESOURCES

THOUSAND TONS OF U_3O_8
RECOVERABLE AT "COST" UP
TO \$30/lb U_3O_8

	<u>REASONABLY ASSURED</u>	<u>ESTIMATED ADDITIONAL</u>
Australia	430	104
Sweden	390	-
S. and SW Africa	359	96
Canada	225	887
France	71	52
Niger	65	39
Algeria	36	-
Spain	30	55
Argentina	27	50
USA	640	1,060
Other	150	110
	<hr/>	<hr/>
Total Free World	2,420	2,450
	<hr/>	<hr/>

SOURCE: "Nuclear Power - Issues and Choices" Report of the Nuclear Energy Policy Study Group (Mitre-Ford Foundation) Ballinger Publishing Company, Cambridge, Mass. 1977.

Cumulative Arisings of Irradiated Oxide Fuel Available For Reprocessing (tonnes uranium)				
	by end 1980	by end 1985	by end 1990	by end 1995
1. From Prototype Reactors Operating at Windscale and Winfrith	100	125	150	175
2. From AGR Stations in Operation or Under Construction				
CEGB	150	850	1650	2450
SSEB	100	300	500	700
3. From Stations Planned with Sites Identified (4GW(E) Thermal Reactors)				
CEGB	-	-	75	575
SSEB	-	-	75	325
4. From Stations Projected by the UK Generating Boards				
[10 GW(E) Thermal Reactors CEGB 1 GW(E) Thermal Reactors SSEB]				
CEGB	-	-	-	300 *Note 1
SSEB	-	-	-	25 - 125
TOTAL 1 - 4	350	1275	2450	4550 - 4650

*Note 1 The range in SSEB arisings reflects the difference between their 'best estimate' and 'low' programmes.

APPENDIX 5 FORECAST ARISING OF IRRADIATED OXIDE FUEL IN THE WESTERN WORLD

(excluding the U.K., U.S.A. and France*)

		FORECAST CUMULATIVE ARISING (tonnes)		
		by 1980	by 1985	by 1990
<u>EUROPE</u> (excl. France and U.K.)	Reactors operating and under construction	2,000	7,000	13,000
	Reactors planned	-	(<500)	4,500
	Total	2,000	7,000	17,500
<u>JAPAN</u>	Reactors operating and under construction	1,000	3,000	5,000
	Reactors planned	-	(<500)	3,000
	Total	1,000	3,000	8,000
<u>REST OF WESTERN WORLD</u>	Reactors operating and under construction	(<500)	1,000	2,000
	Reactors planned	-	(<500)	2,500
	Total	(<500)	1,000	4,500
<u>TOTAL WESTERN WORLD</u> (excl. France, U.K. and U.S.A.)	Reactors operating and under construction	3,000	10,500	19,500
	Reactors planned	-	500	10,000
	Total	3,000	11,000	29,500

* Assumed that Oxide Fuel from French reactors will be reprocessed in France.

APPENDIX 6

ILLUSTRATIVE COSTS FOR COMPARATIVE PURPOSES TO
DEMONSTRATE ECONOMIES OF SCALE BETWEEN 600 AND
1200 TONNE PER ANNUM REPROCESSING PROJECTS

UNITS ARE £ MILLION FOR TEN YEARS PLANT OPERATION FOR TOTAL THROUGHPUTS OF 3000 TONNES AND 6000 TONNES RESPECTIVELY

		600 TONNE P.A. PLANT	1,200 TONNE P.A. PLANT
1.	R & D Expenditure £M	30	30
2.	Reprocessing Plant Capital Cost £M	250	300
3.	Highly Active Waste Storage Capital Cost £M	50	100
4.	Operating Costs for Ten Years £M	135	140
TOTAL 1 - 4 £M		465	570

EXCLUDED

FINANCING CHARGES
FUEL STORAGE POND COSTS
CLASSIFICATION AND ULTIMATE WASTE DISPOSAL COSTS

A COST ASSESSMENT OF ALTERNATIVE METHODS
OF DEALING WITH IRRADIATED OXIDE FUEL

BNFL sees four basic alternatives to deal specifically with 3,000 tons of irradiated fuel produced by the Electricity Boards' nuclear power stations in the next 20 years. The cases are as follows:

- Case A Reprocessing the 3,000 tons of fuel generated by the Home Boards together with 3,000 tons of fuel from other sources in a 1,200 tons capacity plant, followed by vitrification of the leftover highly active radioactive waste material.
- Case B Reprocessing the 3,000 tons of fuel generated by the Home Boards together with 1,300 tons of fuel from BNFL's existing overseas contracts and UK prototype reactors in an 860 ton capacity plant, followed by vitrification of the leftover highly active radioactive waste material.
- Case C Reprocessing the 3,000 tons of fuel generated by the Home Boards together with 1,300 tons of fuel from BNFL's other customers in the existing B204/B205 reprocessing plants, followed by vitrification of the leftover highly active radioactive wastes.
- Case D Storing the 4,300 tons of fuel (of B and C) in the currently proposed pond storage facilities for 10 years while long-term storage areas are developed and constructed. The fuel will then be stored in a dry storage area, with the option of subsequent reprocessing prior to disposal.

In evaluating these alternatives, neither the cost of final disposal of the waste nor the costs of decommissioning were included.

Case A, the proposal under consideration, has a quantity of 6,000 tons of fuel to be reprocessed. The cost given includes a pond storage capacity of 4,750 te for interim storage, allowing for one 1,000 te pond held in reserve.

Case B examines a plant with a throughput capacity limited to that

required for UK domestic fuel and any existing overseas contracts. These sources would produce approximately 4,300 te of fuel to be reprocessed in the next 20 years. Despite the difference of 1700 tons in the amount of fuel to be reprocessed, a proportional drop in either the pond storage required or in the total capital costs does not occur.

Case C represents the use of the existing plants at Windscale. The amount of oxide fuel potentially reprocessed by this method was approached at two different angles: first BNFL determined the throughput possible if B205 achieved the maximum theoretical plutonium throughput of 35 kg per day; and secondly, according to the present B205 plutonium throughput of 25 kg per day. The maximum theoretical throughput can be effectively ruled out as impossible to achieve because of the massive alterations needed in the plant and because no time for repairs or maintenance could be allowed.

At the present 25 kg per day rate, a total of 450 tons of the 3,000 tons of domestic fuel to be reprocessed would still not have been reprocessed by the end of 1996-97.

Further, the development of a suitable plant would require substantial additions and alterations to the B204 plant, which would be virtually impossible due to space limitations.

Although the alternative of constructing a new B204 plant was considered, the cost estimate proved it to have little economic advantage. While the capital expenditure for the new plant would be less than that of Case A, it does not include the alterations to B205 nor the necessary pipe connections between the two plants. Further, Case C still places an undesirable reliance on B205 for the sum total of the UK's reprocessing.

Case D considers the cost of long term storage, but does not make any provision for the cost of the waste's final disposal, nor for the cost of opening a new site, since BNFL assumed the repository would be located at Windscale. The costs estimated are approximate since no established long term storage exists on which to base them.

To make this alternative viable, high integrity containers must be developed as well as facilities designed for a 50-year period of storage. This facility would have to be completed within ten years in order to prevent the present ten year maximum storage for oxide fuel from being overreached.

BNFL believes that dissolution and vitrification will be needed to put the fuel into a safe final disposal form at the end of the storage period, leading to an additional cost of £450,000/te. However, this additional cost does not including any credit for recovered fuel materials.

In terms of long-term storage alternatives, further R&D is necessary before a choice between "dry" and "wet" long-term storage can be made. While BNFL believes that dry storage for oxide fuel will be necessary, an estimate of the costs of "wet" storage has also been included.

Common to both alternatives are costs required for the provision of water-filled storage ponds on the scale stated in Case B, the operating costs for these ponds and facilities, and the costs of the R&D program.

The remaining items included in the costs for dry storage are remote handling plant for transfer to long term containers, container costs, and storage facility.

