SENATO DELLA REPUBBLICA

V LEGISLATURA

(N. 793)

DISEGNO DI LEGGE

presentato dal Ministro degli Affari Esteri

(NENNI)

di concerto col Ministro di Grazia e Giustizia

(GAVA)

col Ministro dell'Industria, del Commercio e dell'Artigianato

(TANASSI)

e col Ministro della Marina Mercantile

(LUPIS)

COMUNICATO ALLA PRESIDENZA IL 5 LUGLIO 1969

Approvazione ed esecuzione dell'Accordo tra l'Italia e gli Stati Uniti d'America sull'uso dei porti italiani da parte della nave nucleare « Savannah » e degli Scambi di Note relativi conclusi a Roma, rispettivamente, il 23 novembre 1964 ed il 16 dicembre 1965

ONOREVOLI SENATORI. — Gli Scambi di Note tra l'Italia e gli Stati Uniti d'America, effettuati a Roma il 16 dicembre 1965, intendono dare assetto giuridico all'insieme dei problemi suscettibili di porsi nel caso di un incidente di origine nucleare in cui la nave « Savannah » sia coinvolta in acque territoriali italiane o fuori di esse, quando sia in viaggio verso porti italiani o da porti italiani, qualora il danno venga causato in Italia o a bordo di navi battenti bandiera italiana.

Con il primo Scambio di Note si eleva, grazie ad una norma di riferimento, a 500 milioni di dollari (posti a disposizione con Atto del Congresso USA) il limite di responsabilità del gestore in caso di incidente.

Si pongono anche norme di carattere procedurale relative sia alla competenza dei giudici italiani che all'indagine sulla natura della responsabilità.

Con il secondo Scambio di Note si pongono limiti — in senso assoluto — allo scarico in acque italiane di residui radioattivi solidi, gassosi o liquidi. Entro quei limiti — giudicati perfettamente adeguati dalle competenti Autorità italiane — ogni scarico sarà tuttavia soggetto a preventiva autorizzazione del Ministero della marina mercantile.

L'Accordo concluso a Roma il 23 novembre 1964 e gli Scambi di Note sopramenzionati, relativi alla nave « Savannah », il solo mercantile a propulsione nucleare attual-

mente esistente che possa fare ed abbia fatto scalo nei porti italiani, intendono riempire una lacuna delle norme vigenti per quel che concerne i rischi inerenti alla navigazione di navi nucleari.

Si può però sin da ora ritenere per certo che, in un futuro anche prossimo, numerose altre navi mercantili a propulsione nucleare prenderanno il mare. Sarà quindi necessario sia emanata in tempo utile una legislazione specifica, concernente la navigazione nucleare, sulle linee di quanto predisposto dalla Convenzione di Bruxelles del 29 luglio 1960, e sull'esempio di quanto recentemente è stato fatto in Francia ed in Spagna: due Paesi che, per la loro posizione geografica, sentono con particolare urgenza i problemi relativi alla navigazione nell'Atlantico.

Circa l'Accordo sopramenzionato del 23 novembre 1964, occorre porre in rilievo il fatto che esso, per comune consenso dei due Governi, non è più stato ritenuto interamente applicabile ed è quindi stato modificato dagli Scambi di Note del dicembre 1965, poichè nel frattempo è mutata la situazione giuridica della nave « Savannah ». Mentre nel novembre del 1964 questa nave era gestita direttamente dal Ministero della marina mercantile statunitense sulla base di un contratto con la Commissione della Energia Atomica americana, nel luglio del 1965 la nave « Savannah » è passata in gestione ad una Compagnia (la FAST) appositamente costituita. Non potevano quindi più applicarsi quegli articoli dell'Accordo del 1964 che stabilivano la diretta responsabilità del Governo degli Stati Uniti in quanto gestore.

Con gli Scambi di Note del 16 dicembre 1965, tenuto conto della mutata situazione, si è data soluzione ai problemi giuridici sia sostanziali che procedurali che sono per noi rilevanti, lasciando alla discrezionalità del Ministero della marina mercantile di stabilire, di volta in volta che la nave « Savannah » entrerà in acque territoriali italiane, le condizioni alle quali dovrà soddisfare la gestione di quella nave.

DISEGNO DI LEGGE

Art. 1.

Sono approvati i seguenti Atti internazionali conclusi tra l'Italia e gli Stati Uniti di America:

Accordo sull'uso dei porti italiani da parte della nave nucleare Savannah, concluso a Roma il 23 novembre 1964;

Scambi di Note relativi alla nave nucleare Savannah, effettuati a Roma il 16 dicembre 1965.

Art. 2.

Piena ed intera esecuzione è data agli Atti internazionali di cui al precedente articolo a decorrere dalla loro entrata in vigore.

ALLEGATO

ACCORDO

TRA IL GOVERNO ITALIANO ED IL GOVERNO DEGLI STATI UNITI D'AMERICA SULL'USO DI PORTI ITALIANI DA PARTE DELLA N.S. SAVANNAH

Il Governo italiano ed il Governo degli Stati Uniti d'America, per l'interesse che entrambi portano all'uso pacifico dell'energia nucleare, compresa la sua applicazione alla marina mercantile, hanno concordati i seguenti princìpi che regolano l'entrata della N.S. *Savannah* in acque italiane, in relazione a visite della nave in porti italiani:

Articolo I

Ingresso della N.S. Savannah *nei porti*

a) L'ingresso e la permanenza della N.S. *Savannah,* qui di seguito denominata « Nave », in acque ed in porti italiani, e l'uso di questi, saranno soggetti all'approvazione preventiva del Governo italiano.

b) Le visite della Nave a porti italiani saranno regolate dai princìpi e dalle procedure stabilite nel Capitolo VIII della Convenzione sulla Sicurezza della Vita in Mare proposta dalla Conferenza di Londra del 1960 e nelle Raccomandazioni applicabili alle navi nucleari contenute nell'Annesso *C* all'Atto finale di quella Conferenza. Detti princìpi e procedure si intendono parte integrante del presente Accordo ed hanno quello stesso valore che avrebbero se fossero stati inclusi nel presente Accordo.

Articolo II

Rapporto di sicurezza

a) Al fine di mettere in grado il Governo italiano di dare la sua approvazione all'ingresso della Nave in porti italiani ed al loro uso da parte di quella, il Governo degli Stati Uniti presenterà un Rapporto di sicurezza compilato secondo quanto stabilito dal Regolamento n. 7 del Capitolo VIII della Convenzione del 1960 sulla Sicurezza della Vita in Mare e secondo quanto stabilito dalla Raccomandazione n. 9 dell'Annesso *C* sopra indicato.

b) Non appena possibile, dopo aver ricevuto il Rapporto di sicurezza, il Governo italiano notificherà al Governo degli Stati Uniti che la Nave può operare nel porto o nei porti italiani designati, secondo le modalità stabilite nel presente Accordo, nel Rapporto di sicurezza e nel Manuale di operazioni.

Articolo III

Disposizioni per i porti

a) Il Governo italiano darà alle Autorità competenti le disposizioni necessarie per l'entrata della Nave in porti italiani e per l'uso di essi.

b) Le Autorità italiane competenti provvederanno ad assicurare i servizi antincendi e di polizia, nonché il controllo del pubblico ed appresteranno le attrezzature necessarie all'entrata della Nave in porto.

c) Il controllo sull'accesso del pubblico alla Nave sarà affidato al Capitano della Nave. Disposizioni particolari relative a tale controllo saranno concordate tra il Capitano e le autorità designate dal Governo italiano.

d) Il Capitano si atterrà ai regolamenti locali. Qualora l'Armatore o il Capitano stesso ritengano che l'applicazione di tali regolamenti non sia rispondente alle esigenze di sicurezza relative al funzionamento dell'impianto nucleare, saranno concordate al riguardo le necessarie misure.

e) Il Governo italiano provvederà alla sorveglianza delle zone circostanti la Nave, con l'assistenza del Governo degli Stati Uniti, così come sarà stabilito per mutuo accordo.

Articolo IV

Ispezioni

Durante la permanenza della Nave in acque territoriali italiane, le Autorità designate avranno una ragionevole facoltà di accesso alla Nave, per ispezionare sia la Nave stessa che le registrazioni dei dati relativi alla navigazione della Nave ed al suo programma, al fine di stabilire se le operazioni della Nave sono state effettuate in conformità al Manuale di operazioni.

Articolo V

Rifiuti radioattivi

a) Il Governo degli Stati Uniti prenderà le misure necessarie a che non sia effettuato dalla Nave alcuno scarico di rifiuti radioattivi sia liquidi che solidi salvo quanto stabilito dal documento STS-9 (NS *Savannah* Technical Specifications) del maggio 1964.

b) Lo scarico dalla Nave di sostanze radioattive liquide o solide entro le acque territoriali o in porti italiani potrà essere effettuato soltanto con la previa specifica approvazione delle competenti Autorità italiane.

c) Lo scarico dalla Nave di qualsiasi sostanza gassosa radioattiva in acque territoriali o porti italiani dovrà essere contenuto entro quei limiti che saranno consentiti dalle competenti Autorità italiane. L'eliminazione o lo scarico, nelle acque territoriali e nei porti italiani, di sostanze gassose radioattive eccedenti tali limiti consentiti saranno soggetti alla previa approvazione delle competenti Autorità italiane.

Articolo VI

Manutenzione ordinaria e manutenzione straordinaria

L'aggiudicazione di contratti per la partecipazione nei lavori di riparazione, nella manutenzione ordinaria ed in quella straordinaria dell'attrezzatura nucleare della Nave, mentre questa si trova nelle acque italiane, sarà circoscritta alle organizzazioni autorizzate dalle competenti Autorità italiane a fornire tali servizi.

Articolo VII

Incidenti

Il Capitano della Nave presenterà alle Autorità italiane designate un rapporto come richiesto nel Capitolo VIII, Regolamento 12, della Convenzione del 1960 sulla Sicurezza della Vita in Mare, in caso di qualsiasi incidente che possa rappresentare un pericolo per le zone circostanti mentre la Nave si trova nelle acque italiane o sta per entrarvi.

Articolo VIII

Responsabilità per danni

Nei limiti della responsabilità fissati dalla « United States Public Law 85-256 » (Allegato « A »), così come emendata dalla legge 85-602 (Allegato « B »), in qualsiasi azione o procedimento legale intentati *in personam* contro gli Stati Uniti in un tribunale italiano, il Governo statunitense pagherà una indennità per qualsiasi responsabilità accertata da un tribunale italiano, secondo la legge italiana, per qualsiasi danno alle persone o alle cose causato da un incidente nucleare — connesso, derivante o risultante da operazioni, riparazioni, manutenzione o impiego della Nave — in cui la Nave nucleare *Savannah* sia coinvolta nelle acque territoriali italiane, o fuori di esse quando essa sia in viaggio verso o da porti italiani, se il danno viene causato in Italia o a navi di matricola italiana.

Entro il limite di 500 milioni di dollari fissato da tali leggi, il Governo statunitense si impegna a non sollevare l'eccezione di immunità riconosciuta a Stati esteri nell'esercizio di attività sovrane, a sottoporsi alla giurisdizione del tribunale italiano ed a non invocare le disposizioni delle leggi italiane o di qualsiasi altra legge sulla limitazione delle responsabilità degli armatori.

Articolo IX

Condizioni dell'Accordo

Nel caso di entrata in vigore di qualsiasi Convenzione multilaterale relativa alla sicurezza, alle modalità d'impiego o alla responsabilità verso terzi di navi mercantili nucleari, che sia vincolante sia per il Governo italiano che per quello degli USA, il presente Accordo sarà emendato per comune accordo delle Parti in modo da uniformarlo alle disposizioni della nuova Convenzione.

Articolo X

Entrata in vigore dell'Accordo

Il presente Accordo entrerà in vigore all'atto della firma delle Parti contraenti.

Articolo XI

Fine dell'Accordo

Ciascuno dei due Governi ha facoltà di denunciare il presente Accordo dando all'altro un preavviso non inferiore a 180 giorni.

FATTO a Roma, in duplice esemplare, nelle lingue italiana ed inglese, i due testi facenti ugualmente fede, il 23 novembre 1964.

Per il Governo della Repubblica Italiana
ATTILIO CATTANI

Per il Governo degli Stati Uniti d'America
G. FREDERICK REINHARDT

AGREEMENT

BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE GOVERNMENT OF ITALY ON THE USE OF ITALIAN PORTS BY THE N.S. SAVANNAH

The Government of the United States of America and the Government of Italy, having a mutual interest in the peaceful uses of nuclear energy, including its application to the merchant marine, have agreed on the following principles governing the entry of the N.S. *Savannah* into Italian waters in connection with any visit of the vessel to an Italian port.

Article I

Entry of the N.S. Savannah *into Ports*

(*a*) The entry into and stay of the N.S. *Savannah* (hereinafter referred to as « the Ship ») in Italian waters and ports and the use thereof shall be subject to the prior approval of the Italian Government.

(*b*) The visits of the Ship to Italian ports shall be governed by the principles and procedures set forth in Chapter VIII of the Convention on the Safety of Life at Sea as proposed by the 1960 London Conference and in the Recommendations applicable to nuclear ships contained in Annex *C* to the Final Act of that Conference. Those principles and procedures are embodied in the present Agreement by reference and have the same force as if they had been included herein.

Article II

Safety Report

(*a*) To enable the Italian Government to give its approval for the entry of the Ship into Italian ports and the use thereof, the Government of the United States shall submit a Safety Report prepared in accordance with Regulation 7 of Chapter VIII of the 1960 Convention on the Safety of Life at Sea and in accordance with Recommendation 9 of Annex *C* mentioned above.

(*b*) As soon as possible after receipt of the Safety Report, the Italian Government shall notify the Government of the United States that the Ship may be operated in the port or ports designated in accordance with this Agreement, the Safety Report, and the Manual of Operations.

Article III

Port Arrangements

(*a*) The Italian Government shall give the competent authorities the instructions necessary for the entry of the Ship into Italian ports and for the use thereof.