In considering wet storage, the pond capacity of 3,750 tons used to estimate costs previously is only adequate as long as the fuel is eventually removed to be placed in dry storage. Additional capacity is needed if the ponds are to be used as long-term storage sites. Even if the transfer flasks are suitable for extended storage, additional flasks, proportional to the additional pond capacity required, will be needed. The estimate does not include the possibility of the costs of development if the new flasks are not adequate for long-term storage.

Credit for recovered uranium and plutonium in all of the reprocessing schemes depends entirely on the price of natural uranium in the 1990s and on the timing for the material's reuse. The value for

these materials (Appendix 5) was obtained by comparing the costs of preparing a ton of enriched uranium from both natural and recovered uranium. The formula used to determine the amount of uranium needed to make one ton of fuel at x% enrichment from y% enriched material with a tails enrichment T% is $\frac{(x-T)}{(y-T)}$ te.

When one ton of reprocessed fuel is only sufficient to make 1/4.32 ton of fuel, the value of the recovered uranium (at a price of \$30 per pound) is £64,000. Recovered plutonium from one ton of reprocessed fuel yields only 1/8.11 ton of fuel valued at £93,000 (at \$30 per pound).

COMPARATIVE PRICES

	A	B	C (25 kg/day)	C (35 kg/day)
Amount of material handled	6,000 te	4,300 te	3,806 te	4,470 te
Total capital expenditure	£ 580M	£ 500M	£ 417 M	£424 M
Net cost per ton of reprocessing	£ 140,000	£ 187,000		
Capital cost per ton	£ 108,000	£ 130,000	£ 144,000	£ 121,000
Ex-Works price per ton	£ 260,000	£ 315,000		
	D (dry)	D (wet)	D (additional cost of vitrification)	
Amount of material handled	4,300 te	4,300 te	4,300 te	
Total capital expenditure	£ 410M	£ 255M	£ 615M	
Net cost per ton repro/storage	£ 149,000		£ 152,000	
Capital cost per ton	£ 95,000		£ 140,000	
Ex-Works price per ton	£ 225,000	£ 150,000	£ 450,000	
Operating Cost to year 2036	£ 195M	£ 165M		

All figures (both costs and credits) have been translated from pure monetary figures into real money terms by using the standard 10% discount rate to account for inflation and market interest rates.

CONCLUSIONS

On a unit price level, it is obvious that, even at the lowest price given for uranium ore, the net cost of reprocessing in Case A approximates to the cost of long term dry storage even before any final treatment to make the stored fuel suitable for final treatment. Any increase in uranium price increases the economic benefits of reprocessing and it virtually pays for itself when uranium prices are very high. Further, Case A is much more economical than either of the reprocessing schemes of Cases B and C.

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Case C

- Table 1: Forecast Delivery and Reprocessing Program
(Pu Throughput of 25 kg per day)
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Case D

- Table 1: Capital Expenditure
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Appendix 5

The Value of the Material Recovered from Reprocessing

- Table 1: Cost Assumptions
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BLE 1 (APPENDIX 1)
CASE A - THORP PLANT AS PROPOSED
REPROCESSING AND POND STOCKS (TONNES U)