(*b*) The competent Italian authorities shall take all necessary measures for fire safety and police protection, crowd control, and the general preparation of facilities relating to the entry of the Ship.

(*c*) Control of public access to the Ship shall be the responsibility of the Master of the Ship. Special arrangements for such control shall be agreed upon by the Master and the authorities designated by the Italian Government.

(*d*) The Master shall comply with local regulations. If the Operator or the Master himself considers that the application of those regulations does not fulfil the safety requirements of operation of the nuclear plant, the necessary measures shall be agreed upon in this connection.

(*e*) The Italian Government shall see to the surveillance of the areas in the vicinity of the Ship, with the assistance of the Government of the United States, as mutually agreed.

Article IV

Inspection

While the Ship is in Italian territorial waters, the designated authorities shall have reasonable access to it for purposes of inspecting the Ship and its operating records and program data, to determine whether it has been operated in accordance with the Manual of Operations.

Article V

Radioactive Materials

(*a*) The Government of the United States shall insure that no disposal of radioactive liquid or solid wastes shall take place from the Ship except as stated in STS-9 (N.S. *Savannah* Technical Specifications) of May 1964.

(*b*) Disposal of radioactive liquid or solid substances within Italian territorial waters and ports shall take place from the Ship only with the specific prior approval of competent Italian authorities.

(*c*) Release of any radioactive gaseous substances from the Ship while within Italian territorial waters and ports shall be at or below permissible levels as specified by competent Italian authorities. Disposal or release of any radioactive gaseous substances within Italian territorial waters and ports which exceed such permissible levels shall be subject to prior approval of competent Italian authorities.

Article VI

Regular Maintenance and Special Maintenance

The awarding of contracts for assistance in the repair, regular maintenance and special maintenance of the nuclear equipment of the Ship while it is in Italian waters shall be limited to the organizations which the designated Italian authorities have authorized to provide such services.

Article VII

Accidents

A report such as that required in Chapter VIII, Regulation 12, of the 1960 Convention on the Safety of Life at Sea shall be made to the designated Italian authorities by the Master of the Ship in the event of any incident that can constitute an environmental hazard while the Ship is in or is approaching the territorial waters of Italy.

Article VIII

Liability for Damage

Within the limitations of liability set by United States Public Law 85-256 (annex « A »), as amended by 85-602 (annex « B »), in any legal action or proceeding brought *in personam* against the United States in an Italian court, the United States Government will pay compensation for any responsibility

which an Italian court may find, according to Italian law, for any damage to people or goods deriving from a nuclear incident in connection with, arising out of or resulting from the operation, repair, maintenance or use of the Ship, in which the N.S. *Savannah* may be involved within Italian territorial waters, or outside of them on a voyage to or from Italian ports if damage is caused in Italy or on ships of Italian regis ry.

Subject to the $ 500 million limitation in such public laws, the United States Government agrees not to interpose the defense of sovereign immunity and to submit to the jurisdiction of the Italian court and not to invoke the provisions of Italian laws or any other law relating to the limitation of shipowners' liability.

Article IX

Term of the Agreement

In the event of the entry into force of any multilateral convention relating to the safety and operating procedures or the third-party liability of nuclear-powered merchant ships which is binding on both the Italian Government and the Government of the United States of America, the present Agreement shall be amended with the mutual consent of the parties so as to bring it into conformity with the provisions of the new convention.

Article X

Entry into Force of the Agreement

The present Agreement shall enter into force upon signature by the contracting parties.

Article XI

Termination

Either Government may terminate this Agreement by giving the other at least 180 days' notice.

DONE at Rome, in duplicate, in the English and Italian languages, both texts being equally authentic, this 23rd day of November 1964.

For the Government of the United States of America

G. FREDERICK REINHARDT

For the Government of the Italian Republic

ATTILIO CATTANI

ANNEX A

PUBLIC LAW 85-256 85th CONGRESS, H. R. 7383 SEPTEMBER 2, 1957

AN ACT

71 Stat. 576.

To amend the Atomic Energy Act of 1954, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Atomic Energy Act of 1954, as amended, is amended by adding a new subsection to read as follows:

Nuclear damages. Availability of funds. 68 Stat. 921. 42 USC 2012.

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

SEC. 2. Subsection 53 e. (8) of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

License conditions. 22 USC 2073.

"(8) except to the extent that the indemnification and limitation of liability provisions of section 170 apply, the licensee will hold the United States and the Commission harmless from any damages resulting from the use or possession of special nuclear material by the licensee."

SEC. 3. Section 11 of the Atomic Energy Act of 1954, as amended, is amended by adding thereto the following new subsections, and redesignating the other subsections accordingly:

Definitions. 68 Stat. 922; 70 Stat. 1069. 42 USC 2014.

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

"n. The term 'licensed activity' means an activity licensed pursuant to this Act and covered by the provisions of section 170 a."

"o. The term 'nuclear incident' means any occurrence within the United States causing bodily injury, sickness, disease, or death, or loss of or damage to property, or for loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or by product material."

"r. The term 'person indemnified' means the person with whom an indemnity agreement is executed and any other person who may be liable for public liability."

"u. The term 'public liability' means any legal liability arising out of or resulting from a nuclear incident, except claims under State or Federal Workmen's Compensation Acts of employees of persons indemnified who are employed at the site of and in connection with the activity where the nuclear incident occurs, and except for claims arising out of an act of war. 'Public liability' also includes damage to property of persons indemnified: *Provided,* That such property is covered under the terms of the financial protection required, except property which is located at

the site of and used in connection with the activity where the nuclear incident occurs."

68 Stat. 919.
42 USC 2011 note.

SEC. 4. The Atomic Energy Act of 1954, as amended, is amended by adding thereto a new section, with the appropriate amendment to the table of contents:

"SEC. 170. INDEMNIFICATION AND LIMITATION OF LIABILITY. —

42 USC 2133, 2134, 2235, 2073, 2093, 2111.

"a. Each license issued under section 103 or 104 and each construction permit issued under section 185 shall, and each license issued under section 53, 63, or 81 may, have as a condition of the license a requirement that the licensee have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with subsection 170 b. to cover public liability claims. Whenever such financial protection is required, it shall be a further condition of the license that the licensee execute and maintain an indemnification agreement in accordance with subsection 170 c. The Commission may require, as a further condition of issuing a license, that an applicant waive any immunity from public liability conferred by Federal or State law.

Indemnification agreement.

Waiver.

Liability insurance.

"b. The amount of financial protection required shall be the amount of liability insurance available from private sources, except that the Commission may establish a lesser amount on the basis of criteria set forth in writing, which it may revise from time to time, taking into consideration such factors as the following: (1) the cost and terms of private insurance, (2) the type, size, and location of the licensed activity and other factors pertaining to be hazard, and (3) the nature and purpose of the licensed activity: *Provided*, That for facilities designed for producing substantial amounts of electricity and having a rated capacity of 100,000 electrical kilowatts or more, the amount of financial protection required shall be the maximum amount available from private sources. Such financial protection may include private insurance, private contractual indemnities, self insurance, other proof of financial responsibility, or a combination of such measures.

Aggregate indemnity.

"c. The Commission shall, with respect to licenses issued between August 30, 1954, and August 1, 1967, for which it requires financial protection, agree to indemnify and hold harmless the licensee and other persons indemnified, as their interest may appear, from public liability arising from nuclear incidents which is in excess of the level of financial protection required of the licensee. The aggregate indemnity for all persons indemnified in connection with each nuclear incident shall not exceed $ 500,000,000 including the reasonable costs of investigating and settling claims and defending suits for damage. Such a contract of indemnification shall cover public liability arising out of or in connection with the licensed activity.

"d. In addition to any other authority the Commission may have, the Commission is authorized until August 1, 1967, to enter into agreements of indemnification with its contractors for the construction or operation of production or utilization facilities or other activities under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident. In such agreements of indemnification the Commission may require ist contractor to provide and maintain financial protection of such a type and in such amounts as the Commission shall determine to be appropriate to cover public liability arising out of or in connection with the contractual activity, and shall indemnify the persons

indemnified against such claims above the amount of the financial protection required, in the amount of $ 500,000,000 including the reasonable costs of investigating and settling claims and defending suits for damage in the aggregate for all persons indemnified in connection with such contract and for each nuclear incident. The provisions of this subsection may be applicable to lump sum as well as cost type contracts and to contracts and projects financed in whole or in part by the Commission.

Contracts.

" e. The aggregate liability for a single nuclear incident of persons indemnified, including the reasonable costs of investigating and settling claims and defending suits for damage, shall not exceed the sum of $ 500,000,000 together with the amount of financial protection required of the licensee or contractor. The Commission or any person indemnified may apply to the appropriate district court of the United States having venue in bankruptcy matters over the location of the nuclear incident, and upon a showing that the public liability from a single nuclear incident will probably exceed the limit of liability imposed by this section, shall be entitled to such orders as may be appropriate for enforcement of the provisions of this section, including an order limiting the liability of the persons indemnified, orders staying the payment of claims and the execution of court judgments, orders apportioning the payments to be made to claimants, orders permitting partial payments to be made before final determination of the total claims, and an order setting aside a part of the funds available for possible latent injuries not discovered until a later time.

Aggregate liability.

Application to U.S. district court.

" f. The Commission is authorized to collect a fee from all persons which whom an indemnification agreement is executed under this section. This fee shall be $ 30 per year per thousand kilowatts of thermal energy capacity for facilities licensed under section 103. For facilities licensed under section 104, and for construction permits under section 185, the Commission is authorized to reduce the fee set forth above. The Commission shall establish criteria in writing for determination of the fee for facilities licensed under section 104, taking into consideration such factors as (1) the type, size, and location of facility involved, and other factors pertaining to the hazard, and (2) the nature and purpose of the facility. For other licenses, the Commission shall collect such nominal fees as it deems appropriate. No fee under this subsection shall be less than $ 100 per year.

Collection of fee.

42 USC 2133, 2134, 2235.

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

Private insurance organizations.

Use of services.

41 USC 5.

" h. The agreement of indemnification may contain such terms as the Commission deems appropriate to carry out the purposes of this section. Such agreement shall provide that, when the Commission makes a determination that the United States will probably be required to make indemnity payments under this section, the Commission shall collaborate with any person indemnified and may approve the payment of any claim under the agreement of indemnification, appear through the Attorney General on behalf of the person indemnified, take charge of such action, and settle or

Termes of settlement.

defend any such action. The Commission shall have final authority on behalf of the United States to settle or approve the settlement of any such claim on a fair and reasonable basis with due regard for the purposes of this Act. Such settlement may include reasonable expenses in connection with the claim incurred by the person indemnified.

Survey of causes.

" i. After any nuclear incident which will probably require payments by the United States under this section, the Commission shall make a survey of the causes and extent of damage which shall forthwith be reported to the Joint Committee, and, except as forbidden by the provisions of chapter 12 of this Act or any other law or Executive order, all final findings shall be made available to the public, to the parties involved and to the courts. The Commission shall report to the Joint Committee by April 1, 1958, and every year thereafter on the operations under this section.

68 Stat. 940.
42 USC 2161.
Report to Congress.

Contracts in advance of appropriations.

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

31 USC 665.

" SEC. 5. The Atomic Energy Act of 1954, as amended, is amended by adding thereto a new section, making the appropriate amendment to the table of contents, as follows:

" SEC. 29. ADVISORY COMMITTEE ON REACTOR SAFEGUARDS. — There is hereby established an Advisory Committee on Reactor Safeguards consisting of a maximum of fifteen members appointed by the Commission for terms of four years each. The Committee shall review safety studies and facility license applications referred to it and shall make reports thereon, shall advise the Commission with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards, and shall perform such other duties as the Commission may request. One member shall be designated by the Committee as its Chairman. The members of the Committee shall receive a per diem compensation for each day spent in meetings or conferences, or other work of the Committee, and all members shall receive their necessary traveling or other expenses while engaged in the work of the Committee. The provisions of section 163 shall be applicable to the Committee. "

42 USC 2203.
Licence applications.
68 Stat. 953;
70 Stat. 1069.
42 USC 2232.

SEC. 6. Section 182 of the Atomic Energy Act of 1954, as amended, is amended by redesignating subsection b. as subsection c. and subsection c. as subsection d., and by inserting the following subsection as a new subsection b. immediately after subsection a.:

Report.
42 USC 2133, 2134.

" b. The Advisory Committee on Reactor Safeguards shall review each application under section 103 or 104 b. for a license for a facility, any application under section 104 c. for a testing facility, and any application under section 104 a. or c. specifically referred to it by the Commission, and shall submit a report thereon, which shall be made part of the record of the application and available to the public, except to the extent that security classification prevents disclosure. "

42 USC 2239.
Hearing.
Publication in F.R.
42 USC 2133, 2134.

SEC. 7. Section 189 a. of the Atomic Energy Act of 1954, as amended, is amended by adding the following sentence at the end thereof: " The Commission shall hold a hearing after thirty days notice and publication once in the Federal Register on each application under section 103 or 104 b. for a license for a facility, and on any application under section 104 c. for a license for a testing facility. "

Approved September 2, 1957.

ANNEX B

PUBLIC LAW 85-602 85th CONGRESS, S. 4165 AUGUST 8, 1958

AN ACT

To amend the Atomic Energy Act of 1954, as amended.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 11 o. of the Atomic Energy Act of 1954, as amended, is amended by substituting a colon for the period at the end thereof and adding the following: " *Provided, however*, That as the term is used in subsection 170 l., it shall mean any such occurrence outside of the United States rather than within the United States. "

Nuclear ship *Savannah.*
71 Stat. 576.
42 USC 2014.