Financial Year	CUMULATIVE DELIVERIES					CUMULATIVE REPROCESSED				POND STOCKS				
	UK Prototypes	CAGR	Future UK	Overseas	Total	UK Prototypes	CAGR	Overseas	Total	UK Prototypes	CAGR	Future UK	Overseas	Total
End 1976/7	31			251	282					31			251	282
77/8	50			372	422					50			372	422
78/9	63	65		546	674					63	65		546	674
79/80	75	150		691	916					75	150		691	916
80/1	88	275		806	1,169					88	275		806	1,169
81/2	95	440		911	1,446					95	440		911	1,446
82/3	100	615		1,039	1,754					100	615		1,039	1,754
83/4	105	800		1,179	2,084					105	800		1,179	2,084
84/5	110	1,000		1,272	2,382					110	1,000		1,272	2,382
85/6	115	1,200		1,416	2,731					115	1,200		1,416	2,731
86/7	120	1,400		1,626	3,146					120	1,400		1,626	3,146
87/8	125	1,600		1,873	3,598	5	100	95	200	120	1,500		1,778	3,398
88/9	130	1,800		2,049	3,979	15	300	285	600	115	1,500		1,764	3,379
89/90	135	2,000	50	2,261	4,446	32	638	605	1,275	103	1,362	50	1,656	3,171
90/91	140	2,200	150	2,473	4,963	49	976	925	1,950	91	1,224	150	1,548	3,013
91/2	145	2,400	300	2,685	5,530	65	1,315	1,245	2,625	80	1,085	300	1,440	2,905
92/3	150	2,600	500	2,830	6,080	82	1,653	1,565	3,300	68	947	500	1,265	2,780
93/4	155	2,800	700	2,840	6,495	100	1,990	1,885	3,975	55	810	700	955	2,520
94/5	160	3,000	930	2,850	6,940	116	2,329	2,203	4,650	44	671	930	645	2,290
95/6	165	3,200	1,240	2,850	7,455	130	2,667	2,525	5,322	35	533	1,240	325	2,133
96/7	170	3,400	1,655	2,850	8,075	150	3,000	2,850	6,000	20	400	1,655	-	2,075

CASE A

No CAGR will be stored for more than 10 years
 No LWR or prototype fuel will be stored for more than 15 years

Financial Years	To 81/82	82/83 To 86/87	87/88 To 91/92	9 To 96/97	Total
<u>Receipt and Storage</u>					
Includes B27 T-Bay extension (750 tc), 4 x 1,000 tc Thorp ponds and associated receipt facilities and oxide portion of pond water treatment plant costs.					
T Bay extension fully operational 1980/81					
Site construction commences early 1978	T Bay	10	-		10
Thorp 1 and 2 ponds fully operational 1982/83					
Site Construction commences 1978/79	Thorp Ponds 1 & 2	70	30		100
Thorp 3 and 4 Ponds fully operational 1984/85					
Site construction commences 1979/80	Thorp Ponds 3 & 4	10	30		40
<u>Reprocessing Plant</u>					
Includes head end treatment, primary separation, U and Pu finishing, HA MA and salt evaporation, LA effluent treatment, gaseous effluent treatment.					
Plant design capacity = 1,200 tc pa					
Commissioning 1986/87 Site construction commences 1980/81	45	250	5		300
Operational 1987/88					
<u>HA Storage Tanks</u>					
Provision of HA tanks for 6,000 tc U		57	43		100
<u>Research and Development</u>	18	11	1		30
(on-going technical support included in operating costs)					
TOTAL CAPITAL FOR THORP	153	378	49		580
<u>Harvest Plant</u>					
Commissioning 1991/2			29	36	65
Operational 1992/3					
Based on conceptual plant layouts and including provision for pond storage of containers					
Site construction commences 1988/9	153	378	78	36	645
TOTAL	153	378	78	36	645

NOTES: (1) Assumes planning permission for Reprocessing Plant and signature of new overseas reprocessing contracts before the end of 1977

(2) Figures include Site Services directly attributable to the THORP project

CASE A - DETERMINATION OF UNIT COST TO CECB/SSEBReprocessing

Proportion of Capital Costs chargeable
to CECB/SSEB + 50% x £580M = £290M

Capital Cost per tonne = £290M ÷ 3,000 = £97,000/te

Ex Works Price (including operating costs
and return on capital employed) = £230,000/te

Vitrification

Proportion of Capital Costs chargeable
to CECB/SSEB = 50% x £65M = £32.5M

Capital Cost per tonne = £32.5M ÷ 3,000 = £11,000/te

Ex Works Price (including operating costs
and return on capital employed) £30,000/te

Total Cost Ex Works BNFL = £260,000/te U

1 1 (APPENDIX 2)
CASE B860 TE PA THORP PLANT
REPROCESSING AND FOND STOCKS (TONNES U)

Financial Year	CUMULATIVE DELIVERIES					CUMULATIVE REPROCESSED				FOND STOCKS				
	UK Prototypes	CAGR	Future UK	Overseas	Total	UK Prototype	CAGR	Overseas	Total	UK Prototype	CAGR	Future UK	Overseas	Total
End 1976/77	31			251	282					31			251	282
77/8	50			372	422					50			372	422
78/9	63	65		546	674					63	65		546	674
79/80	75	150		691	916					75	150		691	916
80/1	83	275		806	1,169					88	275		806	1,169
81/2	95	440		911	1,446					95	440		911	1,446
82/3	100	615		1,039	1,754					100	615		1,039	1,754
83/4	105	800		1,139	2,044					105	800		1,139	2,044
84/5	110	1,000		1,150	2,260					110	1,000		1,150	2,260
85/6	115	1,200		1,150	2,465					115	1,200		1,150	2,465
86/7	120	1,400		1,150	2,670					120	1,400		1,150	2,670
87/8	125	1,600		1,150	2,875	6	124	30	160	119	1,476		1,120	2,715
88/9	130	1,800		1,150	3,080	17	333	110	460	113	1,467		1,040	2,620
89/90	135	2,000	50	1,150	3,325	33	667	240	940	102	1,333	50	910	2,395
90/1	140	2,200	150	1,150	3,640	50	1,000	370	1,420	90	1,200	150	780	2,220
91/2	145	2,400	300	1,150	3,995	66	1,334	500	1,900	79	1,066	300	650	2,095
92/3	150	2,600	500	1,150	4,400	82	1,668	630	2,380	68	932	500	520	2,020
93/4	155	2,800	700	1,150	4,805	100	2,000	760	2,860	55	800	700	390	1,945
94/5	160	3,000	930	1,150	5,240	116	2,334	890	3,340	44	666	930	260	1,900
95/6	165	3,200	1,240	1,150	5,755	133	2,667	1,020	3,820	32	533	1,240	130	1,935
96/7	170	3,400	1,655	1,150	6,275	150	3,000	1,150	4,300	20	400	1,655	-	2,075

NOTE: No CAGR fuel will be stored for more than 10 years
 (Future UK fuel will be stored for more than 15 years)

TABLE (APPENDIX 2)

CASE B - CAPITAL EXPENDITURE FOR 860 TE PA THORP PLANT

£M

	Total £M
<u>Receipt and Storage</u> Includes B27 T-Bay extension (750 te), 3 x 1,000 te Thorp ponds and associated receipt facilities and oxide portion of pond water treatment plant costs.	130
<u>Reprocessing Plant</u> Includes head end treatment, primary separation, U and Pu finishing, HA MA and salt evaporation, LA effluent treatment, gaseous effluent treatment Plant design capacity = 860 te pa. Commissioning 1986/7 Operational 1987/8	270
<u>HA Storage Tanks</u> Provision of HA tanks for 4,300 te U	70
<u>Research and Development</u> (ongoing technical support included in operating costs)	30
TOTAL CAPITAL FOR THORP	500
<u>Harvest Plant</u> Commissioning 1991/2 Based on conceptual plant layouts and including Operational 1992/3 provision for pond storage of containers.	55
TOTAL	555

NOTES: (1) Assumes planning permission for Reprocessing Plant before the end of 1977

(2) Figures include Site Services directly attributable to the project

CASE B - DETERMINATION OF UNIT COST TO CECB/SSEBReprocessing

Proportion of Capital Costs chargeable
to CECB/SSEB = $30/43 \times £500M$ = £350M

Capital Cost per tonne = $£350M \div 3,000$ £117,000/te

Ex Works Price (including operating costs
and return on capital employed) £280,000/te

Vitrification

Proportion of Capital Costs chargeable
to CECB/SSEB = $30/43 \times £55M$ = £39M

Capital Cost per tonne = $£39M \div 3,000$ = £13,000/te

Ex Works Price (including operating costs
and return on capital employed) £35,000/te

Total Cost Ex Works BNFL = £315,000/teU

TABLE 2 (APPENDIX 3)