SEC. 2. Section 170 of the Atomic Energy Act of 1954, as amended, is amended by adding at the end thereof the following new subsections:

71 Stat. 576.
42 USC 2210.

" l. The Commission is authorized until August 1, 1967, to enter into an agreement of indemnification with any person engaged in the design, development, construction, operation, repair, and maintenance or use of the nuclear-powered ship authorized by section 716 of the Merchant Marine Act, 1936, and designated the ' nuclear ship Savannah '. In any such agreement of indemnification the Commission may require such person to provide and maintain financial protection of such a type and in such amounts as the Commission shall determine to be appropriate to cover public liability arising from a nuclear incident in connection with such design, development, construction, operation, repair, maintenance or use and shall indemnify the person indemnified against such claims above the amount of the financial protection required, in the maximum amount provided by subsection e. including the reasonable costs of investigating and settling claims and defending suits for damage. "

Indemnification agreements.
70 Stat. 731.
46 USC 1206.

SEC. 2. Section 170 e. of the Atomic Energy act of 1954, as amended, is amended by deleting the second sentence thereof and inserting in lieu thereof the following: " The Commission or any person indemnified may apply to the appropriate district court of the United States having venue in bankruptcy matters over the location of the nuclear incident, except that in the case of nuclear incidents caused by ships of the United States outside of the United States, the Commission or any person indemnified may apply to the appropriate district court of the United States having venue in kankruptcy matters over the location of the principal place of business of the shipping company owning or operating the ship, and upon a showing that the public liability from a single nuclear incident will probably exceed the limit of liability imposed by this section, shall be entitled to such orders as may be appropriate for enforcement of the provisions of this section, including an order limiting the liability of the persons indemnified, orders staying the payment of claims and the execution of court judgments, orders apportioning the payments to be made to claimants, orders permitting partial payments to be made before final determination of the total claims, and an order setting aside a part of the funds available for possible latent injuries not discovered until a later time. "

Limitation of liability.
42 USC 2210.
72 Stat. 525.
72 Stat. 526.

Approved August 8, 1958.

(*Traduzione non ufficiale*)

ALLEGATO A

ORDINANZA PUBBLICA 85-256 85° CONGRESSO, H. R. 7383 2 SETTEMBRE 1957

LEGGE

71 Stat. 576

Per emendare la legge sull'Energia atomica del 1954, già emendata e per altri scopi.

Danni nucleari. Disponibilità di fondi. 68 Stat. 921. 42 USC 2012.

Il Senato e la Camera dei rappresentanti degli Stati Uniti d'America riuniti in assemblea decretano che la 2ª Sezione della legge sull'energia atomica del 1954, già emendata, venga (ulteriormente) emendata con l'aggiunta di una nuova sottosezione così compilata:

« i. Nell'intento di proteggere la popolazione e di incoraggiare lo sviluppo dell'industria dell'energia atomica, nell'interesse del benessere generale e della difesa e della sicurezza comuni, gli Stati Uniti possono mettere a disposizione dei fondi per riparare una parte dei danni sofferti dalla popolazione in conseguenza di incidenti nucleari, limitando nel contempo la responsabilità delle persone cui tali danni siano attribuibili ».

Condizioni per il rilascio di autorizzazioni.

SEZ. 2. Sottosezione 53 e. (8) della legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata nel modo seguente:

« (8) Salvo quanto si riferisce alle clausole della sezione 170 relative al risarcimento ed alla limitazione della responsabilità, il titolare di un permesso libererà gli Stati Uniti e la Commissione da ogni responsabilità nascente dall'uso o dal possesso di particolari materiali nucleari ».

Definizioni. 68 Stat. 922. 70 Stat. 1069. 42 USC 2014.

SEZ. 3. La sezione 11 della legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata aggiungendo le nuove sottosezioni seguenti e modificando di conseguenza le altre sottosezioni:

« j. Il termine " copertura finanziaria " sta ad indicare la capacità di rispondere dei danni verso la popolazione, di far fronte alle spese relative alle indagini, alla difesa dalle rivendicazioni ed alla definizione delle cause per tali danni ».

« n. Il termine " attività autorizzata " sta ad indicare un'attività autorizzata in base alla presente legge e protetta dalle clausole della sezione 170 a ».

« o. Il termine " incidente nucleare " sta ad indicare ogni evento che, entro i confini degli Stati Uniti, causi danno corporale, malattia, infermità o morte, o la perdita della proprietà o danni ad essa, o la perdita dell'uso della proprietà derivante o risultante dagli effetti radioattivi, tossici, esplosivi o altri effetti pericolosi derivanti dalle materie grezze nucleari o da materie speciali nucleari o dai loro sottoprodotti ».

« r. Il termine " persona indennizzata " (1) sta ad indicare la persona con la quale viene concluso un accordo di indennizzo o qualsiasi altra persona che possa essere tenuta a rispondere di una pubblica responsabilità ».

« u. Il termine " responsabilità pubblica " sta ad indicare ogni responsabilità legale derivante o risultante da un incidente nucleare, eccettuati i reclami fatti in base a leggi federali o al " Federal Workmen's Compensation Act " relativi ai dipendenti di persone risarcite che sono impiegati sul luogo di un incidente nucleare ed in relazione alle attività ove si verifica l'incidente, eccettuati inoltre i reclami conseguenti ad atti di guerra. La " responsabilità pubblica " include anche i danni alla proprietà delle persone risarcite, *a condizione che* tale proprietà sia coperta dalle clausole della protezione finanziaria richiesta, eccettuata la proprietà situata sul luogo ove avviene l'incidente nucleare usata in relazione alle attività connesse a detto incidente ».

SEZ. 4. La legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata con l'aggiunta di una nuova sezione, e con le conseguenti modifiche da apportarsi all'indice:

68 Stat. 919. 42 USC 2011 note.

« SEZ. 170. RISARCIMENTO E LIMITAZIONE DI RESPONSABILITÀ ».

42 USC 2133, 2134, 2235, 2073, 2093, 2111.

« a. Ogni autorizzazione rilasciata in base alle sezioni 103 o 104 ed ogni permesso di costruzione rilasciato in base alla sezione 185, debbono prescrivere, come condizione per il rilascio dell'autorizzazione o del permesso, che l'autorizzato possieda e mantenga una copertura finanziaria del tipo, e nella misura che la Commissione richiederà in base alla sottosezione 170 b. a copertura dei reclami relativi alla responsabilità pubblica. La stessa condizione può essere prescritta per ogni autorizzazione rilasciata in base alle sezioni 53, 63 o 81. Ogni qual volta tale copertura finanziaria sia richiesta, al titolare di una licenza verrà imposta un'ulteriore condizione consistente nell'osservare e nel mantenere un accordo di indennizzo in base alla sottosezione 170 c. La Commissione può richiedere, come ulteriore condizione per il rilascio di un'autorizzazione, che il richiedente rinunci ad ogni esenzione dalla responsabilità verso la popolazione conferitagli dalla legge federale o statale ».

Accordo di indennizzo.

Rinuncia.

« b. L'ammontare della copertura finanziaria richiesta corrisponderà all'ammontare della copertura assicurativa per la responsabilità contratta con compagnie assicuratrici, eccettuato il caso in cui la Commissione stabilisca un ammontare inferiore sulla base di criteri stabiliti per iscritto, che essa può modificare in qualsiasi momento, tenendo in considerazione i seguenti fattori: (1) costo e condizioni dell'assicurazione privata; (2) tipo, dimensioni ed ubicazione dell'attività autorizzata unitamente ad altri fattori relativi al rischio e (3) la natura e lo scopo dell'attività autorizzata *a condizione che* per impianti destinati alla produzione di importanti quantitativi di energia elettrica aventi una potenza di 100.000 kilowatt elettrici o più,

Assicurazione contro la responsabilità.

(1) Con il termine « persona indennizzata » usato nella presente legge e in quella che segue, il legislatore americano intende riferirsi alle imprese munite di regolare autorizzazione o ad altre imprese autorizzate all'esercizio di attività nucleari, le quali, in caso di incidente nucleare, sono beneficiarie dei risarcimenti fissati dalla legge sia a copertura dei danni da esse subìti, sia dei danni subìti da altre imprese o da privati cittadini, al cui risarcimento debba provvedere, direttamente o per delega, l'impresa munita di regolare autorizzazione.

l'ammontare della copertura finanziaria richiesta corrisponda all'ammontare massimo ottenibile da compagnie assicuratrici.
Tale copertura finanziaria può includere le assicurazioni private, le indennità contrattuali private, le auto-assicurazioni, altri mezzi documentati di copertura finanziaria, o una combinazione di tali garanzie ».

Indennizzo globale.

« c. La Commissione dovrà, per le autorizzazioni accordate fra il 30 agosto 1954 ed il 1° agosto 1967 per le quali si richiede una copertura finanziaria, acconsentire ad indennizzare ed a sollevare il titolare dell'autorizzazione ed altre persone indennizzate da ogni pubblica responsabilità derivante da incidenti nucleari che ecceda il limite di copertura finanziaria richiesto al titolare della autorizzazione.
L'indennità globale per tutti gli indennizzati in relazione ad ogni incidente nucleare non dovrà eccedere i 500.000.000 di dollari, incluso un ragionevole ammontare per le spese relative alle indagini, alla difesa delle rivendicazioni e alla definizione delle cause per danni.
Tale contratto di indennizzo dovrà coprire la responsabilità pubblica derivante dall'attività autorizzata o in relazione ad essa ».

« d. In aggiunta a tutte le facoltà di cui gode, la Commissione è autorizzata, fino al 1° agosto 1967, a stipulare accordi di indennizzo con i suoi imprenditori incaricati della costruzione o della conduzione di impianti di produzione o di utilizzazione, o incaricati di altre attività in appalto nell'interesse degli Stati Uniti comportanti attività in cui si corra il rischio di responsabilità pubblica per gravi incidenti nucleari. In tali accordi di indennizzo, la Commissione potrà richiedere ai suoi imprenditori di provvedere a mantenere una copertura finanziaria del tipo e nello ammontare che la Commissione giudicherà necessari per coprire la responsabilità pubblica derivante dall'attività contrattuale o con essa connessa e risarcirà le persone indennizzate relativamente ai reclami che superino lo ammontare della copertura finanziaria richiesta, sino alla somma di 500 milioni di dollari, incluso un ragionevole ammontare per le spese relative alle indagini, alla difesa delle rivendicazioni ed alla definizione delle cause per danni globali subìti da tutti gli indennizzati in relazione a tale contratto e per ogni incidente nucleare.

Contratti.

Le disposizioni della presente sottosezione sono applicabili sia ai contratti per una somma globale, che ai contratti a consuntivo o a contratti e progetti finanziati in tutto o in parte della Commissione.

Responsabilità totale.

« e. La responsabilità per ogni singolo incidente nucleare verso le persone indennizzate, incluso un ragionevole ammontare per le spese relative alle indagini, alla difesa delle rivendicazioni e alla definizione delle cause per danni, non eccederanno la cifra di 500.000.000 di dollari, ivi incluso lo ammontare della copertura finanziaria richiesta al titolare della autorizzazione o all'imprenditore. La Commissione od ogni altra persona indennizzata possono ricorrere al Tribunale distrettuale degli Stati Uniti avente competenza in materia fallimentare nel luogo dell'incidente nucleare e, dopo aver provato che la responsabilità pubblica derivante da un singolo incidente nucleare eccede probabilmente il limite di responsabilità fissato dalla presente sezione, potranno ottenere delle ordinanze atte a dare esecuzione alle disposizioni della presente sezione, incluse le ordinanze che limitino la responsabilità delle persone indennizzate; delle ordinanze che stabiliscano il pagamento degli indennizzi e l'esecuzione delle sentenze del Tribunale;

Ricorso al Tribunale distrettuale degli SU

delle ordinanze che ripartiscano i versamenti da effettuarsi a favore dei richiedenti; delle ordinanze che consentano pagamenti parziali da effettuarsi prima della definizione conclusiva dell'insieme dei ricorsi, nonché un'ordinanza che provveda all'accantonamento di parte dei fondi disponibili per risarcire possibili danni latenti eventualmente denunciati in tempi successivi.

Esazione delle tasse.

42 USC 2133, 2134, 2235.

« f. La Commissione è autorizzata ad esigere una tassa da tutti coloro nei confronti dei quali si applica un accordo di indennizzo in base alla presente sezione. Tale tassa ammonterà a 30 dollari l'anno per ogni mille kilowatts di potenza termica per gli impianti autorizzati in base alla sezione 103. Per gli impianti autorizzati in base alla sezione 104 e per i permessi di costruzione di cui alla sezione 185, la Commissione è autorizzata a ridurre la tassa summenzionata. La Commissione stabilirà per iscritto i criteri per la determinazione della tassa per gli impianti autorizzati in base alla sezione 104, prendendo in considerazione i seguenti fattori: (1) tipo, dimensioni ed ubicazione dell'impianto in questione, unitamente ad altri fattori relativi al rischio e, (2) la natura e lo scopo dell'impianto. Per le altre autorizzazioni, la Commissione esigerà le tasse nominali che riterrà opportune. In ogni caso nessuna tassa di cui alla presente sottosezione dovrà essere inferiore ai 100 dollari l'anno.

Compagnie di Assicurazioni private. Uso dei loro servizi.

41 USC 5.

« g. Nell'applicare le disposizioni della presente sezione, la Commissione farà ricorso, per quanto possibile, alla collaborazione delle compagnie di assicurazioni private; essa potrà impegnarsi a versare un ragionevole compenso per tali servizi. Ogni contratto stipulato in base alle disposizioni della presente sottosezione può essere concluso senza tener conto delle disposizioni della sezione 3709 dei " Revised Statutes " già emendati, previa dimostrazione da parte della Commissione che la pubblicità è irrealizzabile e che dei pagamenti anticipati possono essere effettuati.

Condizioni di transazione.

« h. L'accordo di indennizzo può contenere tutte le condizioni che la Commissione riterrà appropriate al raggiungimento dei fini della presente sezione. Tale accordo dovrà prevedere inoltre che, qualora la Commissione giunga alla conclusione che gli Stati Uniti potranno essere richiesti di effettuare dei versamenti per indennizzo ai sensi della presente sezione, la Commissione collaborerà con ogni persona indennizzata e potrà approvare il pagamento di ogni reclamo in base all'accordo di indennizzo, nonché comparire nella persona del Procuratore generale a nome della persona indennizzata, assumere la condotta di tale azione e comporre o difendere qualsiasi azione del genere. La Commissione avrà in nome degli Stati Uniti, l'autorità definitiva per regolare o approvare la composizione di qualsiasi reclamo del genere su basi eque e ragionevoli tenuti presenti gli scopi della presente legge. Tale composizione potrà comprendere il rimborso di spese ragionevoli in relazione alla richiesta di indennizzo della persona indennizzata. ».