NOTIONAL REPROCESSING PROGRAMME FOR B204/205, ASSUMING 35 KG Pu PER DAY IN B205

	CUMULATIVE: DELIVERIES					REPROCESSED				POND STOCKS			
	UK Prototype	CAGR	Future UK	Overseas	TOTAL	UK Prototypes	CAGR	Overseas	TOTAL	UK Prototypes	CAGR	Future UK	Overseas
To end													
76/7	31			251	282					31			251
77/8	50			372	422					50			372
78/9	63	65		546	674					63	65		546
79/80	75	150		691	916	10		125	135	65	150		566
80/1	88	275		806	1169	20		250	270	68	275		556
81/2	95	440		911	1446	20		250	270	75	440		661
82/3	100	615		1029	1754	20		250	270	80	515		789
83/4	105	800		1139	2044	20		250	270	85	800		889
84/5	110	1000		1150	2260	20		250	270	90	1000		900
85/6	115	1200		1150	2465	20	350	250	620	95	850		900
86/7	120	1400		1150	2670	30	570	370	970	90	830		780
87/8	125	1600		1150	2875	40	790	490	1320	85	810		660
88/9	130	1800		1150	3080	50	1010	610	1670	80	790		540
89/90	135	2000	50	1150	3335	60	1230	730	2020	75	770	50	400
90/1	140	2200	150	1150	3640	70	1450	850	2370	70	750	150	300
91/2	145	2400	300	1150	3995	80	1670	970	2720	65	730	300	180
92/3	150	2600	500	1150	4400	90	1890	1090	3070	60	710	500	60
93/4	155	2800	700	1150	4805	105	2165	1150	3420	50	635	700	0
94/5	160	3000	930	1150	5240	120	2500	1150	3770	40	500	930	0
95/6	165	3200	1240	1150	5755	135	2835	1150	4120	30	365	1240	0
96/7	170	3400	1655	1150	6375	150	3170	1150	4470	20	230	1655	0

TABLE 1 (Appendix 3)

NOTIONAL REPROCESSING PROGRAMME FOR B204/205, ASSUMING 25 KG Pu PER DAY IN B205

	CUMULATIVE: DELIVERIES					REPROCESSED				POND STOCKS			
	UK Prototypes	CAGR	Future UK	Overseas	TOTAL	UK Prototypes	CAGR	Overseas	TOTAL	UK Prototypes	CAGR	Future UK	Overseas
To end													
76/7	31			251	282					31			251
77/8	50			372	422					50			372
78/9	63	65		516	674					63	65		546
79/80	75	150		691	916	10		90	100	65	150		601
80/1	85	275		806	1169	20		180	200	69	275		636
81/2	95	440		911	1446	20		180	200	75	440		731
82/3	100	615		1089	1754	20		180	200	80	45		859
83/4	105	800		1139	2044	20		180	200	85	800		959
84/5	110	1000		1150	2260	20		180	200	90	1000		970
85/6	115	1200		1150	2465	20	350	180	550	95	850		970
86/7	120	1400		1150	2670	30	550	270	850	90	850		880
87/8	125	1600		1150	2875	37	730	370	1137	88	870		780
88/9	130	1800		1150	3080	44	910	470	1424	86	890		680
89/90	135	2000	50	1150	3335	51	1090	570	1711	84	910	50	580
90/1	140	2300	150	1150	3640	58	1270	670	1998	82	930	150	480
91/2	145	2400	300	1150	3995	65	1450	770	2285	80	950	300	380
92/3	150	2600	500	1150	4400	72	1630	870	2572	78	970	500	280
93/4	155	2800	700	1150	4805	79	1810	970	2859	76	990	700	180
94/5	160	3000	930	1150	5240	86	1990	1070	3146	74	1010	930	130
95/6	165	3200	1240	1150	5755	96	2210	1150	3456	69	990	1240	0
96/7	170	3400	1655	1150	6375	106	2550	1150	3806	64	850	1655	0