Analisi delle cause.

68 Stat. 940; 42 USC 2161. Rapporto al Congresso.

« i. Dopo il verificarsi di ogni incidente nucleare che abbia comportato i pagamenti da parte degli Stati Uniti ai sensi della presente sezione, la Commissione effettuerà un'analisi delle cause e della estensione del danno che sarà immediatamente comunicata al " Joint Committee " e, tranne quanto vietato dalle disposizioni del capitolo 12 della presente legge o di ogni altra legge o decreto, tutte le conclusioni di essa saranno rese note al pubblico, alle parti in causa ed ai Tribunali. La Commissione riferirà al " Joint Committee ", il 1° aprile 1958 e, successivamente, tutti gli anni, circa le operazioni effettuate in base alla presente sezione.

« j. Nell'applicare le disposizioni contenute nella presente sezione, la Commissione potrà stipulare contratti prima che siano stanziati gli importi necessari, e assumere obbligazioni in deroga alle disposizioni di cui alla sezione 3679 dei *Revised Statutes*, già emendati ».

Contratti conclusi prima degli stanziamenti.
31 USC 665.

SEZ. 5. La legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata con l'aggiunta della seguente sezione, apportando le conseguenti modifiche all'indice:

« SEZ. 29. COMITATO CONSULTIVO SULLA SICUREZZA DEI REATTORI. — Viene con la presente sezione istituito un Comitato consultivo sulla sicurezza dei Reattori composto al massimo di 15 membri, nominati dalla Commissione per un periodo di 4 anni. Il Comitato riesaminerà le analisi relative alla sicurezza e alle richieste di autorizzazioni di impianti che gli verranno sottoposte e redigerà i relativi rapporti; fornirà pareri alla Commissione relativamente ai pericoli degli impianti di reattori esistenti o in progetto e all'adeguatezza degli standards di sicurezza proposti per i reattori e porterà a termine qualsiasi altro incarico che la Commissione potrà affidargli. Uno dei membri verrà designato dal Comitato come Presidente. I membri del Comitato riceveranno un compenso per ogni giorno speso in riunioni o conferenze, o in altri lavori del Comitato e ogni membro riceverà il rimborso delle spese di viaggio o di altro genere sostenute nel corso dei lavori del Comitato. Le disposizioni contenute nella sezione 163 saranno applicabili al Comitato ».

SEZ. 6. La sezione 182 della legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata indicando la sottosezione b. come sottosezione c. e la sottosezione c. come sottosezione d., ed inserendo la seguente sottosezione quale nuova sottosezione b., subito dopo la sottosezione a.:

42 USC 2203.
Richieste di autorizzazioni.
68 Stat. 953; 70 Stat. 1069.
42 USC 2232.
Rapporto.
42 USC 2133, 2134.

« b. Il Comitato consultivo sulla sicurezza dei Reattori riesaminerà ogni richiesta in base alla sezione 103 o 104 b. per una autorizzazione di impianto, ogni richiesta fatta in base alla sezione 104 c. per un impianto di prova ed ogni richiesta fatta in base alla sezione 104 a. o c. alla quale la Commissione faccia speciale riferimento, e sottoporrà un rapporto al riguardo che farà parte della documentazione allegata alla richiesta ed accessibile al pubblico, salvo i casi in cui ragioni di sicurezza ne vietino la divulgazione ».

SEZ. 7. La sezione 189 a. della legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata aggiungendo alla fine di essa la seguente frase: « La Commissione terrà udienza, con preavviso di 30 giorni e previa inserzione una sola volta nella *Gazzetta Ufficiale* degli USA, per qualsiasi richiesta fatta in base alle sezioni 103 o 104 b. per un'autorizzazione di impianto, e per qualsiasi richiesta fatta in base alla sezione 104 c. per un'autorizzazione per un impianto di prova ».

42 USC 2239.
Udienza, Pubblicazione nella Gazzetta Ufficiale degli U.S.A.
42 USC 2133, 2134.

Approvata il 2 settembre 1957.

ALLEGATO B

LEGGE 85-602 85° CONGRESSO S. 4165 8 AGOSTO 1958

LEGGE

Per emendare la legge sull'Energia atomica del 1954 già emendata.

Il Senato e la Camera dei rappresentanti degli Stati Uniti d'America riuniti in Assemblea decretano che la sezione 11 o. della legge sull'Energia atomica del 1954, già emendata, sia (ulteriormente) emendata mettendo due punti alla fine del periodo ed aggiungendo quanto segue: « a condizione che l'espressione usata nella sottosezione 170 l., sia intesa ad indicare qualsiasi evenienza del genere che abbia luogo all'esterno degli Stati Uniti piuttosto che all'interno di essi ».

Nave nucleare *Savannah*.
71 Stat. 576.
42 USC 2014.

SEZ. 2. La sezione 170 della legge sull'Energia atomica del 1954, già emendata, viene (ulteriormente) emendata aggiungendo alla fine di essa le seguenti nuove sottosezioni:

71 Stat. 576.
42 USC 2210.

« l. La Commissione viene autorizzata sino al 1° agosto 1967 a concludere accordi di indennizzo con qualsiasi persona interessata alla progettazione, allo sviluppo, alla costruzione, alla conduzione, alla riparazione e alla manutenzione o uso della nave a propulsione nucleare autorizzata dalla sezione 716 della legge per la Marina mercantile del 1936 e denominata « nave nucleare *Savannah* ». In qualsiasi accordo di indennizzo del genere, la Commissione può richiedere alla detta persona di provvedere e mantenere una copertura finanziaria del tipo e per l'ammontare che la Commissione riterrà adeguati a coprire la responsabilità pubblica derivante da incidenti nucleari in relazione alla suddetta progettazione, sviluppo, costruzione, conduzione, riparazione, manutenzione od uso e dovrà risarcire la persona indennizzata contro i reclami che superino l'ammontare della copertura finanziaria richiesta, sino all'ammontare massimo previsto dalla sottosezione e, ivi incluse le ragionevoli spese relative alle indagini, alla difesa delle rivendicazioni e alla definizione delle cause per danni ».

Accordi di indennizzo.

70 Stat. 731.
46 USC 1206.

SEZ. 2. La sezione 170 e. della legge sull'energia atomica del 1954, già emendata viene (ulteriormente) emendata abrogando la seconda frase contenuta in essa e sostituendola con la seguente: « La Commissione o qualsiasi persona indennizzata possono ricorrere al Tribunale distrettuale degli Stati Uniti avente competenza in materia fallimentare nel luogo dell'incidente nucleare. Qualora l'incidente nucleare sia causato da navi degli Stati Uniti al di fuori del territorio degli Stati Uniti, la Commissione o qualsiasi persona indennizzata possono ricorrere al Tribunale distrettuale degli Stati Uniti, avente competenza in materia fallimentare, nel luogo sede principale di affari della Compagnia armatrice proprietaria della nave o che la impiega e dopo aver provato che la responsabilità pubblica derivante da un singolo incidente nucleare eccede probabilmente i limiti di responsabilità fissati dalla presente sezione. In tali casi la Commissione o qualsiasi persona indennizzata potranno ottenere delle ordinanze atte ad eseguire quanto disposto dalla presente sezione, incluse ordinanze che limitano la responsabilità delle persone indennizzate; delle ordinanze che stabiliscano il pagamento dei reclami e l'esecuzione delle sentenze del Tribunale; delle ordinanze che ripartiscano i versamenti da effettuarsi a favore dei richiedenti; delle ordinanze che consentano pagamenti parziali da effettuarsi prima della definizione conclusiva dell'insieme dei ricorsi, nonché una ordinanza che provveda all'accantonamento di parte dei fondi disponibili per risarcire danni latenti, eventualmente denunciati in tempi successivi ».

Limitazione di responsabilità.
42 USC 2210.

72 Stat. 525.
72 Stat. 526.

Approvata l'8 agosto 1958.

No. 551

The Embassy of the United States of America presents its compliments to the Ministry of Foreign Affairs of the Government of Italy and has the honor to refer to the Agreement of November 23, 1964 concerning visits of the N.S. Savannah to Italy and to recent conversations with respect to the situation arising from the operation of the N.S. Savannah by a private company, rather than by the Maritime Administration of the United States Government, and from the fact that an indemnity agreement between the United States Atomic Energy Commission and the private company has taken the place of the indemnity agreement between the United States Atomic Energy Commission and the United States Maritime Administration.

In view of the inapplicability of the Agreement of November 23, 1964 to the new situation, the Embassy proposes that the following shall constitute the agreement between the two Governments in the new situation.

Within the limitation of liability set by United States Public Law 85-256 (Annex *A*), as amended by 85-602 (Annex *B*), in any legal action or proceeding brought *in personam* against the operator of the N. S. Savannah in an Italian court, the United States Government will provide compensation by way of indemnity for any legal liability which an Italian court may find for any damage to people or goods deriving from a nuclear incident in connection with, arising out of or resulting from the operation, repair, maintenance or use of the N. S. Savannah, in which the N. S. Savannah may be involved within Italian territorial waters, or outside of them on a voyage to or from Italian ports if damage is caused in Italy or on ships of Italian registry. Within the $ 500 million limitation in such public laws, the operator of the ship shall be subject to the jurisdiction of the Italian court and shall not invoke the provisions of Italian law or any other law relating to the limitation of shipowner's liability.

If the Italian Government agrees with the above proposal, the Embassy proposes that this note and the Ministry's affirmative reply shall constitute an agreement between the two Governments which shall enter into force on the date of the reply and remain in force unless terminated by either Government on ninety days written notice.

The Embassy of the United States of America takes this occasion to renew to the Ministry of Foreign Affairs the assurances of its highest consideration.

EMBASSY OF THE UNITED STATES OF AMERICA,

Rome, December 16, 1965.

MINISTERO DEGLI AFFARI ESTERI 45/25852

NOTA VERBALE

Il Ministero degli affari esteri ha l'onore di riferirsi alla Nota verbale dell'Ambasciata degli Stati Uniti d'America del 16 dicembre 1965 concernente un accordo tra il Governo degli Stati Uniti e il Governo italiano in relazione alla nave « Savannah ».

Il Ministero degli affari esteri esprime l'approvazione del Governo italiano al testo dell'Accordo quale esso risulta da detta Nota verbale:

« Nei limiti della responsabilità fissati dalla " United States Public Law 85-256 " (allegato *A*) come emendata dalla legge 85-602 (allegato *B*), in qualsiasi azione o procedimento legale intentati *in personam* nei confronti del gestore della nave *Savannah* in un tribunale italiano, il Governo degli Stati Uniti pagherà un compenso sotto forma di indennizzo per qualsiasi responsabilità legale che sia accertata da un tribunale italiano per qualsiasi danno alle persone o alle cose causato da un incidente nucleare — connesso, derivante o risultante da operazioni, riparazioni, manutenzione o impiego della nave — in cui la nave nucleare Savannah sia coinvolta nelle acque territoriali italiane, o fuori di esse quando essa sia in viaggio verso porti italiani o da porti italiani, se il danno viene causato in Italia o a bordo di navi di matricola italiana.

Entro il limite di cinquecento milioni di dollari fissato dalle leggi 85-256 e 85-602, il gestore della nave sarà soggetto alla giurisdizione dei tribunali italiani e non potrà avvalersi di disposizioni della legge italiana o di qualsiasi altra legge relative alla limitazione della responsabilità degli armatori ».

Il Ministero degli affari esteri conferma che il testo suddetto costituisce un accordo tra i due Governi, il quale entra in vigore con decorrenza immediata ed è destinato a restare in vigore fino a denuncia di una delle due parti, con preavviso scritto di novanta giorni.

Il Ministero degli affari esteri coglie l'occasione per rinnovare all'Ambasciata degli Stati Uniti d'America i sensi della sua più alta considerazione.

ALL'AMBASCIATA DEGLI STATI UNITI D'AMERICA — ROMA

Roma, 16 dicembre 1965.

No. 552

The Embassy of the United States of America presents its compliments to the Ministry of Foreign Affairs of the Government of Italy and has the honor to refer to discussions regarding the operation of the N.S. Savannah. In connection with the operation of the N.S. Savannah, the Government of the United States wishes to inform the Government of Italy that the operator of the N.S. Savannah is required under the license issued by the United States Government to dispose of radioactive liquid, gaseous, or solid wastes in accordance with FAST-1 (N.S. Savannah Technical Specifications) of July 1965, which is attached hereto. The United States Government will notify the Italian Government of any changes in FAST-1.

The Embassy of the United States of America takes this occasion to renew to the Ministry of Foreign Affairs the assurances of its highest consideration.

Enclosure: as stated.

EMBASSY OF THE UNITED STATES OF AMERICA,

Rome, December 16, 1965.

MINISTERO DEGLI AFFARI ESTERI 45/25851/1508

NOTA VERBALE

Il Ministero degli affari esteri ha l'onore di riferirsi alla Nota verbale dell'Ambasciata degli Stati Uniti d'America del 16 dicembre 1965 concernente lo scarico di materiali radioattivi liquidi, gassosi o solidi da parte della nave « Savannah », qui di seguito trascritta e del cui contenuto prende debita nota:

« In relazione alle operazioni della nave Savannah, il Governo degli Stati Uniti informa il Governo italiano che il gestore della nave Savannah potrà, in virtù della licenza rilasciatagli dal Governo degli Stati Uniti, scaricare rifiuti radioattivi liquidi, gassosi o solidi solo secondo quanto consentito dal documento FAST-1 (N. S. Savannah Technical Specifications) del luglio 1965, qui annesso.

Il Governo degli Stati Uniti notificherà al Governo italiano qualsiasi mutamento che dovesse essere apportato al documento FAST-1 ».

Il Ministero degli affari esteri desidera d'altra parte informare l'Ambasciata degli Stati Uniti, in relazione alle conversazioni avutesi circa le operazioni della nave Savannah, che, nelle acque italiane, quella nave sarà sottoposta alle misure di controllo ritenute opportune o necessarie dal Ministero della marina mercantile italiana.

Il Ministero degli affari esteri coglie l'occasione per rinnovare all'Ambasciata degli Stati Uniti d'America i sensi della sua più alta considerazione.

ALL'AMBASCIATA DEGLI STATI UNITI D'AMERICA — ROMA

Roma, 16 dicembre 1965.

FAST-1 (Revision 1)

NS SAVANNAH

TECHNICAL SPECIFICATIONS

JULY 1965

FIRST ATOMIC SHIP TRANSPORT INC.
New York, New York

CONTENTS

INTRODUCTION

The following Technical Specifications together with the Port Operation Criteria contain the significant design and operating limitations pertaining to the NS SAVANNAH Nuclear Merchant Ship Reactor and, in these matters, supersede all other documents. These criteria are designed to assure the health and safety of the public in all operations of the NS SAVANNAH.

First Atomic Ship Transport Inc. (the " Licensee ") may make changes in the procedures, or conduct tests, unless the proposed change or test involves a change in these Technical Specifications or an unreviewed safety question.

In obeying and construing these rules, the Master shall give due regard for the dangers of navigation and hazards which may render a departure from the Technical Specifications necessary to avoid immediate danger.

A. Site

1. The nuclear plant described in these specifications shall be located on board the NS SAVANNAH.

2. The NS SAVANNAH is designed to operate as a cargo-passenger ship. All normal activities required to accomplish operation shall be carried out on board the ship.

3. The decks outboard of the reactor space shall be strengthened for collision protection to form the principal barrier to penetration of the reactor space. Additional collision resistance shall be obtained from a complex formed by the concrete secondary shield, the redwood and steel collision mat, and the longitudinal bulkheads. The collision mat shall be composed of alternate layers of 1-inch steel plates and 3-inch slabs of redwood extending from " C " Deck to the 14-foot level and 15 feet fore and aft from the center of the containment vessel. Assuming average load and speed conditions, the number of ships that at any time could possess sufficient kinetic energy to penetrate, in a collision, the SAVANNAH's reactor compartment longitudinal bulkhead constitutes less than 1% of the world's merchant vessel fleet.

B. Containment

1. The carbon steel containment vessel, and its penetrations, shall be designed to contain an internal pressure of 173 psig. At 60 psig, the maximum permissible total leakage rate of the containment vessel (including penetrations) shall be 1.20% of the free volume of the containment vessel in 24 hours. The containment vessel shall be a cylinder with hemispherical ends, approximately 35 feet in diameter and 50,5 feet in length, with a free volume of approximately 30,000 cubic feet. The containment vessel shall contain approximately 317 individual electrical penetrations and 98 piping penetrations. Support shall be provided to ensure that the containment vessel shall remain in place at critical angles, including the capsized condition.

2. Two 18" × 24" manways in the bottom of the containment vessel shall be arranged to open inwardly to prevent collapse of the vessel in the event of sinking in deep water. The bolts securing the manway covers shall be designed to break when the hydrostatic pressure on the cover corresponds

to a maximum water depth of 100 feet. When the pressure inside the containment vessel balances that outside, a spring shall return the cover to the closed position, thus effectively resealing the vessel.

3. Additional electrical containment penetrations may be installed, as may piping penetrations of 2" ID or less, provided the new penetrations are the same or equal in design criteria to those originally installed and do not cause the leakage of the containment vessel to exceed the maximum total leakage rate specified in Section B.1. Containment penetrations may be removed or capped off provided the closures are equal in strength and leak tightness to the requirements set forth in Section B.1. Capped containment penetrations may be uncapped and put into service provided the penetrations are equal in strength and leak tightness to the requirements set forth in Section B.1.

4. Whenever more than one control rod is withdrawn, normal containment integrity shall be maintained. No personnel shall be permitted inside the containment vessel when the reactor is critical. Whenever the reactor is not critical, the following additional restrictions shall apply:

a. When the primary system temperature is greater than 300 F, access to the containment vessel shall be permitted through the air lock with one door closed at all times.

b. When the primary system temperature is less than 300 F and with the primary system pressurized up to and including 2200 psig, access to the containment vessel shall be permitted through the air lock with both air lock doors open, but these doors shall be continually manned to effect closure if required.

c. When the primary system temperature is less than 200 F, the containment vessel may be open under administrative controls which will provide reasonable assurance that no member of the general public will receive more than 25 rem whole body or 300 rem thyroid in the event of an accident.

5. A test to determine the leakage rate of the containment vessel shall be performed quarterly. An initial leak rate test shall be made with an internal pressure no less than 6 psig before leakage—reducing adjustments are made to penetration fittings, closure bolts, valve seats, or mechanisms. This test shall be conducted to indicate continuity of integrity between tests. Following this, another leak rate test shall be made with an internal pressure 60 $\pm$ 5 psig to demonstrate that total leakage rate of the containment vessel (including penetrations) does not exceed 1.20% of the free volume of the containment vessel in 24 hours at an internal pressure of 60 psig.

6. The oxygen in the containment vessel shall be maintained at a maximum concentration of 10% by volume whenever the reactor is at temperatures above 400 F or more than one control rod is withdrawn, except during the testing of the scram capabilities of the control rods.

7. The maximum ambient temperature shall be 150 F within the main portion of the containment vessel and 165 F within the cupola.

8. At least daily a reading from the containment pressure reference system or some other indication of containment integrity will be taken and logged.

9. The exterior door of the personnel air lock shall be tested at 10 psig for leak tightness prior to each reactor startup if it has been opened during the shutdown. Containment drain and purge valves shall be tested at 50 psig to demostrate leak tightness after each use. The pressure decay rate on the drain and purge valves shall not exceed 15 psi in 30 minutes.

C. Primary Coolant System

The primary coolant system shall be designed to consist of two loops to convert the heat in the primary coolant into steam, and includes piping, valves, coolant pumps, steam generators and a pressurizer to maintain and control the pressure in the primary coolant system.

1. *General Specifications*

a. The primary coolant system shall be designed to consist of two $12^5/_8$" ID piping loops which shall be austenitic stainless steel conforming to the ASTM Specification A376 TP304. Each loop shall have a 16" motor operated gate valve on the reactor inlet side and a 16" motor operated gate valve on the reactor outlet side. The reactor inlet gate valve shall open or close in approximately four minutes and the reactor outlet gate valve shall open or close in approximately one minute.

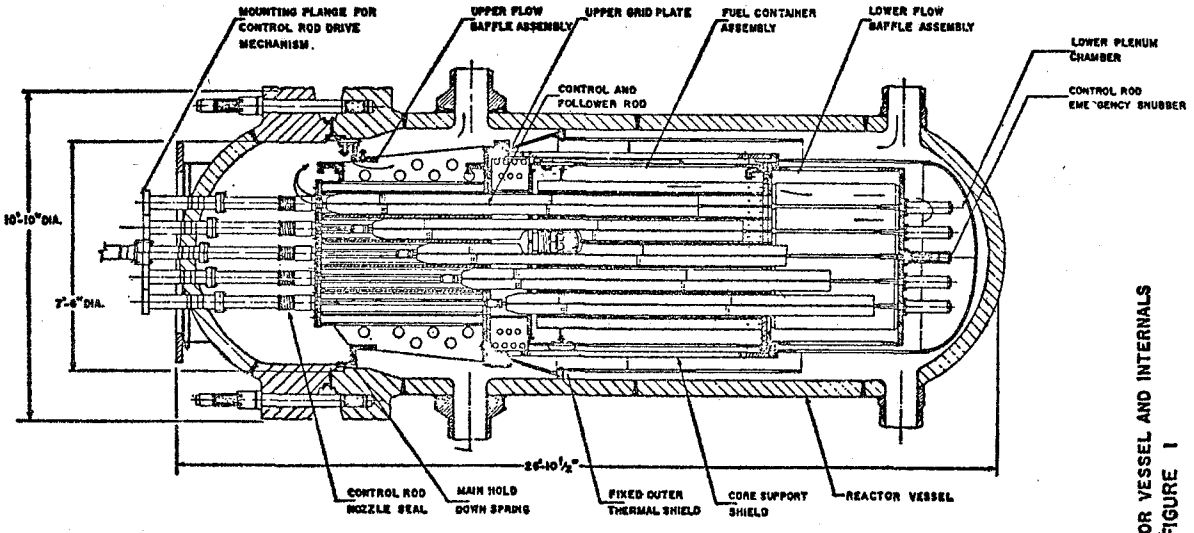
b. Each pump shall have a 10" check valve at its discarge. With all primary coolant pumps operating, the design primary coolant flow rate per loop at normal operating temperature shall be approximately 4.7×10^6 pounds per hour.

c. The maximum main primary coolant loop warmup rate shall average 40 F per hour. The maximum main primary coolant loop cooldown rate shall average 50 F per hour. The primary coolant system shall not be pressurized above 20% of the design pressure unless the temperature of the reactor vessel is at least 200 F during its first 120,000 MWD of operation. After 120,000 MWD of operation, the reactor vessel condition shall be reviewed before further operation is permitted.

d. The total primary coolant water volume is approximately 1290 cubic feet.

2. *Principal Reactor Vessel Design Features*

a. The reactor vessel shall be of welded construction and shall be fabricated of ASTM A-212 Grade B carbon steel, clad internally with Type 304 stainless steel, and designed for 2000 psig, 650 F.



REACTOR VESSEL AND INTERNALS
FIGURE 1

b. The reactor vessel shall be a right cylinder having an inside diameter of 98 inches, and overall length of approximately 27 feet with hemispherical heads.

c. The reactor vessel top head closure shall be sealed by means of two concentric seal rings. Provision shall be made for seal welding the closure to prevent leakage. Other connections or penetrations shall be of the welded nozzle type designed for 2000 psig, 650 F.

d. The vessel shall have 25 penetrations as follows: four primary coolant nozzles, of which two shall be inlet nozzles located in the bottom head, and two shall be outlet nozzles located in the cylindrical section; and 21 3½" ID control rod nozzles located in the top head. All penetrations except the inlet nozzles shall be located above the core.

e. The reactor vessel shall be supported and held in position by a carbon steel skirt attached by welding to the lower portion of the vessel. The support skirt shall bear on and be welded to a support platform which shall be welded to the stiffenings rings of the containment vessel.

f. The reactor vessel internal structure shall be designed to hold the core in place and permit operation of the control rods under all motions and attitudes of the ship likely to be encountered at sea. All reactor internal structural components in contact with the primary water shall be constructed or clad with Type 304 stainless steel or be of other corrosion resistant material. The general arrangement of internals shall be as shown on Figure 1.

3. *Primary Coolant Specifications*

a. The primary coolant shall be water, which, during operation, shall have the following composition:

Total Solids	3.0 ppm maximum
Dissolved Solids	1.0 ppm maximum
Chloride	1.0 ppm maximum
Dissolved Hydrogen	20 to 40 cc STP per kg water maximum
pH	6.0—9.5.

If the solids, dissolved hydrogen or pH exceed the above limits, corrective action is to be taken. Reactor shutdown under these conditions is not mandatory, however.

b. The primary coolant system shall be pressurized by means of a pressurizing vessel which shall generate steam by means of electrical heaters to raise and maintain the primary coolant pressure at the normal operating pressure of 1735 psig. This pressurizer shall contain an internal spray system. A pressure control system shall be provided for automatic and remote manual control of the spray system and the electrical heaters.

c. A level control system shall be provided for automatic and remote manual control of the water level in the pressurizer. At least one third of the pressurizer volume shall be steam filled when more than one reactor control rod is withdrawn.

4. *Operating Variables*

a. When the reactor is operating at power, the minimum reactor outlet pressure shall be 1485 psig and the maximum reactor outlet pressure shall be 2000 psig.

b. The maximum allowable primary coolant reactor outlet temperature shall be 540 F.

c. The maximum operating reactor power level shall be determined by the operating conditions shown in the following table.

TABLE 1. — REACTOR POWER VS PRIMARY COOLANT PUMPS RUNNING

No. of Pumps Operating	Pump Speed	No. of Loops Operating	Maximum Operating Power Level Core
4	Full	2	80 MWt
4	½	2	40 MWt
3	Full	2	68 MWt
3	½	2	32 MWt
2	Full	2	52 MWt
2	Full	1	48 MWt
2	½	1	20 MWt
1 and 2	Full and ½	1 and 1	48 MWt

5. *Principal Design Features of Major Components*

a. The two steam generators, one in each loop, shall be of the shell and tube type. The primary coolant side of the steam generators shall be designed for 2000 psig, 650 F. The shells and heads shall be of carbon steel clad with Type 304 stainless steel on surfaces in contact with the primary coolant. The tubes shall be Type 304 stainless steel. Each steam generator shall have a capability of transferring 136.5 million BTU per hour.

b. The pressurizer vessel shall be a right cylinder having an ID of 4′ 6″ and an inside height of approximately 11 feet, and a surge capacity of approximately 28 cubic feet. It shall be of welded construction with hemispherical heads. The vessel shall be designed for 200 psig, 650 F. The heads and shell shall be fabricated of carbon steel, and clad internally with Type 304 stainless steel. The pressurizer shall be designed for 160 replaceable cartridge type electrical heaters, with a design capacity of 224 kw, which shall be installed in wells in the lower portion of the vessel. The maximum continuous heatup rate of the pressurizer shall average 75 F per hour.

c. The pressurizer shall be equipped with an internal spray nozzle located in the top head. The spray nozzle shall be supplied with water from a pipe connection located between the reactor vessel inlet and the reactor inlet gate valve on one of the primary coolant loops. A valve shall be provided in the spray line for automatic or remote-manual control of the pressurizer pressure.

d. The pressurizer shall be equipped with two spring-loaded self-actuated safety valves arranged in parallel. A three-way motor-operated selector valve shall be interposed between this pair of safety valves and the pressurizer vessel to that the selector valve isolates either of the safety valves from the primary coolant system pressure. Each spring-loaded safety valve shall have a design capacity of 18,000 lb/hr of steam at 2000 psig. The maximum pressure settings for these valves shall not exceed the limitations of the U.S. Coast Guard regulations.

e. The pressurizer shall be equipped with a pilot-operated, diaphragm-actuated valve set to open at a pressure below the set pressure of the spring-loaded safety valves. A remote-operated shut-off valve shall be located between the diaphragm-actuated valve and the pressurizer.

f. The pressurizer safety valves shall discharge through a closed piping system to the effluent condensing tank. The effluent condensing tank shall be protected from over-pressure by a relief valve which discharges to the containment vessel.

g. A purification system shall be provided for letdown and purification of primary coolant. The normal flow through the purification system shall be designed to maintain the water level in the pressurizer within its operating limits.

h. A buffer seal system shall be provided to return the purified water from the purification system in either of two ways:

(1) via the control rod buffer seals, thereby preventing outward leakage of primary coolant at the seals, and also providing lubrication of the seals, or

(2) by direct injection into the primary system.