CASE C CAPITAL EXPENDITURE FOR NEW HEAD-END PLANT AND
ASSOCIATED B205 MODIFICATIONS

B205 Pu throughput per day	25 kg £M	35 kg £M
<u>Receipt & Storage</u>	130	130
Includes B27 T-Bay extension (750 te), 3 x 1,000 te Thorp type ponds and associated receipt facilities and oxide portion of pond water effluent treatment plant		
T Bay extension on line 80/81. First Thorp type pond on line 83/84.		
<u>New Head-End and Associated Facilities</u>	160	160
Includes head-end treatment, solids removal, first cycle, effluent treatment, modifications to B205 for increase Pu throughput, and product treatment facilities to meet specifications. (The cost assessment is derived from the comparable facilities in Thorp after making appropriate allowance for difference in throughput)		
Commissioning 1986/87. Operational 1987/83 to 1996/7		
<u>HA Storage Tanks</u>	52	59
Provision of HA tanks for throughput reprocessed		
<u>Research and Development to plant Commissioning</u>	30	30
(On-going technical support by R&D Department assumed to be included in annual operating costs)		
TOTAL CAPITAL FOR NEW PLANT	372	379
<u>Harvest</u>		
Based on conceptual plant layouts and including pond storage of containers		
	45	45
TOTAL	417	424
Total fuel reprocessed	te	2900
CEGB/SSEB fuel reprocessed	te	1800
Total Capital Expenditure chargeable to CEGB/SSEB	£M	259
Capital cost to CEGB/SSEB per tonne	£144,000	£121,000
	273	

TABLE 1CASE D

	£M
Preliminary Storage Ponds, including Inlet and Water Facilities	130
Research and Development (5 year programme - see para 4)	10
Remote Handling Plant for Transfer to Long Term Containers (para 4)	20
Container Costs (para 5)	100
Long Term Retrievable Storage Facility (para 5)	150
	—
	£410M
	—
Capital Cost to CECB/SSEB =	
$\frac{3,000}{4,300} \times £410M$	= £285M
	= £95,000/te
Ex Works Price (including operating costs and return on capital employed)	= £225,000/te

TABLE 2CASE D

£M

Dissolution Head End and some
Solvent Extraction, HA, MA
and LA Treatment

235

Vitrification Plants

380

615

Capital Cost to CECB/SSEB =

$$\frac{3,000}{4,300} \times £615M$$

= £430M approx

= £140,000/te

Ex Works Price (including
operating costs and return
on capital employed)

= £450,000/te

TABLE 1 (APPENDIX 5) COST ASSUMPTIONS

UOC to UF_6 conversion	£ 1900/te
Recycled UN to UF_6 conversion	£ 4000/te
Enrichment (tails 0.25% U235)	\$ 112/SWU
Uranium fuel fabrication	£72,500/te
Plutonium (mixed oxide) fuel fabrication	£290,000/te HA
Exchange Rate	\$ 1.7/£

thus UOC price is \$/lb x 1537 = price in £/te.

TABLE 2 (APPENDIX 5) Lifetime Uranium Charge and Discharge for an AGR Power Station

	Mass of uranium Loaded te/GWe	Mean Enrichment %	Mass of uranium Discharged te/GWe	Mean Enrichment, %	Mass of Plutonium Discharged kg PU239 Eq/GWe
Initial Charge.	165.2	1.73			
Year 1	10.7	2.38	5.9	1.32	4.3
" 2	25.1	2.31	17.2	1.17	22.0
" 3	36.0	2.33	30.8	1.11	60.1
" 4	41.0	2.33	40.5	1.01	104.1
" 5	35.9	2.33	35.3	0.85	115.2
" 6	31.9	2.33	31.3	0.63	112.7
" 7	34.1	2.35	33.4	0.75	123.2
" 8	34.7	2.33	34.1	0.76	126.2
" 9	34.7	2.33	34.1	0.76	126.2
" 10	34.7	2.33	34.1	0.76	126.2
" 11	34.7	2.33	34.1	0.76	126.2
" 12	34.7	2.33	34.1	0.76	126.2
" 13	34.7	2.33	34.1	0.76	126.2
" 14	34.7	2.33	34.1	0.76	126.2
" 15	34.7	2.33	34.1	0.76	126.2
" 16	33.7	2.33	33.1	0.76	126.2
" 17	32.7	2.33	32.1	0.76	122.6
" 18	31.7	2.33	31.1	0.76	119.0
" 19	30.8	2.33	30.2	0.76	115.4
" 20	29.8	2.33	29.2	0.76	111.8
" 21	28.8	2.33	28.2	0.76	108.2
" 22	27.8	2.33	27.2	0.76	104.5
" 23	26.8	2.33	26.3	0.76	100.9
" 24	25.8	2.33	25.3	0.76	93.7
" 25	24.8	2.33	24.3	0.76	90.1
Final discharge			181.0	1.48	470.0