The flow of water to the buffer seals shall be controlled to maintain the seal inlet water pressure above reactor pressure. The flow of water by direct injection into the primary system shall normally be automatically controlled by a throttling valve actuated by pressurizer water level. Provisions shall be made for manual control of both valves. Three buffer seal charge pumps shall be provided with a maximum combined capacity of 210 gpm at 2250 psi TDH. Each pump shall be capable of providing the normal buffer seal and primary system makeup requirements. The minimum primary system makeup temperature shall be 80 F.

1. Provision shall be made for sampling primary coolant, and water from the waste storage tanks, inner bottom tanks and lab waste tank.

j. An intermediate cooling water system shall be provided for cooling reactor plant and auxiliary equipment. Two separate flow circuits shall be provided, one for sea water and the other for fresh cooling water, to provide an intermediate barrier between the primary system and the sea. The pumps and heat exchangers shall be provided in duplicate, each capable of the entire heat load and required flow rate.

The intermediate coolant shall be water which, during operation, shall have the following composition:

Total Solids	2000 ppm maximum
Chromates	500-1000 ppm
Chlorides	1.0 ppm maximum*
pH	10-11

* If chlorides exceed 1.0 ppm, but are less than 5.0 ppm, and corrective action is not successful within a 48-hour period, system shutdown is mandatory. Shutdown is mandatory if a concentration of 5 ppm is exceeded.

If the above chemistry limits are exceeded, corrective action shall be taken. Reactor shutdown under these conditions is not mandatory, however.

k. A control air system shall be provided to supply air for the reactor plant pneumatic instrumentation and process control. Duplicate air compressors shall be provided.

6. *Materials and General Configuration of Primary System Shielding*

a. Shielding shall consist of primary, secondary, and miscellaneous component shielding. The primary shield shall consist of a 33-inch thick annulus of water in a steel tank surrounding the reactor vessel up to the head flange. With the reactor operating, the primary shield tank shall be full. The water annulus shall be supplemented at the outer wall of the tank by lead. The shield water shall be cooled by the intermediate cooling system and the shield water temperature shall not exceed 175 F.

b. Secondary shield shall consist of lead and polyethylene installed directly on the containment vessel above its equator, and a mixture of ordinary and ilmenite concrete reinforced with steel in vertical walls below its equator.

c. 4.5 inches of lead shielding shall be provided around the primary purification demineralizers, and 2.0 inches of lead shielding shall be provided around the effluent filters.

d. Radiation levels in the passenger and crew quarters shall not exceed limits set forth in 10 CFR 20.

D. Steam and Propulsion System

1. Heat transferred from the primary coolant shall convert water in the secondary side of the two steam generators to saturated steam. The steam system shall be designed for 800 psig at 650 F.

The total flow rate from both steam generators at full power shall be approximately 307,500 lb/hr. At the full power flow rate, the design steam pressure shall be approximately 425 psig and the steam temperature approximately 454 F.

2. The secondary side of each steam generator shall be provided with two safety valves set to relieve at 800 psig. The combined design relieving capacity of these valves on each steam generator shall be approximately 108,000 lb/hr at 800 psig. These safety valves shall relieve directly to the containment vessel.

3. A quick closing steam stop valve shall be located just outside the containment wall in the steam line from each drum. These valves shall be controlled from the main control console to provide isolation in the event of a leak from the primary system to the steam system.

4. A main and an auxiliary feedwater line shall be provided to each boiler from the main and port feed pumps. The lines to each steam generator shall join in a single line provided with an electric-operated gate valve just outside the containment vessel. The maximum differential temperature between the primary and steam systems shall be 100 F.

5. The water in the steam generators shall have the following composition during operation:

Total dissolved solids	650 ppm maximum
Chlorides	1 ppm*
Sodium sulfite	20-30 ppm
pH	10.5-11.0

* If chlorides exceed 1.0 ppm, but are less than 5.0 ppm, and corrective action is not successful within a 48-hour period, boiler shutdown is mandatory. Shutdown is mandatory if a concentration of 5 ppm is exceeded.

Should the solids, sodium sulfite or PH be outside the above limits, appropriate action should be taken to restore the proper chemical balance. Operation outside the limits should be avoided but during the time required to restore the balance the reactor may be operated. The presence of sodium sulfite at temperatures above 212 F precludes the presence of oxygen.

6. The main propulsion unit shall be capable of delivering 22,000 shp in maximum continuous duty. The astern power capability shall be 8,000 shp. The propulsion unit shall be equipped with a 750 hp reversible electric motor.

7. The ship's main condenser shall be a single pass design with scoop injection for normal operation and a circulating pump for standby and maneuvering.

8. A steam dump system shall be provided capable of passing 190,000 lb/hr of steam directly to the main condenser.

9. The design characteristics of the main maneuvering ahead valve shall be as shown in Figure 2. The design opening or closing time for the ahead valve shall be at least 25 seconds and for the astern valve at least 14 seconds. Lift or closure shall be directly proportional to the first power of the time the gate is in motion.

E. Reactor Core

1. *Principal Core Design Features*

a. The moderator material shall be water.

b. The reflector material shall be water and steel having a combined thickness of 18 inches.

c. The nuclear fuel shall be composed of enriched uranium oxide. The fuel shall be compressed and sintered uranium oxide pellets with a mean fuel pellet density of 10.0 gm/cm^3. The pellets shall be stacked to an active fuel length of approximately 66 inches in Type 304 stainless steel tubes having an O.D. of 0.500 inch and a wall thickness of 0.035 inch. Between the fuel pellets and the clad there shall be a maximum diametral gap, at room temperature, of 0.007 inches. This gap shall be filled initially with helium gas. The complete fuel element shall consist of 164 fuel pins in a square lattice with a fuel pin pitch of 0.663 inches. Each fuel element shall be 8.5 inches square. The active reactor core shall consist of 32 fuel elements in a square lattice with a bundle spacing of approximately 9.7 inches.

d. The fuel pellets in the inner 16 fuel elements shall be enriched to 4.2% U-235, and those in the outer 16 fuel elements to 4.6% U-235. The U-235 loading shall be 312 kg in a total core loading of 8050 kg of UO_2.

e. The core shall contain 21 movable control and follower rod assemblies. Each assembly shall consist of a cruciform shaped boron stainless steel absorbing section and a Zircaloy-2 follower section. The neutron absorbing section shall be constructed of a matrix of 1.5% by weight boron in stainless steel of which 92% of the boron shall be B-10. The boron stainless steel shall be clad with Type 304 stainless steel. The follower rod shall be riveted to the neutron absorbing section.

f. The core shall be designed for a total energy production of approximately 40,000 megawatt days.

g. The void fraction at design power shall be zero. The reactor uniform void coefficient of reactivity at 508 F is—1.7×10^{-4} Δk per percent void at the beginning of core life.

h. The temperature reactivity defect, ambient to operating, is approximately—0.046 Δk at the beginning of core life. The pressure reactivity coefficient is approximately $+ 1.5 \times 10^{-6}$ Δk per psi at normal operating conditions.

i. A soluble poison addition system shall provide an alternate means of post-shutdown reactivity control by injection of a soluble poison into the primary coolant. The soluble poison addition system shall be capable of overriding xenon decay and the temperature defect to permit the operator to cool the reactor and maintain subcritical conditions without control rod action at any time during the core life-time.

j. The metal-to-water volume ratio in the core shall be 0.76 where all material other than water is considered as metal.

k. The neutron source shall be polonium-beryllium, double encapsulated in 304 stainless steel. Two sources shall be provided, each with a minimum initial strength of 100 curies. The sources shall be installed in the central shaft of two of the inner fuel elements in the core.

2. *Principal Core Temperatures and Thermal Characteristics*

a. The design thermal power of the reactor core is 80 megawatts.

b. The average core that flux at design thermal power shall be 72,400 BTU/hr-ft^2.

c. The maximum local core heat flux at design thermal power shall be approximately 315,000 BTU/hr-ft^2.

d. The minimum burnout safety factor with normal full flow at the scram set point power level shall not be less than 2.2 as determined by the Bettis correlation described in report WAPD-188.

e. The average design power density of the core shall be 24.3 kw/liter of core.

f. The maximum fuel cladding design temperature at the scram power level shall be 626 F.

g. The maximum fuel pin center design temperature at the scram power level shall be 4800 F.

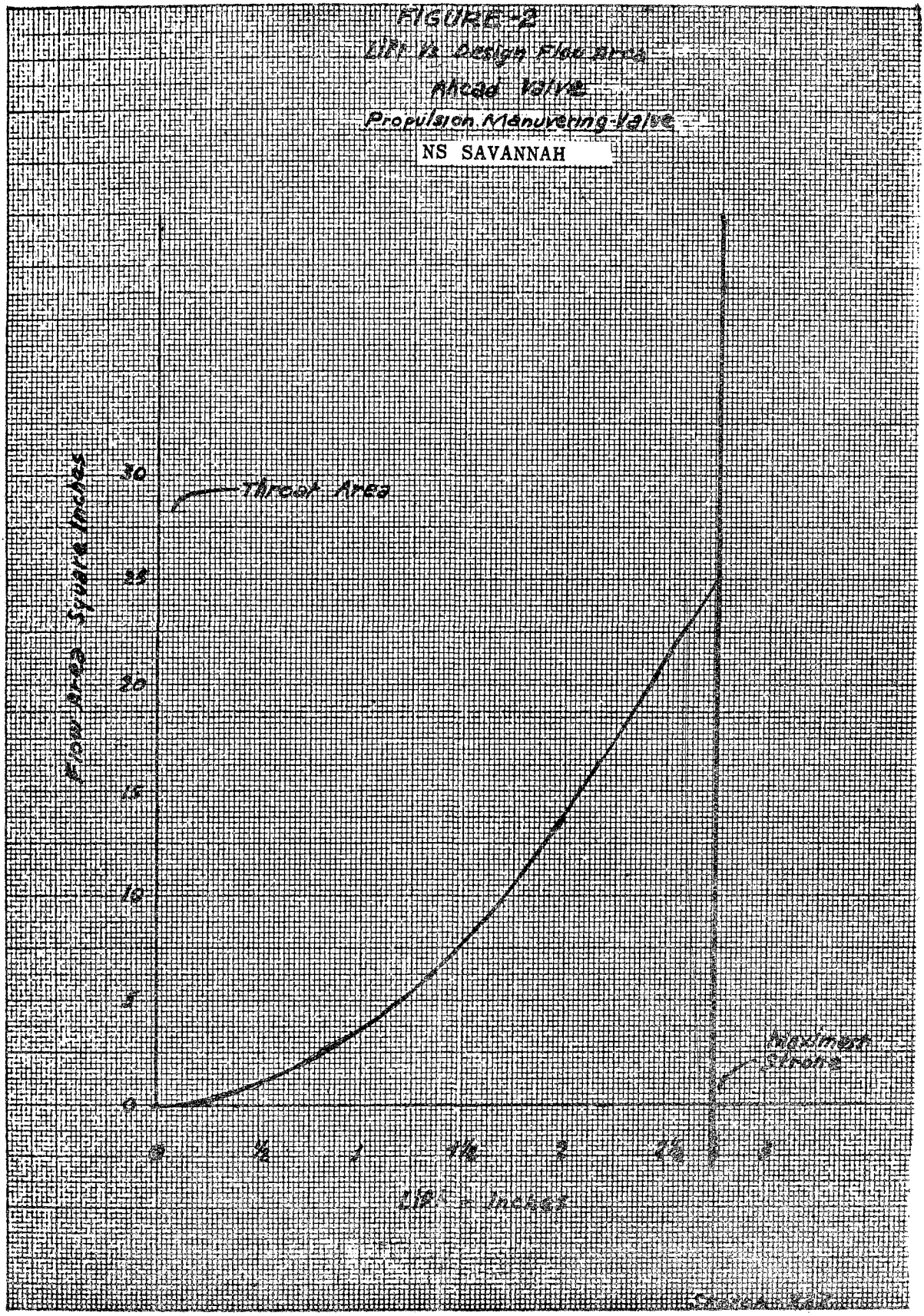
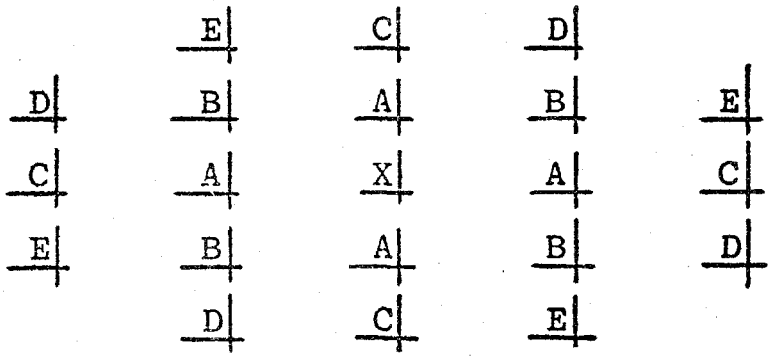


FIGURE-2
Lift vs Design Flow Area
Aileron Valve
Propulsion Maneuvering Valve
NS SAVANNAH
Flow Area Square Inches
30
25
20
15
10
5
0
Throat Area
Maximum Thrust
0
½
1
1½
2
2½
3
Lift - Inches

F. SAFETY AND CONTROL SYSTEMS

1. *Control System Design and Operating Limits*

a. The control rods normally shall be operated as groups when the reactor is being started or operated. Individual rod movement shall be permitted to synchronize the rods in a group. The assignment of control rods to groups A, B, C, D, E and X shall be as follows:



b. The maximum reactivity worth of the control rods shall be as follows:

	Maximum reactivity worth
All control rods	0.15
One group of control rods	0.05
One control rod	0.02

c. The minimum cold shutdown margin of reactivity with all control rods inserted in the core shall be 0.02.

d. The minimum shutdown margin when all control rods are inserted shall be equivalent to the withdrawal of the control rod having the greatest worth.

e. The maximum possible reactivity addition rate shall not exceed 4×10^{-4} Δk per second.

f. The maximum reactivity of the cold clean core shall be 1.13.

g. Twenty-one electro-mechanical hydraulic drive mechanisms shall position the control rods in the reactor. A selsyn position indicator transmitter shall be installed on each control rod drive carriage to indicate carriage position. To scram the reactor, an increased hydraulic pressure shall be applied to the hydraulic cylinder to force the control rod down into the core. Hydraulic pressure for the drive mechanisms shall be supplied by at least one of three separate high-pressure pumping units. Drive line deceleration at the end of the scram stroke shall be accomplished by a snubber in the hydraulic cylinder. Scram movement shall be independent of the electro-mechanical drive mechanism. When the drive line stop separates from the drive carriage, the motor shall automatically run the drive carrioge down to regain contact with the drive line stop. Either of the two latch arms connected to the drive line stop shall prevent outward motion of the drive line at any ship attitude if the drive carriage fails to regain contact with the drive stop and scram hydraulic pressure is lost. The mechanism shall be capable of scram insertion at any ship attitude. Energy for scramming each of the control rods shall be supplied by compressed gas in individual hydraulic accumulators. The reactor shall be shut down immediately upon any indication that more than one control rod drive line stop is not engaged with its drive carriage.

h. The reactor shall be under the manual control of the operator at all times. The reactor shall not be brought critical with the start-run switch in the " RUN " position.

i. The following conditions shall require an automatic reactor scram:

(1) Reactor power of 96 MW with the start-run switch in the " RUN " position.
(2) Reactor power of 40 MW with the start-run switch in the " START " position.
(3) Startup rate of 3 decades/minute at power levels less than 5 MWt.
(4) Primary coolant pressure of less than 1485 psig.
(5) Primary coolant pressure greater than 2000 psig.
(6) Reactor outlet coolant temperature greater than 540 F.
(7) Control rod drive hydraulic supply pressure less than 2700 psig.
(8) Loss of 2-phase power to the control rod drive motors.
(9) Loss of primary coolant flow as determined by pump motor low current monitors (scram on loss of all pumps).
(10) Loss of power to solenoid scram valves in the control rod hydraulic system.
(11) Loss of power to the safety system.
(12) Primary coolant flow of less than 3000 GPM.
(13) Scram insertion of one control rod.

In addition to the scrams listed above, a manual scram shall be provided and scram action shall also result from the removal from the safety circuit of either of the safety amplifiers, except during test, or the scram alarm panels.

j. A pressure in excess of 5 psig inside the containment vessel shall require that all pneumatic lines and normally open process pipe lines which penetrate the containment vessel be isolated either by automatic valve closure, by check valve seating, or, for the main steam stop valves, by remote-manual closure.

2. *Safety System Design and Operating Limits*

a. The reactor safety system shall collect imput information from the nuclear instrumentation, nonnuclear instrumentation and auxiliary sources and cause a scram of the withdrawn control rods as required for safe operation.

b. The safety system design shall be modified Westinghouse type FN equipment. At least two channels shall be provided from the sensed parameter to the scram-actuating devices and failure in any one channel shall not inhibit the operation of any other channel.

c. The safety system operation limits shall be as follows:

(1) The time delay from the start of a scram action to the initiation of insertion of the withdrawn movable control rods shall not exceed 0.5 seconds. Each control rod shall be capable of inserting to a point two-thirds of the full stroke length from the fully withdrawn position within 1.0 seconds after initiation of scram insertion. This shall be checked twice annually.

(2) Neutron level or reactor power measurement and indication shall be accomplished continuously from source level through 120 MWt. This shall be provided by the source range, channels 1 through 4, intermediate range, channels 5 through 7, and the power range, channels 8 through 10. Each lower channel shall overlap the beginning of each higher channel by at least one decade of flux information.

(a) at least one of channels 1 and 2 shall be operable during startup.

(b) At least one of channels 3 and 4 shall be operable during startup.

(c) At least two of channels 5, 6, and 7 shall be in operation during startup and power operation in the intermediate power range. A scram shall be initiated if two of the three channels indicate scram condition. Whenever a channel is inoperative, a trip signal from one of the remaining two channels shall initiate a scram.

(d) At least two of channels 8, 9, and 10 shall be in service and functioning normally whenever control rods are withdrawn. A scram shall be initiated if two of the three channels

indicate a scram condition. Whenever a channel is inoperative, a trip signal from one of the remaining two channels shall initiate a scram.

(e) At the scram level, chamber current in the power range channels shall not exceed 50% of saturation current.

(f) At the scram level, chamber current from the power range channels shall not exceed 50% of the current rating of its high voltage power supply.

(g) The power range nuclear instrumentation channels shall be recalibrated any time the power level indicated by them differs from that indicated by a thermodynamic calculation of power level by more than 6%. Such a check of channel response shall be performed no less frequently than once each month. Further, any one of these channels shall be deemed incapacitated if its indication of reactor power differs from that of the average of the remaining two channels by 6% or more.

3. *Interlocks Related to the Safety and Control System*

The interlocks listed in Table 2 shall be provided.

4. *Systems Auxiliary to the Control and Safety Systems*

a. Power for electrical equipment shall normally be supplied by two 1500 kw turbine generators. If one of these turbine generators is not operable, at least one 750 kw auxiliary diesel generator shall be capable of providing power. If neither of the turbine generators is operable, both 750 kw auxiliary diesel generators shall be capable of providing power. A 300 kw emergency diesel generator, which shall be air cooled, shall be capable of providing power whenever the reactor is operating.

b. A battery-protected source of power shall be provided to supply those loads where momentary interruption cannot be tolerated. This power source shall be designed to consist of two ac-dc motor generator sets, a battery bank, and two dc-ac motor generator sets. Either of the ac-dc motor generator sets or the bank of storage batteries shall supply power to a direct current bus. The dc motor of the operating dc-ac motor generator set shall be driven from the same dc bus. The ac generators which they drive shall provide ac power supply for instrumentation as necessary.

TABLE 2. — TABULATION OF INTERLOCKS

Title	Function	Source	Setting
Primary System Pump-valve	Prevents pump from operating or starting with reactor outlet valve closed	Gate valve limit switches	80% open
Primary System Δ T	Prevents pump from being started if idle loop temperature is a set amount below the active loop	Primary system thermometers	75 F Δ T
Primary System Pump-valve	Prevents pump from being started if reactor inlet valve is open	Gate valve limit switches	Fully closed
Primary System Pump-valve	Prevents pump from operating unless reactor inlet gate valve is 50% open within 0-165 sec. after the pump was started	Time-delay relay	50% open in less than 165 sec.
Primary System Pump-valve	Prevents pump from being started at full speed with reactor inlet valve closed	Gate valve limit switches	50% open
Pressurizer heaters	Interrupts or prevents power supply to pressurizer heaters unless water level is above highest heater	Level transmitter	6 inches
Rod Bottom	Prevents starting primary pump in idle loop with reactor operating	21 control rod limit switches in series	All rods inserted in core

Startup	Prohibits rod withdrawal without count rate indication	Source range nuclear instrumentation	1.5 cps
Period-trip	Prevents period scram above 5 MWt	Power range nuclear instrumentation	5 MWt
Start-run	Start position: a. Sets over power scram trip point at lower than design power b. Allows individual rod movement from operator's desk panel c. Includes half-speed windings in pump monitor Run position: a. Sets over power trip point at 96 MW b. Transfers pump monitor to full speed windings c. Disallows individual rod movement from operator's desk panel—Individual rod movement from rod control panel only		Manual switch on console

G. VENTILATION, WASTE DISPOSAL AND MONITORING SYSTEMS

1. *Ventilation System*

a. The ventilation system for the reactor compartment shall be designed to maintain the compartment at a negative pressure except during entry and egress by continuously discharging a portion of the compartment air through filters to the atmosphere. Heat removal shall be accomplished by a recirculating supply and return system totally enclosed within the reactor compartment. In port, with the reactor temperature above 200 F or more than one control rod withdrawn the reactor compartment shall be maintained at a negative pressure with respect to surrounding compartments. An alarm shall sound in the control room when the negative pressure in the upper reactor compartment is less negative than 0.3″ of H_2O. The pressure difference between the upper reactor compartment and the adjacent passageway shall normally be recorded. Further, mechanical devices will be provided to cause reactor compartment door closure.

b. A ventilation exhaust system shall be provided which draws air from the reactor compartment lower void or from the containment vessel during purging. The discharge from the ventilation system shall be from the 90-foot mast and shall be monitored. The exhaust system shall contain two fans, each with a rated capacity of 1000 cfm, and two filter units. Each filter unit shall be a six stage assembly consisting of a demister designed to remove entrained water droplets, a prefilter, an absolute filter, a silver plated copper ribbon bed, a charcoal bed, and another silver plated copper bed. Either fan can be used with either filter unit. An alarm will annunciate in the control room upon loss for any reason of the operating fan and filter unit.

c. The ventilation filters shall be tested quarterly to demonstrate:

(1) A removal factor of at least 1000 for iodine.
(2) A removal factor of at least 1000 for DOP.

d. The reactor compartment exhaust filter housings, which are exposed to the reactor compartment, shall be demonstrated to be leaktight by soap bubble testing quarterly.

e. The alternate standby equipment provided in the reactor compartment exhaust ventilation system shall be tested for operability weekly. The standby equipment in this system may be out of service for brief periods for maintenance. In the event of inoperability of both fans or both filters in this system, the reactor shall be shut down.

f. Emergency electric power for the reactor compartment exhaust system shall be supplied by the emergency bus.

2. *Liquid Waste*

All radioactive liquid wastes shall be accumulated in tanks aboard ship and analyzed prior to discharge. Radioactive liquid wastes shall be discharged in accordance with the following criteria:

Zone 1—*Harbors, estuaries and coastal waters out to two miles from the shoreline.*

a. To a properly licensed contractor in port.
b. To the N.S.V. ATOMIC SERVANT.
c. To the harbor, estuary or coastal waters, if the waste at the point of discharge contains less than 1×10^{-7} $\mu c/cm^3$ activity above natural background and it is known that Ra-226 and Ra-228 are not present in the waste.

Zone 2—*The coastal area between two and twelve miles from the shoreline.*

a. While underway, discharge shall be to the sea, provided the gross radioactivity level of the waste is less than 1×10^{-4} $\mu c/cm^3$.

Zone 3—*The outer continental shelf, from twelve miles offshore to the 200 fathom depth contour.*

a. While underway, discharge shall be to the sea, provided the gross radioactivity level of the waste is less than 1×10^{-1} $\mu c/cm^3$.

Zone 4—*The open sea, more than twelve miles from any shore and having depths greater than 200 fathoms.*

a. No limit shall be placed on the concentration of liquid waste discharge to this zone, other than that indirectly by the Total Discharge Limit below.

Total Discharge Limit

The discharge of radioactive liquid wastes to harbors, estuaries, coastal waters, and the sea shall be limited to less than 2 curies of gross radioactivity per month.

Policy

It shall be the ship's policy to discharge liquid wastes to the uncontrolled environment in Zones 3 and 4 only, insofar as this is practicable.

3. *Solid Wastes*

All radioactive solid wastes shall be discharged to either a licensed or an authorized waste disposal agent.

4. *Gaseous Wastes*

The release of radioactive gaseous wastes shall be controlled so that no passenger or member of the public shall be exposed to concentrations of radioactive gases in excess of those specified by Table II, Appendix B, of 10 CFR 20.

5. *Monitoring System*

1. Gaseous effluent, liquid and air monitoring facilities shall be provided to ascertain that the radiation exposure of the crew, the passengers, and the general public is held within the applicable limits set forth in Items 2 and 4 above.

b. The following monitors shall be provided at the locations given and with the specified ranges.