TABLE 3 (APPENDIX 5)

COMPARATIVE COSTS OF PRODUCING ONE TONNE OF URANIUM OR PLUTONIUM FUEL AT 2.6% ENRICHMENT

ALL FIGURES IN £'000

	Natural Uranium			Recovered Material	
				Uranium	Plutonium
	30 \$/lb	60 \$/lb	100 \$/lb		
Feed Material	240	480	800	-	-
UOC to UF ₆ conversion	10	10	10	-	-
UN to UF ₆ conversion	-	-	-	16	-
Enrichment	204	204	204	163	-
Fabrication	73	73	73	73	290
TOTAL	527	767	1087	252	290

Testimony of Colin J. Edney, Manager of Nuclear Transport for
BNFL, on the transport of nuclear materials

PRESENT MOVEMENT BY ROAD, RAIL AND SEA

All irradiated fuel is transported to Windscale in substantial steel flasks weighing from 40-100 tons and containing 1-3 tons of fuel.

The largest proportion of transport of irradiated fuel takes place within the UK and consists mainly of Magnox fuel from domestic power stations. While approximately 1,100 tons are moved by rail each year from the stations, 100 tons of Magnox fuel are also moved by road from a BNFL reactor to Windscale. Very little oxide fuel is moved either by the Electricity Boards or by BNFL.

BNFL uses two specially fitted ships to import fuel from abroad. One carries Magnox and oxide fuel from Japan while the other bring oxide and Magnox fuel from Italy and oxide fuel from other European countries. Both ships dock at Barrow where the fuel is then transported by rail to Windscale. The rest of the European fuel is shipped half by rail and half by road, both using short sea ferry routes.

FUTURE MOVEMENTS

While the volume of domestic Magnox fuel transport will remain constant in the foreseeable future, by 1981, the annual tonnage of oxide fuels moved should have increased to about 2-300 tons. Both fuels will be transported by road from the reactor to the nearest railhead and then to Windscale by rail. The volume of transport should not increase significantly before the late 1980s.

The first significant rise in overseas fuel transport will be a consequence of the new 1974 Japanese reprocessing contracts, requiring the addition of three larger transport ships. Peak deliveries under these contracts will be about 180 tons in 1983.

Under the additional Japanese contracts now being negotiated, BNFL may need to operate 5 or 6 ships in the late 1980s. Half

of this capacity will be used for deliveries to Windscale and half for deliveries to France. This increase in traffic through the port of Barrow may require the expansion of the port facilities. Any increase of oxide fuel movements from Europe can be accommodated by rail shipments and, in some cases, in shipments by charter ship. In sum, oxide fuel transport should only increase 600-700 tons per annum over the present total of 1400 tons p.a. for both oxide and Magnox fuel in the next fifteen years.

UK REGULATORY REQUIREMENTS AND PRACTICES

The IAEA has issued "Regulations for the Safe Transport of Radioactive Materials" on which domestic regulations in the UK and other countries are based. Both transportation of radioactive materials and the design of the flasks used in transportation are covered by these regulations.

Both the UK and IAEA have strict rules on land transport, covering both road and rail movements.

The transport flasks have to survive the most severe conditions likely to be met in an accident. At present a cubical flask is used for Magnox fuel and an Excellox flask is used for oxide fuels. No new technology will be used in the transport of oxide fuels.

The UK and the IAEA have strict rules for transport of irradiated fuel by sea. The existing ships have safety features including fire fighting equipment and cooling capacity to remove residual heat from the flasks. New ships will have structural reinforcement and compartmentalization to reduce the risk of loss of the ship.