Channel Number	Monitoring Location	Instrument Range	Maximum Alarm Set Point
1	Inside containment	0.1 to 10^5 mr/hr	1.5 r/hr
2	Demineralizer compartment	0.1 to 10^5 mr/hr	1.5 r/hr
3	Stack exhaust system area monitor	0.01 to 10^4 mr/hr	5 mr/hr
4	Stack exhaust system area monitor	0.01 to 10^4 mr/hr	5 mr/hr
5	Intermediate cooling water system	10^{-5} to 10^{-2} μc/cc	5×10^{-3} μc/cc
6	Inside containment	1 N/CM²/sec. to 3000 N/CM²/sec. (thermal) (300 CPM—10^6 CPM)	100,000 CPM
7	Gland seal exhauster	Air particle detector 8×10^{-10} to 8×10^{-7} μc/cc	8×10^{-9} μc/cc
8	Stack exhaust	Air particle detector 1.3×10^{-11} to 3.5×10^{-8} μc/cc for Sr^{89}	3×10^{-9} μc/cc
9	Stack exhaust	Radiogas detector 6.5×10^{-7} *a*400 CPM background to 2.5×10^{-3} μc/cc for A^{41}	3×10^{-6} μc/cc
10	Secondary shield area, containment vessel, gaseous waste collection manifold	Air particle detector 1.3×10^{-11} to 3.5×10^{-8} μc/cc for Sr^{89}	1×10^{-9} μc/cc
11	Secondary shield area, containment vessel, gaseous waste collection manifold	Radiogas detector 6.5×10^{-7} *a*400 CPM background to 2.5×10^{-3} μc/cc for A^{41}	3×10^{-5} μc/cc
12	Vent intakes on living areas and engineering spaces	Air particle detector 1.3×10^{-11} to 3.5×10^{-8} μc/cc for Sr^{89}	3×10^{-9} μc/cc
13	Vent intakes on living areas and engineering spaces	Radiogas detector 6.5×10^{-7} *a*400 CPM background to 2.5×10^{-3} μc/cc for A^{41}	1.7×10^{-6} μc/cc

Each of these channels can initiate the radiation monitoring system alarm located in the Control Room.

c. All sources of radioactive gases except the containment vessel air space, the reactor compartment and the radiochemistry laboratory hood will be vented to the gaseous waste collection manifold. Discharge from this manifold to the exhaust ventilation system shall not exceed 8 CFM. Channels 10 and 11 shall monitor the gaseous waste collection manifold approximately 22 hours per day.

b. Should monitoring systems components become temporarily inoperable, special sampling and surveillance techniques, including the use of portable monitors, shall be used to insure continued compliance with the provisions of these specifications.

e. The total discharge of radioactive gas and particles from the radiochemistry laboratory hood shall be controlled so that the total release in any 24-hour period when divided by the volume of air discharged from the stack during the same period yield concentrations less than those set forth in Table II, Appendix B, of 10 CFR 20.

f. Purging of the containment vessel air space shall be conducted on a batch basis, samples being taken before release and appropriate restricted areas being established as required to conform with item 4 above.

H. Reactor Emergency Cooling System

1. Reactor emergency cooling shall be provided by transfer of heat from the primary coolant to sea water in an emergency cooler. The cooler shall be designed to remove 4×10^6 BTU/hr with a primary coolant inlet temperature of 500 F. Forced circulation of primary coolant through the reactor shall be provided by a circulatory pump having a minimum flow rate of 200 gpm. Forced circulation of sea water through the cooler shall be provided by a pump and associated piping and strainers.

2. Forced circulation of water through at least two of three cooling coils in the containment air conditioning system shall be provided. At least one of two circulating fans shall be operable. The procedures for determining the integrity of these coils and for placing these coils back into operation after containment isolation, shall be practiced at least once per month.

3. Approximately 40 kw of electrical power shall be provided to the emergency cooling system.

4. The emergency cooling system shall start automatically upon loss of current to the primary pumps. The system shall also be capable of being placed in operation manually at either the main control console or the emergency control center located on the nagivation deck.

5. At least two sea chest suctions and overboard discharges for this system shall be provided, one suction and one discharge shall be capable of use at any time. At least one suction and one discharge shall be through the side of the ship.

6. Decay heat from the core may also be removed by the main steam generators and by the letdown coolers.

7. The following emergency cooling equipment augments the primary equipment specified in items 1 and 2 above:

a. Control rod drive shaft buffer seal system including makeup water tanks and pumps to provide a minimum flow of 6 gpm to the buffer seals.

b. Provisions for water injection into the reactor containment vessel through the CO_2 system.

c. Provision for flooding the reactor compartment lower void at a rate of 400 gpm.

I. Administrative and Procedural Safeguards

1. *Operation*

a. The NS SAVANNAH shall be bareboat chartered by the Maritime Administration to the Licensee, who shall manage, man, schedule, operate, maintain, repair, supply, refuel, and dispose of wastes from the ship in accordance with the policies and procedures set forth in these Technical Specifications and in the Port Operation Criteria.

b. The Master shall be in complete command of the NS SAVANNAH. He shall be responsible for the operation and safety of the vessel and its reactor. He shall operate the vessel in accordance

with applicable national and international laws, regulations and rules and in accordance with directives of the Licensee.

c. The control room shall be attended by a certified or licensed operator at all times when there is fuel in the reactor. The control room shall be attended by a certified or licensed reactor operator and at least one other member of the Engine Department who is familiar with emergency procedures at all times when the reactor is operating.

d. The NS SAVANNAH Organization by departments is shown in Figure 3. Officers in all departments shall be informed, in writing, of their expected functions and responsibilities.

e. The Chief Engineer shall be responsible for operation and maintenance of the power plant.

f. The minimum manning to be maintained at sea as per the United States Coast Guard Certificate of Inspection is as follows:

The following complement of licensed officers and crew are required to be carried, included in which there shall be ten certified lifeboatmen:

1. Master
1 Chief Officer
1 2nd Officer
1 3rd Officer
1 Radio Officer
6 Able Seamen
3 Ordinary Seamen
1 Chief Engineer
1 1st Assistant Engineer
2 2nd Assistant Engineers
6 3rd Assistant Engineers
1 Instrumentation/Electronics Technician
3 Oilers

The Chief Engineer, 1st Assistant Engineer, and each engineering watch supervisor shall be licensed senior reactor operators. There shall be one other licensed engineer who is a licensed reactor operator on each watch.

Three qualified health physics technicians, one of whom will be designated as staff health physicist, shall be included in the complement while at sea.

g. The minimum manning of the NS SAVANNAH, while in port with the reactor operating, shall be as follows:

1 Deck Officer
4 Seamen
1 Engineering Officer
3 Assistant Engineers
1 Oiler
1 Health Physics Technician

Each engineering watch supervisor shall be a licensed senior reactor operator. There must be one other licensed engineer who is a licensed reactor operator on each watch.

The normal water quality program will be maintained while the ship is in port.

h. The minimum in port manning with the reactor shut down shall be:

1 Deck Officer
2 Seamen

1 Engineering Officer
1 Assistant Engineer
1 Oiler
1 Health Physics Technician

The engineering watch supervisor shall be a licensed senior reactor operator.

i. The total number of visitors aboard ship at any one time shall not exceed 750 people.

j. Within 24 hours after docking, an emergency evacuation drill shall be performed to demonstrate that the ship can be evacuated of unessential personnel within thirty minutes. During normal operation of the vessel, the following drills shall be conducted weekly both while at sea and in port:

(1) Fire Drill
(2) Boat Drill
(3) Radiation Emergency Drill

k. All operations of the reactor installation which may affect nuclear safety shall be carried out in accordance with the procedures contained in the following listed and described manuals. These manuals shall be reviewed and approved by the Licensee's Vice President for Operations or his designated alternate.

(1) REACTOR PLANT OPERATING MANUAL—Describes the detailed procedures for startup, normal and emergency operation, shutdown, maintenance, equipment changes and periodic tests along with applicable limitations and restrictions.

(2) HEALTH PHYSICS MANUAL—Describes the requirements and procedures for radiation surveys, monitoring, record keeping, personnel control, and the handling and disposal of radioactive materials.

l. Manual scram of the reactor shall be initiated should any automatic scram fail to occur.

m. Manual shutdown of the reactor shall be accomplished whenever the provisions of these Technical Specifications are not met.

n. The concentration of fission products in the primary coolant shall not exceed that which would result in average radiation dose rates in excess of design dose rates outside the secondary shielding or which would result in gaseous discharge concentrations in excess of that required by these Specifications.

o. The deck officer in charge shall be responsible for the decision to institute emergency ship removal and evacuation action. He shall be qualified to command the ship during emergency removal if such should become necessary.

p. A nuclear advisor shall be present on the ship or readily available on call, although not necessarily aboard the ship, at all times during reactor operations.

q. Continuity of supervision and cognizance of reactor operation and maintenance shall be achieved by the presence on board or the ready availability on call of either the Chief Engineer or First Assistant Engineer.

2. *Maintenance and Servicing*

All maintenance work having reactor safety implications shall be performed in accordance with procedures reviewed and approved by the Licensee's Executive Vice President or his designated alternate. Repair maintenance and alterations shall be performed in accordance with applicable requirements of the U.S. Coast Guard.

3. *Design and Operating Changes*

a. Changes to equipment or operating procedures shall be reviewed and approved by the Licensee's Vice President for Operations or his designated alternate.

b. Changes to design of equipment having reactor safety implications shall be reviewed and approved by the Licensee's Executive Vice President or his designated alternate.

4. *Testing*

a. Detailed Standard Operating Procedures will be followed in the checkout of the control rod drive system following either an extended outage or system maintenance. Routine operation of the system will be monitored by the reactor operators in the normal course of work.

b. Regular checkout of the Emergency Cooling System, including the emergency generator, will be accomplished at a minimum frequency of once per week. In addition, the system will be tested prior to startup from any extended outage and following any system maintenance.

c. Weekly test, while the reactor is operating, will be conducted on the high flux level safety circuit trip points.

This will be accomplished with the system in coincidence requiring two of three signals for an actual scram.

d. All scram signals and interlocks described in Section F will be tested following an outage lasting 72 hours or more. If the reactor has been operated for one month or longer, these tests will be performed prior to startup from an outage of any duration. These tests shall be performed prior to startup from any scram if the cause for it has not been definitely established at the time of startup. Scram checkout will be mandatory whenever maintenance has been performed on the system(s) involved.

e. Ductwork integrity, containment vessel leak rate and isolation system, and filter efficiency tests shall be performed at least quarterly.

f. Within 24 hours prior to port entry and no less frequently than weekly while in port with the reactor operating, tests shall be made to demonstrate the operability of the take home motor.

5. *Drydocking*

The NS SAVANNAH may be drydocked in either a floating or graving drydock of sufficient size and capacity subject to the limitations presented in these specifications. A detailed drydocking procedure containing the specific applications to individual drydocks will be prepared and used.

a. The vessel will be moved to the drydock by using at least two tugboats.

b. The nuclear reactor will have been shut down for at least 72 hours.

c. The primary system shall be cooled to below 200 F.

d. Reactor core cooling will be provided by operation of at least one primary pump at half speed, providing circulation through the letdown coolers and the core, backed up by an on-ship operable emergency cooling system. The emergency cooling system's operability will be checked within 24 hours prior to drydocking.

e. Heat exchangers in the intermediate cooling system (CW), one of the auxiliary diesel generators and the emergency cooling system (DK), normally supplied from the sea chests will, in drydock, be provided cooling water from a shore water supply through two independent 2½" hoses. This shoreside source of water shall be backed up by an additional cooling water supply utilizing a pump of sufficient capacity to supply vessel cooling water demands.

f. In drydock, the vessel shall be supplied electrical power from a shore power generating source. This source of power shall be backed up by one operable ship's auxiliary diesel generator with further backup by the ship's emergency diesel generator. The auxiliary diesel and emergency diesel shall be tested for operability within 24 hours of drydocking. The shore supplied electrical power will be connected and supplying power prior to raising the vessel out of the water.

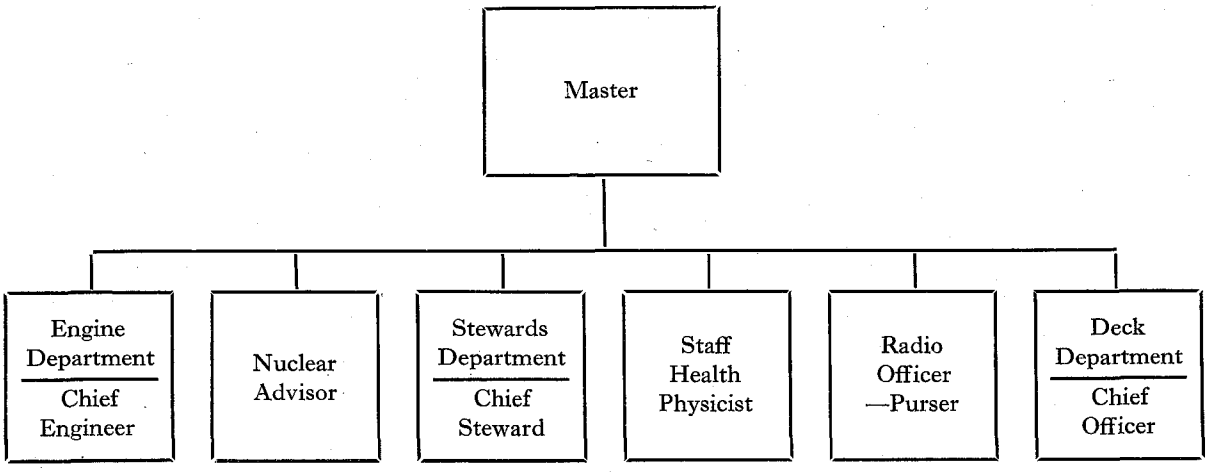
g. Prior to lifting the ship from the water, the shore source of cooling water flow will be established and demostrated to be adequate for the loads involved.

h. The extent of work involving openings in the hull will be controlled to provide reasonable assurance that the ship, in the event of a nuclear accident, could be undocked and removal started within 24 hours.

6. *Refueling the Reactor*

The procedural safeguards set forth in these Specifications are not intended to extend to reactor refueling operation.

Figure 3. NS SAVANNAH Shipboard Organization



J. EMERGENCY EQUIPMENT

1. Thirty-five (35) pieces of portable radiation monitoring equipment shall be stored in various places on the ship. This equipment shall be capable of monitoring α, β, and ν activity from 0 to 10,000 r/hr.

2. In addition, six emergency kits containing film badges and protective clothing shall be kept stored in convenient places aboard ship. Three of these are intended specifically for use by tug personnel. In the event of a nuclear accident, they shall be transferred to the tug personnel when they pull alongside, if necessary.

3. An emergency electric power bus connected for receiving power from the 300 kw emergency diesel electric generator shall be capable of supplying power in emergencies to all essential loads including the nuclear instrumentation, the reactor compartment ventilation system, the decay heat removal system, and the emergency package boiler controls and pumps.